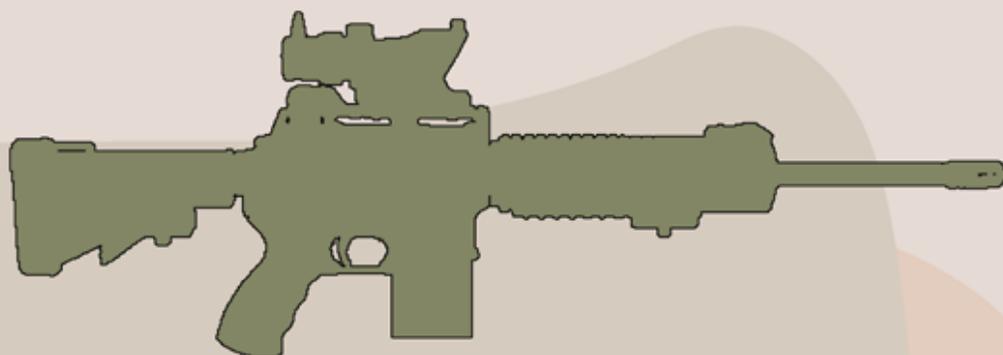


MANUAL OF THE INDEPENDENT COUNTERTERRORIST



TRAINING MODULES



*ADVICE,
RECOMMENDATIONS,
REFERENCES, AND
KNOWLEDGE FOR
THOSE WHO WISH
TO DEFEND INNOCENT
HUMAN LIVES.*

R.J. GODLEWSKI

To facilitate the incorporation of the civilian population into the war effort against international terrorists, the International Nuclear Emergency Response Team (INERT), R.J. Godlewski, Right Truth Blog, and affiliated parties are developing a volunteer training program to educate interested individuals in the fields of counterinsurgency, counterintelligence, counterterrorism, and counter-guerrilla warfare operations.

Each monthly module will consist of a brief narrative by R.J. Godlewski, appropriate federal military/civilian training manual/reports to review, and review questions to stimulate debate. There are no fees associated with these programs and no grades/certificates will be issued. This is strictly a volunteer program for educational purposes.

Topics:

Counterinsurgency, Operations, Che Guevara, Intelligence and Analysis, Interrogation, Explosive Ordnance Disposal, History of Terrorism, Castro and Terrorism, Psychology of Terrorism, Urban Warfare, Medical and Trauma Education, Survival and Evasion, Mine/Countermine Operations, Psychological Operations, Intelligence Preparation of the Battlefield, Shooting and Personal Defense, Police Intelligence Operations, Special Forces Intelligence, Combat and Operational Stress Control, Human Intelligence Collector Operations, Carlos Marighella, Urban Threats from Guerrilla and Terrorist Organizations, Nuclear Terrorism.

NOTICE:

Neither the author, INERT, nor any of its affiliated parties/individuals assume any responsibility for the misuse of any information contained within this training program. Seek competent legal advice before engaging within any personal plan of action.

*“Military training...
has three purposes:
(1) to save ourselves from becoming subject to others,
(2) to win for our own city a position of leadership,
exercised for the benefit of others...
(3) to exercise the rule of a master over those who
deserve to be treated as slaves.”*

Aristotle, The Politics, Book VII



What are *you* prepared to do to survive?

3. Survival, Evasion, and Fieldcraft

There is *no* greater lesson to learn in life...

Consider the following:

- You're perusing a gun shop in Darra, Pakistan, marveling at the assortment of AK-47s, M-16s, "Stealth" pen guns, brass knuckles and that lovely rocket launcher leaning against the proprietor's counter when you suddenly turn around to find your guide has been replaced by several scrutinizing locals;
- You're on your first night ever in the Amazon Jungle hoping to make ends meet as an outdoor photographer when your guide hands you his machete and says "See you in a couple of days";
- You're driving alone in a strange city, hung-up in the poorest section of town when you turn a corner and find yourself face to face with a rickety barricade blocking your path and hordes of angry crowds surrounding your vehicle.

Before you consider the foregoing as highly unlikely, permit me to add that I consider myself a very typical human being and yet I encountered two of these situations back when I was even less extraordinary. We've all experienced situations within our lives where we've found our survival challenged, whether we were entering a darkened parking garage, transiting a foreign airport, or simply adjusting to a new city.

As soon as we exit our dwelling, we immerse ourselves into a world of threats, both natural and manmade, and unless we condition ourselves to adjust to our constantly evolving environment we run the risk of placing our lives at the mercy of chance. Far too many people have been caught up in our semblance of security that the first thing that happens when things turn sour is that we panic. The next thing that usually happens is that our lives have been needlessly changed forever.

As terrifying as the three foregoing situations may seem, what they all offer is that neither of them started with your death and, this is most important, if a situation does not start with your death then it *may not end with your death*. This may seem a little sophomoric but as long

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as you are still alive you still have prospects for survival. Think about it and consider the Amazon Jungle:



Figure 1. Amazon Jungle Trail, ©1992 R.J. Godlewski



Figure 2. Amazon Tarantula, ©1992 R.J. Godlewski

This trail through the jungle may seem threatening and believe me, there's spiders out there the size of Frisbees® (The one in FIGURE 2 was photographed through a telephoto lens from *many* feet away). Still, there are no virgin jungles left in the world; everything that *you* could come across has already been more or less tamed by the human species. What makes the jungle trail in the photograph *appear* threatening is that your mind has already convinced you that it is dangerous without challenge. Why? Because your *eyes* have seen a simple trail but your *mind* has interpreted it as a hostile, impassible barrier.

Let's consider another way in which this human prejudice works. In the following photograph is a living, breathing Jaguar:



Figure 3. Jaguar, ©1992, R.J. Godlewski

I personally saw this particular specimen crawling out of the jungle while I sat within our camp. He approached me from the jungle in what I immediately identified as a "stalking prance" and, well, my first reaction was one of *Oh, shit*.

It was when I witnessed one of the local women go calmly about her

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daily cleaning that I began to suspect that all was not as it had first appeared. Taking another look at the new arrival, I noticed that his back was mangled and as it turned out, he was something of a pet for the local villagers. What I had mistaken for his “stalking” posture was simply the only way the poor animal could walk. Realizing what an ass I had become, the cat and I thus became friends.



Figure 4. R.J. Godlewski with Jaguar, ©1992

Several lessons can be drawn from this episode. First, while I had been deep in the heart of the Amazon Jungle, it did not occur to me at that time that a jaguar *could* appear out of the jungle. I should've known that it would've been a remote possibility, sure, but I had simply ruled it out completely. Second, when a jaguar *did* appear – in broad daylight with several other people around – I did not think for a moment that it could've been a “peaceful” cat acclimated to a symbiotic relationship with the locals. In reality, the jaguar was probably more shocked to find himself coming face to face with a stupid Gringo as he approached for his lunch handout as I was in facing a jungle cat.

Now let's segue into the chance encounter with a hostile

group. You're driving alone, perhaps somewhat lost within an unknown city, and through sheer dumb luck you find yourself turning into the most disadvantaged part of town. Herein are three things that should have you suspecting “jaguars emerging from the jungle”. Yet, all is not lost – especially your life.

In this situation, there are two things that would normally hold your life in peril: 1.) if you look out of place within your surroundings, and 2.) if you look like *you know* that you look out of place within your surroundings. Both of these conspire to draw attention to your predicament and those that would like to see some harm come to you automatically see you as what you are: a prime target for harassment or worse.

Using my Amazon analogy once more, that jaguar probably came straight for me not because I'm an animal lover but probably because *I was the one individual* in the whole camp that looked and acted “out of place”. He may not have perceived me to be a threat, but his senses did detect a need to investigate the matter further. The same holds true for human “animals”.

Unless you've cheated and jumped ahead in this training program, you've already read about our enemies and how they think and act. Already, these training modules have been downloaded by ‘some people’ in the Islamic Republic of Iran, so you can rest assured that these same enemies of humanity are already thinking about what you are learning. You have also begun to formulate something of a change in your own character and, hopefully, have taken steps to condition your body as well as your mind.

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This third module in the series, however, represents the one that is to be considered of the most fundamental importance. Not so much by its length or material covered, but because its knowledge must be applied to the whole of your life. That is, survival is of such paramount importance to your existence that a slip for even the slightest of moments may doom your future and that of those closest to you.

It is for this reason that, although this is a free program, I strongly encourage you to seek out the additional resources (recommended reading, etc.) that I have listed at the back of this package. These are not expensive options, but there is far too much material that applies specifically to your situation than can be contained within a reasonably downloadable file.

However, by no means ignore the material herein. I've included the [U.S. ARMY SURVIVAL MANUAL FM 21-76](#) which contains a wealth of pertinent information culled from decades of real-life practice. Also included is [FM 4-25.11 FIRST AID](#), a 'joint services' manual that'll give you everything that you need to know about coping with medical emergencies.

You will note, I strongly hope, a pattern developing here. I first introduced you in MODULE ONE to those who wish to harm us and, by doing so, presented a strong case that there *are*, in fact, people out there who want to see you dead for no other reason than you are who you are. You can't run from people who actively seek you out. Next, I addressed in MODULE TWO your need to condition both your mind

and your body to accept this reality *and* the fact that ours is a situation where independent effort is decidedly lacking. Now, in MODULE THREE, you are being given additional information that will instill within you the fight to survive; the ability to control your instincts and corral your fear in hazardous situations.

This is how this program is structured; to build upon what you've already learned and channel it towards your ultimate goal: the ability to protect yourself and that of your loved ones *within any setting* that should arise. At this point, you are merely a baby learning to walk and crawl before you can run. That's okay, however; just consider how much you've matured from the point when you were a *real* infant learning to walk.

There'll always be people who remind you that "you can't teach old dogs new tricks!" Yet, the *only* people who believe such statements are old dogs that *don't want to learn new tricks*. In other words, people who are simply too lazy, too pre-occupied, and basically too shiftless. Consider that new MasterCard® television commercial with Indianapolis quarterback Peyton Manning. Give me *one sound reason* that you can't have "rock hard abs" at your age, whatever that may be? Uh huh.

...than perhaps this one.

"Ask and it will be given to you; seek and you will find; knock and the door will be opened to you." (Mt. 7:7)

The only barrier between you and those rock hard abs of the professional football player is the one that you yourself have erected. The

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only thing besides time that may stand between you and my challenge for you to become a disciplined warrior in the battle against terrorism is, once again, the limitations of your own courage, knowledge, and desire.

Everything else is simply a distraction. We've allowed ourselves to become like Don Knotts in the movie *The Shakiest Gun In The West* where we've bungled our way through life with the assistance of others more capable than we are. It's not easy to shy away from this reliance upon others, but we must if *we* are to survive. Even if we can rely upon others for 99% of the time, what about that single percent where their aid is absent? We'll find our existence terminated. It never fails.

In contrast, we need to strive for that ultimate plateau – possessing the mindset of the ancient *Ninjutsu* of feudal Japan. You can stop laughing; I'm not talking about modern Ninja with its weird turtles or that of Hollywood 'B' action flicks. I'm talking about the *real* thing, a form of life built on concealment, camouflage, invisibility, and psychic sensitivity; the traits that would make for a great LRRP* candidate.¹ You would do well to study up on the ancient Ninjas and work their techniques in with your own martial arts training program.

If you did possess these abilities, you could make the claim that you could strike anyone at any time and there's nothing that anyone could do to stop you. Now wouldn't rock hard abs be a slightly easier objective? It's all in the mind, people, and part of the effort is working through these training modules. No,

they won't in themselves turn you into Rambo, but adherence to their recommendations, advice, and study materials will make you less of a Gomer Pyle.

Spend the rest of your life working at and keeping your new body and mind in tune with your surroundings, but base that desire on keeping yourself and your family alive. As we progress further into our technologically advanced world, we voyage our minds further from the primitive beings that we truly are deep down. The conflict that emerges is one between our subconscious that knows our need to endure life "kicking and screaming" and our consciousness which simply desires convenience (such as laptop computers, plasma televisions, and voice-activated car phones).

Resurrecting your primal nature.

We're progressing into a culture that sugarcoats everything that we do. We fill our thirst for danger and intrigue by watching *Survivor* on television (basically just "office politics" in the wild) and demand superhuman abilities in action flicks. Each of these proves our subconscious desire to return to our old ways, yet we allow commercialism and popularity to taint our perception of what these 'ways' actually represent.

In the case of the television *Survivor*, the 'contestants' are merely motivated by money and fame, neither of which would come into play during *actual* survival conditions (though *cash* can come into use during evasion efforts). If Hollywood wanted a *true* survival show, they would take some poor

* Long Range Reconnaissance Patrol, pronounced "LURP".

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chump, strip him to his BVD®s, and drop him in Northern Alaska and say “See ya in six months, buddy!”

Another way that Hollywood fills our thirst but shatters our common sense is through the ubiquitous action/adventure tale of the hero on the run. You know the movies; the ones where the antagonist thwarts his pursuers by hiding underwater. *Rambo* comes immediately to mind.

Listen, the surest way in which to die or be captured is to hide within the water. Our bodies are designed for 98.6° F. and *anything* cooler than that drains heat away from our bodies. You say that you can withstand a nice 74° F. day? Right. Water is one of the best coolants around which is why your automobile is liquid-cooled instead of air-cooled. You immerse yourself in 74° F. water and you’ll be shivering within minutes and dead not very long after that.

Even if you could somehow survive the temperatures endured, being in water is simply a deathtrap. If you were, for example, being hounded by a team of dogs and slipped underneath a river or lake to escape their attention, they would certainly come to such a conclusion once they lost your scent for a few minutes. Then, they’d simply wait for you to succumb to hyperthermia. So, in order to survive, *never entrap yourself*.

The ‘fantasy’ industry – motion pictures, television, yes even novels – are geared towards *entertaining* you; getting you to think that the impossible is quite real. We do this so that you people can escape from your everyday, humdrum lives for a few precious moments. In real world survival you

can – indeed, should – use imagination but *fantasy* can be a real killer.

Take the recent mall shootings in Nebraska, which happened just the other day from this writing. A deranged madman (hardly any more than a boy) shot and killed eight people because *no one was available to shoot him in turn*. Why? Part of the reason is that the mall was a “gun free zone”. In other words; decent, law-abiding people were prevented from defending themselves as the framers of the U.S. Constitution had intended. Would you place “door lock free zone” placards surrounding your house. No, of course you wouldn’t.

Nearly lost within the news on that particular day was another story of a seven-year-old girl who was shot six times throwing her body in harm’s way in order to protect her mother. This brave little tyke survived, but only by the grace of God; the police weren’t much help during the crisis. *It took three calls to 911 before the police showed up after the fact!*

Again, *you* have to condition your mind to behave as if you are alone against a world of some six billion desperate souls for that is what has always been and will always be. You might think that all of this talk about primal survival is a bit much to comprehend. Okay, fine. Let’s bring reality a little closer to your expectations.

Let’s say that you have a family of five to support; you basically live paycheck to paycheck and are only one mortgage payment away from being cast out onto the street. Now, your employer folds up and you need another job. Well, you

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find another job opening within the area and you show up all nice and polite hoping to keep your family from the local homeless shelter. Guess what? There's probably a bunch of other people vying for that same job. So what do *you* do? Do you remain a good Christian, for example, and wish the other guy "luck" or had you spent your prior free time studying, learning, and improving yourself so when that day came you could "win" the new job by being superior to your foes – and, yes, I said *foes* for they are ones who will literally be taking food from your family's mouths if they get the new job.

In negotiating class (a minor semblance of which will be included within a forthcoming module), we learn that "everything that you want or need is owned or controlled by someone else." How apropos. This translates well to survival: "everything that you need to survive in life is controlled by someone else". Everything that isn't *already* owned or controlled by yourself, that is.

Before you find yourself within a life or death survival situation, you should've had a survival kit available; done a great deal of study on life, your environment, and the people you're likely to encounter; and conditioned yourself to act – not *react* – to whatever situation you may find yourself in.

Consider your home and the (hopefully functioning) smoke detectors within. When you hear that tone, are you prepared to evacuate yourself and your family/friends from the premises? What if your primary egress route is blocked? What if you have sustained an injury and are less mobile than normal?

Survival means being prepared as much as it does being fit and trained. When I was in the Navy and stood electrical switchboard watches (which controlled distribution of electricity throughout the ship and, henceforth, we were responsibility for the *entire* ship's operation at its most primitive – i.e., electrical – level) we had drills all of the time. On many an occasion the inspectors would descend into the engine room, often at 2 A.M. or later, to run casualty simulations to see how I would handle crises.

Needless to say, as someone barely out of high school my nerves were often shattered as "Godlewski you should've done this!" and "Godlewski you should've done that!" echoed throughout the steel confines of the engineering space. I didn't think that *anyone's* voice could be heard amongst the din of the machinery of the steam plant but sure enough, even those not part of the drill could hear me being chastised. I still have nightmares regarding these 'simulations'.

Yet, when we did have a *real* crisis, such as losing a generator offline, or cooling pump failure, I was able to act subconsciously and avoid a major catastrophe. I, as an electrician, never "dropped the load". I came damn close once when one of our generators tripped off and I had to shut down lights and non-essential equipment throughout the ship. Despite the catcalls and insults flung from those high above, as my supervisor noticed when he came racing down into the forward 'hole' – the engine room's lights were on and this meant that the ship, as dark as it was above, was still functioning.

No matter how infuriating (and nerve-wracking) repetitive

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procedures are, they serve to ensure that you can do what needs to be done without thinking. Your constant drills with your family on how to evacuate your house may seem intrusive and boring, but when your house is on fire you will *not* think so. Going to the gun range every few days to ensure that you can hit the bull's eye consistently and without thought may seem less exciting than going shopping or to the latest movie, but when the next creep with an AK-47 aims at you, you *won't* think so. Planning a daily physical conditioning program while you're fifty pounds overweight may seem impossible to keep, but when you have to dash across the street to ensure that your five-year-old isn't run over by a bus, you *definitely* won't think so.

If any of the above seems farfetched or perhaps a bit drastic then may I ask you of the point for training for *expected* occurrences? If you knew that someone was going to attack you at such and such a place at a particular time, then a complete imbecile would know enough to avoid that activity. If you knew that your home was going to burst into flames on Saturday, the 8th of March, 2008 at precisely 2:05 A.M., then you would telephone the fire department at midnight to ensure that they would arrive there on time while you're enjoying an espresso at the neighbor's. If you knew what the answers were on every one of your tests, you'd be the valedictorian, now wouldn't you? So don't be a valetudinarian when it comes to your safety. Be prepared!

What If?

To illustrate this need for preemptive training, consider the following scenario. You're on a flight to Athens to undertake a long-awaited vacation. You dream of exploring ancient Greek architecture. The Parthenon. The ruins of the Akropolis. You daydream of walking as a contemporary through the Theatre of Dionysios.

Suddenly, just before your budget charter flight lands a bunch of men storm throughout the cabin, assaulting the flight attendants, brandishing AK-47s and announcing that the rest of you are in the hands of "Nazi Islamists for Communistic Buddhism." Okay, so what do *you* do? The following may be well worth remembering:

Surviving aboard a hijacked airliner.²

1. If kept in close quarters with a hijacker, talk about your own and his family. Make yourself a real, normal person in his eyes and you'll be treated better. Don't talk politics.
2. If you can fake being sick and keep it up, you may be released in an interim deal.
3. Don't wear religious or other insignia when you travel as these 'beliefs' may not be shared by the hijackers, especially provocative T-shirts (probably ordered from my store ☺) with political slogans.
4. Don't carry military documents with you on board. Pack them within your main luggage instead. If they find out that you're connected with a military or federal agency, you can expect to be singled out for torture or other rough treatment.

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5. Remain quiet, not attracting any attention. When they make their move, they are looking for people who might thwart their actions.

And if your aircraft is stormed by a hostage rescue team:

1. Do not pick up weapons as you flee the aircraft, you might be shot as one of the terrorists. As you exit the aircraft, fall flat upon the ground with your arms outstretched and remain there until the security forces instruct you to move.

2. Obey the assault team to the letter; they'll treat *everyone* as potential threats so expect to be considered as such until they clear you personally.

3. If tear gas is used, do not rub your eyes, especially if you wear contact lenses.

4. As soon as the assault occurs, drop to the floor underneath your seat and stay there. Avoid the aisle as the assault force will likely trample over you as they storm the aircraft.

Of course, September 11th, 2001 changed the above equation a bit and were it not for the brave actions of the passengers of United Flight 93 the events of that particular day could've been a whole lot worse. I have thus included the above for two primary purposes. First, to keep you thinking about personal safety and survival. Secondly, these actions are valuable *when your airplane is safely on the ground*. Remember, however, that the current batch of Islamist terrorists hate Westerners and especially Americans. You must continually adapt your 'survival

instincts' to adjust to *whomever* the hijackers are. Terrorists are not limited to radical Muslims and this training program is not meant to single them out exclusive to other threats.

Your SURVIVAL posture.

If there is one simple thing that you will remember from the attached material, remember the SURVIVAL acronym:

- **S** – Size up the situation, your surroundings, your physical condition, and your available equipment/resources;
- **U** – Use all senses, undue haste makes waste;
- **R** – Remember your location;
- **V** – Vanquish fear and panic;
- **I** – Improvise;
- **V** – Value living;
- **A** – Act like the natives (if caught up within a foreign locale while evading);
- **L** – Live by wits, learn basic skills.

When you find yourself within a survival situation, what you do is as important as that which you do not do.

Most people who find their lives threatened simply panic. They see the "jaguar out of the jungle" and immediately think "wild cat". Don't be one of them; don't allow your life to end prematurely until you've analyze the situation and your surroundings. Remember what I did; I noticed that an elderly cleaning lady was not afraid of the cat and therefore concluded that I shouldn't be either.

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Unless your life is in imminent danger of being extinguished – such as facing a deranged gunman pointing his weapon at you – make use of the time that will undoubtedly be available. Take notice of your surroundings; identify that which can be used and that which should be avoided. Survey what you have on your person. Pocketknives are indispensable. iPods® not so much so – after their batteries wear down and you find a need to ‘entertain’ yourself through other means.

Knowing where you are is also important. Rivers naturally lead to communities and communities lead to assistance. However, if you’re being pursued water gives you a chance to camouflage your tracks, *but remember what I said about hiding within the water!*

You should’ve already known where you were roughly at the time that you got into your particular predicament and therefore should know where the nearest form of civilization is. Thus, by navigating with the help of the sun (daytime) or the North Star/Southern Cross (nighttime) you can start heading towards said civilization. All of this is covered in the Army survival manual but did you know that you could navigate merely by knowing which highway you’re on (I’m not trying to be funny here)?

U.S. highways are numbered from left to right and from bottom to top. Even numbers represent East-West travel while odd numbers represent North-South travel. Many people – if not the vast majority of travelers – don’t pay attention to this. For example, I-5 is a low, odd number which means that it is positioned near the left hand side of

a map of the United States and runs vertically. In this case, I-5 is a highway running through California on up through Washington. Similarly, I-95 does the same from Miami on up to the Canadian border in Maine.

Conversely, I-10 represents an even number and therefore runs the East-West corridor and is a relatively low number so you can expect to find it somewhere in the Southern United States. In this particular case, running from Jacksonville, Florida to Los Angeles, California. Now, where would you find I-94? This highway runs from Port Huron, Michigan down through Detroit, Chicago, and over to Billings, Montana where it meets I-90 running to Seattle, Washington.

Knowing this bit of highway numerology, you can find your way within a blinding snowstorm. Simply find the nearest highway sign that you can read and you can tell what direction you’re heading in. After all, you need not be lost in Garam Chasm, Pakistan to find yourself in a survival situation. Flashfloods, snowstorms, dust storms, and a host of other meteorological disturbances can turn your ‘backyard’ into hell if you are unprepared for the occurrence.

The worst snowstorm that I ever drove through in my life was not in my native Michigan but in *Southern Texas*. I was completing an all-night run to Austin and was traveling eastbound on U.S. 290 (just north of San Antonio) and barely able to stay awake as I was trying to reach my destination by my 7 A.M. appointment. There was about a foot and a half of snow on the ground, visibility virtually non-existent, and the only thing that told me that I was

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on a highway were the tire tracks on the road. I didn't know *which* lane that I was on but an occasional bull hauler roaring the other way generally made me feel confident that I was at least within the eastbound lanes. Two other memories from my brief trucking career bear mentioning within the context of survival.

One of the earliest was when Sara and I served the household goods industry (where she actually had a 'role' in inventorying the people's possessions and ensuring that all pre-existing damage was dutifully noted). We were heading south into Illinois from Wisconsin along the aforementioned I-94. The weather was snowy but clear and the road remarkably dry. I was cruising at the then allowed speed of 55 m.p.h. when we began to notice the heavy traffic along the northbound side. Soon, traffic was backed up for miles with about every third tractor-trailer rig resting in the ditch.

After we had witnessed this "bumper to bumper" traffic for many miles, I looked at Sara and said with all incredulity: "*Did we miss something?*" To this day, I don't know what exactly had been the problem. It was as if the northbound lanes were trapped in some time warp where they were in a blizzard and we were proceeding through a normal day. My only conclusion was that those people traveling *north* were coming from warmer weather in the south and simply panicked. I don't know but there wasn't *any* problems on the southbound side a mere median away.

The other occurrence involved again a run from Dallas into Oklahoma City where the trucking company that I was driving for (one

of only two times that I ran as a company-employed driver) had their terminal. The weather was horrible, but nothing worse than a typical Midwestern winter. There I was, booking along in Oklahoma City when after a few minutes I realized that I was alone on the highway. I didn't attribute anything spectacular to this as it was about 10 P.M. or so. Still the roads were pretty snow-covered and I had a grand old time avoiding traffic.

After a bit, I pulled into the yard, secured my rig, and walked into the driver's lounge amidst a crowd of shocked faces. "We're did *you* come from?" one trucker asked. Naturally, I turned around to see if there was some extraterrestrial behind me. Being none, I replied "Who me? Dallas. Dropped my load off there."

"Didn't you know that the city was shut down?" gasped another driver. "The president of the company was going to broadcast a satellite message telling all drivers to avoid the area!" added the first. I grumbled "If you think that this is bad, you ought to see Michigan in June!" as I left to find the nearest Coke® machine. An entire city was shut down simply because they were ill-prepared to deal with an infrequent occurrence. I entered this environment simply because I didn't detect anything unusual, but *you* may find yourself in a similar situation through no direct action of your own. Be as calm as I was.

Some people panic – I've seen this on many occasions – as soon as they see the first snowflake. I've also seen similar situations in the Navy when people literally laid down on the deck of my ship and turned a grotesque shade of green when they

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announced “underway, shift colors!” on the 1MC (public address system for you landlubbers!). We were still next to the frickin’ pier! Their minds simply corralled their consciousness when *nothing* changed within their environment. Riding out hurricanes on a tin can (A destroyer, which is a long, *thin* warship) is one thing – even I almost got sick a couple of times; thankfully, however, I survived all three years of fleet duty without being seasick – but getting sick alongside the same pier that we tied up against is simply one’s mind losing control of one’s senses.

It’s the same as when you feel that slight ‘bump’ whenever you’re riding within an elevator. Your heart skips a beat because you think that you’ve lost control of the situation for the briefest of moments. A little thought in the back of your mind reminds you of all of those crashing elevator movies that you just love watching while cuddled up in the safety of your own home. Uncertainty breeds fear.

Ever wonder why a new home seems more ‘noisy’ than one that you’ve lived in for ages? Because you had grown accustomed to all of the moans, groans, and creaks of the familiar one and therefore the new residence is ‘haunted’ or being ‘invaded’ every time that your ears detect the slightest disturbance. Sure, you keep reminding yourself, it’s just the wind or ‘settling’ or a host of other explanations. Yet, *why* did you find the need to convince yourself of the mere routine in the first place? Because deep down *fear* is playing with your sanity.

Consider me. I hate spiders. I absolutely, positively hate the eight-legged little screw-ups of nature. Oh, I’ll kill them – with vengeance, I

might add – but my spine tingles at the mere sight of one on the television or scurrying across the floor of my home. Yet when I was in the Amazon and photographed that *Biggie*-sized one in FIGURE 2 it didn’t bother me at all. Why? Because I was located in the Amazon Jungle and I fully *expected* to see large, hairy things there. I panic only when I’m in Michigan and I find one of the furry little bastards running across my forehead at one o’clock in the morning. Such is the power of the human mind.

Pain is another sense that distracts. Yet it can also motivate, enhance, and cajole you into doing extraordinary superhuman deeds. This is a survival power to utilize if you can corral it. In 1996 I was briefly incapacitated by the miniscule but immensely powerful adversary known as a kidney stone. From the time that I first felt the slightest ‘discomfort’ within my lower back until I was rolling around on the floor releasing every known swear word in every language that I knew was but a few brief minutes and I spent the next twelve hours trying to convince my right knee to sail over my left shoulder.

When I finally reached the emergency room, they proceeded to pump morphine into my system – eventually *ten shots* of the stuff was injected into my body and I still *demanded* more. Of course, they wouldn’t give me anymore but they didn’t believe that what they had already given me wasn’t working either.

“When you came in, your pain was a 10.” the snooty nurse asked me in a condescending voice. “Where is it now?”

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“Twenty-six.” replied I truthfully.

“See.” she turned towards Sara. “The medication is working; he doesn’t know what he’s saying.”

“Like hell I don’t you fat ugly bitch!” I leapt upwards. “*I WANT MORE MORPHINE!!!!*”

Needless to say, I’m probably going to suffer through eternity in purgatory for that daylong episode but I’ve included it to illustrate a point. Even though I have a natural resistance to pain killers and other medications – there just isn’t *anything* that works on me after the first time; even my dentist had to shift to sodium pentothal during extractions – the absolute pain of a kidney stone overpowered morphine.

My late uncle (my godfather) grew up in the rough and rowdy environment of Hamtramck, Michigan during its heyday of the early twentieth century. He and his brothers (including my dad) were members of the then notorious “Woodward and Six Mile” gang. For comparison, Eminem hung around *Eight Mile*.

Well, my uncle once had a kidney stone and he told my mother that he literally bent the railing of the hospital bed from his pain. I believe him; I wanted to beat the living shit out of the entire medical staff whenever they told me to be quiet for the benefit of the other patients.

When properly focused, such pain can give you the instinct for survival that ten thousand years of civilization has done its best to eradicate. If you find yourself injured – with a broken limb, for instance – such pain can keep you focused. Your ‘baby steps’; your concentration on where you step, how you move, etc. can serve to distract your mind from

delivering “Oh my gosh! I’m lost!” thoughts to your consciousness.

Pain and fear go hand in hand through an Einsteinian-esque quirk of human relativity ☺ :

$$(P)ain=(A)ctions \times (F)ear^2$$

If you eliminate pain from the foregoing equation, then your actions will be directed solely by a whole lot of fear. On the other hand, if you remove fear, then your actions will be *equal* to your pain – a semblance of equilibrium where neither action nor sense is overpowering.

Okay, so my mathematical analogy leaves something – much – to be desired. However, the comparisons *are* sound. Pain can remove fear and therefore your efforts will be a fine balance between your actions and the pain that drives your thinking. Minimized fear – through rational thought – can also be used to lower your pain. You can formulate rational thought processes that go something like this “I don’t like the way that *steep* trail looks, so I’m going to travel on the longer, level one to the right” and your action will reduce the fatigue and *pain* exerted upon your injury.

Fear is simply the incapacitation of the mind through irrational thought. *Anything* that you can do to keep your mind preoccupied will serve to extend your chances for survival. Many students learn this the hard way. They pay attention in class, observe everything the instructor does, and even read their textbooks and other material from cover to cover. Yet, they tank on the exams. Why? Because they overload their minds through the archaic tactic known as “cramming.”

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I noticed – quite a while back – that I always seemed to get ‘Cs’ on tests that I studied for and ‘As’ on those that I didn’t. I couldn’t figure out why until I discovered that by cramming all night before the exam I was simply distracting myself from what I *already knew*. That my fear of failing the test (that is, not believing that I knew enough to pass already) caused me to second-guess my efforts and I’d spend hours and hours preparing for what I had already spent an entire semester learning. Nobody seems to understand that if you don’t know something by the day of the exam, then you never did. Still, millions of high school and college students throughout the United States attempt to force-feed their minds at the last minute. Do this with your survival training and you’re dead.

Improvisation is everything.

Within *any* survival setting you must remember two very important things. One that you have resources available upon your person (especially assuming that you’ve prepared a survival pack for your car or briefcase, or perhaps included a first aid kit and defibrillator, etc. within your tractor-trailer rig) and two what Mother (and human) Nature provides within your environment can be used to enhance your chances of survival.

What living requires from *you* is for you to be adaptive. In other words, be an improvisational artist within your setting. With available resources and your ability to look beyond the norm, then you can not only expect to survive you probably will.

While walking along a trail, for instance, find yourself a lengthy and sturdy branch with which to use as a walking stick. Find one that isn’t going to snap as soon as weight is applied to it; check its bark to see if the tree might’ve been diseased or infested. Besides stability – three ‘legs’ are inherently more stable than one – the stick can be used later as a weapon against predators or as a fishing pole for obtaining food.

Big, broad leaves can be used to fashion a bowl to trap rainwater. Small, spherical stones can be used as ammunition for a slingshot. How did you acquire a slingshot, you may ask? You made one from a forked branch and a piece of elastic that you found from an abandoned pair of underwear. Survival need not be clean, it just must be effective.

Most people when they walk don’t pay enough attention to their surroundings, but you must observe and detect *everything!* Don’t overstep something that might lead to your survival simply because you’re too “civilized” to use it. Remember what I said about unleashing your primal nature.



“It’s better to be tried by twelve than carried by six.”

No survival training is worth a damn if you don’t consider the ultimate; that you might have to take

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a life to preserve one – yours. We simply live in a culture where we are forced to acknowledge that we rely upon the police for protection. Even when they are not available, they always manage to screw up our security by planting “if someone tries to take away your possessions, give it to them. They’re not worth your life” into your mind. The trouble is, more and more thugs don’t *care* about your life and they will kill you *and* take away your possessions.

Part of the survival instinct has to become one of “I still happen to *like* my possessions, thank you very much, and I will stop *anyone* who so much as lifts a finger to challenge me.” Gun training – rather the discussion for firearms training – will be discussed in detail during a later module. However, to ensure that you are adequately prepared, I will keep bringing up the subject of ‘ultimate defense’ periodically so that it becomes ingrained into your psyche this “it’s either them or me” mentality.

Part of the problem is that we, in modernistic, Western civilization are abhorred at death. We can’t seem to get it through our thick heads that maybe, just maybe, death can lead to life – yours or someone close to you. Liberals do not value anyone’s life as more important than anyone else’s. You, however, need to concentrate on your most fundamental, primal self. What if you, for whatever farfetched reason, were to find yourself like Will Smith in his latest movie *I Am Legend*. Are you a legend in your own mind enough to desire ultimate protection?

People also seem to think that religion – and regardless of what anyone thinks, ours is a pretty

religious society – demands compassion, self-sacrifice, and especially “turning the other cheek” towards our aggressors. However, the *Catechism of the Catholic Church* offers some pretty sound arguments in favor of defending your own life and, regardless of your beliefs or faith, you’d do well to remember them.

“Legitimate defense can be not only a right but a grave duty for someone responsible for another’s life, the common good of the family, or of the state...” [2265]

“Love toward oneself remains a fundamental principle of morality. Therefore it is legitimate to insist on respect for one’s own right to life. Someone who defends his life is not guilty of murder even if he is forced to deal his aggressor a lethal blow.” [2264]

You have to consider that the saving of your life is more important than the taking of another. Or, to build upon the above:

“...Nor is it necessary for salvation that a man omit the act of moderate self-defense to avoid killing the other man, since one is bound to take more care of one’s own life than of another’s.” [2264]

And

“The legitimate defense of persons and societies is not an exception to the prohibition against the murder of the innocent that constitutes intentional killing. The act of self-defense can have a double effect: the preservation of one’s own life; and the killing of the aggressor...The one

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is intended, the other is not.”
[2263]

Now, I ask you, who puts up a more persuasive argument; the Roman Catholic Church or the liberals that want to place your life into jeopardy? If you have to shoot someone (or stab them, or pulverized them with a sledgehammer upside the head, or...) in order to save your life or that of your family or friends, you may very well be arrested by our inept police departments. It goes with the territory and we'll discuss how to get yourself out of that particular predicament in the 'Guns' Module.

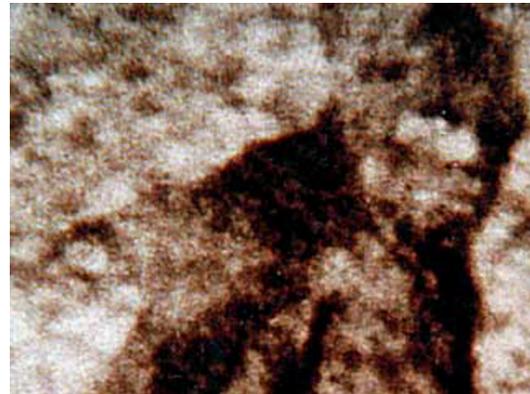
What you have to ask yourself is, are *you* prepared to deal with all of the headaches of court and trial or do you simply want to give the bad guys a free rein to play with your life? As for me, I'll do whatever it takes to protect my life and I'm not afraid to tell a jury of my peers so – and I just about bet that they'd do the same thing if the roles were reversed.

Fortunately, our society is beginning – slowly – to understand this need for personal protection and citizen involvement and many states are thankfully passing laws to protect your right to protect. Still, there are many communities out there – San Francisco, New York City, D.C., etc – where the Second Amendment seems to extend only to cities and states. Why, then, does the U.S. Constitution begin with “We the People”? Because human survival, even at today's greatness of achievement, boils down to the individual level. If we can't protect lives, then we surely can't protect society.

Again, this is the very foundation for this entire training

program – you, as an individual, are of paramount importance to *your* individual survival. You must formulate something of the ancient Ninja within your personal life – *you can protect yourself anywhere, any time, and through any means necessary*. If you can make such a boast and not seem entirely stupid making it, then you will probably live to be a hundred.

For now, however, you need to break with your chivalrous self – for the time being. I suggest getting back to nature and avoiding the trappings of your normal, day to day work environment. Take your next vacation and “go wild”. No, I don't mean head down to Daytona and make an ass of yourself; I mean take the wife and kids and head out as far away from city life as you can find enough courage to endure.



No, I don't mean *that* much! ☺ I do mean heading out into the woods, perhaps the desert, *anywhere* where the semblance of civilization is at least far enough away that you begin to feel a bit ‘uneasy’ over your surroundings. In short, head somewhere where your basic instincts for personal survival can flourish and be exercised.

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Become the ‘Sentinel’.

My wife used to love watching the television series *The Sentinel*, where the man character, an ex-Special Forces soldier/police officer, used his heightened senses to solve crimes with his ubiquitous geek sidekick. Once one got past the trick camera angles now standard on the *CSI* shows, the program was very realistic.

Being in the jungle is all about survival – which, strangely, is what this module is all about – and one is not long for survival unless they can become in tune with their surroundings. In the city, we tend to take things for granted – walk/don’t walk signs tell us when traffic has cleared, computer graphics tell us when storms are approaching (boy, I miss the days when the television weatherman had to draw on a chalkboard!), and our ‘check engine’ light comes on to remind us that the local repairperson has a family to feed.

Away from these conveniences and we’re on our own, yet our senses were fashioned during two million years of evolution. That is, our human senses (if not the human spirit) knows more about what’s going on around us than we care to remember. We have simply

allowed ourselves to saturate our minds with all of the extra crap that mankind has invented to make life more – gulp! – interesting. We need to begin to peel away this layer of crud and get back to our original selves. So, head back to the wild!

Take a *real* vacation away from the rat race and rediscover the beauty of the ‘natural’ world. No, I’m not saying book a cruise to Antarctica or practice rock climbing at the local spa; I mean actually *go* to these places and *do* these things. Don’t simply talk the talk...

Go into the woods and actually build a fire without using your Zippo®. Pitch a tent not out of nylon but out of whatever you can find in your immediate area. Fish for food with a homemade pole. Shock yourself to hell with the breathtaking beauty of a *real* honest-to-goodness starry night (if you’ve never been out to sea on a darkened ship, you can nearly read by the Milky Way there).

So, for this present module, you are only being given one “homework” assignment. ☺ Learn to become an outdoors person. Go to your local library (or bookstore) and find yourself a text on tracking animals. Get away from the city and see if you can discover any fresh tracks (the snow up here is making it easy to find cottontail prints around the house).

Take what you’ve learned from the attached manuals, this narrative, and those books and see if you can envision how it all fits into your personal survival. Hopefully, you’re beginning to realize that there’s no such thing as an isolated individual any more than there’s such a thing as a truly civilized one.

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ATTACHMENTS:

1. **MODULE THREE Word Search Puzzle** (2 Pages)
2. **USMC *Individual's Guide to Understanding and Surviving Terrorism*** (138 Pages)
3. **Joint Services *Survival, Evasion, and Recovery* QUICK REFERENCE** (106 Pages)
4. U.S. Army ***FM 21-76 Survival*** (277 Pages)
5. Joint Services ***First Aid*** (224 Pages)
6. R.J. Godlewski ***Survival is a Black and White Issue Ad*** (1 Page)
7. International Nuclear Emergency Response Team [INERT] ***Choose your enemy Ad*** (1 Page)

RECOMMENDED READING:

The Special Forces Guide to Escape and Evasion, Will Fowler. Thomas Dunne/St. Martin's Press, 2005. 0-312-33653-5

The U.S. Armed Forces Survival Manual, John Boswell (Ed.). Times Books, 1980.

Long-Range Patrol Operations: Reconnaissance, Combat, and Special Operations, James W. England. Paladin Press, 1987. 0-87364-403-4

Manual of the Mercenary Soldier, Paul Balor. Paladin Press, 1988. 0-87364-474-3 (Contains good advice on hostile encounters)

The Photographic Atlas of the Stars, HJP Arnold, P Doherty and P Moore. Kalmbach Books, 1997. 0-913135-31-3 (Complete photos of the night sky as would be seen by naked eye. Useful to learn navigation and bearings)

FORTHCOMING:

SUPPLEMENT B: *Escape and Evasion*. (Supplemental, TBD)

MODULE FOUR: *Religion, Faith and War*. (February, 2008)

MODULE FIVE: *Program Review* [No new material] (March, 2008)

NOTES:

¹ England, James W. 1987. *Long-Range Patrol Operations: Reconnaissance, Combat, and Special Operations*, Paladin Press. Pg. 255.

² *Combat and Survival Vol. 1*. 1991. H.S. Stuttman Inc. Publishers. Pg. 46-49.

Name: _____

Date: _____

Independent Counterterrorist Training Module Three Word Search



**LEARN.
TRAIN.
SURVIVE.**

II	A	E	S	U	J	D	Y	B	Y	T	L	R	Y	H	I	P	A	V	I	D	E	L	K	G	V	I	E	U	Z	G	S	Q	I	K	Q
HH	X	R	E	E	Y	S	A	H	B	I	R	Z	G	G	R	N	R	Z	K	P	B	P	E	E	Y	O	L	F	C	G	Q	G	W	P	
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EE	M	I	V	R	P	B	V	G	A	I	K	E	E	L	T	Z	F	S	S	T	K	B	H	M	X	R	L	O	G	H	Z	I	A	Z	L
DD	M	Y	F	X	C	P	Y	Z	G	B	C	T	V	E	P	Y	S	X	H	Z	L	P	Y	J	K	L	O	J	N	F	V	V	L	M	J
CC	G	H	K	X	T	K	E	M	W	T	Y	Z	R	H	Z	C	F	X	N	M	J	A	E	R	O	F	O	B	I	X	K	Y	M	Y	E
BB	F	X	Y	C	O	Q	O	Z	I	W	C	M	J	I	W	Z	A	O	S	C	A	Y	Y	S	W	T	T	V	P	I	C	V	I	Y	H
AA	G	O	G	S	D	G	D	O	L	D	I	Z	V	N	P	Z	B	U	M	S	R	C	Z	C	I	K	Q	Y	M	P	B	P	M	C	D
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SURVIVAL	HAMILTON	FOOD	OUTDOORS
PROTECTION	GODLEWSKI	DETERMINATION	EDUCATION
ANXIETY	POLARIS	RESOLVE	FIREARMS
FEAR	IMPROVISE	COURAGE	PERSISTENCE
TERRORISM	NORTH	KNOWLEDGE	
CAMPING	COMPASS	AMERICAN	
EVASION	WATER	FAMILY	

The Individual's Guide for Understanding and Surviving Terrorism



U.S. Marine Corps

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Changes: Readers of this publication are encouraged to submit suggestions and changes that will improve it. Recommendations may be sent directly to Commanding General, Marine Corps Combat Development Command, Doctrine Division (C 42), 3300 Russell Road, Suite 318A, Quantico, VA 22134-5021 or by fax to 703-784-2917 (DSN 278-2917) or by E-mail to **morgann@mccdc.usmc.mil**. Recommendations should include the following information:

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<http://www.doctrine.usmc.mil>

Unless otherwise stated, whenever the masculine gender is used, both men and women are included.

DEPARTMENT OF THE NAVY
Headquarters United States Marine Corps
Washington, DC 20380-1775

18 September 2001

FOREWORD

Marine Corps Reference Publication (MCRP) 3-02E, *The Individual's Guide for Understanding and Surviving Terrorism*, provides guidance to individual Marines (private through general officer) and their dependents on terrorism and its effects.

This reference publication gives an overview of terrorism, explains antiterrorism individual protective measures, and what to do if taken hostage.

MCRP 3-02E supersedes Fleet Marine Force Reference Publication (FMFRP) 7-14A, *The Individual's Guide for Understanding and Surviving Terrorism*, dated 31 October 1989, and FMFRP 7-37, *Vehicle Bomb Search*, dated 30 April 1990.

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS



EDWARD HANLON, JR.
Lieutenant General, U.S. Marine Corps
Commanding General
Marine Corps Combat Development Command

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The Individual's Guide for Understanding and Surviving Terrorism

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Chapter 1

Overview

Terrorism Defined

Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms*, defines terrorism as “the calculated use of unlawful violence or threat of unlawful violence to inculcate fear; intended to coerce or to intimidate governments or societies in the pursuit of goals that are generally political, religious, or ideological.” Within this definition are three key elements—violence, fear, and intimidation. Each element produces terror in its victims. The policy of the United States is summarized as follows:

- All terrorist acts are criminal and intolerable, whatever their motivation, and should be condemned.
- The U.S. will support all lawful measures to prevent terrorism and bring those responsible to justice.
- No concessions will be made to terrorist extortion, because to do so only invites more terrorist action.
- When Americans are abducted overseas, the U.S. will look to the host government to exercise its responsibility to protect all persons within its territories, to include achieving the safe release of hostages.
- The U.S. will maintain close and continuous contact with the host government during the incident and will continue to develop international cooperation to combat terrorism.

Strategy

Terrorism is a criminal act that influences an audience beyond the immediate victim. The strategy of terrorists is to commit acts of violence that draw the attention of the local populace, the government, and the world to their cause. Terrorists plan their attack to obtain the greatest publicity, choosing targets that symbolize what they oppose. The effectiveness of the terrorist act lies not in the act itself, but in the public's or government's reaction to the act.

For example, at the 1972 Munich Olympics, the Black September Organization killed 11 Israelis. The Israelis were the immediate victims. But the true target was the estimated 1 billion people watching the televised event. The Black September Organization used the high visibility of the Olympics to publicize its views on the plight of the Palestinian refugees.

Similarly, in October 1983, Middle Eastern terrorists bombed the Marine Battalion Landing Team Headquarters at Beirut International Airport. Their immediate victims were the 241 U.S. military personnel who were killed and over 100 others who were wounded. Their true target was the American people and the U.S. Congress. Their one act of violence influenced the United States' decision to withdraw the Marines from Beirut and was therefore considered a terrorist success.

On 11 September 2001, terrorists skyjacked U.S. commercial planes and crashed two planes into the World Trade Center in New York City and one into the Pentagon in Washington D.C. The terrorist attacks inflicted serious loss of life by destroying the World Trade Center towers and part of the Pentagon building. They were designed to strike a blow at the American will and its

economic and military structure. Although the attacks succeeded in hitting their targets, they galvanized the will of the American public to take political, financial, and military actions to combat terrorism.

Perspectives

There are three perspectives of terrorism: the terrorist's, the victim's, and the general public's. The phrase "one man's terrorist is another man's freedom fighter" is a view terrorists themselves would accept. Terrorists do not see themselves as evil. They believe they are legitimate combatants, fighting for what they believe in, by whatever means possible. A victim of a terrorist act sees the terrorist as a criminal with no regard for human life. The general public's view is the most unstable. The terrorists take great pains to foster a "Robin Hood" image in hope of swaying the general public's point of view toward their cause.

Today's Threat

Many areas of the world are experiencing great political, economic, and social unrest. The reasons for this unrest can be seen in conflicts with neighboring states, internal strife, dissatisfaction with governments in power, unconstrained population growth, declining resources, and ethnic and religious hatreds. This unrest has spawned numerous groups that lack the means to have their grievances solved by their own governments through the normal political processes. Sometimes these groups resort to terrorism to achieve their aims. Generally, these aims stem from political ideology, nationalism, religion or special interests.

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Over the past 20 years, terrorists have committed extremely violent acts for alleged political or religious reasons. Political ideology ranges from the far left to the far right. For example, the far left can consist of groups such as Marxists and Leninists who propose a revolution of workers led by a revolutionary elite. On the far right, are dictatorships that typically believe in a merging of state and business leadership.

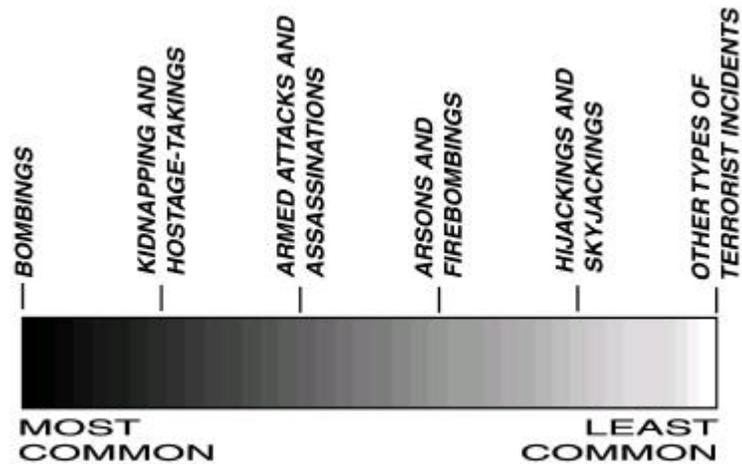
Nationalism is the devotion to the interests or culture of a group of people or a nation. Typically, nationalists share a common ethnic background and wish to establish or regain a homeland.

Religious extremists often reject the authority of secular governments and view legal systems that are not based on their religious beliefs as illegitimate. They often view modernization efforts as corrupting influences on traditional culture.

Special interest groups include people on the radical fringe of many legitimate causes such as antiabortion views, animal rights, radical environmentalism. These groups believe that violence is morally justifiable to achieve their goals.

Types of Terrorist Incidents

The following figure provides a spectrum of terrorist incidents, from the most common to the least common.



Bombings

Bombings are the most common type of terrorist act. Typically, improvised explosive devices are inexpensive and easy to make. Modern devices are smaller and harder to detect. They contain very destructive capabilities; for example, on 07 August 1998, two American embassies in Africa were bombed. The bombings claimed the lives of over 200 people, including 12 innocent American citizens, and injured over 5,000 civilians.

Terrorists can also use materials readily available to the average consumer to construct a bomb. For example, on 19 April 1995, the Murrah Federal Building in Oklahoma City, OK, was bombed, and 168 people were killed by an improvised explosive device.

In the case of the 11 September 2001 attacks, terrorists skyjacked commercial planes, laden with full fuel tanks, to fly them into

buildings as guided missiles or massive flying bombs. This awakened the world to a new level of terrorist bombing efforts.

Kidnappings and Hostage-Takings

Terrorists use kidnappings and hostage-takings to establish a bargaining position and elicit publicity. Although kidnapping is one of the most difficult acts for a terrorist group to accomplish, if it is successful, it can gain terrorists money, release of jailed comrades, and publicity for an extended period of time.

Hostage-taking involves the seizure of a facility or location and the taking of hostages. Unlike a kidnapping, hostage-taking provokes a confrontation with authorities. It forces authorities to either make dramatic decisions or to comply with the terrorist's demands. Hostage-taking is overt and designed to attract and hold media attention. The terrorists' intended target is the audience affected by the hostage's confinement, not the hostage himself.

Armed Attacks and Assassinations

Armed attacks include raids and ambushes. Assassinations are the killing of a selected victim, usually by bombings or small arms. Drive-by shootings are a common technique employed by loosely organized terrorist groups. Historically, terrorists have assassinated specific individuals for psychological effect.

Arsons and Firebombings

Incendiary devices are cheap and easy to hide. Arson and firebombings are easily conducted by terrorist groups that may not be

as well-organized, equipped or trained as a major terrorist organization. Arsons or firebombings against utilities, hotels, government buildings or industrial centers are common tactics used by terrorists to portray an image that the ruling government is incapable of maintaining order.

Hijackings and Skyjackings

Hijacking is the seizure by force of a surface vehicle, its passengers, and/or its cargo. Skyjacking is the taking of an aircraft, which creates a mobile, hostage barricade situation. It provides terrorists with hostages from many nations and draws heavy media attention. Skyjacking also provides mobility for the terrorists to relocate the aircraft to a country that supports their cause and provides them with a human shield, making retaliation difficult.

On 11 September 2001, commercial airplanes were skyjacked but only to gain control of the aircraft. The terrorists' intent was not to create a hostage barricade situation, but to ensure the passengers did not interfere with their desire to crash the aircraft into their intended targets.

Other Types of Terrorist Incidents

In addition to the acts of violence discussed, numerous other types of violence exist under the framework of terrorism. Terrorist groups conduct maimings against their own people as a form of punishment for security violations, defections or informing. Terrorist organizations also conduct robberies and extortion when they need to finance their acts and are without sponsorship from sympathetic nations.

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Cyberterrorism is a new, increasing form of terrorism that targets computer networks. Cyberterrorism allows terrorists to conduct their operations with little or no risk to themselves. It also provides terrorists an opportunity to disrupt or destroy networks and computers. The result is interruption of key government or business-related activities. Although this type of terrorism lacks a high profile compared to other types of terrorist attacks, its impact is just as destructive.

Historically, terrorist attacks using nuclear, biological, and chemical (NBC) weapons have been rare. Due to the extremely high number of casualties that NBC weapons produce, NBC weapons are also referred to as weapons of mass destruction (WMD). A number of nations are involved in arms races with neighboring countries because they view the development of WMD as a key deterrent of attack by hostile neighbors. The increased development of WMD also increases the potential for terrorist groups to gain access to WMD. It is believed that in the future terrorists will have greater access to WMD because unstable nations or states may fail to safeguard their stockpiles of WMD from accidental losses, illicit sales or outright theft or seizure.

Determined terrorist groups can also gain access to WMD through covert independent research efforts or by hiring technically skilled professionals to construct them. Although an explosive nuclear device is believed beyond the scope of most terrorist groups, chemical, biological or radiological dispersion weapons that use nuclear contaminants are not.

An example of a terrorist group gaining access to WMD was tragically evident on 20 March 1995. A Japanese religious cult, Aum Shinrikyo or Supreme Truth, chemically attacked Japanese citizens in the Tokyo subway system. Use of the nerve agent Sarin resulted in 12 deaths and 5,500 hospitalizations.

In October of 2001, several letters were mailed to selected U.S. Government and media individuals. Those letters contained the biological agent anthrax. In large amounts or even small amounts widely distributed, such biological agents can be a WMD. Fear of these biological agents can create as much terrorist value as their actual employment.

Intentions of Terrorist Groups

- Produce widespread fear.
- Obtain worldwide, national or local recognition for their cause by attracting the attention of the media.
- Harass, weaken, or embarrass government security forces so that the government overreacts and appears repressive.
- Steal or extort money and equipment, especially weapons and ammunition.
- Destroy facilities or disrupt lines of communication in order to create doubt that the government can provide for and protect its citizens.
- Discourage foreign investments, tourism or assistance programs that can affect the target country's economy and support of the government in power.
- Influence government decisions, legislation or other critical decisions.
- Free prisoners.
- Satisfy vengeance.

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- Turn the tide in a guerrilla war by forcing government security forces to concentrate their efforts in urban areas. This allows the terrorist groups to establish themselves among the local populace in rural areas.

General Characteristics of Terrorist Groups

- Seek to intimidate by promoting fear.
- Some have advanced weaponry (e.g., tanks) but generally they are militarily weaker than the governments they fight.
- Employ unconventional warfare tactics; training can include physical and mental preparation, weapons and explosives, political and religious indoctrination, combat tactics, intelligence, psychological warfare, survival, and communications.
- Do not equate tactical success with mission success. A specific terrorist act may not achieve its desired results, but a terrorist may still view the act as successful if it publicizes the cause.
- Usually urban-based and highly mobile. If urban-based, terrorists have access to mass transportation (e.g., airplanes, ships, railroads, and subways). Terrorist groups with international contacts may also have access to forged passports and safehavens in other countries.
- Generally organize and operate clandestinely in cells of three to five members. A cell may only have contact with another cell or the next higher command level. Therefore, the capture of one or more terrorists rarely results in the compromised identity of the entire terrorist organization.

Crime Prevention Measures

Although this publication is oriented to protecting Marines and their family members from terrorists, measures discussed in the following chapters are generally applicable to protection from crime as well. As an American, you must be careful when traveling at home or abroad. Crime is a more common threat to most military personnel than terrorism, however, the threat of terrorism has a far greater impact on national security. You can narrow the chances of becoming a victim by increased awareness of potential problems and careful planning. Practicing sound individual protective measures makes you a “hard target.”

Chapter 2

Protection Through Awareness

Types of Targets

Terrorists prefer a target that involves little risk and a high probability of success. Terrorists evaluate a target's security profile, predictability, and value. The target's value is determined by its importance and possible benefits gained. Once a target has been evaluated by terrorists, the target is labeled in the terrorist's mind as either a soft or a hard target.

Soft Targets

Soft targets are accessible, predictable, and unaware. They make it easy for strangers to access their private information (e.g., phone numbers, addresses, schedules). Soft targets follow consistent routines at home and at work, allowing terrorists to predict a target's movements in advance. Soft targets are unaware of their surroundings and do not employ individual protective measures.

Hard Targets

Hard targets are inaccessible, unpredictable, and aware. They make it difficult for terrorists to gain access to themselves or their families. Hard targets consciously vary their routines and avoid setting patterns in their daily life. They are security conscious, aware of their surroundings, and proactively adhere to individual protective measures. Hard targets do **not**—

- Put their names on mailboxes or exterior walls of their homes.
- Run or walk daily at the same time of day or to the same place.

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- Wash cars, mow lawns or have family cookouts the same day every week.
- Shop the same day of each week at the same store.
- Travel to and from home on the same route and at the same time of day.
- Attend church services at the same time of day and place each week.
- Sit in the same seat in a vehicle, restaurant, church, etc.
- Arrive at work, go to lunch, depart work at the same time of day every day.
- Pick up the newspaper or mail at the same time of day every day.
- Walk or feed the dog along the same route or at the same time of day every day.
- Patronize the same restaurants or bars or patronize only American restaurants or bars.
- Park vehicles in the same area at church, social events, etc.
- Earn the reputation of always lending a helping hand, e.g., aiding “victims” at “staged” roadside accidents.

Identification of the Threat

Learn about your destination—the culture, language, local customs, and history of terrorist/criminal activity—as soon as you know that you’re going to be travelling outside the United States. Information is available from the following sources:

- Command’s antiterrorism/force protection (AT/FP) officer or S-2/intelligence officer.

- Naval Criminal Investigative Service (NCIS) briefs and reports.
- U.S. Defense Representative Force Protection Officer (usually the U.S. Embassy's Defense Attache) or U.S. Embassy Regional Security Officer.
- Country handbooks from the Marine Corps Intelligence Activity (MCIA).
- U.S. State Department consular information sheets, public service announcements or travel warnings via the internet.
- Other Services' or other Government agencies' manuals and web sites. (See Marine Corps Order [MCO] 3302.1C, *The Marine Corps Antiterrorism/Force Protection [AT/FP] Program*, for a listing of terrorism, law enforcement, and security information websites on the internet.)
- Newspapers, magazines, books, travel agents or tourist offices.
- People who currently live or have lived in the area.

All commands are required to provide a Level I AT/FP briefing to all Marines, civilian employees, and family members deploying or travelling outside the U.S. on official orders. Level I briefings include an area of responsibility (AOR) specific threat briefing/update for the area of travel. This brief stresses the need for a heightened awareness of the terrorist threat and reviews individual protective measures that can reduce individual vulnerability. (See MCO 3302.1C for more details.) Once in-country, additional information is available from the U.S. Embassy and the host country; specifically:

- Are the terrorist groups in the area active?
- Are the terrorist groups organizing or reorganizing?

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- What are the local populace's attitudes towards the terrorist groups?
- What are the local populace's attitudes towards Americans?
- Does the respective foreign government support, condone or condemn the terrorist activity?
- What is the potential for violence?
- What are the terrorists' methods of operation?

Generally, when a terrorist group is successful with a certain method of operation, the group reuses it or it will be used by other terrorist groups. However, just because a terrorist group has not used a specific tactic in the past does not mean they won't develop new tactics or adopt similar tactics used by other terrorist groups.

Visibility

Be alert to your surroundings, know and respect local customs and laws. Don't call undue attention to yourself. Be unpredictable by varying the days and times of your activities and by varying routes you usually travel.

REMEMBER THREE BASIC RULES:

- **BE ALERT**
- **KEEP A LOW PROFILE**
- **BE UNPREDICTABLE**

Anyone who is highly visible is a potential, high-risk victim. Victims can be targeted for being an American, a very important person (VIP), someone associated with VIPs or a target of opportunity.

Identified as an American

You can protect yourself from becoming a target if you avoid saying, doing, wearing, using, displaying or driving anything that readily identifies you as an American. Even if the local populace does not see Americans on a daily basis, global commerce and communications provides them access to magazines, movies, television shows, and web sites that portray American lifestyles. The following paragraphs identify common indicators that easily identify Americans overseas.

Uniforms

Wear civilian clothes when traveling back and forth to work; change into your uniform after you arrive at work; and change into civilian clothes before you leave work.

License Plates

Americans serving overseas may be issued different colored license plates or a different number or letter indicator on their license plates. If possible, use local license plates on any automobile driven. Avoid using vanity license plates or license plates with U.S. Marine Corps logos.

Dress

Blend in with what the local populace or local tourist element wears. Flashy or trendy clothing can attract unwanted attention.

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Clothes should not clearly identify you as an American; for example, cowboy boots, American logo T-shirts, clothes bearing American sports teams, and expensive athletic shoes.

Speech

Although American dialect is hard to avoid, even if you speak the native language, avoid using military terminology and American slang.

Customs and Habits

Even if you physically blend in with the local populace, your customs and habits can identify you as an American. If possible, you should adopt local or tourist customs and habits.

Personal Behavior

Some Americans have the tendency to be loud and obnoxious in the presence of the local populace. Another common mistake that Americans can make is to unnecessarily boast about American culture, wealth, technology, and military power, etc. in the presence of foreign nationals. Strive to blend in as much as possible, and not draw attention to yourself. **KEEP A LOW PROFILE**, especially in a public environment or with the local media.

Tattoos and Jewelry

Wear a shirt that covers tattoos with military or civilian slogans or logos when you go out. Leave military jewelry—such as service rings, medallions, and watches—at home.

Controversial Materials

Avoid carrying potentially controversial materials such as gun magazines, military publications, religious books, pornography or magazines that can offend the local populace.

Nationality Indicators

American flags, decals, patches or logos easily identify you as an American. Avoid displaying them on your vehicles, clothes, in front of your home or place of employment.

U.S. Government Bus Stops

Do not wait for long periods of time at U.S. Government bus stops. When the bus approaches, walk toward the bus, stop short of the bus stop, and board the bus after the other passengers have boarded. Be especially observant for suspicious looking personnel or objects such as unattended luggage or boxes.

Currency

Exchange a few U.S. dollars into the local currency before arriving overseas. Use local currency and avoid carrying large amounts of money.

Identified as Someone of Importance

Many people, including terrorists, equate certain lifestyles with prominence. They believe that a prominent lifestyle is indicative of a person's importance to his government or company. Americans, in particular, are often treated by host governments as VIPs out of respect. Whenever possible, avoid being treated as a VIP.

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Avoid using your rank, title or position when introducing yourself or signing your name. Strive to maintain a low profile and blend in with the local populace. The issues identified in the following subparagraphs give the impression of importance and therefore should be avoided.

Expensive Cars

People may think anyone who drives an expensive car is important. Avoid driving expensive vehicles. Drive the type of vehicle that is common to the area in which you are located.

Staff Cars

People may think that anyone driving around in a staff car from the American embassy must be important. Therefore, limit use of nonarmored staff cars.

Bodyguards

If you do not need bodyguards, do not use them. If you must have bodyguards, keep them to a minimum and ensure that they blend in with the other personnel around you—they should not be obvious. Ensure bodyguards pass a background check and are well trained.

Chauffeurs

Many people may believe that anyone who has a driver is a VIP. Therefore, perform your own driving if possible. If you do have a driver, the rear right seat is typically reserved for a VIP. Therefore, sit up front with the driver and occasionally rotate your seat position within the vehicle. You should also—

- Ensure your driver has the required training so that he will not panic or freeze in a high pressure situation.

- Develop an all-clear or distress signal (e.g., a hat or cigarette pack on the dash) between you and your chauffeur. A signal allows the driver to warn you of a problem prior to your approaching the vehicle.
- Have the driver open the door for you.
- Avoid giving your itinerary to your driver. All a driver needs to know is when and where to be. For example, you have the driver show up at 0700, but you do not leave until 0800. If possible, tell your driver your destination only after the car has started.

Briefcases

In some countries, people think anyone carrying a briefcase is considered important. If possible, avoid carrying a briefcase unless it is the norm for the area. If the local populace uses backpacks, then you should also use a backpack.

License Plates and Decals

If using diplomatic license plates, license plates with low numbers, or decals is unavoidable, employ proactive individual protective measures to reduce both vulnerability and visibility.

Passports and Official Papers

Diplomatic (black) and official (red) passports indicate someone of importance. Use a tourist (blue or green) passport whenever possible. If you use a tourist passport, consider placing your official passport, military ID, travel orders, and related documents in your checked luggage. If you must carry official documents on your person, select a hiding place onboard your aircraft, bus, boat or train to hide them in case of a highjacking. Try to memorize

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your passport number and other essential information to avoid flashing this information in front of other passengers. While passing through customs, keep your passport out of sight by placing it in your airline ticket pouch. Do not carry classified or official papers unless it is mission essential.

Parking

VIPs warrant their own parking spots usually very close to their offices, thus drawing attention to themselves and their importance. Therefore, avoid using a designated parking space; instead, park in an unmarked parking space and rotate where you park your vehicle.

Domestic Employees

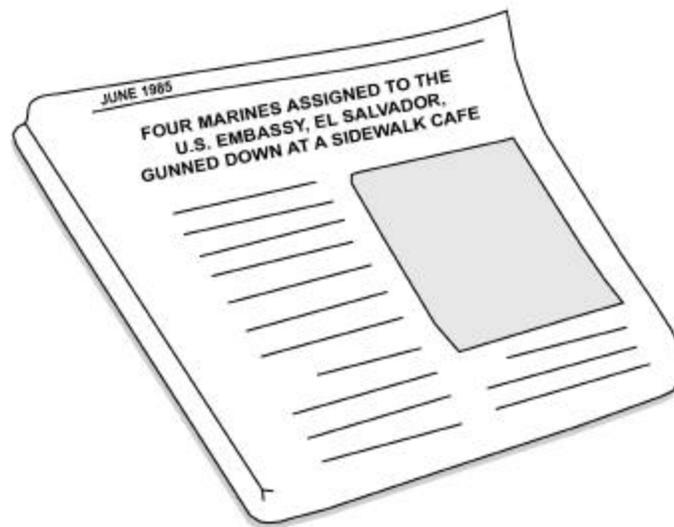
In many foreign countries domestic employees—such as maids, cooks, private guards, gardeners, and drivers—are very affordable. However, domestic help can provide terrorists with critical access to you and your family. If you are considering employing domestic help, ask for letters of reference and obtain a background check through the Embassy, if possible.

- Avoid live-in domestic help. If they must have access to keys, never let them remove keys from the house.
- Domestic employees should not allow anyone (including persons in police uniforms) to enter the house without permission from the family.
- Avoid providing transportation to and from work for any domestic employees. Pay for a taxi or bus fare.
- If a domestic employee calls in sick, do not accept the temporary services of a relative (“cousin” or “sister”).

- Have domestic employees report potential terrorist surveillance of your residence and watch for anyone loitering in the area or repeatedly driving or walking by.
- Pay domestic help well and give cash rewards for following your security rules.
- Take special care to never discuss sensitive topics or detailed travel plans in their presence. Terrorists have successfully drawn this information from domestic employees in the past.

Identified as a Target of Opportunity

These are the headlines that millions of Americans were viewing in June 1985 when four Marine U.S. Embassy guards became targets of opportunity for the Faribundo Marti Para la Liberacion Nacional (FMLN) terrorist organization. These Marines were sitting outside of a very popular cafe in San Salvador when they were gunned down for being symbols of the



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United States. When overseas, remember that you are a visual symbol of an American presence, values, prestige, and power. The longer you remain overseas, the more comfortable you may become. The more comfortable you become, the less you may think of yourself as a potential target. While overseas, never allow yourself to become complacent. Safeguard information concerning yourself, your home, job, and family. The more intelligence a terrorist can collect on you, the greater his chance of success. Terrorists gather their information from a variety of sources, which can include the following:

- Various internet sources, including command web pages.
- Aircraft loading manifests identify sending units, receiving units, departing facilities, and landing facilities.
- Bills of lading provide names of people moving into and out of an area.
- Immigration records provide names of people, dates of birth, and nationalities.
- Unit rosters provide names, addresses and phone numbers of individuals, spouses, and dependents. Unit rosters should be controlled and not posted in plain view.
- Manning boards provide an individual's name, duty position, squad, platoon, etc.; some even have photographs. If possible, offices should avoid using manning boards. If these are a necessity, they should be covered when not in use and kept in a locked office during nonduty hours. Do not post them in front of the unit.
- Billeting offices often maintain a listing of all housing assignments. Security managers must ensure that billeting offices establish procedures to prevent unauthorized disclosure of personal information.

- Telephone directories provide an individual's name, address, and phone number. If you must list your phone number in the telephone directory, request that only your name and number be included, not your address, rank or duty position.
- Some units or schools publish a "Who's Who" book. If possible, avoid having your name listed in this type of publication.
- Duty rosters for the staff duty, drivers, military details, etc., should not be posted in plain view. When they become obsolete, they should be destroyed (not just thrown away).
- Discarded mail or official correspondence can be used to identify an individual, the sender, and the place from which the correspondence was sent. Destroy any mail or official correspondence no longer needed and remove address labels from magazines.
- The carbon from a credit card provides an individual's name and account number. Use the currency of the country you are visiting or working in. If you must use a credit card, also request the carbon copy.
- Checks can provide an individual's name, address, phone number, and social security number. Have only minimal information printed on the front of your checks.
- Nameplates make it easy to find an individual in an office environment; avoid their use, if possible.
- Receipts from hotels, laundries, etc., identify an individual by name and often by room number. Consider using a nickname or an assumed name.
- Luggage should be generic and civilian in nature. Avoid displaying your rank, unit patches, decals, or any American identifiers on your luggage.
- Remove all destination and baggage claim tags from luggage as well as stickers, decals, and other markings that reveal that

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the luggage has been through U.S. Customs (e.g., custom's stickers).

- Be aware of all the documentation that contains information about your unit, yourself, and your family. Destroy all documentation, especially trash, that could be used by terrorists as a source of information.

Family Members

Family members must be aware of the potential terrorist and criminal threat at home and abroad. They should also receive a Level I AT/FP brief that emphasizes the importance of individual protective measures and physical security. Ensure that your family members know and perform the following safeguards when traveling/living at home and abroad:

- The threat risk for the area.
- Where they are at all times. A simple orientation to the area could prevent them from straying into dangerous areas.
- Keep the house locked and secured whenever leaving the house. Exercise caution upon return. Set up simple signals to alert family members or associates if there is danger.
- Develop and practice emergency procedures for use in the home such as:
 - Evacuation due to fire.
 - Intruders in the residence upon arriving home.
 - Intruders breaking into the house.

- Location and phone numbers of the U.S. Embassy, military base, neighbors, and all emergency services such as police, fire department, and medical services, and other safe locations for refuge or assistance.
- Carry small cards with emergency phrases in the respective foreign language, and post these phrases by the telephone.
- In preparation for emergencies, maintain survival items (e.g., supply of fresh water, nonperishable food, candles, lanterns, flashlights, extra batteries, blankets, portable radio, camping stove with spare fuel, axe, first aid kit, and other appropriate items). Consider maintaining a similar kit for your car for emergency situations in isolated areas. For more information see MCRP 3-02F/FM 21-76, *Survival*.
- Take an ample supply of medications that family members use. Also keep a copy of the prescription, statement from a physician, and know the generic name of the medication so you can reorder it abroad. Also, keep eyeglass prescriptions on hand.
- Always carry identification documents. Carry a card stating blood type and allergies to particular medications. The card should be bilingual/multilingual—English and the host nation language(s).

Special Precautions for Children

Kidnapping is a potential tool used to extort ransom money that finances terrorist organizations or may be used as an attempt to

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force you to assist in a terrorist operation. Special precautions include the following:

- Never leave children alone or unattended. Leave children only with responsible and trustworthy individuals capable of handling emergency situations.
- Instruct children to keep doors and windows locked, and never to allow strangers into the house. Discourage children from answering the door, especially during hours of darkness.
- If possible, locate children's rooms in areas not easily accessible from the outside.
- Instruct children to never leave home without telling the parents. They should only travel in groups and avoid isolated areas especially when travelling to and from school. Accompany young children to and from bus stops, where necessary.
- Children should only use locally approved play areas where recreational activities are supervised by responsible adults and where police protection is readily available.
- Children should refuse automobile rides from strangers and refuse to accompany strangers anywhere on foot, even if a stranger says, "Your Mom/Dad sent me and said it was ok".
- Inform school authorities to never release children to any person who is not a family member. Instruct children to call home if a stranger is there to pick them up.
- Children should be told to refuse gifts from strangers and to avoid providing information to strangers such as their name and where they live.
- Children should immediately report anyone who attempts to approach them to the nearest person or authority (teacher, police).

- Instruct children not to discuss what you do and tell them to inform you if they are questioned about you by anyone.

Home Physical Security

Criminals remain the most likely threat in your home. However, terrorists have conducted operations at the homes of servicemen overseas. The following section provides some basic information to make your home a hard target. Develop a security plan that includes the following:

- **Operations Security.** Don't provide information to potential terrorists or criminals via the mail, phone, computer or trashcan.
- **Outer Security.** Use available assets (local shop owners, neighbors, domestic employees, guards, family etc.) to detect potential surveillance.
- **Inner Security.** Establish a warning system with pets, alarms, and motion sensors.
- **Barriers.** Fences, walls, locked doors and windows, secure rooms to go to in an emergency.
- **Communications.** Phone, cell phones, megaphones, intercoms, radios, audible alarms, linked security systems.
- **Deterrent/Response Systems.** Guards, pets, weapons (if authorized), and fire extinguishers.

General

- Change or re-key locks when you move in or when a key is lost by a family member. Maintain strict control of all keys. Change the security code in the garage door opener. Never

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leave house or trunk key with your ignition key while your car is being serviced or parked by an attendant.

- Don't open doors to strangers. Observe them through a peephole viewer. Establish procedures for accepting deliveries such as: verifying identities of delivery person, checking the identity of the deliverer with the appropriate dispatcher, refusing all unexpected packages.
- Allow maintenance work only on a scheduled basis. Unless a clear emergency exists. Be alert to people disguised as public utility crews, road workers, vendors etc., who might station themselves near the house to observe activities and gather information.
- Note parked or abandoned vehicles near the entrance or walls of the residence.
- Make residence appear occupied while you are away by using timers to control lights, TVs, and radios.
 - Ask neighbors to adjust blinds and draperies and pick up newspapers and mail.
 - Schedule regular lawn work.
 - Notify local law enforcement or military police if you will be away for an extended period.

Residential Physical Security

- Routinely keep all doors, skylights, roof doors, and windows locked. Keep all window curtains and blinds tightly closed after sundown.
- Install lighting all around the house and yard; link to timers and sensors.

- Ensure door frames, doors, locks, and bolts are of solid construction. Ensure door hinges exposed to outside of house are pinned or spot-welded to prevent removal of the hinge bolt.
- Ensure fuse boxes are secure from tampering.
- Remove all trees, poles, ladders, etc., that might help an intruder scale fences, walls or gain access to second floor windows. Remove dense foliage or shrubbery near gates, garages, windows or doors that might conceal an intruder.
- Install intrusion detection, smoke, and fire alarms. Ensure intrusion detection alarms covers both the perimeter (doors and windows) and interior (motion and/or glass break sensors). Have the alarms monitored through a reputable security service or police. Train family members to use and test alarms regularly.
- If possible, select and prepare an interior safe room for use in case of emergencies. The safe room should have a sturdy door with a lock and an emergency exit, if possible. Bathrooms on upper floors are generally good, safe rooms.
- Store emergency and first aid supplies in the saferoom. Bars or grillwork on saferoom windows should be locked from the inside to expedite escape.
- Keep keys to locks, a rope or chain ladder to ease escape, and a means of communication (e.g., cellular phone and radio transmitter).

Telephones

- Don't place your name in a public local phone directory.
- If you receive obscene, threatening or annoying phone calls or an unusual number of wrong or silent callers, report this to the police. Use caller-ID or call block, if available.

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- Answer the phone without providing any personal information. Be especially cautious when sending personal information over computer on-line services.
- Report any interruption or unusual interference with phone, electrical or computer service. This could be the first indication of “bugging” your phone line.
- Keep a cellular phone charged and available, particularly at night.

Letter Bombs and Biological Mailings

Heightened personal security involves treating any suspicious-looking mail (letter or package) as a bomb or a potential biological threat. If you think any mail is suspicious, contact the military police or appropriate security officials and let them investigate. Do not attempt to handle the mail yourself. You should examine your mail for the following suspicious features:

- It is from a stranger or an unknown place?
- Is the return address missing?
- Is there an excessive amount of postage?
- Is the size excessive or unusual?
- Does it have external wires or strings that protrude?
- Is the spelling correct?
- Does the return address and place of postmark match?
- Does the handwriting appear to be foreign?
- Does it smell peculiar?
- Is it unusually heavy or light?
- Is it unbalanced (lopsided)?

- Are there any oily, sticky or powdery substances on the outside of the letter or package?
- Does it have springiness on the top, bottom or sides?

You should use the following guidelines if you suspect that a piece of mail contains a bomb or biological agent:

- Don't panic.
- Do not shake the empty contents of any suspicious envelope or package. If any powder or substance leaks out, do not attempt to clean it up.
- Place the envelope or package in a plastic bag or some other type of container to prevent leakage of the contents. (If you do not have a container, cover the mail and do not remove the cover. If powder or any other substance has already leaked out, cover that also. You can cover the mail with clothing, paper, trash cans, etc.)
- Leave the room and close the door. Secure the area to prevent others from entering.
- Wash your hands with soap and water to prevent spreading any biological agent to your skin or respiratory system.
- Report the incident to authorities. If at home, dial 911 and report the incident to your local law enforcement agency. If at work, report the incident to the governing law enforcement agency and notify your building security official or an available supervisor.
- List all of the people who were in the room or area when the suspicious mail was recognized. Give this list to both the local health authorities and law enforcement officials.

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All mail that is sent overseas should be delivered via Army/Fleet Post Offices or through the U.S. Embassy to allow for proper bomb detection and inspection by trained mail handlers.

Vehicle Bomb Search

A large number of terrorist attacks take place in or around a vehicle, typically by some sort of explosive device. This occurs because bombs are relatively easy to make and plant on exposed and unattended vehicles. You need to learn how to search a vehicle for tampering and to recognize danger signs. Appendix A contains procedures and tips for conducting a vehicle bomb search. By routinely inspecting your vehicle, you give the impression of being a hard target.

Travel

Traveling is one of the most opportune times for a terrorist attack. You are the most vulnerable and predictable in the morning as you enter or leave your quarters, your place of work, or your vehicle. Your understanding and application of the following information can reduce your chances of becoming a victim of a terrorist attack while traveling:

General Precautions
Remain alert; travel in groups or pairs in well-lighted, busy areas.
Watch your luggage at all times. Use concealed bag tags.
Establish alternate routes from each starting place to each destination. Make sure at least one person you work with and someone in your family are aware of these routes and the approximate time it takes you to travel these routes.
Keep travel arrangements confidential as much as possible.
Avoid using rank or military addresses on tickets, travel documents, and hotel reservations.
Make a copy of the following and place in different pieces of luggage: passport, ID card, and official papers. If lost or stolen, these items can be replaced at a U.S. Embassy, Consulate or military facility.
Register with the U.S. Embassy upon arrival in country either in person or via phone. Carry a card that has the location and phone number of U.S. military facilities and the U.S. Embassy and Consulates in the area. These are vital safehavens during emergencies.
Maintain a low profile. Do not discuss your U.S. government affiliation with any other passengers.
Get a detailed briefing from the Force Protection/S-2/intelligence officer on the cities you plan to visit. The briefing should include the threat, the safest routes to use, safehavens, areas to avoid, and anything else pertaining to your mission and safety.
Avoid using public transportation. Buses and trains are preferred to a taxi. If you must travel in a taxi, specify the route you want the taxi driver to take and look for the photo identification or license to ensure that the photo matches the driver.

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Learn common phrases and greetings and how to ask for assistance or help in the local language.
Know how to use public phones and carry enough change (in the local currency) to make a phone call. Calling cards can be used in many countries also.
Learn the names and phone numbers of persons to contact at your destination, including emergency numbers.
Safeguards while Driving
Park your car for easy escape (pointed outwards).
Lock your car and garage when you park overnight. Alternate use of parking garages if possible. Park in well lighted areas if you must park on the street.
Walk to your car with keys in hand, ready to use.
Perform a quick internal and external check of car. See appendix A for vehicle bomb check.
Start your car immediately after conducting your vehicle bomb search. Do this before you adjust your seat or mirrors. You should be prepared for rapid escape if necessary.
Lock your doors and keep your windows up.
Wear your seatbelt.
Avoid traveling alone and during late hours. Know where the dangerous areas in the city are and avoid them.
Travel only on busy, well-traveled thoroughfares, especially routes that allow speeds over 25 mph. Most attacks occur in stop and go traffic. Avoid one-way streets and other choke points such as bridges, traffic circles, and narrow alleyways. Avoid isolated secondary roads.

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Enter and exit your vehicle at busy locations.
Know en route safehavens such as police and fire stations, military posts, and checkpoints you can drive to. If you feel you are being followed, don't go directly home.
Avoid carrying classified material. If driving, lock classified materials in the trunk.
Varying times and routes driving to and from work.
If possible, use different building entrances and exits.
Keep your vehicle in good mechanical condition and your gas tank at least half full. Ensure you have a locking gas cap.
Keep safety equipment (e.g., cellular phone, fire extinguisher) inside your vehicle in good working order. Consider carrying a survival kit. (See MCRP 3-02F/FM 21-76, <i>Survival</i> .)
Avoid driving close behind other vehicles or in any situation where you can get boxed in or forced to a curb. Have an evasive plan ready. Sometimes making a simple U-turn is enough to get you out of danger.
Keep at least one-half car length of empty space in front of your vehicle when stopped at traffic signals and stop signs. This gives you room to escape in a kidnapping or armed attack/assassination attempt.
Never pick up hitchhikers.
In an emergency, drive on flat tires until reaching a well-lighted, well-traveled area or safehaven.

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<p>In the event of mechanical failure, set out warning triangles/ flares, raise the hood, activate emergency flashers, and stay inside. If someone stops to offer assistance, ask them to notify the police or road service. If you feel unsure of the situation, don't get out of the car until the police or road service arrives. If you feel threatened by strangers, stay in the car with the doors locked. Use vehicle's horn to attract attention.</p>
<p style="text-align: center;">Safeguards while Walking</p>
<p>Be alert to the possibility of surveillance. Before leaving a building or mode of transportation, check up and down the street for suspicious looking cars or individuals.</p>
<p>Walk facing traffic at all times.</p>
<p>Walk on the center of the sidewalk, this allows you to see around corners. Walking next to the street affords someone the opportunity to push you out into the street.</p>
<p>Remain alert when walking across alley entrances or other places where a terrorist could be hiding.</p>
<p>Walk only in lighted areas. Avoid bad sections of town.</p>
<p>Avoid walking in noisy areas; e.g., a construction site.</p>
<p>Stay near people. Don't walk in isolated areas; e.g., alleys.</p>
<p>Avoid hostile crowds by turning back or crossing the street.</p>
<p>If you suspect you are being followed, move as quickly as possible to a safe-haven (e.g., police station or government office).</p>
<p style="text-align: center;">Safeguards while Flying</p>
<p>If possible, buy your ticket at the last possible moment to prevent unauthorized personnel from finding out about your travel plans.</p>

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<p>Choose flights that will route you through an airport with a history of good security measures.</p>
<p>Avoid countries, airports or airlines that are currently targets of terrorist organizations. Direct flights are best. If possible use military air, military charter or U.S. flag carriers.</p>
<p>Arrive early. Don't loiter near the ticket counter, luggage check-in or security area. Go through security as quickly as possible to the boarding area. Only use shops, restaurants, and lounges in the security area, not the main terminal.</p>
<p>Buy your ticket at a travel agency that offers you seat selection and gives you a boarding pass when you buy your ticket. Ask for a window seat near the center of the aircraft. Terrorists generally select passengers for abuse that are sitting in more easily accessible aisle seats.</p>
<p>Don't let your carry-on luggage out of your sight and don't agree to "watch" someone else's luggage.</p>
<p>Keep your eyes open for any suspicious activity such as an individual who gets up and leaves behind bags, packages, etc. If you see something suspicious, get out of the area quickly and report it to airport security officials!</p>
<p>Stay within the restricted or boarding areas of the airport, or leave the airport if possible or practical when you have a long layover for several hours.</p>
<p>No matter where you are in the terminal, identify objects suitable for cover in the event of an attack. Pillars, trash cans, luggage, large planters, counters and furniture can provide some protection.</p>
<p>Sit with your back against a wall, facing the crowd to give you greater awareness to your surroundings.</p>
<p>Avoid seats in first class.</p>

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Count the number of seats to the closest emergency exit so that you will be able to find your way out in case the lights go out, or if the compartment fills with smoke.
Avoid telling other passengers that you are in the military or otherwise confiding in them. On a foreign carrier, avoid speaking English as much as possible.
Inform someone of your destination and get in the habit of checking in with them before you depart and after you reach your destination. This could provide authorities with a starting point if you should become missing.
At the first indication of a hijacking, hide all documents, identification cards, and official passports that could identify you as military.
Safeguards while Staying in Hotels
Stay at DOD facilities whenever possible for security.
Request another room if one has been reserved for you. Do not give your room number to strangers.
Avoid street-level rooms. Ask for a room between the second and eighth floors. This puts you high enough to avoid easy access from the outside and still be low enough for local fire equipment to reach.
Check before exiting from an elevator or your room for objects that seem out of place or for strangers who seem to be loitering.
Answer the hotel phone with hello, not your name.
Never answer hotel paging. If you are expecting someone, go to the lobby, but don't go to the desk and identify yourself, check to see if the caller is whom you are waiting for.
Keep your room key on you at all times. Don't leave a copy of your room key on your key chain for the parking attendants.

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Be careful answering the door. First, check to see who it is through the peep hole or side window and arrange knock signals with your traveling companions.
Watch for anyone loitering in halls, lobbies, or public areas or for anyone carrying objects that could be used as a weapon.
Vary your arrival and departure times.
Vary how you enter and exit the building; e.g., use a hotel's entrance as well as its elevators and stairwells.
Know where emergency exits and fire extinguishers are located.
Avoid frequent exposure on windows and balconies. Keep your room draperies closed. Conduct business in your room, not in the lobby or hallways.
Inspect your room thoroughly upon entering. Keep your room and personal effects neat and orderly. This practice helps you recognize tampering or strange, out-of-place objects.
Place a piece of tape on the door crack or a string in the door jam. If it has moved while you were out, you will know that someone has entered your room during your absence.
Lock the door and use the chain.
Place the DO NOT DISTURB sign on the door.
Avoid maid service and never admit a stranger to your room.
Consider purchasing a portable door alarm, this will awaken you if someone attempts to enter while you are sleeping.
Place a large screw into the space between the door and the door frame, this will delay anyone's entry into the room.

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Leave the lights, television or radio on when you are out of the room to give the appearance that someone is still there.

Find out if the hotel has security guards; if so, determine how many, their hours of duty, equipment they use, their expertise, and how to locate them by phone and in person.

Do not discuss travel plans over hotel phones. The lines could be “bugged.”

Do not take the first taxi in line when leaving your hotel and don't allow strangers to direct you to a specific cab.

Detecting Surveillance

Terrorist operations are normally meticulously planned, allowing for the greatest chance of success and safe escape for the terrorists. Reducing vulnerability with security enhancements is vital to your efforts to deter terrorist attacks. Equally important is surveillance detection. In most cases, the target that terrorists select to attack is based on lengthy surveillance. Through surveillance, they hope to learn about your habits and assess where you are vulnerable. By practicing good individual protective measures, you not only disrupt their intelligence gathering efforts, but you also make yourself a “hard target.” Terrorists want to hit “soft” targets, which minimizes their risk of failure. In cases of targets of opportunity, however, the surveillance may last only for a few minutes to hours to confirm the ease of the target. However, terrorists will usually abandon “hard targets” and move on to another “soft target.”

Upon arrival in a new area, begin determining what is normal and routine. Once you've determined what is normal and routine, it is easier to determine what is unusual. This makes the problem of identifying surveillance simpler.

Often initial surveillance efforts are conducted by less experienced personnel who may often make mistakes. For example, terrorists will often show up at a surveillance location immediately prior to their target's arrival and depart immediately after the target leaves. A surveillance program involving family members, neighbors, and domestic employees can often detect this surveillance.

Look for people who are in the wrong place or dressed inappropriately. Eliminate stereotypes about terrorist surveillance personnel; they are often women and children. Be particularly observant when traveling to and from your home or office. Look up and down the streets for suspicious vehicles, motorcycles, mopeds, etc. Note people near your home or place of work who appear to be repair personnel, utility crews, or even peddlers. Ask yourself if they appear genuine or is something unusual?

Types of Surveillance

- Stationary - At home, along route or at work.
- Following - On foot or by vehicle.
- Monitoring - Telephone, mail, computers.
- Searching - Luggage, personal effects, trash.
- Eavesdropping - Electronic and personnel.

Terrorists sometimes employ an elaborate system involving several people and vehicles. Typical surveillance vehicles are motorcycles and cars with multiple personnel. Become familiar with local vehi-

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cle makes and models. Memorize and write down license plate numbers. Determine if a surveillance pattern is developing.

Surveillance Indicators

- Illegally parked or occupied parked vehicles.
- Cars with large mirrors.
- Cars that suddenly pull out of parking places or side streets when you pass, cars that move with you when you move, or cars that pass you and immediately park.
- Cars slowly maneuvering through turns and intersections or vehicles signalling for turns but do not turn.
- Flashing lights for signaling between cars.
- Unusual speeding up, slowing down or running red lights to stay up with you.

Conduct a route analysis of your principal routes that you make on routine trips. Identify chokepoints where your vehicle must slow down. Typically these chokepoints are: traffic circles, one-way streets, bridges, and major intersections. Search out safehavens that you can pull into along the route in the event of emergency. If you think you're being followed, go directly to a safehaven, not your home. Safehavens are generally well lit, public facilities where persons will respond to your request for help. (Examples of a safehaven might be a police station, fire station, large shopping mall, busy restaurant.)

If you are aware of surveillance, never let those watching you know you have figured out what they are doing. Never confront them. Terrorists and criminal elements are typically armed, don't want to be identified, and may react violently in a confrontation.

Reaction (if in a Vehicle)

- Circle the block for confirmation of surveillance.
- Do not stop or take other actions that could lead to confrontation
- If possible, get a description of the car and its occupants.
- Go to the nearest safehaven. Report incident to the nearest security or law enforcement organization.

Reaction (if on Foot)

- Move rapidly towards a safehaven avoiding any route you routinely use.
- If a safehaven is not immediately available, move into a crowded area.
- Immediately report suspicions to nearest security element or local law enforcement.

Attack Recognition

If terrorists succeed in surveilling you and plan an attack, the next place to foil their efforts is to recognize their intentions and prepare to escape. Recognizing an attack scenario is difficult. Often what may appear to be an attack is more likely to be innocent circumstances. However, alertness and willingness to act are the keys to surviving a genuine attack scenario.

Abnormal Situations

- Individuals who appear to be excessively nervous and seem out of place by dress or mannerisms.
- Individuals wearing unusually long or heavy clothing for the environment.

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- Individuals who appear to be acting as lookouts along your route of travel.
- Vehicles that hit your car from the front or rear.
- Unusual detours, vehicle roadblocks, cones, or other barriers. Be prepared to escape by going around the obstacle or ramming it.
- Vehicles traveling with items protruding from side doors or vans traveling with side doors open.
- Disabled vehicles, hitchhikers or distressed “accident victims” seeking your assistance are commonly employed traps.
- A flagman, workman or fake police or government checkpoint stopping your car at a suspicious place.
- Sudden unusual activity or the unexplained absence of local civilians.
- Gunfire.

Escape, Evade or Confront

Once you recognize an attack is occurring, decisions must be made immediately. If the scenario is an armed attack or assassination attempt, get out of the kill zone. Typically terrorists have a relatively narrow window of time and may have restricted fields of fire due to obstacles in their path. Once you exit the kill zone, terrorists will rarely pursue you since they must begin their own escape and evasion plan. In emergency situations, it may be a matter of survival to employ evasive driving techniques in order to arrive at the nearest safehaven. Use of evasive driving techniques may also be to your advantage by attracting the attention of local law enforcement. If on foot, take advantage of the density of crowds and layouts of buildings to evade pursuers. When you feel

you have evaded the terrorists and are out of immediate danger, contact security forces or law enforcement for assistance.

In some cases, you may become captive as were the passengers on board the ill-fated flights of 11 September 2001. Escape and evasion were not possible. The only chance for those passengers to survive was to confront the terrorists in order to regain control of the aircraft. On one aircraft, although the plane crashed killing all on board, the passengers' confrontation with the terrorists saved countless lives because the aircraft never reached its intended target.

Incident Reaction

Bombs

Should a bomb explode outside the building, do not rush to the window to see what happened. Immediately seek cover in a protected area due to the possibility of a secondary, probably larger explosion (referred to as a double bombing). Terrorists may use an initial bomb to breach outer security, then a second bomb on the target, and may follow-up the bombing with an armed attack. In a variation, terrorists can place an initial bomb, followed by a second bomb shortly thereafter to kill or injure security forces and emergency services responding to the initial bomb.

In the city, if you are on the street when a terrorist bomb explosion occurs, quickly get inside the nearest building and remain

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there. Shattered glass and other debris from high-rise buildings can fall for blocks around the point of explosion. As soon as practical, following a bombing:

- Notify the proper authorities.
- Evacuate the wounded based on the situation. Do not impede the efforts of emergency services. Witnesses to the bombing will naturally approach the explosion area to aid in searching for casualties. Authorities will also be trying to coordinate the search and will want to limit the number of searchers due to the threat of additional explosions and secondary effects such as falling masonry or fires.
- Move to a clear area, away from objects such as automobiles, buildings, and garbage containers.

Armed Attack or Assassination

If in an office or hotel, quickly lock the door, turn out the lights, grab the telephone, and get down on the floor. Call building security immediately. Telephone connections outside the building or hotel might be difficult to obtain. If no security office is available, call the local authorities. Tell the authorities exactly what you heard and provide them with the address, building, floor, room number, and telephone number. Stay in a protected area, and if possible, take the phone with you. If you believe you are involved in a terrorist takeover, hide your wallet and identification.

Arsons and Firebombings

Exercise normal fire safety precautions. However, do not gather in open areas such as parking lots or areas where others are congregating. Terrorists could stage an arson attack or false fire

alarm to get a crowd out of a building and then conduct a bombing or armed attack.

Hijackings, Skyjackings, and Kidnappings

Reactions to these and similar attacks are described in chapter 3.

Additional Individual Aids

Appendix B contains the complete April 2000 text of Joint Staff Guide 5260, *Service Member's Personal Protection Guide: A Self-Help Handbook to Combatting Terrorism While Overseas*. Appendix C and D are wallet-sized cards containing pertinent individual protective measures.

For detailed checklists and discussions of Antiterrorism Individual Protective Measures, see DOD Directive 0-2000.12-H, *Protection of DOD Personnel and Activities Against Acts of Terrorism and Political Turbulence*.

Chapter 3

Hostage Survival

The Hostage

Hostage-taking is a way for terrorists to achieve a bargaining position by forcing a confrontation with authorities. It will remain an effective terrorist tool as long as mankind values human life. Hopefully, you will never become a hostage, but if you do, knowing how to react will improve your chances of survival. Your role as a hostage is to *survive with honor*—not to kill the terrorists or get you or your fellow hostages killed. Remember, most hostages survive a hostage-taking. Terrorists select hostages for a variety of reasons. The hostage may have a prominent job or social status or may be—

- Well known, so that terrorists receive widespread media attention.
- An American.
- Hated by the terrorists, or the terrorists may blame the hostage for any setbacks they have suffered from their own government's forces. For example, U.S. military advisors in El Salvador were despised by terrorists of the FMLN because of the assistance the advisors provided the El Salvadorian government.
- Valuable to employers and families; for example, families and civilian firms have paid ransoms to secure a hostage's release.
- Seen as a threat to the terrorists. For example, in Colombia, the terrorist groups M-19 and Revolutionary Armed Forces of Colombia (FARC), who make more than \$100 million each year from cocaine sales, target special agents of the U.S. Drug Enforcement Administration.

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These reasons identify why a particular person may be targeted for a hostage-taking. But, in most cases, a hostage is an innocent victim of circumstances—someone who was in the wrong place at the wrong time. Therefore, you must prepare yourself to respond (both mentally and physically) to a hostage-taking incident.

Terrorist Suicide Missions

If under the control of terrorists, you must rapidly determine the terrorists' intent: to establish a bargaining position and elicit publicity or to carry out a suicide mission. The passengers on board the planes used in the 11 September 2001 attacks were not hostages in the traditional sense because the terrorists never intended to use them to achieve a bargaining position. Those passengers were simply on board a skyjacked aircraft that was being used for a suicide mission. In such terrorist suicide mission situations, the techniques described in the "Escape or Surrender" section on page 3-8 may be the most useful.

The Hostage-Takers

The following paragraphs address broad categories of hostage-takers—the ones that are the norm. The lines between the categories may blur or overlap, and the hostage-taker may move from one category to another based on a goal. Multiple subsets may also exist within each category.

Political Extremist

Most hostage-takers are political extremists. They typically operate within a military-type structure. Their operations are usually well planned. They typically resist appeals based on morals, decency or fear for their own safety. They are often prepared to die for their cause.

Statistically, leaders of political extremist groups are single, urban, bright, and dedicated to their cause. They are often college graduates with professional backgrounds. They often come from upper or upper middle class families whose parents are politically active but not violent. They tend to be abnormally idealistic and inflexible.

Fleeing Criminal

Fleeing criminals take hostages on impulse, typically to avoid immediate apprehension and to have a bargaining chip for escape. Authorities must handle a fleeing criminal with caution. If he feels a sudden loss of power, it can create agitation, despair, or panic. With these emotions at the forefront, he also may impulsively kill a hostage. Therefore, time and patience in dealing with the hostage-taker is critical. The fleeing criminal will often settle for much less than originally demanded if he perceives that he is slowly losing power, control of the situation, or facing death. Many times, he will surrender if allowed to give up with dignity.

Wronged Person

A hostage-taker who feels he is a wronged person is motivated by personal revenge. He seeks to notify society of the defects in the system or the establishment. He attempts to effect justice in order

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to right a wrong or to publicize what he feels is an injustice. The hostage may represent the “system” to the hostage-taker; if so, the hostage could be in increased danger. This type of hostage-taker is convinced that he is absolutely right in his behavior. Often, gentle persuasion is required to convince him that he needs to end the situation and release the hostage.

Religious Extremist

Dealing with hostage-takers who are religious extremists requires time, patience, and sensitivity. Religious extremists share a common, unshakable belief in the righteousness of their cause. They may perceive that their source of power comes from their god or the leaders of their cult or group. They may see themselves as superior to others simply because of their beliefs. Individuals who join cults or radical religious groups often lack personal confidence and join these types of organizations to bolster their self-esteem.

Religious extremists may feel that they must succeed or die for their faith. Some religious cults and groups believe that to die at the hand of the nonbeliever is the holiest achievement possible. This way of thinking greatly increases the threat to the hostage. The hostage may also be seen as a “sacrificial lamb,” one who must die for the sins of others.

Mentally Disturbed

A hostage-taker who is mentally disturbed is not normally associated with an organized terrorist group. However, this type of hostage-taker conducts over half of the hostage-taking incidents. Usually, the mentally disturbed hostage-taker acts alone. Authorities may have difficulty establishing and maintaining a rapport with the mentally disturbed hostage-taker. If challenged or threatened by

authorities, the mentally disturbed hostage-taker may easily accept the murder of a hostage, his own personal suicide or both.

Personal Contingency Planning

As a Marine and a representative of the U.S. Armed Forces, you are a potential hostage even in low and negligible threat areas. You must prepare for your own personal safety, prepare your family, and prepare for the potential of becoming a hostage and the ensuing captivity.

Although nothing can fully prepare you for the experience of becoming a hostage, knowing that the following issues have been addressed will lessen the trauma on you and your family:

- Your will is current and your family knows its location.
- Appropriate powers of attorney are given to a spouse, relation, or trusted friend.
- Your family knows who to contact for assistance.
- Family finances are settled so they do not suffer financially during your captivity. Family members should have access to money, airline tickets, credit cards, insurance policies, etc.

All family members should assemble a personal history/information sheet, preferably in their own handwriting, which can be used as an aid to law enforcement and intelligence officials in the event of an incident. This sheet should contain the following information items:

- Name and nicknames.
- Place and date of birth.

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- Home address and telephone number.
- Secondary address and telephone number
- Precise physical description (e.g., height, weight, scars, tattoos, dentures, etc.).
- Other identifying characteristics (e.g., birthmarks, physical handicaps).
- Prescription for eyeglasses used.
- Special medications and instructions for their use.
- Vehicles (types and license).
- School (type, class, address, teachers).
- Recent information on educational qualifications and hobbies.
- Information about friends residing in diverse locations and their phone numbers.
- Preparing a brief family member oral history on a cassette recording may be helpful. This can be used to help identify voices on recordings mailed to authorities in the event of a kidnapping. Samples of handwriting taken under various conditions (e.g., writing on the hood of a car, writing on bare ground), may also be helpful.

Your family also needs to know how to react if you are taken hostage. Typically, terrorists carry radios so they can listen to the news and monitor the world's reaction to the hostage-taking and to receive further instructions from their superiors. Your family should not grant interviews to the media. If confronted by the media for a statement, your family should say that they hope the terrorists will release the hostages, and that the ordeal will be over soon. You should advise your family not to express fear for your safety, identify you as a Marine, or provide the terrorists

with any information that will help the terrorists select you as a victim or endanger the lives of the other hostages.

Department of Defense Directive 1300.7

Closely related to personal contingency planning is developing a good understanding of the policy and guidance contained in DOD Directive (DOD Dir) 1300.7, *Training and Education Measures Necessary to Support the Code of Conduct*. The six articles of the Code of Conduct outline basic responsibilities and moral obligations of members of the U.S Armed Forces. The code is designed to assist military personnel, both in combat and those being held as prisoners of war, conduct themselves in a manner that brings credit upon themselves and their country.

When military personnel participate in military operations other than war or are assigned overseas, they are potentially subject to detention by hostile governments or captivity by terrorist groups. DOD Directive 1300.7 builds upon the spirit and intent of the Code of Conduct to provide guidance to servicemembers that specifically applies to peacetime detention or captivity. Key elements of the directive include the following:

- Maintaining faith with fellow hostages by communication and rejecting privileges and special favors.
- Resisting exploitation for information or propaganda purposes.
- Maintaining proper bearing and displaying courtesy.
- Resisting disclosure of classified information or materials.
- Organizing in a military manner to the fullest extent possible.
- Avoiding embarrassment to the U.S. and host governments.

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- Authorizing acceptance of release unless doing so requires you to compromise your honor or causes damage to the U.S. government or allies.
- Authorizing escape attempts, if you view such as attempt as your only hope.
- Providing specific guidance and legal considerations involving detention by hostile governments.

Escape or Surrender

During the initial moment of capture, you must make an instant decision—escape or surrender. Even though it is the most dangerous time of a hostage ordeal, you must remain calm. Do not make any sudden movement that may rattle an already anxious gunman. Abductors are tense; adrenaline is flowing. Terrorists themselves feel vulnerable until they are convinced they have established firm control over their hostages. Unintentional violence can be committed with the slightest provocation. For example, do not make eye contact with the captors initially. Be polite and cooperate. You may need to reassure your abductors that you are not trying to escape by controlling your emotions, following instructions, and avoiding physical resistance.

Terrorists meticulously plan to capture hostages. Initiative, time, location, and circumstances of the capture usually favor the captors, not hostages. However, the best opportunity to escape is normally during the confusion of the takeover while you are still in a relatively public place. During this period the hostage takers are focused on establishing control and may leave openings for escape. If you decide in advance to try to escape, try to plan and practice doing so. Mental alertness improves the chances of

escape. While waiting for an opportunity to escape, continue passive information collection on—

- Appearance, accents, rank structure, equipment, and routines of the terrorists.
- Strengths and weaknesses of the facility and its personnel.
- Conditions and surrounding area that could impact an escape attempt.
- Items within the detention area that can be used to support an escape effort.

Escape from detention by terrorists is risky but may become necessary if conditions deteriorate to the point that the risks associated with escape are less than the risks of remaining captive. These risks would include the credible threat of torture and death at the hands of the terrorists. Escape attempts should be made only after careful consideration of the risk of violence, chance of success, and possible detrimental effects on hostages remaining behind.

If you eliminate escape as an option, avoid physical resistance. Assure your captors of your intention to cooperate fully.

Intimidation and Control

Remember, hostage-takers usually want you alive! They may use drugs, blindfolds, or gags when they abduct you, but try not to be alarmed or resist unduly. If you struggle, hostage-takers may resort to more severe measures of restraint. Hostage-takers use blindfolds or hoods to keep you from knowing where you are being taken, as well as to prevent you from identifying them later. You should not

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attempt to remove a blindfold or hood, if you see your abductors they may kill you. Likewise, you should not attempt to remove an abductor's mask or hood if they are wearing one.

Hostage-takers may also drug their victims, usually at the beginning of an operation, to make the victim sleep and keep him pacified. This experience should not be alarming. At this stage, your life is almost as important to the hostage-taker as it is to you. Drugs used to put you to sleep do not have lasting side effects. If hostage-takers should use drugs such as heroin, lysergic acid diethylamide (LSD), or sleeping pills, you can typically recover from this quicker than you can from physical abuse. Hostage-takers may use "truth-serum" drugs, but these drugs are typically inefficient, and their results are similar to the consumption of too much alcohol.

Stabilization

If you are abducted, your goal is to survive. To survive, you must adjust. You must try to maintain emotional control as quickly as possible after the capture. Maintaining emotional control helps you keep control of your mental abilities such as situational awareness, judgment, and decisionmaking skills. Remember, most hostages survive an abduction. After the initial shock of capture wears off, both hostage takers and victims stabilize their emotions and begin to plan for the future. The terrorists may divulge information about themselves, their organization, their goals, and objectives. They may share their demands and may even discuss roles and responsibilities that the hostages have. The hostages begin making an emotional transition from being a victim to being a survivor. But to survive, you must be alert and cautious. Remember that hostage-takers have used "sleepers" in their

hostage operations. A sleeper is really a terrorist posing as a hostage to inform on the real hostages or draw out security personnel. Be careful who you trust.

Situational Awareness

If you are blindfolded and gagged during transportation, concentrate on sounds, smells, direction of movement, passage of time, conversations of the hostage-takers, and any information that might be useful. For example, you might hear train sounds that might indicate you are near a train station or going by railroad tracks. Hearing a ship's horn would indicate you are crossing a river or near a body of water. Try and draw a mental map of where you are. If you can hear the hostage-takers, try to determine the language they are speaking, key phrases, goals of the abduction, names, weapons carried, and directions taken, such as "make a left at [famous landmark]." Information collected over time might allow you to guess the possible route and the area where they have taken you. All this information will be very useful if you are released or if you escape while the hostage-takers are still holding other hostages.

Confrontations

To avoid confrontations with any hostage-taker, you should not carry documents or other sensitive or potentially embarrassing items in your briefcase or on your person. If taken hostage, you must be prepared to explain telephone numbers, addresses, names, and any other items carried at the time of capture. If asked for identification, show your tourist passport. Dispose of items such as your military ID and official passport as soon as possible. If you are identified as member of the military, you could be perceived as a

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threat to the hostage-taker's activities. If interrogated, adopt a simple, tenable position and stick with it. Delay identifying yourself as military, but do not lie when asked if you are in the military. Rather, you should attempt to skirt the question; i.e., if you are a formal school instructor, reply "I am a teacher." You should try to convince your captors that they have kidnapped the wrong person. The terrorists may not be convinced, but don't give up. This delaying effort serves only to maximize survival during the initial stages of captivity and reduce the terrorist's apprehension that you might be a threat to their activities. Most casualties among hostages occur during the process of capture and initial internment.

Defense Mechanisms

As a Marine, it is important to understand what is going on in the minds of hostages. You might observe what you would consider unusual behavior. This behavior is usually a combination of psychological effects that terrorists seek to achieve by their controlling actions and unconscious, personality-based responses hostages display while in captivity.

Survival is instinctively the most important issue to the human mind. When placed in a hostage situation, the mind commonly employs defense mechanisms. These unconscious psychological adjustments are made by hostages to deal with the stress and trauma of the situation. To survive this ordeal, the mind can typically deny that the incident is occurring; regress into a dependent state; and/or identify with the hostage-taker's demands and values to avoid punishment. A combination of these defense mechanisms can result in the "Stockholm Syndrome," whereby the hostage identifies with the hostage-taker and may actively support the hostage-taker's activities.

Denial

Denial is a primitive and very common defense mechanism. To survive an incident that the mind cannot handle, it reacts as if the incident is not happening. Hostages commonly respond, “This can’t be happening to me!” or “This must be a bad dream!” Denial is one stage of coping with an impossible turn of events. These thoughts are actually stress-relieving techniques. Some hostages deny their situation by sleeping.

As time passes, most hostages gradually accept their situation. They find hope in the thought that their fate is not fixed, begin to view the situation as temporary, and believe they will be rescued soon.

Regression

Regression is the return to a more elementary thought pattern commonly found in children. Like a child, a hostage is in a state of extreme dependence and subject to fright. Unconsciously, the hostage selects a behavior that was successfully used in childhood. The hostage becomes reliant on the hostage-taker just as if the hostage-taker was a parent, providing food, shelter, and protection from the outside world. If this thought pattern is firmly in place, hostages may view authorities as a threat to the “safety” being provided by the hostage-takers.

Identification

Like regression, identifying with the hostage-taker occurs at the unconscious level. The mind seeks to avoid wrath or punishment by mirroring the behaviors and complying with the demands of the hostage-taker.

The Stockholm Syndrome

Because you are a potential hostage, you must know and understand the Stockholm Syndrome (see page 3-15). If taken hostage, you will be able to recognize if it is happening to other hostages. The Stockholm Syndrome is an automatic, unconscious emotional response to the trauma of becoming a victim. Observed around the world, the Stockholm Syndrome occurs when people are exposed to a high level of stress and cast together with others, not of their choosing, into a new level of adaptation. The result is a positive bond that affects both the hostage and the hostage-taker. The positive emotional bond may develop because of the stress of being in a closed room under siege. This bond unites its victims against the outside world. An attitude of “it’s us against them” seems to develop.

The Stockholm Syndrome produces a variety of responses. Minimal responses consist of victims seeing the event through the eyes of their captor. Those deeply influenced respond by recognizing the terrorist for his “gallant act.” Responses have also ranged from hostage apathy to actual participation by the hostages in impeding the efforts of rescue forces and negotiation teams. Another response is losing touch with reality and suffering long-term emotional instability.

No one knows how long the syndrome lasts, but the bond seems to be beyond the control of some hostages. They all share common experiences, including positive contact, sympathy for the human qualities of the hostage-takers, and tolerance.

On 23 August 1973, the quiet, early morning routine of the Credit Bank in Stockholm, Sweden, was destroyed by the sound of a submachine gun. Four hostages were held for 131 hours: three women ranging in ages from 21 to 31 and a 25-year old man. They were held by Jan-Erik Olsson, a thief, burglar, and prison escapee. Olsson kept the hostages in an 11-foot by 4-foot crated bank vault, which they came to share with another criminal and former cell mate of Olsson's, Clark Olofsson. Olofsson joined the group after Olsson demanded his release from prison, and the authorities granted his request. Over time, the hostages began to fear the police more than they feared the robbers. In a phone call to Premier Olof Palme, one of the hostages told the Premier that the robbers were protecting them from the police. After the hostages were released, they began to question why they didn't hate the robbers, why they felt as if Olsson and Olofsson had been the ones to give them their lives back, and that they were emotionally indebted to them for this generosity. For weeks after the incident and while under the care of psychiatrists, some of the hostages experienced severe conflicting emotions of fear that Olsson and Olofsson might escape from jail, yet they also felt no hatred for them. This hostage-taking and its resulting conflicting psychological emotions became known as the Stockholm Syndrome.

Positive Contact

Hostages may develop positive contact with their abductors if they do not have negative experiences (for example, beatings and rapes). Positive contact also develops if there has been a negative experience followed by a positive contact. For example, if a hostage was beaten by a “cruel guard” every time the hostage asked for a drink of water, then a “kind guard” replaced the “cruel guard” who gives water freely, typically, the hostage will establish a positive contact with the “kind guard.”

Human Qualities of the Hostage-Takers

Hostage-takers may talk about their own mental abuse and physical suffering. They want their hostages to see them as victims of circumstance rather than aggressors. Unfortunately, hostages may sympathize with the hostage-taker and forget that he is the one depriving them of their freedom. Once hostages begin to sympathize with the hostage-taker, they may actually support the hostage-takers’ cause.

Tolerance

Humans have an unconscious limit as to how much we will allow ourselves to be abused or how much we can tolerate. When we are placed in a survival situation, our acceptable tolerance for abuse usually increases in order for us to survive.

Coping with Captivity

Coping is a rational mental process used by hostages to deal with and adjust to the problems of a difficult environment. Unlike

defense mechanisms that are mostly unconscious reactions based on personality, coping involves conscious and deliberate thoughts and actions. Coping includes such innovative behaviors as adjusting to living conditions, maintaining dignity and respect, dealing with fear, maintaining mental and physical fitness, and building rapport with captors.

Living Conditions

The living conditions hostages have endured vary from incident to incident. Hostages have been held for days in a bus, airliner or train where heat or lack of heat and lack of adequate water, food, and toilet facilities were almost unbearable. During the seizure of an office or residence, hostages may be in familiar, comfortable surroundings where they have worked or lived. But kidnap victims are frequently forced to live in makeshift prisons located in attics, basements or remote hideouts. These prisons may be quite small and in some cases prevent the hostage from easily standing or moving around. Sleeping and toilet facilities may be poor, consisting of a cot or mattress and a bucket or tin can for body waste, or a hostage may be forced to soil his living space as well as himself.

The hostage-takers may move you to different holding areas to keep you hidden from authorities. To assist authorities in locating you, you should leave your fingerprints wherever possible in your living area.

Dignity and Self-Respect

Maintaining one's dignity and self-respect can be very difficult, but it is vital to your survival. Your dignity and self-respect may be the keys to retaining your status as a human being in the eyes of the hostage-takers. If you can build empathy while maintaining your

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dignity, you can potentially lessen the aggression of a captor. Most people cannot inflict pain on another person unless that person becomes dehumanized or turned into a symbol of their hatred.

Fear

Fear of death is a hostage-taker's most important tool. They use it to control, intimidate, and wear down the hostage and the negotiators. The fear of death is usually greatest during the first few hours of capture. Hostage-takers may induce fear by loading and unloading weapons in the hostage's presence, displaying excesses of temper, resorting to physical abuse, and staging mock executions which are "mercifully" stopped at the last minute. As this fear subsides, a hostage may begin to hear he "owes" his life to the captors who have "allowed" him to live. Anticipate isolation and terrorist efforts to confuse you. Fear of dying is real, and it can become overwhelming, especially during the early phase of captivity. However, you must try to maintain emotional control in order to stay mentally alert. Fight despair and depression by keeping a positive mental outlook. Remember, although death is a real possibility, most hostages walk out of the ordeal.

Physical and Mental Fitness

If abducted, you should develop and maintain a daily physical fitness program. It will help you ward off boredom and can reduce stress. Staying physically fit might be the deciding factor if an escape opportunity presents itself, and you have to run or walk a considerable distance to reach safety. It may be hard to exercise because of cramped space or physical restraints, but you can run in place or perform isometric exercises. However, you should avoid excessive exercise that could result in injury.

It is important to make some mental link to the outside world. To stimulate your mind, you can read, write, daydream, or use your imagination to build something step-by-step (a house, a car, a piece of furniture, etc.). Ask the hostage-takers for reading materials or a radio. If possible, communicate with and try to reassure fellow hostages. If it is your day of worship, mentally walk through the various parts of the worship service. Establish a slow, methodical routine for every task.

Typically, hostage-takers want to keep their hostages alive and well. Eat whatever food is available to maintain your strength. If you need medicine, ask for exactly what you need. If your abductors want you alive, they are not likely to take chances by providing you with the wrong medicine. A side effect of captivity for some hostages is weight loss. Although this may be considerable, it generally does not cause health problems. Hostages may also suffer gastrointestinal upset including nausea, vomiting, diarrhea, and/or constipation. Although these symptoms can be debilitating, they are usually not life-threatening.

Establishing Rapport

Rapport-building techniques help you make a transition from a faceless symbol who has been dehumanized to one who is human again. However, don't exaggerate your human emotions by begging or crying. An emotional outburst could spread panic and fear among the other hostages and could be viewed as a disgusting display of cowardice by the hostage-takers. You must portray yourself as a person rather than an object by maintaining your dignity, self-respect, and apparent sincerity. You must attempt to establish

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rapport with your hostage-taker, but you must do it with dignity and self-respect. This rapport may save your life. You should—

- Make eye contact with the hostage-takers.
- Greet the hostage-takers and use personal names.
- Smile.
- Talk to the hostage-takers. Especially talk about your family and show photos if you have them.
- Determine if you have common interests; e.g., sports, hygiene, food, etc.
- Listen to the hostage-taker. If he wants to talk about his cause, act interested. You may explain that you might not agree with him, but you're interested in his point view.
- Avoid appearing overly attentive or interested, the hostage-takers may view this as patronizing or insincere.
- Avoid arguing with the hostage-takers. Avoid escalating tensions with words such as gun, kill, or punish that could cause the hostage-takers to single you out as being argumentative or combative and therefore a threat to their authority. Bring up neutral topics at critical times to defuse arguments and reduce tensions.
- Avoid emotionally charged topics of religion, economics, and politics.
- Do not refuse favors offered by your captors if doing so will aggravate them or cause further harm to the health and safety of all hostages. However, do not accept favorable treatment at the expense of other hostages. Terrorists commonly employ this controlling tactic to cause division and distrust among the hostage group.

Exploitation of Hostages

Hostages should make reasonable efforts to avoid providing oral or signed confessions, answering questionnaires, making propaganda broadcasts, and conducting news interviews. These actions help terrorist groups further their goals and exploit the media. Interviews broadcast around the world could embarrass the U.S. or host governments. However, if you don't comply with the hostage-takers requests, you could be tortured or threatened with death. You should never mistake pride for inappropriate resistance. Keep your temper under control and maintain a polite bearing. When being interrogated, take a simple, tenable position and stick with it. Give short answers to the terrorist questions that discuss unimportant topics. The Department of Defense policy is *survive with honor*. If you are forced to sign or make a statement for the hostage-takers, try to degrade the propaganda, provide minimum information, and avoid making a plea on your behalf. Identify your statement as being made in response to the demands of your captors. Do not hide your face if the hostage-takers take photographs of the hostages; photos provide authorities with positive identification and information.

Releases and Rescue Attempts

Historically, the more time that passes, the better chance a hostage has of being released or rescued. The majority of hostage-taking incidents are resolved by negotiated releases not rescue attempts. While the passage of time without rescue or release can be depressing, it is actually to your advantage. Time can produce a positive or negative bond between you and your abductors. If the hostage-taker does not abuse you, hours spent together will

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most likely build rapport, produce positive results, and increase your chances of survival. However, you must also look ahead and plan for your release or rescue. You must also remember that if the hostage-takers' demands are not met, they may kill hostages. You must prepare yourself for the potential response from authorities if a hostage is killed. Typically, negotiations cease, and rescue forces move in to rescue hostages.

Releases

The moment of imminent release, like the moment of capture, is very dangerous. The hostage-takers, as well as the hostages, are likely to feel threatened and even panic. The hostage-takers will be extremely nervous during any release phase, especially if negotiations are drawn out. The terrorists will be anxious to evade capture and punishment, and they will fear being double-crossed by the authorities. You need to pay close attention to the instructions the hostage-takers give you when the release takes place: do not panic and do not run because the hostage-takers may shoot you.

Rescue Attempts

During the rescue attempt, both the hostage and the rescue force are in extreme danger. Most hostages who die are killed during rescue attempts. You must be especially alert, cautious, and obedient to instructions if an attempt is imminent or is occurring. If possible, position yourself in the safest area, such as under desks, behind chairs, or behind any large object that provides protection. You should avoid being near doors, windows, or open areas. If the doors fly open followed by rescue forces, drop to the floor immediately, lie as flat as possible, do not move, do not say anything, do not attempt to pick up a weapon or help the rescuers.

Rescue forces have no idea whether you are friend or foe. Any movement you make could result in injury or death to you or your fellow hostages. It could also distract members of the rescue force, which, in turn, could lead to injuries or deaths among the rescuers. During a rescue operation at Entebbe, Uganda, a woman hostage threw her hands up in a natural gesture of joy as the rescue forces came bursting in. Unfortunately, the rescue forces shot her. Once the rescue forces are in control, you might be handled roughly and ordered up against the wall. You will probably be handcuffed, searched, and possibly gagged and/or blindfolded until everyone is positively identified.

After the Release

Once you are safely in the hands of the authorities, remember to cooperate fully with them, especially if others are still being held. As soon as you can, write down everything you can remember: guard location, weapons and explosives description and placement, and any other information that might help rescue forces.

After your release, you must prepare yourself for the aftermath. The news media will want an interview immediately, and you will be in no condition to provide intelligent, accurate responses. Do not make comments to the news media until you have been debriefed by proper U.S. authorities and have been cleared to do so by the appropriate military commanders. You should only say that you are grateful to be alive and thankful for being released. You should not say anything that could harm fellow hostages who may still be in captivity. You must not say anything that is sympathetic to the terrorist cause or that might gain support for them.

Upon release, many hostages feel guilty for not having conducted themselves in a heroic manner. Emotional turmoil is common.

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Some may feel angry because they feel that their government did not do enough to protect them. Remember that a government's unwillingness to make concessions to terrorists discourages future acts of terrorism and sends a message to all terrorists worldwide. When ransoms for captives of terrorists have been paid by governments, these payments have usually been used by terrorists to increase their status and capability to continue terrorist acts. It did not mean that your life had no value. It is the policy of the United States that when Americans are abducted overseas, the United States will continue to cultivate international cooperation to combat terrorism and secure the safe release of the hostages.

Appendix A

Vehicle Bomb Search

Prevention

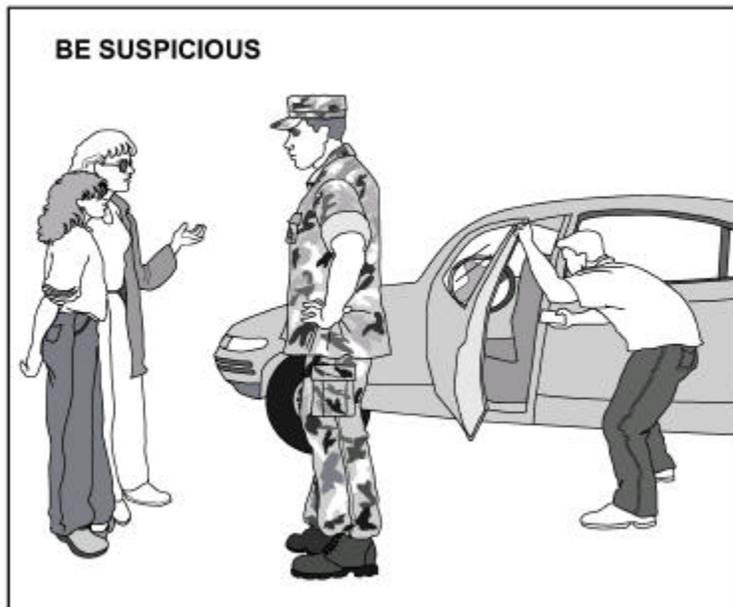
You must learn to recognize danger signs and how to search a vehicle for tampering or explosive devices. Certain procedures apply that may help prevent you from becoming a victim of a vehicle bombing, they include—

- Checking your vehicle at irregular times to prevent establishing a pattern.
- Being suspicious and aware of what is going on around you.



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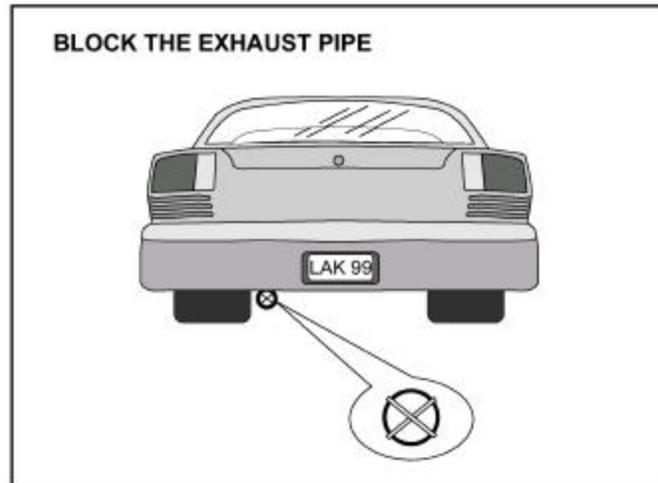
- Locking your vehicle and parking in secured areas whenever possible to limit easy access.
- Allowing a fine coat of dust to remain on the vehicle surface or applying talcum powder.
- Securing transparent tape to vehicle doors, trunk, and hood to help detect tampering.
- Installing two bolts in an X pattern over the open end of the exhaust pipe.
- Installing a locking gas cap and a mesh strainer in the mouth of the filler tube.
- Getting out of the car to wait for passengers.

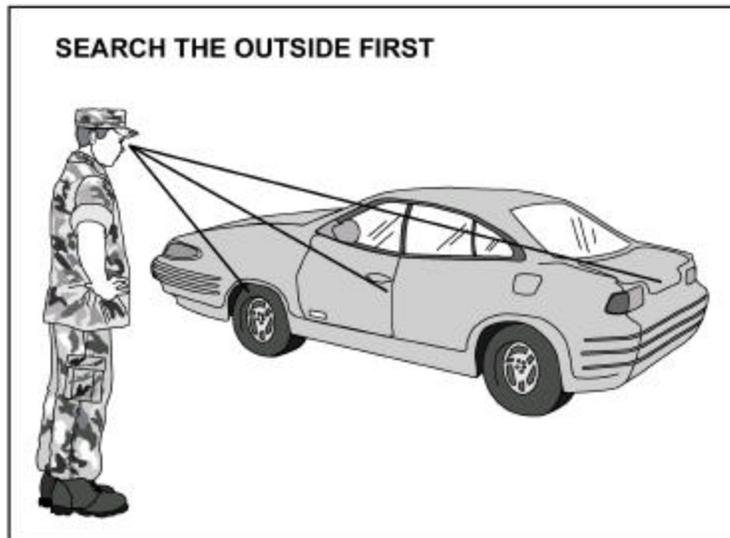


Exterior Search

Unless your vehicle has been under 24-hour guard, you must always assume that it has been rigged with a bomb, and you must use extreme caution while conducting an external search. You must know your vehicle inside and out so that you can quickly recognize something that is wrong. If possible, you should search in pairs. If you notice that you are being observed while conducting the search, gently close the hood, trunk, or door if it is open and walk away from the vehicle. If you find a bomb, or something that looks like a bomb, **DO NOT TOUCH IT**: immediately contact an explosive ordnance disposal unit. An exterior search is conducted as follows:

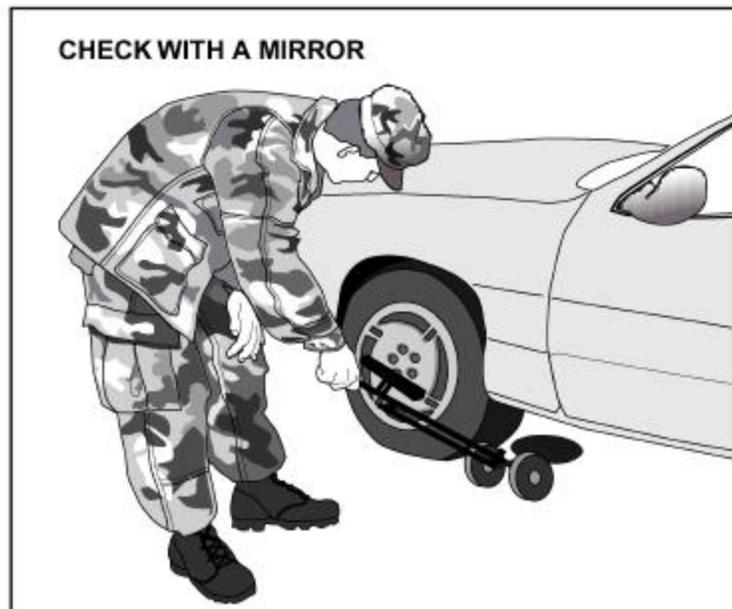
- Search the area around the vehicle. Bushes, shrubs, trees, trash cans, mailboxes, etc., are areas where an improvised explosive device may be placed or concealed. An explosion close to a vehicle can produce the same devastating effects as if the bomb was placed in the vehicle.





- Examine the exterior surfaces of the vehicle. Look for signs of tampering; wires hanging down; or doors, hood, or trunk left ajar. Does anything appear different from when you left the vehicle?
- Examine the film of dust or talcum powder. Is it undisturbed? Has another layer of dust appeared?
- Examine the transparent tape (removed or broken?).
- Examine the hood or trunk lock (look, do not lift). Has either been jimmied?
- Examine the vehicle for other signs of forced entry (broken windows, scratched paint, bent, or damaged metal).
- Open the interior compartments just a little, enough to gently run your fingers around the opening and to feel for a trip wire.

- If a trip wire is not found, you can open the compartment gradually, examining the hinges for pressure or tension release initiators.
- Look closely for any bits of tape or wire lying in or around the vehicle.
- Examine the ground for any unusual marks or signs of digging on the ground.
- Remove the gas cap and look inside.
- Check in and around the exhaust pipe.
- Check the undercarriage. If you can, use a long-handled mirror to help in your search.



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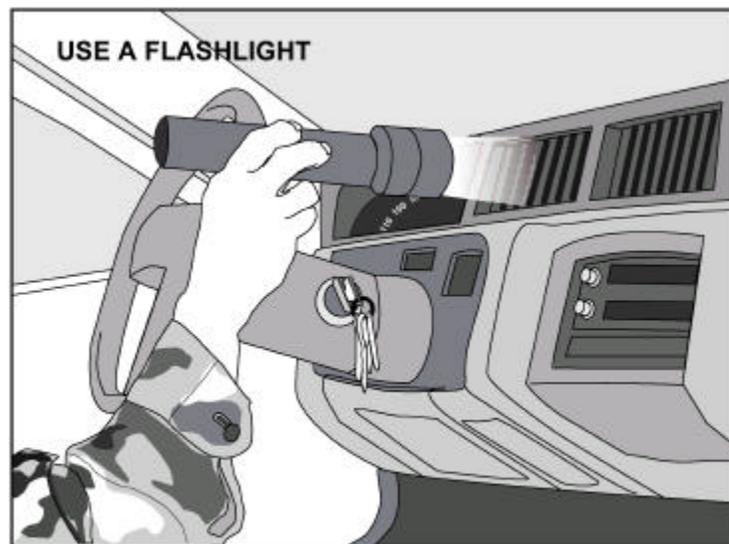
- Examine the wheel wells and behind the bumpers.
- Examine everywhere: steps, handholds, even the canvas tops of tactical vehicles.

Interior Search

You must conduct an interior search with extreme caution. Always *look* inside before you *move* inside. You must avoid touching anything in the interior of the vehicle until it has been searched, and you should never rest your hand on the seat. If you find a bomb, or something that looks like a bomb, **DO NOT TOUCH IT**: immediately contact an explosive ordnance disposal unit. An interior search is conducted as follows:

- Look through the windows. Do you see anything out of place? Has anything been moved? Has anything been added: a package or briefcase that does not belong there? Do you see tapes or wires hanging down?
- Unlock a door, open it very slowly, and only a quarter of an inch. Look around the door edges for trip wires. If the door looks free of trip wires, open the door gradually, examining the hinges for pressure or tension release initiators. If anything looks suspicious, close the door gently.
- Look at the carpet or floor mats for any suspicious bulges. Look as far as you can under the seat, around the seat, and behind the seat without entering the vehicle.
- Look around and behind all the other seats.

- Slip into the seat and check the ashtray, adjustable headrest, and seat belt.
- Examine the right rear passenger seat.
- Check the glove compartment.
- Look under the dash, checking especially for strange tapes and wires.
- Use a flashlight to check the air conditioning ducts and other vehicle cavities.
- Examine the sun visors and mirrors for signs of tampering.



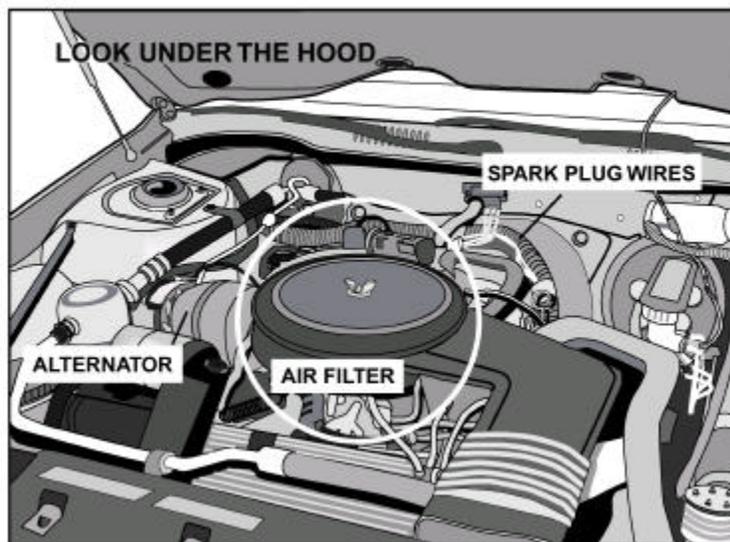
Engine and Trunk Search

Once an interior search has been conducted, you should exit the vehicle and open the engine hood and trunk. You should open the hood or the trunk only a quarter of an inch at first and very gently feel for wires along the length of the hood or the trunk.

An engine or trunk search is conducted as follows:

Engine

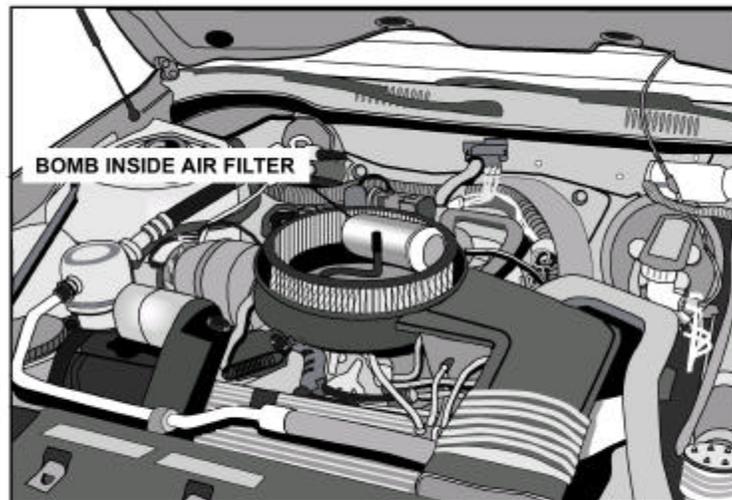
- Raise the hood and make a thorough search of the engine compartment and fire wall.
- Look for any strange or new-looking wires attached to the battery, clutch, coil, accelerator, or any power-operated equipment.



- Check engine cavities for anything that looks like it does not belong there and anything out of place.
- Open the air filter and look inside. Pay special attention to the spark plug wires, the distributor, the ignition area, and the exhaust manifold.

Trunk

- Raise the trunk and make a thorough search.
- Check the items inside. Is anything rearranged? Is anything new?
- Check the spare tire to ensure it is filled with air.



Final Check Before Starting the Vehicle

Once you have inspected the exterior and interior of the vehicle, the trunk, and the engine, you can get into the driver's seat and check the dashboard. You should look at the turn signals and lights, if nothing is unusual, then turn them on. You also need to check and test the wipers, washer, radio, and horn. Once you feel that the vehicle is safe, you can start the vehicle. Let the vehicle run for about 2 minutes before you proceed to your destination.

Appendix B
Joint Staff Guide 5260,
“Service Member's
Personal Protection Guide:
A Self-Help Guide to Combat Terrorism
while Overseas”

FOREWORD

This guide is designed to assist in making you and your family less vulnerable to terrorists while stationed or traveling overseas. You should become familiar with its contents and incorporate those protective measures that are applicable to your particular situation. Moreover, ensure every member of your family is made aware of this valuable information so they can help protect themselves as well.

Terrorism is an indiscriminate crime that strikes in varying forms of threats and violence. Terrorist generate fear through intimidation, coercion, and acts of violence such as hijackings, bombings or kidnappings, which usually occur more frequently in certain parts of the world, making travelers to foreign countries more likely potential victims. As past events have shown, terrorists have reached new levels of organization, sophistication, and violence—their tactics and techniques are always changing and will continue to be a challenge to neutralize. Accordingly, we must remain diligent in applying the proper protective measures.

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You and your family are an important part our military. This guide will not ensure immunity from terrorism, but by practicing these techniques and proven security habits, the possibility of becoming a target will be reduced. Defensive awareness and personal security regarding terrorism are responsibilities of everyone assigned to DOD. As members of the military community, you are highly valuable yet most valuable resource. Constant awareness can help protect all members of the military family from acts of terrorism.



HENRY H. SHELTON
Chairman
of the Joint Chiefs of Staff

Joint Staff Guide 5260

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STEPS TO COMBAT TERRORISM

Keep a Low Profile

Your dress, conduct, and mannerisms should not attract attention. Make an effort to blend into the local environment. Avoid publicity and don't go out in large groups. Stay away from civil disturbances and demonstrations.

Be Unpredictable

Vary your route to and from work and the time you leave and return home. Vary the way you dress. Don't exercise at the same time and place each day, never alone, on deserted streets, or country roads. Let people close to you know where you are going what you'll be doing, and when you should be back.

Be Alert

Watch for anything suspicious or out of place. Don't give personal information over the telephone. If you think you are being followed, go to a preselected secure area. Immediately report the incident to the military/security police or law enforcement agencies. In overseas areas without such above agencies report the incident to the Security Officer or the Military Attache at the U.S. Embassy.

Section I. General Security Checklist

- Instruct your family and associates not to provide strangers with information about you or your family.
- Avoid giving unnecessary personal details to anyone.
- Be alert to strangers who are on government property for no apparent reason. Report all suspicious persons loitering near your office; attempt to provide a complete description of the person and/or vehicle to policy or security.
- Vary daily routines, such as departure times and routes to and from work, to avoid habitual patterns.
- Refuse to meet with strangers outside your work place.
- Always advise associates or family members of your destination and the anticipated time of arrival when leaving the office or home.
- Don't open doors to strangers.
- Memorize key phone numbers—office, home, police, security, etc.
- Be cautious about giving out information regarding family travel plans or security measures and procedures.
- Learn and practice a few key phrases in the native language, such as “I need a policeman, doctor,” etc.

House, Home, and Family Security

Although spouses and children are seldom targeted by terrorists, they should practice basic precautions for their personal security. Familiarize your family with the local terrorist threat and regularly review the protective measures and techniques listed in this handbook. Ensure everyone in the family knows what to do in an emergency.

Tips for the Family at Home

- Restrict the possession of house keys. Change locks if keys are lost or stolen and when moving into a previously occupied residence.
- Lock all entrances at night, including the garage. Keep the house locked, even if you are at home.
- Destroy all envelopes or other items that indicated your name and rank.
- Develop friendly relations with your neighbors.
- Don't draw attention to yourself. Be considerate of neighbors.
- Avoid frequent exposure on balconies and near windows.

Be Suspicious

- Be alert to public works crews and other foreign nationals requesting access to residence; check their identities through a peep-hole before allowing entry.
- Be cautious about peddlers and strangers.

- Write down license numbers of suspicious vehicles; note descriptions of occupants.
- Treat with suspicion any inquiries from strangers concerning the whereabouts or activities of family members.
- Report all suspicious activity to Military/Security Police or local law enforcement.

Telephone Security

- Post emergency numbers on the telephone and preprogram phone numbers where possible:

Military/Security Police: _____

Local Police: _____

Fire Department: _____

Hospital: _____

Ambulance: _____

- Do not answer your telephone with your name and rank.
- Report all threatening phone calls to security officials and telephone company.

When Going Out Overseas

- Travel in small groups as much as possible. Avoid high risk areas such as demonstrations, and vary movements so as not to be predictable.
- Try to be inconspicuous when using public transportation and facilities. Dress, conduct, and mannerisms should not attract attention.
- Do not be curious about spontaneous gatherings or demonstrations. Avoid them.

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- Stay away from known trouble or disreputable places; visit only reputable establishments, but don't frequent the same off-base locations (in particular, known, U.S.-associated locales).
- Know emergency numbers and how to use the local telephone system.

Special Precautions for Children

- Know where your children are all the time.
- Never leave young children alone or unattended. Be certain they are in the care of a trustworthy person.
- If it is necessary to leave children at home, keep the house well lighted and notify the neighbors.
- Instruct children to keep doors and windows locked, and to never admit strangers.
- Teach children how to contact the police or a neighbor in an emergency.
- Advise your children to:
 - Never leave home without telling you where they will be and who will accompany them.
 - Travel in pairs or groups.
 - Avoid isolated areas.
 - Use locally approved play areas where recreational activities are supervised by responsible adults and where police protection is readily available.
 - Refuse automobile rides from strangers and refuse to accompany strangers anywhere on foot even if the strangers say mom or dad sent them, or said it was "okay."

- Report immediately to the nearest person of authority (parent, teacher, police) anyone who attempts to molest or annoy them.

Security Precautions When You're Away

- Leave the house with a lived-in look.
- Stop deliveries of or forward mail to a neighbor's home.
- Don't leave notes on doors.
- Don't hide keys outside house.
- Use a timer (appropriate to local electricity) to turn lights on and off at varying times and locations.
- Leave radio on.
- Hide valuables.
- Notify the police or trusted neighbor of your absence.
- Ask a trusted friend/neighbor to periodically check residence.

Suspicious Packages or Mail

- Suspicious characteristics to look for include:
 - An unusual or unknown place of origin.
 - No return address.
 - An excessive amount of postage.
 - Abnormal or unusual size.
 - Oily stains on the package.
 - Wires or strings protruding from or attached to an item.
 - Incorrect spelling on the package label.

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- Differing return address and postmark.
 - Appearance of foreign style handwriting.
 - Peculiar odor. (Many explosive used by terrorists smell like shoe polish or almonds.)
 - Unusual heaviness or lightness.
 - Uneven balance or shape.
 - Springiness in the top, bottom, or sides.
- Never cut tape, strings or other wrappings on a suspect package or immerse a suspected letter or package in water. Either action could cause an explosive device to detonate.
 - Never touch or move a suspicious package or letter.
 - Report any suspicious packages or mail to security officials immediately.

Domestic Employees

- Conduct a security background check with local police, neighbors, and friends.
- Inform employees about security responsibilities.
- Instruct them which phone or other means of communication to use in an emergency.
- Do not discuss travel plans or sensitive topics within earshot of domestic employees who have no need to know.
- Discuss duties in friendly, firm manner.
- Give presents or gratuities according to local customs.

Residential Security

- Exterior grounds:
 - Do not put your name on the outside of your residence or mailbox.
 - Have good lighting.
 - Control vegetation to eliminate hiding places.
- Entrances and exits should have:
 - Solid doors with deadbolt locks.
 - One-way peep-holes in door.
 - Bars and locks on skylights.
 - Metal grating on glass doors and ground floor windows, with interior release mechanisms that are not reachable from outside.
- Interior features:
 - Alarm and intercom systems.
 - Fire extinguishers.
 - Medical and first aid equipment.
- Other desirable features:
 - A clear view of approaches.
 - More than one access road.
 - Off-street parking.
 - High (6-8 feet) perimeter wall or fence.

Ground Transportation Security

Criminal and terrorist acts against individuals usually occur outside the home and after the victim's habits have been established. Your most predictable habit is the route of travel from home to duty station or to commonly frequented local facilities.

Vehicle Overseas

- Select a plain car; avoid the “rich American” look.
- Consider not using a government car that announces ownership.
- Do not display decals with military or unit affiliations on vehicle.
- Do not openly display military equipment or field gear in your vehicle.

Auto Maintenance

- Keep vehicle in good repair.
- Always keep gas tank at least half full.
- Ensure tires have sufficient tread.

Parking Your Car

- Always lock your car.
- Don't leave your car on the street overnight, if possible.
- Never get out without checking for suspicious persons. If in doubt, drive away.
- Leave only the ignition key with parking attendant.

- Don't leave garage doors open or unlocked.
- Use a remote garage door opener if available. Enter and exit your car in the security of the closed garage.

On the Road

- Before leaving buildings to get into your vehicle, check the surrounding area to determine if anything of a suspicious nature exists. Display the same wariness before exiting your vehicle.
- Prior to getting into a vehicle, check beneath it for any tampering or bombs by looking for wires, tape, or anything unusual.
- If possible, vary routes to work and home.
- Avoid late night travel.
- Travel with companions.
- Avoid isolated roads or dark alleys when possible.
- Habitually ride with seatbelts buckled, doors locked, and windows closed.
- Do not allow your vehicle to be boxed in; maintain a minimum 8-foot interval between you and the vehicle in front; avoid the inner lanes. Be alert while driving or riding.
- Know how to react if you are being followed:
 - Check during turns for confirmation of surveillance.
 - Do not stop or take other actions which could lead to confrontation.
 - Do not drive home. If necessary, go to the nearest military base or police station.
 - Get description of car and its occupants.
 - Report incident to military/security police.

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- Recognize events that signal the start of an attack. When one of these events occurs, start mentally preparing a course of action in case an attack develops. These events may include, but are not limited to:
 - Cyclist falling in front of your car.
 - Flagman or workman stopping your car.
 - Unusual or false police or government checkpoint.
 - Fake police or government checkpoint.
 - Disabled vehicle/accident victims on the road.
 - Unusual detours.
 - An accident in which your car is struck.
 - Cars or pedestrian traffic that box you in.
 - Sudden activity or gunfire.
- Know what to do if under attack in a vehicle:
 - Without subjecting yourself, passengers, or pedestrians to harm, try to draw attention to your car by sounding the horn.
 - Put another vehicle between you and your pursuer.
 - Execute immediate turn and escape; jump the curb at 30-45 degree angle, 35 mph maximum.
 - Ram blocking vehicle if necessary.
 - Go to closest safehaven.
 - Report incident to military/security police.

Commercial Buses, Trains, and Taxis

- Vary mode of commercial transportation.
- Select busy stops.
- Do not always use the same taxi company.
- Do not let someone you don't know direct you to a specific cab.
- Ensure taxi is licensed, and has safety equipment (seatbelts at a minimum).
- Ensure face of driver and picture on license are the same.
- Try to travel with a companion.
- If possible, specify the route you want the taxi to follow.

Traveling Defensively by Air

Air travel, particularly through high risk airports or countries, poses security problems different from those of ground transportation. Here, too, simple precautions can reduce the hazards of a terrorist assault.

Making Travel Arrangements

- Get a threat briefing from your security officer, antiterrorism training officer, or force protection officer prior to traveling in a high risk area. Your force protection officer will know which area DOD considers a high risk area.
- Before traveling, consult the DOD Foreign Clearance Guide to ensure you know and can meet all requirements for travel to a particular country.
- Use military air or U.S. flag carriers.

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- Avoid scheduling through high risk areas; if necessary, use foreign flag airlines and/or indirect routings to avoid high risk airports.
- Do not use rank or military address on tickets, travel documents, or hotel reservations.
- Select a window seat, which would offer more protection since aisle seats are closer to the hijackers' movements up and down the aisle.
- Rear seats also offer more protection since they are farther from the center of hostile action which is often near the cockpit.
- Seats at an emergency exit may provide an opportunity to escape.
- Avoid off-base hotels; use government quarters or contracted hotels.

Personal Identification

- Do not discuss your military affiliation with anyone.
- You must have proper identification to show airline and immigration officials. Consider use of a tourist passport, if you have one with necessary visas, providing the country you are visiting allows it.
- If you use a tourist passport, consider placing your official passport, military ID, travel orders, and related documents in your checked luggage, not in your wallet or briefcase.
- If you must carry these documents on your person, select a hiding place onboard the aircraft to “ditch” them in case of a hijacking.
- Do not carry classified documents unless they are absolutely mission-essential.

Luggage

- Use plain, civilian luggage; avoid military-looking bags such as B-4 bags and duffel bags.
- Remove all military patches, logos, or decals from your luggage and briefcase.
- Ensure luggage tags don't show your rank or military address.
- Do not carry official papers in your briefcase.

Clothing

- Travel in conservative civilian clothing when using commercial transportation or when traveling military airlift if you are to connect with a flight at a commercial terminal in a high risk area.
- Don't wear distinct military items such as organizational shirts, caps, or military issue shoes or glasses.
- Don't wear U.S.-identified items such as cowboy hats or boots, baseball caps, American logo T-shirts, jackets, or sweatshirts.
- Wear a long-sleeved shirt if you have a visible U.S.-affiliated tattoo.

Precautions at the Airport

- Arrive early; watch for suspicious activity.
- Look for nervous passengers who maintain eye contact with others from a distance. Observe what people are carrying. Note behavior not consistent with that of others in the area.

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- No matter where you are in the terminal, identify objects suitable for cover in the event of attack—pillars, trash cans, luggage, large planters, counters, and furniture can provide protection.
- Proceed through security checkpoints as soon as possible.
- Avoid secluded areas that provide concealment for attackers.
- Be aware of unattended baggage anywhere in the terminal.
- Be extremely observant of personal carry-on luggage. Thefts of briefcases designed for laptop computers are increasing at airports worldwide. Likewise, luggage not properly guarded provides an opportunity for a terrorist to place an unwanted object or device in your carry-on bag. As much as possible, do not pack anything you cannot afford to lose; if the documents are important, make a copy and carry the copy.
- Observe the baggage claim area from a distance. Do not retrieve your bags until the crowd clears. Proceed to the customs lines at the edge of the crowd.
- Report suspicious activity to the airport security personnel.

Actions if Attacked in an Airport

- Dive for cover. Do not run. Running increases the probability of shrapnel hitting vital organs or the head.
- If you must move, belly crawl or roll. Stay low to the ground, using available cover.
- If you see grenades, seek immediate cover, lay flat on the floor, feet and knees tightly together with soles toward the grenade. In this position, your shoes, feet, and legs protect the rest of your body. Shrapnel will rise in a cone from the point of detonation, passing over your body.

- Place arms and elbows next to your ribcage to protect your lungs, heart, and chest. Cover your ears and head with your hands to protect neck, arteries, ears, and skull.
- Responding security personnel will not be able to distinguish you from attackers. Do not attempt to assist them in any way. Lay still until told to get up.

Actions if Hijacked

- Remain calm, be polite and cooperate with your captors.
- Be aware that all hijackers may not reveal themselves at the same time. A lone hijacker may be used to draw out security personnel for neutralization by other hijackers.
- Surrender your tourist passport in response to a general demand for identification.
- Don't offer any information; confirm your military status if directly confronted with the fact. Be prepared to explain that you always travel on your personal passport and that no deceit was intended.
- Discreetly dispose of any military or U.S.-affiliated documents.
- Don't draw attention to yourself with sudden body movements, verbal remarks, or hostile looks.
- Prepare yourself for possible verbal and physical abuse, and lack of food, drink, and sanitary conditions.
- If permitted, read, sleep, or write to occupy your time.
- Discreetly observe your captors and memorize their physical descriptions. Include voice patterns and language distinctions, as well as clothing and unique physical characteristics.
- Cooperate with any rescue attempt. Lie on the floor until told to rise.

Taken Hostage—You Can Survive!

The chances of you being taken hostage are truly remote. Even better news is that survival rates are high. But should it happen, remember, your personal conduct can influence treatment in captivity. The Department of State has responsibility for all U.S. government personnel and their dependents in overseas areas. Should a hostage situation develop, the Department of State will immediately begin to take action according to pre-conceived plans to attempt to release the hostages. If kidnapped and taken hostage, the hostage has three very important rules to follow:

- 1. Analyze the problem so as not to aggravate the situation.**
- 2. Make decisions to keep the situation from worsening.**
- 3. Maintain discipline to remain on the best terms with the captors.**

Preparing the Family

- Have your family affairs in order, including an up-to-date will, appropriate powers of attorney, and measures taken to ensure family financial security.
- Issues such as continuing the children's education, family relocation, and disposition of property should be discussed with family members.
- Your family should know that talking about your military affiliation to non-DOD people may place you, or them, in great danger.

- They must be convinced the U.S. government will work to obtain your safe release.
- Don't be depressed if negotiation efforts appear to be taking a long time. Remember, your chances of survival actually increase with time.

Stay in Control

- Regain your composure as soon as possible and recognize your fear. Your captors are probably as apprehensive as you, so your actions are important.
- Take mental notes of directions, times of transit, noises, and other factors to identify your location.
- Note the number, physical description, accents, habits, and rank structure of your captors.
- Anticipate isolation and efforts to disorient and confuse you.
- To the extent possible, try to mentally prepare yourself for the situation ahead. Stay mentally active.

Dealing with Your Captors

- Do not aggravate them.
- Do not get into political or ideological discussions.
- Comply with instructions, but always maintain your dignity.
- Attempt to develop a positive relationship with them.
- Be proud of your heritage, government, and military association, but use discretion.

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Keep Occupied

- Exercise daily.
- Read anything and everything.
- Eat what is offered to you. You must maintain your strength.
- Establish a slow, methodical routine for every task.

Being Interrogated

- If you need to make up a story to protect sensitive information, take a simple, tenable position you will remember and stick to it.
- Be polite and keep your temper.
- Give short answers. Talk freely about nonessential matters, but be guarded when conversations turn to matters of substance.
- Do not be lulled by a friendly approach. Remember, one terrorist may play “Good Guy” and one “Bad Guy.” This is the most common interrogation technique.
- Briefly affirm your belief in basic democratic principles.
- If forced to present terrorist demands to authorities, in writing or on tape, state clearly that the demands are from your captors.
- Avoid making a plea on your behalf.

During Rescue

- Drop to the floor and be still. Avoid sudden moves. Wait for instruction.
- Once released, avoid derogatory comments about your captors; such remarks will only make things harder for those still held captive.

Responding to Chemical Threats

Chemical agents are generally liquids, often aerosolized, and although some effects are delayed, most induce an immediate response. There are many different potential chemical agents that a terrorist could use as a weapon. Nonetheless, the following broad generalizations can be made:

- Although food or water contamination is possible, inhalation is the most likely method of delivery. Protection of the breathing airway is the single most important factor of defense.
- Many likely agents are heavier than air and will tend to stay close to the ground. This dictates an upward safety area strategy.
- Generally, chemical agents tend to present an immediate noticeable effect. Medical attention should be sought immediately, even if exposure is thought to be limited.
- Most chemical agents that present an inhalation hazard will break down fairly rapidly when exposed to sun, diluted with water, or dissipated in high winds.
- No matter what the agent or particular concentration, evacuation—preferable upwind from the area of attack—is always advisable unless you are properly equipped with appropriate breathing device and protective clothing.

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Detection

A chemical attack or incident will not always be immediately apparent because many agents are odorless and colorless. Be alert to the possible presence of an agent. Indicators of such an attack includes:

- Droplets of oily film on surfaces.
- Unusual dead or dying animals in the area.
- Unusual liquid sprays or vapors.
- Unexplained odors (smell of bitter almonds, peach kernels, newly mowed hay, or green grass).
- Unusual or unauthorized spraying in the area.
- Low-lying clouds of fog unrelated to weather, clouds of dust; or suspended, possible colored particles.
- People dressed unusually (long-sleeved shirts or overcoats in the summertime) or wearing breathing protection particularly in areas where large numbers of people tend to congregate, such as subways, or stadiums.
- Victims displaying symptoms of nausea, difficulty breathing, convulsions, disorientation, or patterns of illness inconsistent with natural disease.

Defense in Case of Chemical Attack

Protection of breathing airways is the single most important thing a person can do in the event of chemical attack. In most cases, absent a gas mask, the only sure way to protect an airway is to put distance between you and the source of the agent. While evacuating the area, cover your mouth and nose with a handkerchief, coat sleeve, or any piece of cloth to provide some moderate means of protection. Other steps are:

- Stay alert. Early detection enhances survival.
- Move upwind from the source of attack.
- If evacuation from the immediate area is impossible, move outdoors or to an interior room on a higher floor. Remember, many agents are heavier than air and will tend to stay close to the ground.
- If indoors and no escape outside is possible, close all windows and exterior doors while also shutting down the air conditioning or heating systems to prevent circulation of air.
- Cover your mouth and nose. If gas masks are not available, use a surgical mask or handkerchief. An improvised mask can be made by soaking a clean cloth in a solution of one tablespoon of baking soda in a cup of water. Not highly effective, it may provide some protection.
- Cover bare arms and legs and make sure any cuts or abrasions are covered and bandaged.
- If splashed with an agent, immediately wipe it off using copious amounts of warm soapy water or a diluted 10:1 bleach solution.

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- If water is not available, talcum powder or flour are also excellent means of decontamination of liquid agents. Sprinkle the flour or powder liberally over the affected skin area, wait 30 seconds, and gently wipe off with a rag or gauze pad.

No matter what the agent or concentration, medical attention should be sought immediately, even if the exposure is thought to be limited.

**Section II. DOD Policy Guidance on the
Code of Conduct for Personnel
Subject to Terrorist Activity**

Department of Defense

**DERIVED FROM DOD DIRECTIVE 1300.7
AND DOD INSTRUCTION 1300.21**

A. Policy: This policy concerning the conduct of U.S. military personnel isolated from U.S. control applies at all times. U.S. military personnel finding themselves isolated from U.S. control are required to do everything in their power to follow DOD policy. The DOD policy in this situation is to survive with honor.

B. Scope: The Code of Conduct is a moral guide designed to assist military personnel in combat or being held prisoners of war to live up to the ideals contained in the DOD policy. This guidance shall assist U.S. military personnel who find themselves isolated from U.S. control in peacetime, or in a situation not related specifically in the Code of Conduct.

C. Rationale: U.S. military personnel, because of their wide range of activities, are subject to peacetime detention by unfriendly governments or captivity by terrorist groups. This guidance seeks to help U.S. military personnel survive these situations with honor and does not constitute a means for judgment or replace the UCMJ as a vehicle for enforcement of proper conduct. This guidance, although not exactly the same as

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the Code of Conduct, in some areas, applies only during peacetime. The term peacetime means that armed conflict does not exist or armed conflict does exist, but the United States is not involved directly.

D. General: U.S. military personnel captured or detained by hostile foreign governments or terrorists are often held for purposes of exploitation of the detainees or captives, or the U.S. Government, or all of them. This exploitation can take many forms, but each form of exploitation is designed to assist the foreign government or the terrorist captors. In the past, detainees have been exploited for information and propaganda efforts, confessions to crimes never committed, all of which assisted or lent credibility to the detainers. Governments also have been exploited in such situation to make damaging statements about themselves or to force them to appear weak in relation to other governments. Ransoms for captives of terrorists have been paid by government and such payments have improved terrorist finances, supplies, status and operations, often prolonging the terror carried on by such groups.

E. Responsibility: U.S. military personnel, whether detainees or captives, can be assured that the U.S. Government will make every good faith effort to obtain their earliest release. Faith in one's country and its way of life, faith in fellow detainees or captives, and faith in one's self are critical to surviving with honor and resisting exploitation. Resisting exploitation and having faith in these areas are the responsibility of all Americans. On the other hand, the destruction of such faith must be the assumed goal of all captors determined to maximize their gains from a detention or captive situation.

F. Goal: Every reasonable stop must be taken by U.S. military personnel to prevent exploitation of themselves and the U.S. Government. If exploitation cannot be prevented completely, every step must be taken to limit exploitation as much as possible. In a sense, detained U.S. military personnel often are catalysts for their own release, based upon their ability to become unattractive sources or exploitation. That is, one that resists successfully may expect detainers to lose interest in further exploitation attempts. Detainees or captives very often must make their own judgments as to which actions will increase their chances of returning home with honor and dignity. Without exception, the military member who can say honestly that he/she has done his/her utmost in a detention or captive situation to resist exploitation upholds DOD policy, the founding principles of the U.S., and the highest traditions of military service.

G. Military Bearing and Courtesy: Regardless of the type of detention or captivity, or harshness of treatment, U.S. military personnel will maintain their military bearing. They should make every effort to remain calm and courteous, and project personal dignity. This is particularly important during the process of capture and the early stages of internment when the captor may be uncertain of his control of the captives.

H. Classified Information: There are no circumstances in which a detainee or captive should voluntarily give classified information or materials to those unauthorized to receive them. To the utmost of their ability, U.S. military personnel held as detainees, captives, or hostages will protect all classified information. An unauthorized disclosure of classified information, for whatever reason, does not justify further disclosures. Detainees, captives and hostages must resist, to the utmost of

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their ability, each and every attempt by their captor to obtain such information.

I. Chain of Command: In group detention, captivity, or hostage situations military detainees, captives or hostages will organize, to the fullest extent possible, in a military manner under the senior military member present and eligible to command. The importance of such organization cannot be over emphasized. Historically, in both peacetime and wartime, establishment of a military chain of command has been a tremendous source of strength for all captives. Every effort will be made to establish and sustain communications with other detainees, captives, or hostages. Military detainees, captives, or hostages will encourage civilians being held with them to participate in the military organization and accept the authority of the senior military member. In some circumstances, such as embassy duty, military members may be under the direction of a senior U.S. civilian official. Notwithstanding such circumstances, the senior military member still is obligated to establish, as an entity, a military organization and to ensure that the guidelines in support of the DOD policy to survive with honor are not compromised.

J. Guidance for Detention by Governments: Once in the custody of a hostile government, regardless of the circumstances that preceded the detention situation, detainees are subject to the laws of that government. In light of this, detainees will maintain military bearing and should avoid any aggressive, combative, or illegal behavior. The latter could complicate their situation, their legal status, and any efforts to negotiate a rapid release.

1. As American citizens, detainees should be allowed to be placed in contact with U.S. or friendly embassy personnel. Thus, detainees should ask immediately and continually to see U.S. Embassy personnel or a representative of an allied or neutral government.

2. U.S. military personnel who become lost or isolated in a hostile foreign country during peacetime will not act as combatants during evasion attempts. Since a state of armed conflict does not exist, there is no protection afforded under the Geneva Convention. The civil laws of that country apply. However, delays in contacting local authorities can be caused by injuries affecting the military member's mobility, disorientation, fear of captivity, or desire to see if a rescue attempt could be made.

3. Since the detainer's goals may be maximum political exploitation, U.S. military personnel who are detained must be extremely cautious of their captors in everything they say and do. In addition to asking for a U.S. representative, detainees should provide name, rank, social security number, date of birth, and the innocent circumstances leading to their detention. Further discussions should be limited to and revolve around health and welfare matters, conditions of their fellow detainees, and going home.

4. Historically, the detainers have attempted to engage military captives in what may be called a “battle of wits” about seemingly innocent and useless topics as well as provocative issues. To engage any detainer in such useless, if not dangerous, dialog only enables a captor to spend more time with the detainee. The detainee should consider dealings with his/her captors as a “battle of wits” [sic: wills]—the detainee’s will to restrict discussion to those items that relate to the detainee's treatment and return

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home—against the detainer's will to discuss irrelevant, if not dangerous, topics.

5. As there is no reason to sign any form of document in peacetime detention, detainees will avoid signing any document or making any statement, oral or otherwise. If a detainee is forced to make a statement or sign documents, he/she must provide as little information as possible and then continue to resist to the utmost of his/her ability. If a detainee writes or signs anything, such action should be measured against how it reflects upon the U.S. and the individual as a member of the military or how it could be misused by the detainer to further the detainer's ends.

6. Detainees cannot earn their release by cooperation. Release will be gained by the military member doing his/her best to resist exploitation, thereby reducing his/her value to a detainer, and thus prompting a hostile government to negotiate seriously with the U.S. Government.

7. U.S. military detainees should not refuse to accept release unless doing so requires them to compromise their honor or cause damage to the U.S. Government or its allies. Persons in charge of detained U.S. military personnel will authorize release of any personnel under almost all circumstances.

8. Escape attempts will be made only after careful consideration of the risk of violence, chance of success, and detrimental effects on detainees remaining behind. Jailbreak in most countries is a crime; thus, escape attempts would provide the detainer with further justification to prolong detention by charging additional violations of its criminal or civil law and result in bodily harm or even death to the detainee.

K. Guidance for Captivity by Terrorists: Capture by terrorists is generally the least predictable and structured form of peacetime captivity. The captor qualifies as an international criminal. The possible forms of captivity vary from spontaneous hijacking to a carefully planned kidnapping. In such captivities, hostages play a greater role in determining their own fate since the terrorists in many instances expect or receive no rewards for providing good treatment or releasing victims unharmed. If U.S. military personnel are uncertain whether captors are genuine terrorists or surrogates of government, they should assume that they are terrorists.

1. If assigned in or traveling through areas of known terrorist activity, U.S. military personnel should exercise prudent antiterrorist measures to reduce their vulnerability to capture. During the process of capture and initial internment, they should remain calm and courteous, since most casualties among hostages occur during this phase.

2. Surviving in some terrorist detentions may depend on hostages conveying a personal dignity and apparent sincerity to the captors. Hostages therefore may discuss nonsubstantive topics such as sports, family, and clothing to convey to the terrorist the captive's personal dignity and human qualities. They will make every effort to avoid embarrassing the United States and the host government. The purpose of this dialogue is for the hostage to become a "person" in the captor's eyes, rather than a mere symbol of their ideological hatred. Such a dialogue should strengthen the hostage's determination to survive and resist. A hostage also may listen actively to the terrorist's beliefs about his/her cause; however, they should never pander, praise, participate, or debate the terrorist's cause with him/her.

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3. U.S. military personnel held hostage by terrorists should accept release using guidance in subsection J7 above. U.S. military personnel must keep faith with their fellow hostages and conduct themselves accordingly. Hostages and kidnap victims who consider escape to be their only hope are authorized to make such attempts. Each situation will be different and the hostage must carefully weigh every aspect of a decision to attempt to escape.

Personal Data

Law enforcement agencies need timely and accurate information to effectively work for the release of hostages. Keep this data on hand, ready to give to the military security police.

Military Member or DOD Employee

Spouse

Full name: _____

Passport number: _____

SSN: _____

Rank: _____

Position: _____

Home address: _____

Phone: _____

Place of birth: _____

Date of birth: _____

Citizenship: _____

Race: _____

Height: _____

Weight: _____

Build: _____

Hair color: _____

Color eyes: _____

Languages spoken: _____

Medical requirements
or problems: _____

Medication required
and time intervals: _____

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Military Member or DOD Employee

Spouse

Provide three signature samples:

1. _____
2. _____
3. _____

Attach two photographs, one full length front view and one full length side view.

Attach one complete finger print card.

Child 1

Child 2

Full name: _____

Passport number: _____

SSN: _____

Rank: _____

Position: _____

Home address: _____

Phone: _____

Place of birth: _____

Date of birth: _____

Citizenship: _____

Race: _____

Height: _____

Weight: _____

Child 1

Child 2

Build: _____

Hair color: _____

Color eyes: _____

Languages spoken: _____

Medical requirements
or problems: _____

Medication
required and
time intervals: _____

Provide three signature samples:

1. _____

2. _____

3. _____

Automobiles or Recreational Vehicles

Car 1

Car 2

Make and year: _____

Color: _____

Model: _____

Doors: _____

Style: _____

License/State: _____

Vehicle ID: _____

Distinctive
markings: _____

Telephone Numbers

For additional information contact your ANTITERRORISM OFFICE.

Assistant Secretary of Defense

Special Operation and Low-Intensity Conflict
The Pentagon
Washington, D.C 20301-2500
(703) 693-2898/DSN: 223-2898

The Joint Staff

Attn: J34
Room 2E230, The Pentagon
Washington, D.C. 20318-3000
(703) 693-7520/DSN:223-7520

Army

Headquarters Department of the Army
(DAMO-ODL-FP)
400 Army, the Pentagon
Washington, D.C. 20310
(703) 695-8491/DSN: 225-8491

Navy

Chief of Naval Operations (N34)
The Pentagon
Washington, D.C. 20388-5384
(703) 697-2524/6033/DSN: 227-2524

Marine Corps

Headquarters USMC
POS-17
2 Navy Annex
Washington, D.C. 20380-1775
(703) 614-2180/DSN:224-2180

Air Force

Headquarters U.S. Air Force
Force Protection Division
1340 Air Force, Pentagon
Washington, D.C. 20330-1340
(703) 588-7933/DSN: 425-7933

U.S. Coast Guard

Commandant (G-OPD)
2100 Second St. SW
Washington, DC 20593-0001
(202) 267-0610

Appendix C

Antiterrorism Individual Protective Measures

This appendix contains a cut-and-fold, wallet-size card. These safety reminders could save your life.

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 <div style="border: 1px solid black; padding: 10px; text-align: center;"> <h1>Antiterrorism Individual Protective Measures</h1> </div>	<div style="text-align: center;">AT ALL TIMES</div> <ul style="list-style-type: none"> • Vary eating establishments. • Alternate shopping locations. • Do not establish any sort of pattern! • Avoid crowded areas. • Be especially alert exiting bars, restaurants, etc. • Know how to use the local phone system and carry "helpline change." • Know emergency phone numbers for police, ambulance, and hospital. • Know location of the US Embassy and other safe locations where you can find
<div style="border: 1px solid black; padding: 10px; text-align: center;"> <h1>Joint Chiefs of Staff</h1> </div> 	<div style="text-align: center;">BOMB INCIDENTS</div> <ul style="list-style-type: none"> • Be suspicious of objects found around the house, office or auto. • Check mail and packages for: <ul style="list-style-type: none"> - Unusual odors. - Too much wrapping. - Bulges, burrps or odd shapes. - No return or unfamiliar return address. - Incorrect spelling or poor typing. - Items sent "registered" or marked "personal." - Protruding wires or strings. - Unusually light or heavy packages. Do not immerse them in water. Doing so may cause them to explode. • Clear the area immediately. • Notify your chain of command.

<p style="text-align: center;">SECURITY WHILE TRAVELING</p>	<p style="text-align: center;">AT AIRPORT TERMINAL</p> <ul style="list-style-type: none"> • Use concealed bag tags. • Spend as little time as possible in airports. • Pass through the airport security checks quickly. Once through security, proceed to a lounge or other open area away from baggage lockers. If possible, sit with your back against a wall. • Remain alert. Be a "people watcher." <p style="text-align: center;">AT HOTELS</p> <ul style="list-style-type: none"> • Do not give room number to strangers. • Choose an inside hotel room. • Sleep away from street side windows. • Leave lights on when room is vacant. • Pull curtains. • Arrange know signals. • Answer telephone "hello." Do not use name and rank. • Lock before you exit. • If confronted, have a plan of action ready. • Occasionally exit/enter through the rear entrance. • Keep your room key in your possession at 	<p style="text-align: center;">FROM DOMICILE TO DUTY</p> <ul style="list-style-type: none"> • Alternate parking spaces. • Lock car when unattended. • Look for tampering. Look under your auto. • Be alert when opening door. • Keep gas tank at least half full. • If possible, alter routes and avoid choke points. • Plan "escape" route as you drive. • Watch maps/directions. • Do not pick up hitchhikers. • Drive with windows up and doors locked. <p style="text-align: center;">Remember : REMAIN ALERT.</p>
----------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Appendix D

Antiterrorism Individual Protective Measures When Traveling

Other Traveling Tips
<ul style="list-style-type: none">• Drive with windows up and doors locked.• Look for vehicle tampering.• Keep room key in your possession at all times.• Lock your hotel door.• Leave hotel room lights on when vacant.• Don't give hotel room numbers to strangers.• Sit with your back against the wall.• Spend as little time as possible in airports, sit• Wear inconspicuous clothing.
Antiterrorism Individual Protective Measures When Traveling
<ul style="list-style-type: none">• Vary your routines. Don't establish any patterns.• Avoid crowded areas.• Be alert when exiting bars, restaurants, etc.• Know location of US Embassy and other safe locations.• Know emergency numbers and how to use local phone system.• Remain alert. Be a people watcher.

Appendix E

Acronyms and Abbreviations

AT	antiterrorism
AOR	area of responsibility
FARC	Revolutionary Armed Forces of Colombia
FM	Field Manual
FMFRP	Fleet Marine Force Reference Publication
FMLN	Faribundo Marti Para la Liberacion Nacional
FP	force protection
ID	identification
JP	Joint Publication
LSD	lysergic acid diethylamide
MCIA	Marine Corps Intelligence Activity
MCO	Marine Corps Order
MCRP	Marine Corps Reference Publication
mph	miles per hour
NBC	nuclear, biological, chemical
NCIS	Naval Criminal Investigative Service
SSN	social security number
UCMJ	Uniform Code of Military Justice
VIP	very important person
WMD	weapons of mass destruction

Appendix F References and Related Publications

Joint Publications

Joint Publication 1-02	DOD Dictionary of Military and Associated Terms
Joint Staff Guide 5260	Service Member's Personal Protection Guide: A Self-Help Handbook to Combatting Terrorism While Overseas

Department of Defense Publications

DOD Directive 1300.7	Training and Education Measures Necessary to Support the Code of Conduct
DOD Publication 0-2000.12-H	Protection of DOD Personnel and Activities Against Acts of Terrorism and Political Turbulence

Marine Corps Reference Publication (MCRP)

3-02F/FM 21-76	Survival
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Marine Corps Order (MCO)

1510.144	Individual Training Standards (ITS) for Antiterrorism Force Protection (AT/FP) System
3302.1C	The Marine Corps Antiterrorism/Force Protection (AT/FP) Program

ARMY, MARINE CORPS, NAVY, AIR FORCE



**AIR LAND SEA
APPLICATION
CENTER**

***SURVIVAL,
EVASION,
AND
RECOVERY***

***MULTISERVICE
PROCEDURES FOR
SURVIVAL, EVASION, AND
RECOVERY***

**FM 21-76-1
MCRP 3-02H
NWP 3-50.3
AFTTP(I) 3-2.26**

JUNE 1999

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distribution is unlimited.

MULTISERVICE TACTICS, TECHNIQUES, AND PROCEDURES

QUICK REFERENCE CHECKLIST

Decide to Survive!

S - Size up the situation, surroundings, physical condition, equipment.
U - Use all your senses
R - Remember where you are.
V - Vanquish fear and panic.
I - Improvise and improve.
V - Value living.
A - Act like the natives.
L - Live by your wits.

1. Immediate Actions

- a. Assess immediate situation. **THINK BEFORE YOU ACT!**
- b. Take action to protect yourself from nuclear, biological, or chemical hazards (Chapter IX).
- c. Seek a concealed site.
- d. Assess medical condition; treat as necessary (Chapter V).
- e. Sanitize uniform of potentially compromising information.
- f. Sanitize area; hide equipment you are leaving.
- g. Apply personal camouflage.
- h. Move away from concealed site, zigzag pattern recommended.
- i. Use terrain to advantage, communication, and concealment.
- j. Find a hole-up site.

2. Hole-Up-Site (Chapter I)

- a. Reassess situation; treat injuries, then inventory equipment.
- b. Review plan of action; establish priorities (Chapter VI).
- c. Determine current location.
- d. Improve camouflage.
- e. Focus thoughts on task(s) at hand.
- f. Execute plan of action. Stay flexible!

Recommend inclusion of this manual in the aviator's survival vest.

3. Concealment (Chapter I)

- a. Select a place of concealment providing—
 - (1) Adequate concealment, ground and air.
 - (2) Safe distance from enemy positions and lines of communications (LOC).
 - (3) Listening and observation points.
 - (4) Multiple avenues of escape.
 - (5) Protection from the environment.
 - (6) Possible communications/signaling opportunities.
- b. Stay alert, maintain security.
- c. Drink water.

4. Movement (Chapters I and II)

- a. Travel slowly and deliberately.
- b. **DO NOT** leave evidence of travel; use noise and light discipline.
- c. Stay away from LOC.
- d. Stop, look, listen, and smell; take appropriate action(s).
- e. Move from one concealed area to another.
- f. Use evasion movement techniques (Chapter I).

5. Communications and Signaling (Chapter III)

- a. Communicate as directed in applicable plans/orders, particularly when considering transmitting **in the blind**.
- b. Be prepared to use communications and signaling devices on short notice.
- c. Use of communications and signaling devices may compromise position.

6. Recovery (Chapter IV)

- a. Select site(s) IAW criteria in theater recovery plans.
- b. Ensure site is free of hazards; secure personal gear.
- c. Select best area for communications and signaling devices.
- d. Observe site for proximity to enemy activity and LOC.
- e. Follow recovery force instructions.

FM 21-76-1
MCRP 3-02H
NWP 3-50.3
AFTTP(I) 3-2.26

FM 21-76-1 U.S. Army Training and Doctrine Command
Fort Monroe, Virginia
MCRP 3-02H Marine Corps Combat Development Command
Quantico, Virginia
NWP 3-50.3 Navy Warfare Development Command
Newport, Rhode Island
AFTTP(I) 3-2.26 Headquarters Air Force Doctrine Center
Maxwell Air Force Base, Alabama

29 JUNE 1999

Survival, Evasion, and Recovery

Multiservice Procedures for
Survival, Evasion, and Recovery

Note: This *UNCLASSIFIED* publication is designed to provide Service members quick-reference survival, evasion, and recovery information. See Appendix B for the scope, purpose, application, implementation plan, and user information.

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THE CODE OF CONDUCT

ARTICLE I

I am an American, fighting in the forces which guard my country and our way of life. I am prepared to give my life in their defense.

ARTICLE II

I will never surrender of my own free will. If in command, I will never surrender the members of my command while they still have the means to resist.

ARTICLE III

If I am captured, I will continue to resist by all means available. I will make every effort to escape and aid others to escape. I will accept neither parole nor special favors from the enemy.

ARTICLE IV

If I become a prisoner of war, I will keep faith with my fellow prisoners. I will give no information or take part in any action which might be harmful to my comrades. If I am senior, I will take command. If not, I will obey the lawful orders of those appointed over me and will back them up in every way.

ARTICLE V

When questioned, should I become a prisoner of war, I am required to give name, rank, service number and date of birth. I will evade answering further questions to the utmost of my ability. I will make no oral or written statements disloyal to my country and its allies or harmful to their cause.

ARTICLE VI

I will never forget that I am an American, fighting for freedom, responsible for my actions, and dedicated to the principles which made my country free. I will trust in my God and in the United States of America.

Chapter I

EVASION

1. Planning

- a. Review the quick reference checklist on the inside cover.
- b. Guidelines for successful evasion include—
 - (1) Keeping a positive attitude.
 - (2) Using established procedures.
 - (3) Following your evasion plan of action.
 - (4) Being patient.
 - (5) Drinking water (**DO NOT** eat food without water).
 - (6) Conserving strength for critical periods.
 - (7) Resting and sleeping as much as possible.
 - (8) Staying out of sight.
- c. The following odors stand out and may give an evader away:
 - (1) Scented soaps and shampoos.
 - (2) Shaving cream, after-shave lotion, or other cosmetics.
 - (3) Insect repellent (camouflage stick is least scented).
 - (4) Gum and candy (smell is strong or sweet).
 - (5) Tobacco (odor is unmistakable).
- d. Where to go (initiate evasion plan of action):
 - (1) Near a suitable area for recovery.
 - (2) Selected area for evasion.
 - (3) Neutral or friendly country or area.
 - (4) Designated area for recovery.

2. Camouflage

- a. Basic principles:
 - (1) Disturb the area as little as possible.
 - (2) Avoid activity that reveals movement to the enemy.
 - (3) Apply personal camouflage.
- b. Camouflage patterns (**Figure I-1**):
 - (1) Blotch pattern.
 - (a) Temperate deciduous (leaf shedding) areas.
 - (b) Desert areas (barren).
 - (c) Snow (barren).
 - (2) Slash pattern.
 - (a) Coniferous areas (broad slashes).

- (b) Jungle areas (broad slashes).
- (c) Grass (narrow slashes).
- (3) Combination. May use blotched and slash together.



Figure I-1. Camouflage Patterns

- c. Personal camouflage application follows:
 - (1) Face. Use dark colors on high spots and light colors on any remaining exposed areas. Use a hat, netting, or mask if available.
 - (2) Ears. The insides and the backs should have **2** colors to break up outlines.
 - (3) Head, neck, hands, and the under chin. Use scarf, collar, vegetation, netting, or coloration methods.
 - (4) Light colored hair. Give special attention to conceal with a scarf or mosquito head net.
- d. Position and movement camouflage follows:
 - (1) Avoid unnecessary movement.
 - (2) Take advantage of natural concealment:
 - (a) Cut foliage fades and wilts, change regularly.
 - (b) Change camouflage depending on the surroundings.
 - (c) **DO NOT** select vegetation from same source.
 - (d) Use stains from grasses, berries, dirt, and charcoal.
 - (3) **DO NOT** over camouflage.
 - (4) Remember when using shadows, they shift with the sun.

- (5) Never expose shiny objects (like a watch, glasses, or pens).
- (6) Ensure watch alarms and hourly chimes are turned off.
- (7) Remove unit patches, name tags, rank insignia, etc.
- (8) Break up the outline of the body, “V” of crotch/armpits.
- (9) Conduct observation from a prone and concealed position.

3. Shelters

- a. Use camouflage and concealment.
- b. Locate carefully—easy to remember acronym: **BLISS**.

<p>B - Blend L - Low silhouette I - Irregular shape S - Small S - Secluded location</p>

- (1) Choose an area—
 - (a) Least likely to be searched (drainages, rough terrain, etc.) and blends with the environment.
 - (b) With escape routes (**DO NOT** corner yourself).
 - (c) With observable approaches.
- (2) Locate entrances and exits in brush and along ridges, ditches, and rocks to keep from forming paths to site.
- (3) Be wary of flash floods in ravines and canyons.
- (4) Conceal with minimal to no preparation.
- (5) Take the direction finding threat into account before transmitting from shelter.
- (6) Ensure overhead concealment.

4. Movement

- a. A moving object is easy to spot. If travel is necessary—
 - (1) Mask with natural cover (**Figure I-2**).
 - (2) Use the military crest.
 - (3) Restrict to periods of low light, bad weather, wind, or reduced enemy activity.

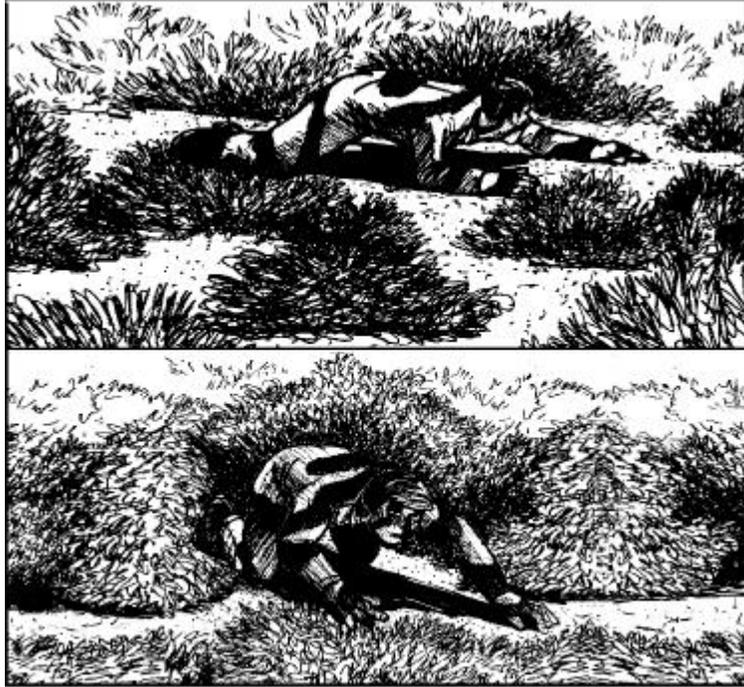


Figure I-2. Ground Movement

- (4) Avoid silhouetting (**Figure I-3**).
- (5) At irregular intervals—
 - (a) **STOP** at a point of concealment.
 - (b) **LOOK** for signs of human or animal activity (smoke, tracks, roads, troops, vehicles, aircraft, wire, buildings, etc.). Watch for trip wires or booby traps and avoid leaving evidence of travel. Peripheral vision is more effective for recognizing movement at night and twilight.
 - (c) **LISTEN** for vehicles, troops, aircraft, weapons, animals, etc.
 - (d) **SMELL** for vehicles, troops, animals, fires, etc.



Figure I-3. Avoid Silhouetting

- (6) Employ noise discipline; check clothing and equipment for items that could make noise during movement and secure them.
 - b. Break up the human shape or recognizable lines.
 - c. Route selection requires detailed planning and special techniques (irregular route/zigzag) to camouflage evidence of travel.
 - d. Some techniques for concealing evidence of travel follows:
 - (1) Avoid disturbing the vegetation above knee level.
 - (2) **DO NOT** break branches, leaves, or grass.
 - (3) Use a walking stick to part vegetation and push it back to its original position.
 - (4) **DO NOT** grab small trees or brush. (This may scuff the bark or create movement that is easily spotted. In snow country, this creates a path of snowless vegetation revealing your route.)
 - (5) Pick firm footing (carefully place the foot lightly but squarely on the surface to avoid slipping). **TRY NOT TO**—
 - (a) Overturn ground cover, rocks, and sticks.
 - (b) Scuff bark on logs and sticks.
 - (c) Make noise by breaking sticks. (Cloth wrapped around feet helps muffle this.)
 - (d) Mangle grass and bushes that normally spring back.

- (6) Mask unavoidable tracks in soft footing by—
 - (a) Placing tracks in the shadows of vegetation, downed logs, and snowdrifts.
 - (b) Moving before and during precipitation allows tracks to fill in.
 - (c) Traveling during windy periods.
 - (d) Taking advantage of solid surfaces (logs, rocks, etc.) leaving less evidence of travel.
 - (e) Patting out tracks lightly to speed their breakdown or make them look old.
- (7) Secure trash or loose equipment—hide or bury discarded items. (Trash or lost equipment identifies who lost it.)
- (8) Concentrate on defeating the handler if pursued by dogs.
- e. Penetrate obstacles as follows:
 - (1) Enter deep ditches feet first to avoid injury.
 - (2) Go around chain-link and wire fences. Go under fence if unavoidable, crossing at damaged areas. **DO NOT** touch fence; look for electrical insulators or security devices.
 - (3) Penetrate rail fences, passing under or between lower rails. If impractical, go over the top, presenting as low a silhouette as possible **(Figure I-4)**.
 - (4) Cross roads after observation from concealment to determine enemy activity. Cross at points offering concealment such as bushes, shadows, bend in road, etc. Cross in a manner leaving your footprints parallel (cross step sideways) to the road. **(Figure I-5)**
 - (5) Use same method of observation for railroad tracks that was used for roads. Next, align body parallel to tracks with face down, cross tracks using a semi-pushup motion. Repeat for the second track. **(Figure I-6)**.

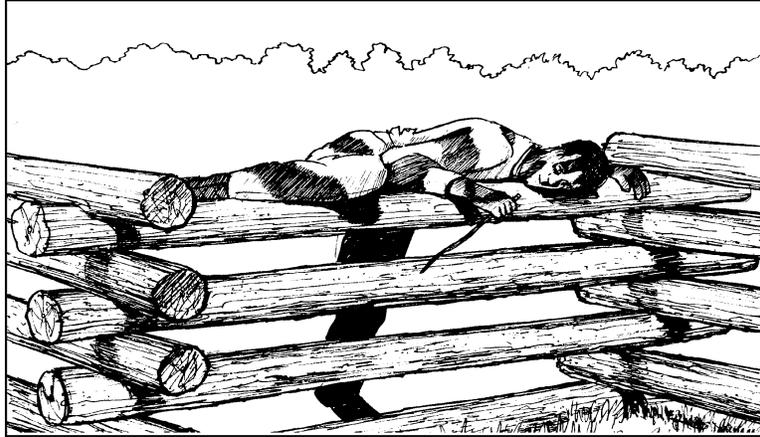


Figure I-4. Rail Fences



Figure I-5. Road Crossing

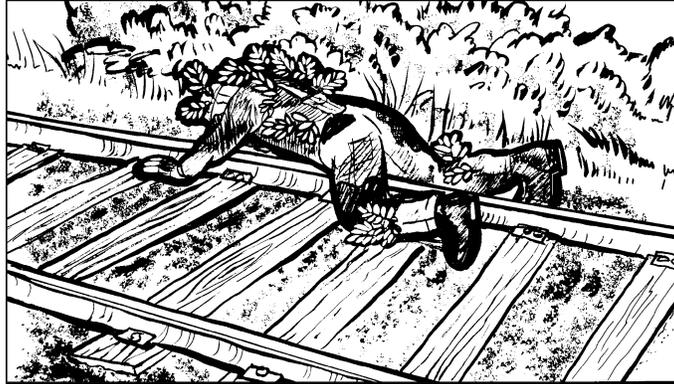


Figure I-6. Railroad Tracks

WARNING: If 3 rails exist, 1 may be electrified.

Chapter II

NAVIGATION

Assess the threat and apply appropriate evasion principles.

1. Stay or Move Considerations

- a. Stay with the vehicle/aircraft in a non-combat environment.
- b. Leave only when—
 - (1) Dictated by the threat.
 - (2) Are certain of your location, have a known destination, and have the ability to get there.
 - (3) Can reach water, food, shelter, and/or help.
 - (4) Convinced rescue is not coming.
- c. Consider the following if you decide to travel:
 - (1) Follow the briefed evasion plan.
 - (2) Determine which direction to travel and why.
 - (3) Decide what equipment to take, cache, or destroy.
- d. Leave information at your starting point (in a non-combat environment) that includes—
 - (1) Destination.
 - (2) Route of travel.
 - (3) Personal condition.
 - (4) Supplies available.
- e. Consider the following for maps (in a combat environment):
 - (1) **DO NOT** write on the map.
 - (2) **DO NOT** soil the map by touching the destination.
 - (3) **DO NOT** fold in a manner providing travel information.

Note: **These actions may compromise information if captured.**

2. Navigation and Position Determination

- a. Determine your general location by—
 - (1) Developing a working knowledge of the operational area.
 - (a) Geographic checkpoints.
 - (b) Man-made checkpoints.
 - (c) Previous knowledge of operational area.
 - (2) Using the **Rate x Time = Distance** formula.
 - (3) Using information provided in the map legend.
 - (4) Using prominent landmarks.

- (5) Visualizing map to determine position.
- b. Determine cardinal directions (north, south, east, and west) by—
 - (1) Using compass.

CAUTION: The following methods are **NOT** highly accurate and give only general cardinal direction.

- (2) Using stick and shadow method to determine a true north-south line (**Figure II-1**).

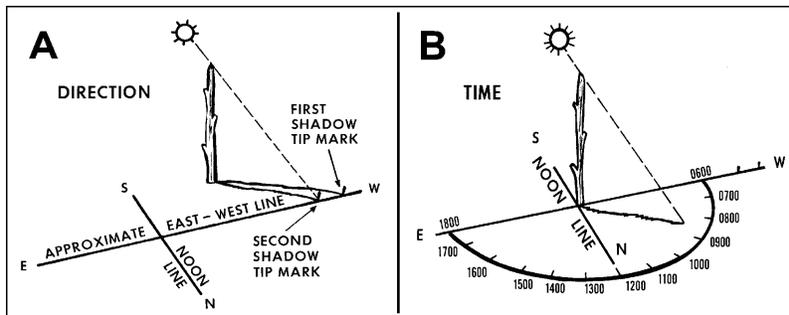
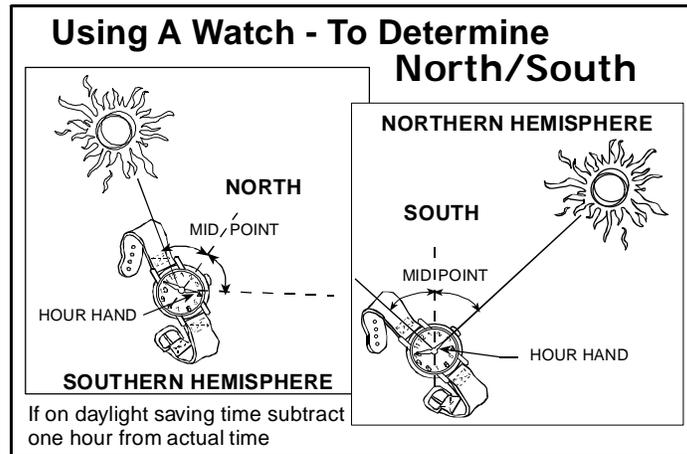


Figure II-1. Stick and Shadow Method

- (3) Remembering the sunrise/moonrise is in the east and sunset/moonset is in the west.
- (4) Using a wristwatch to determine general cardinal direction (**Figure II-2**).
 - (a) Digital watches. Visualize a clock face on the watch.
 - (b) Northern Hemisphere. Point hour hand at the sun. South is halfway between the hour hand and 12 o'clock position.
 - (c) Southern Hemisphere. Point the 12 o'clock position on your watch at the sun. North is halfway between the 12 o'clock position and the hour hand.



- (5) Using a pocket navigator (**Figure II-3**)—
- (a) Gather the following necessary materials:
 - Flat writing material (such as an MRE box).
 - 1-2 inch shadow tip device (a twig, nail, or match).
 - Pen or pencil.
 - (b) Start construction at sunup; end construction at sundown. Do the following:
 - Attach shadow tip device in center of paper.
 - Secure navigator on flat surface (**DO NOT** move during set up period).
 - Mark tip of shadow every 30 minutes annotating the time.
 - Connect marks to form an arc.
 - Indicate north with a drawn arrow.

Note: The shortest line between base of shadow tip device and curved line is a north-south line.

- (c) Do the following during travel:
 - Hold navigator so the shadow aligns with mark of present time (drawn arrow now points to true north).

(d) Remember the navigator is current for approximately 1 week.

CAUTION: The Pocket Navigator is **NOT** recommended if evading.

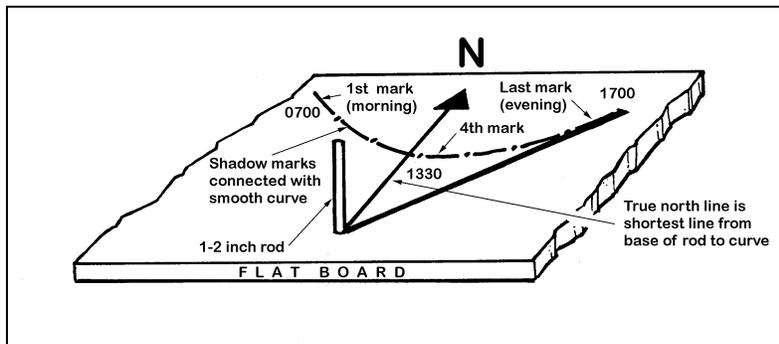


Figure II-3. Pocket Navigator

- (6) Using the stars (Figure II-4) the—
- North Star is used to locate true north-south line.
 - Southern Cross is used to locate true south-north line.

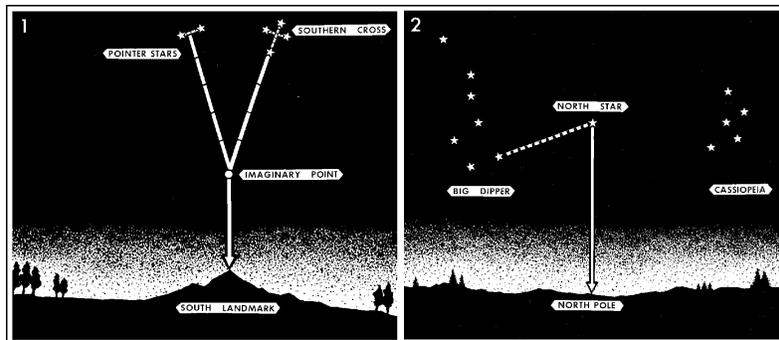


Figure II-4. Stars

- Orient the map by—
 - Using a true north-south line (Figure II-5)—
 - Unfold map and place on a firm, flat, level nonmetallic surface.

- (b) Align the compass on a true north-south line.
- (c) Rotate map and compass until stationary index line aligns with the magnetic variation indicated in marginal information.
 - Easterly (subtract variation from 360 degrees).
 - Westerly (add variation to 360 degrees).

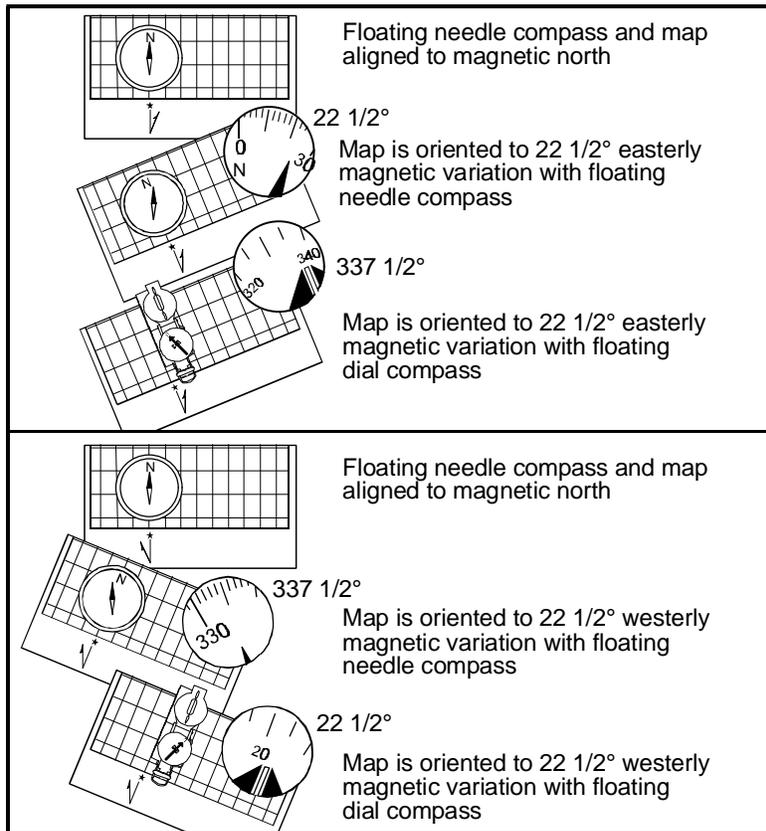


Figure II-5. Orienting a Map Using a True North-South Line

- (2) Using a compass rose (**Figure II-6**)—
- (a) Place edge of the lensatic compass on magnetic north line of the compass rose closest to your location.
 - (b) Rotate map and compass until compass reads 360 degrees.
- degrees.

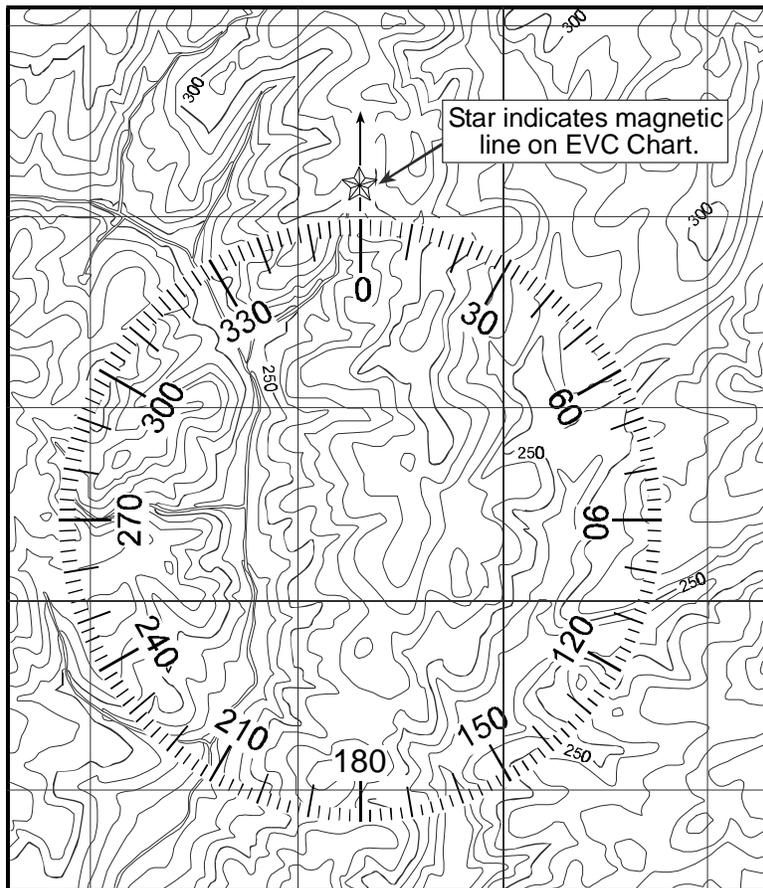


Figure II-6. Map Orientation with Compass Rose

- (3) If there is **NO** compass, orient map using cardinal direction obtained by the stick and shadow method or the celestial aids (stars) method.
- d. Determine specific location.
 - (1) Global Positioning System (GPS).
 - (a) **DO NOT** use GPS for primary navigation.
 - (b) Use GPS to confirm your position **ONLY**.
 - (c) Select area providing maximum satellite reception.
 - (d) Conserve GPS battery life.
 - (2) Triangulation (resection) with a compass (**Figure II-7**).

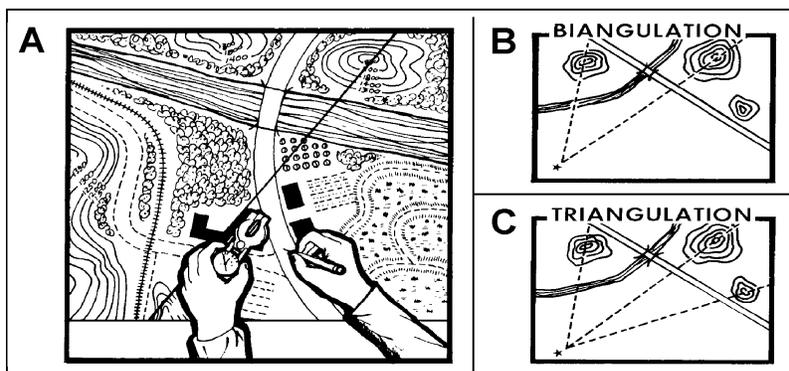


Figure II-7. Triangulation

- (a) Try to use **3** or more azimuths.
- (b) Positively identify a major land feature and determine a line of position (LOP).
- (c) Check map orientation each time compass is used.
- (d) Plot the LOP using a thin stick or blade of grass (combat) or pencil line (non-combat).
- (e) Repeat steps **(b)** through **(d)** for other LOPs.
- e. Use the compass for night navigation by—
 - (1) Setting up compass for night navigation (**Figure II-8**).
 - (2) Aligning north-seeking arrow with luminous line and follow front of compass.
 - (3) Using point-to-point navigation.
- f. Route selection techniques follow:

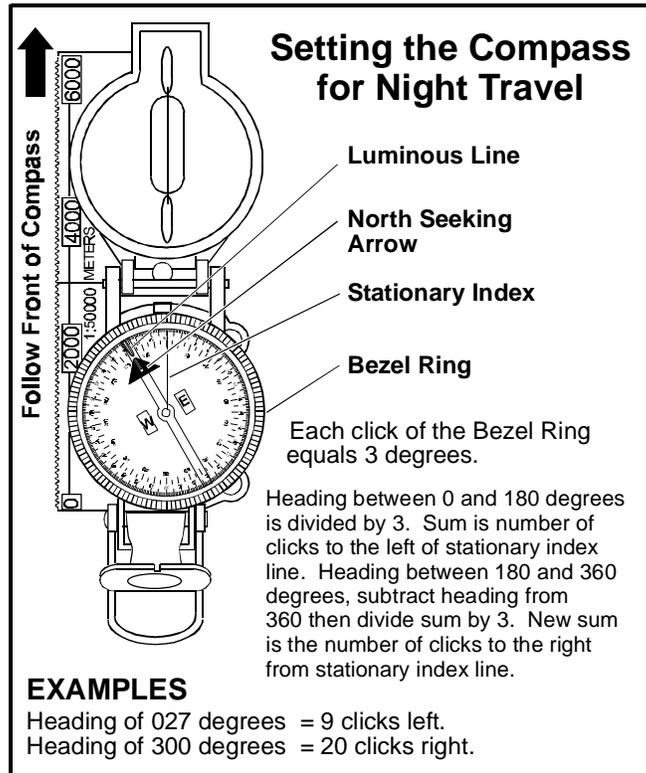


Figure II-8. Compass Night Navigation Setup

- (1) Circumnavigation.
 - (a) Find a prominent landmark on the opposite side of the obstacle.
 - (b) Contour around obstacle to landmark.
 - (c) Resume your route of travel.
- (2) Dogleg and 90 degree offset (**Figure II-9**).
- (3) Straight-line heading as follows:
 - (a) Maintain heading until reaching destination.
 - (b) Measure distance by counting the number of paces in a given course and convert to map units.

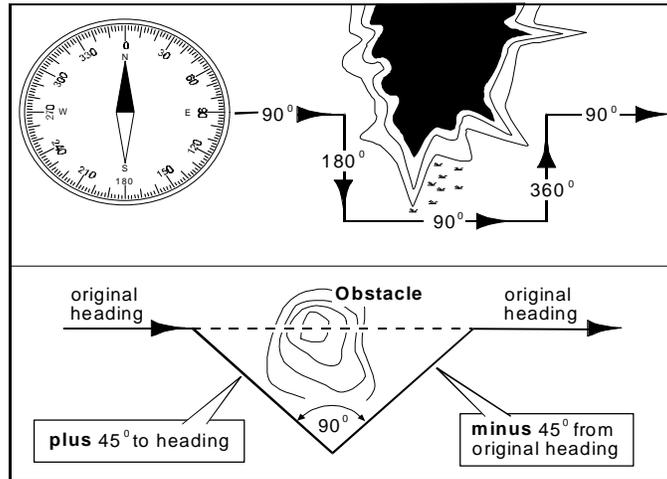


Figure II-9. Dogleg and 90 Degree Offset

- One pace is the distance covered each time the same foot touches the ground.

- Distances measured by paces are approximate (example in open terrain, 900 paces per kilometer [average], or example in rough terrain, 1200 paces per kilometer [average]).

(c) Use pace count in conjunction with terrain evaluation and heading to determine location. An individual's pace varies because of factors such as steep terrain, day/night travel, or injured/uninjured condition. Adjust estimation of distance traveled against these factors to get relative accuracy when using a pace count.

(4) Deliberate offset is—

(a) Used when finding a point on a linear feature (that is, road or river).

(b) Intentionally navigated to left or right of target so you know which way to turn at the linear feature.

(5) Point-to-point is same as straight line.

(a) Pick out landmarks on the heading and walk the trail of least resistance to a point.

(b) On reaching a point, establish another landmark and continue.

3. Travel Considerations

- a. Pick the easiest and safest route (non-combat).
- b. Maintain a realistic pace; take rest stops when needed.
- c. Avoid overdressing and overheating.
- d. Consider food and water requirements.
- e. Take special care of feet (change socks regularly).
- f. Pack equipment to prevent loss, damage, pack imbalance, and personal safety.
- g. Go **around** obstacles, not over or through them.
- h. Travel on trails whenever possible (non-combat).
- i. Travel in forested areas if possible.
- j. Avoid creek bottoms and ravines with **NO** escape in the event of heavy rains.
- k. Consider the following for swamps, lakes, and unfordable rivers:
 - (1) Circumnavigate swamps, lakes, and bogs if needed.
 - (2) Travel downstream to find people and slower water.
 - (3) Travel upstream to find narrower and shallow water.

4. River Travel

River travel may be faster and save energy when hypothermia is not a factor. It may be a primary mode of travel and LOC in a tropical environment (**use with caution if evading**).

- a. Use flotation device (raft, log, bamboo, etc.).
- b. Use a pole to move the raft in shallow water.
- c. Use an oar in deep water.
- d. Stay near inside edge of river bends (current speed is less).
- e. Keep near shore.
- f. Watch for the following **DANGERS**:
 - (1) Snags.
 - (2) Sweepers (overhanging limbs and trees).
 - (3) Rapids (**DO NOT** attempt to shoot the rapids).
 - (4) Waterfalls.
 - (5) Hazardous animals.
- g. Consider using a flotation device when crossing rivers or large/deep streams.

5. Ice and Snow Travel

Travel should be limited to areas free of hazards.

a. **DO NOT** travel in—

- (1) Blizzards.
- (2) Bitterly cold winds.
- (3) Poor visibility.

b. Obstacles to winter travel follow:

- (1) Reduced daylight hours (**BE AWARE**).
- (2) Deep soft snow (if movement is necessary, make

snowshoes [Figure II-10]). Travel is easier in early morning or late afternoon near dusk when snow is frozen or crusted.

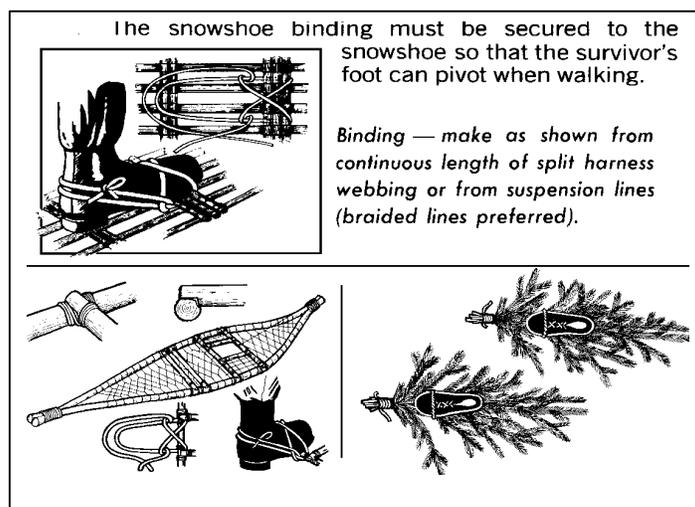


Figure II-10. Improvised Snowshoes

- (3) Avalanche prone areas to avoid:
 - (a) Slopes 30-45 degrees or greater.
 - (b) Trees without uphill branches (identifies prior avalanches).
 - (c) Heavy snow loading on ridge tops.
- (4) If caught in an avalanche, do the following:
 - (a) Backstroke to decrease burial depth.

- (b) Move hand around face to create air pocket as moving snow slows.
- (5) Frozen water crossings.
 - (a) Weak ice should be expected where—
 - Rivers are straight.
 - Objects protrude through ice.
 - Snow banks extend over the ice.
 - Rivers or streams come together.
 - Water vapor rising indicates open or warm areas.
 - (b) Air pockets form when a frozen river loses volume.
 - (c) When crossing frozen water, distribute your weight by laying flat, belly crawling, or using snowshoes.
 - c. Glacier travel is hazardous and should be avoided.

6. Mountain Hazards

- a. Lightning. Avoid ridge tops during thunderstorms.
- b. Avalanche. Avoid areas prone to avalanches.
- c. Flash floods. Avoid low areas.

7. Summer Hazards (see page II-10; paragraph 3, *Travel Considerations*, items h through k.)

- (1) Dense brush.
 - (a) Travel on trails when possible (non-combat).
 - (b) Travel in forested areas if possible.
 - (c) Avoid creek bottoms and ravines with no escape in the event of heavy rains.
- (2) Swamps, lakes, and unfordable rivers.
 - (a) Circumnavigate swamps, lakes, and bogs if needed.
 - (b) Travel downstream to find people and slower water.
 - (c) Travel upstream to find narrower and shallow water.

8. Dry Climates

- a. **DO NOT** travel unless certain of reaching the destination using the water supply available.
- b. Travel at dawn or dusk on hot days.
- c. Follow the easiest trail possible (non-combat), avoiding—
 - (1) Deep sandy dune areas.
 - (2) Rough terrain.
- d. In sand dune areas—
 - (1) Follow hard valley floor between dunes.

- (2) Travel on the windward side of dune ridges.
- e. If a sandstorm occurs—
 - (1) Mark your direction of travel.
 - (2) Sit or lie down in direction of travel.
 - (3) Try to get to the downwind side of natural shelter.
 - (4) Cover the mouth and nose with a piece of cloth.
 - (5) Protect the eyes.
 - (6) Remain stationary until the storm is over.

9. Tropical Climates

- a. Travel only when it is light.
- b. Avoid obstacles like thickets and swamps.
- c. Part the vegetation to pass through. Avoid grabbing vegetation; it may have spines or thorns (**use gloves** if possible).
- d. **DO NOT** climb over logs if you can go around them.
- e. Find trails—
 - (1) Where **2** streams meet.
 - (2) Where a low pass goes over a range of hills.
- f. While traveling trails—
 - (1) Watch for disturbed areas on game trails; they may indicate a pitfall or trap.
 - (2) Use a walking stick to probe for pitfalls or traps.
 - (3) **DO NOT** sleep on the trail.
 - (4) Exercise caution, the enemy uses the trails also.

10. Open Seas

- a. Using currents—
 - (1) Deploy sea anchor (**Figure II-11**). Sea anchor may be adjusted to make use of existing currents.
 - (2) Sit low in the raft.
 - (3) Deflate the raft slightly so it rides lower in the water.
- b. Using winds—
 - (1) Pull in sea anchor.
 - (2) Inflate raft so it rides higher.
 - (3) Sit up in raft so body catches the wind.
 - (4) Construct a shade cover/sail (**Figure II-12**). (Sail aids in making landfall.)

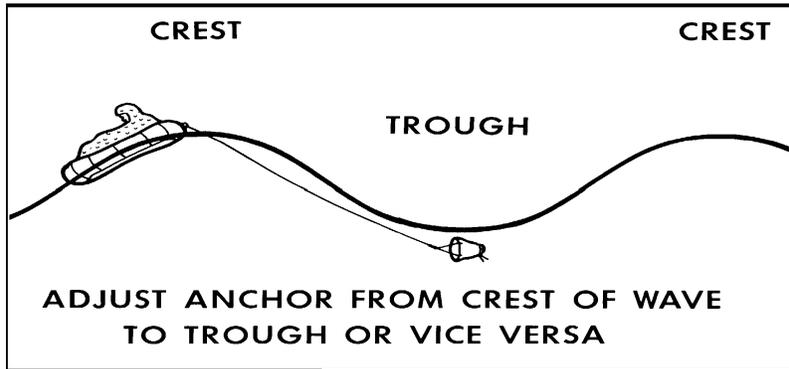


Figure II-11. Sea Anchor Deployment

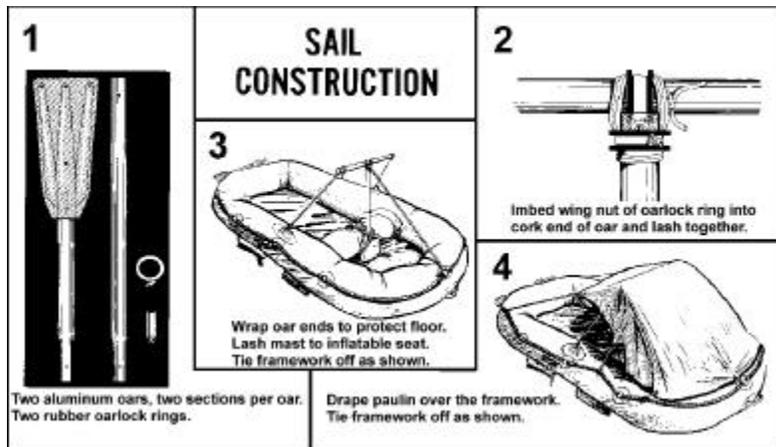


Figure II-12. Shade/Sail Construction

- c. Making landfall. Indications of land are—
- (1) Fixed cumulus clouds in a clear sky or in a cloudy sky where all other clouds are moving.
 - (2) Greenish tint in the sky (**in the tropics**).
 - (3) Lighter colored reflection on clouds (open water causes dark gray reflections) (**in the arctic**).

- (4) Lighter colored water (indicates shallow water).
- (5) The odors and sounds.
 - (a) Odors from swamps and smoke.
 - (b) Roar of surf/bird cries coming from one direction.
- (6) Directional flights of birds at dawn and at dusk.
- d. Swimming ashore—
 - (1) Consider physical condition.
 - (2) Use a flotation aid.
 - (3) Secure all gear to body before reaching landfall.
 - (4) Remain in raft as long as possible.
 - (5) Use the sidestroke or breaststroke to conserve strength if thrown from raft.
 - (6) Wear footgear and at least **1** layer of clothing.
 - (7) Try to make landfall during the lull between the sets of waves (waves are generally in **sets of 7**, from **smallest** to **largest**).
 - (8) In moderate surf.
 - (a) Swim forward on the back of a wave.
 - (b) Make a shallow dive just before the wave breaks to end the ride.
 - (9) In high surf.
 - (a) Swim shoreward in the trough between waves.
 - (b) When the seaward wave approaches, face it and submerge.
 - (c) After it passes, work shoreward in the next trough.
 - (10) If caught in the undertow of a large wave—
 - (a) Remain calm and swim to the surface.
 - (b) Lie as close to the surface as possible.
 - (c) Parallel shoreline and attempt landfall at a point further down shore.
 - (11) Select a landing point.
 - (a) Avoid places where waves explode upon rocks.
 - (b) Find a place where waves smoothly rush onto the rocks.
 - (12) After selecting a landing site—
 - (a) Face shoreward.
 - (b) Assume a sitting position with feet 2 or 3 feet lower than head to absorb the shock of hitting submerged objects.

- e. Rafting ashore—
 - (1) Select landing point carefully.
 - (2) Use caution landing when the sun is low and straight in front of you causing poor visibility.
 - (3) Land on the lee (downwind) side of islands or point of land if possible.
 - (4) Head for gaps in the surf line.
 - (5) Penetrate surf by—
 - (a) Taking down most shade/sails.
 - (b) Using paddles to maintain control.
 - (c) Deploying a sea anchor for stability.

CAUTION: DO NOT deploy a sea anchor if traveling through coral.

- f. Making sea ice landings on large stable ice flows. Icebergs, small flows, and disintegrating flows are dangerous (**ice can cut a raft**).
 - (1) Use paddles to avoid sharp edges.
 - (2) Store raft away from the ice edge.
 - (3) Keep raft inflated and ready for use.
 - (4) Weight down/secure raft so it does not blow away.

Chapter III

RADIO COMMUNICATIONS AND SIGNALING

Inventory and review the operating instructions of all communications and signaling equipment.

1. Radio Communications (Voice and Data)

- a. Non-combat.
 - (1) Ensure locator beacon is operational.
 - (2) Follow standing plans for on/off operations to conserve battery use.
- b. Combat.
 - (1) Turn off locator beacon.
 - (2) Keep it with you to supplement radio communications.
 - (3) Follow plans/orders for on/off operations.
- c. Make initial contact as soon as possible or as directed in applicable plans/orders.
- d. If no immediate contact, then as directed in applicable plans/orders.
- e. Locate spare radio and batteries (keep warm and dry).
- f. Transmissions.
 - (1) Use concealment sites (combat) that optimize line of site (LOS).
 - (2) Face recovery asset.
 - (3) Keep antenna perpendicular to intended receiver (**Figure III-1**).
 - (4) **DO NOT** ground antenna (that is finger on antenna or attaching bolt, space blanket, vegetation, etc.).
 - (5) Keep transmissions short (3-5 seconds maximum). Use data burst if available.
 - (6) Move after each transmission (**ONLY** in combat, if possible).
 - (7) If transmitting in the blind, ensure a clear LOS towards the equator.
 - (8) Use terrain masking to hinder enemy direction finding.
- g. Listening (use reception times in applicable plans/orders or as directed by recovery forces).

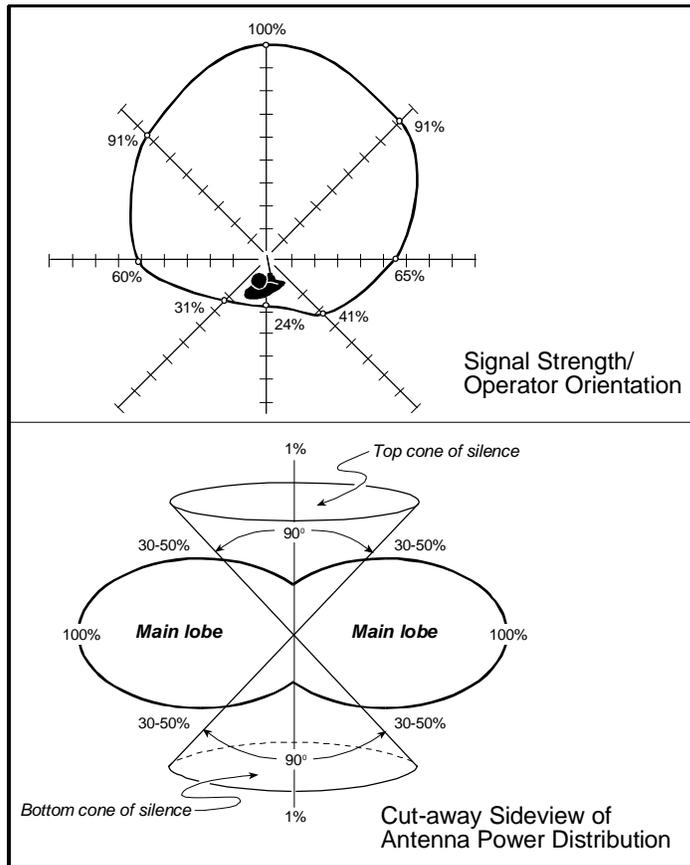


Figure III-1. Radio Transmission Characteristics

2. Signaling

a. Pyrotechnic signals.

- (1) Prepare early (weather permitting).
- (2) Use as directed in applicable plans/orders or as directed by recovery forces.
- (3) Extend over raft's edge before activating.

- b. Signal mirror (**Figure III-2**).
- (1) Use as directed by recovery forces.
 - (2) If no radio, use only with confirmed friendly forces.
 - (3) Cover when not in use.

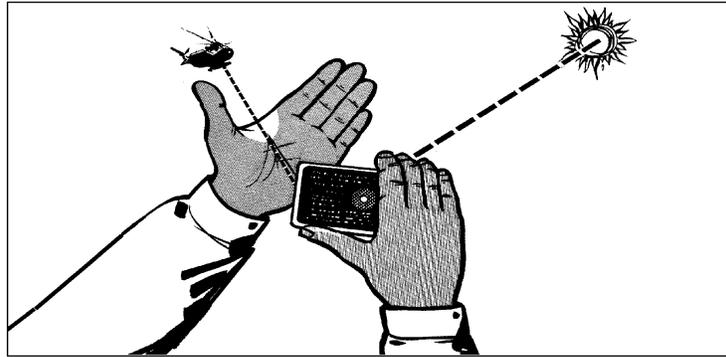


Figure III-2. Sighting Techniques

Note: Make a mirror from any shiny metal or glass.

- c. Strobe/IR lights.
- (1) Prepare early, consider filters and shields.
 - (2) Use as directed by recovery forces.
 - (3) Conserve battery life.

Note: Produces one residual flash when turned off.

- d. Pattern signals (use as directed in applicable plans/orders).
- (1) Materials:
 - (a) Manmade (space blanket, signal paulin, parachute).
 - (b) Natural use materials that contrast the color and/or texture of the signaling area (rocks, brush, branches, stomped grass).
 - (2) Location.
 - (a) Maximize visibility from above.
 - (b) Provide concealment from ground observation.
 - (3) Size (large as possible) and ratio (**Figure III-3**).

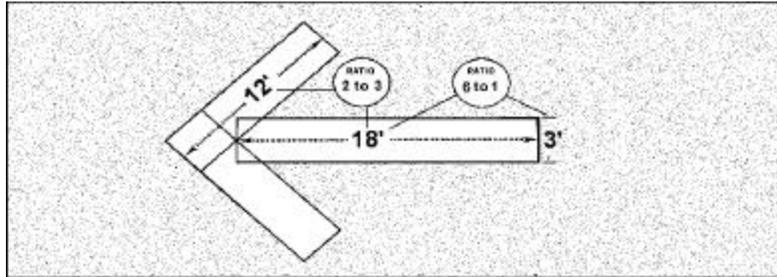


Figure III-3. Size and Ratio

- (4) Shape (maintain straight lines and sharp corners).
- (5) Contrast (use color and shadows).
- (6) Pattern signals (**Figure III-4**).

NO.	MESSAGE	CODE SYMBOL
1	REQUIRE ASSISTANCE	V
2	REQUIRE MEDICAL ASSISTANCE	X
3	NO or NEGATIVE	N
4	YES or AFFIRMATIVE	Y
5	PROCEEDING IN THIS DIRECTION	↑

Figure III-4. Signal Key

- e. Sea dye marker.
 - (1) **DO NOT** waste in rough seas or fast moving water.
 - (2) Conserve unused dye by rewrapping.
 - (3) May be used to color snow.

- f. Non-combat considerations:
- (1) Use a fire at night.
 - (2) Use smoke for day (tires or petroleum products for dark smoke and green vegetation for light smoke). **(Figure III-5)**
 - (3) Use signal mirror to sweep horizon.
 - (4) Use audio signals (that is, voice, whistle, and weapons fire).

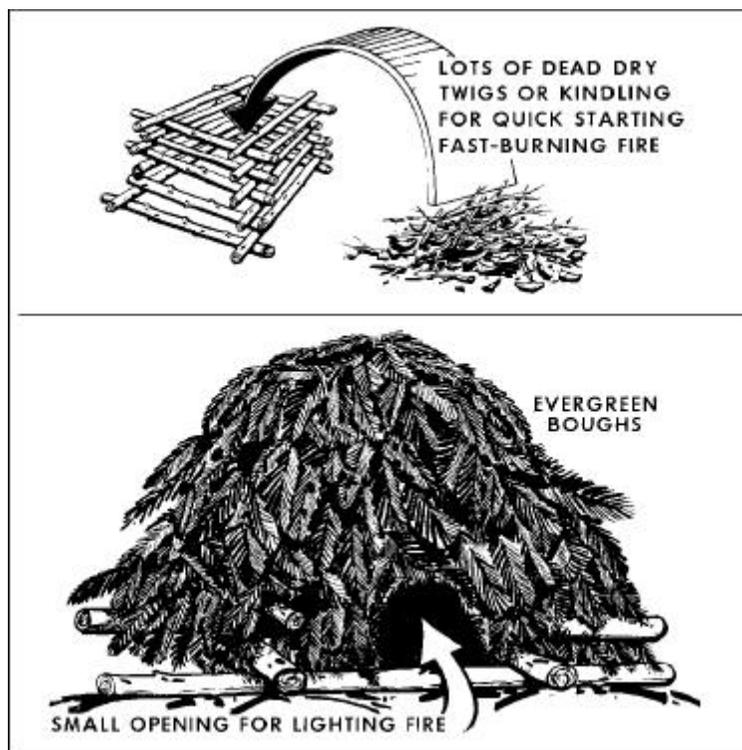


Figure III-5. Smoke Generator

Chapter IV

RECOVERY

1. Responsibilities

- a. Establish radio contact with recovery forces (if possible).
- b. Maintain communication with recovery forces until recovered.
- c. Be prepared to authenticate as directed in applicable plans/orders.
- d. Follow recovery force instructions, be prepared to report—
 - (1) Enemy activity in the recovery area.
 - (2) Recovery site characteristics (slope, obstacles, size, etc.).
 - (3) Number in party/medical situation.
 - (4) Signal devices available.
- e. If no radio, a ground-to-air signal may be your only means to effect recovery.

2. Site Selection

- a. Locate area for landing pick-up, if practical (approximately 150 feet diameter, free of obstructions, flat and level).
- b. Assess evidence of human activity at/near the site (in combat).
- c. Locate several concealment sites around area (in combat).
- d. Plan several tactical entry and exit routes (in combat).

3. Site Preparation

- a. Pack and secure all equipment.
- b. Prepare signaling devices (use as directed or as briefed).
- c. Mentally review recovery methods (aircraft, ground, boat, etc.).

4. Recovery Procedures

- a. Assist recovery force in identifying your position.
- b. Stay concealed until recovery is imminent (in combat).
- c. For a landing/ground recovery—
 - (1) Assume a non-threatening posture.
 - (2) Secure weapons and avoid quick movement.
 - (3) **DO NOT** approach recovery vehicle until instructed.
 - (4) Beware of rotors/propellers when approaching recovery vehicle, especially on sloping or uneven terrain. Secure loose equipment that could be caught in rotors/propellers.

- d. For **hoist** recovery devices (**Figures IV-1 and IV-2**)—
- (1) Use eye protection, if available (glasses or helmet visor).
 - (2) Allow metal on device to contact the surface before touching to avoid injury from static discharge.
 - (3) Sit or kneel for stability while donning device.
 - (4) Put safety strap under armpits.
 - (5) Ensure cable is in front of you.
 - (6) Keep hands clear of all hardware and connectors.
 - (7) **DO NOT** become entangled in cable.
 - (8) Use a thumbs up, vigorous cable shake, or radio call to signal you are ready.
 - (9) Drag feet on the ground to decrease oscillation.
 - (10) **DO NOT** assist during hoist or when pulled into the rescue vehicle. Follow crewmember instructions.
- e. For **nonhoist** recovery (rope or unfamiliar equipment)—
- (1) Create a “**fixed loop**” big enough to place under armpits (**Figure IV-3**).
 - (2) Follow the procedures in “**d**” above.

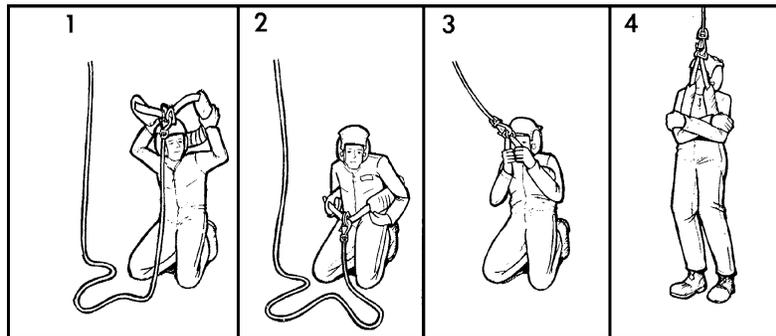


Figure IV-1. Rescue Strap

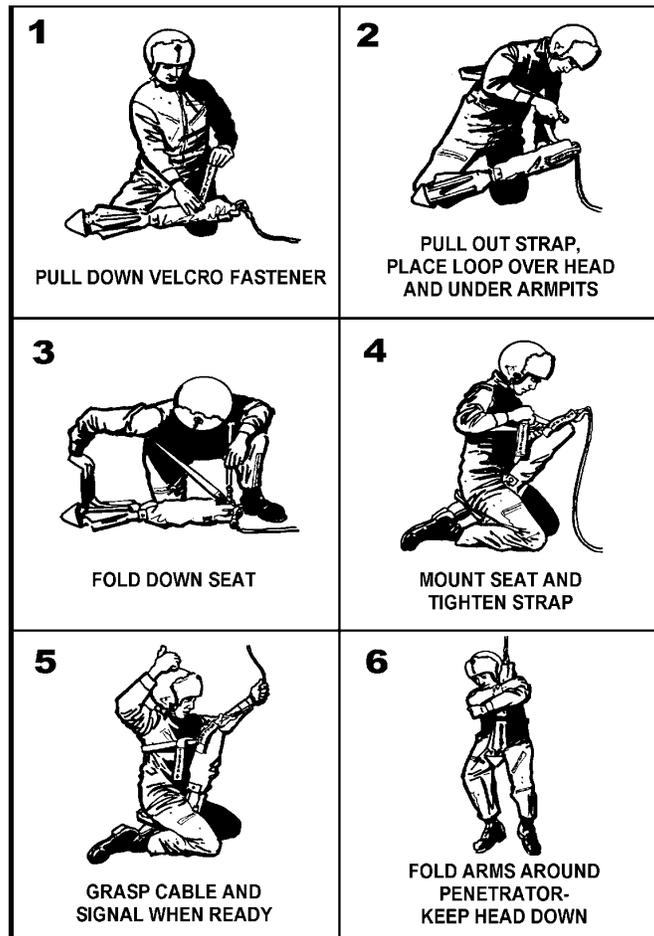


Figure IV-2. Forest Penetrator

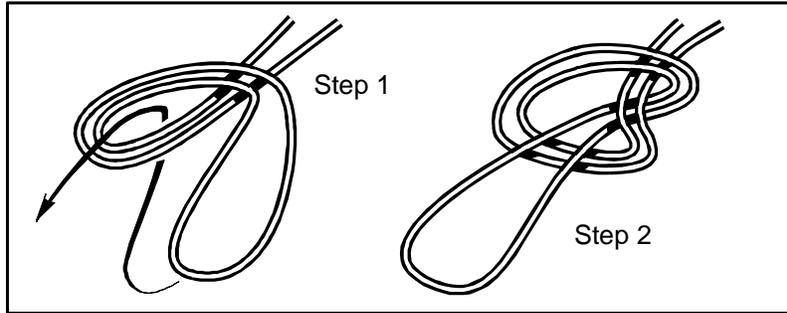


Figure IV-3. Fixed Loop

Chapter V MEDICAL

WARNING: These emergency medical procedures are for survival situations. Obtain professional medical treatment as soon as possible.

1. Immediate First Aid Actions

Remember the ABCs of Emergency Care:
Airway Breathing Circulation

- a. Determine responsiveness as follows:
 - (1) If unconscious, arouse by shaking gently and shouting.
 - (2) If no response—
 - (a) Keep head and neck aligned with body.
 - (b) Roll victims onto their backs.
 - (c) Open the airway by lifting the chin (**Figure V-1**).
 - (d) Look, listen, and feel for air exchange.



Figure V-1. Chin Lift

- (3) If victim is not breathing—
 - (a) Check for a clear airway; remove any blockage.
 - (b) Cover victim's mouth with your own.
 - (c) Pinch victim's nostrils closed.
 - (d) Fill victim's lungs with **2** slow breaths.
 - (e) If breaths are blocked, reposition airway; try again.
 - (f) If breaths still blocked, give **5** abdominal thrusts:
 - Straddle the victim.
 - Place a fist between breastbone and belly button.
 - Thrust upward to expel air from stomach.
 - (g) Sweep with finger to clear mouth.
 - (h) Try **2** slow breaths again.
 - (i) If the airway is still blocked, continue **(c)** through **(f)** until successful or exhausted.
 - (j) With open airway, start mouth to mouth breathing:
 - Give **1** breath every 5 seconds.
 - Check for chest rise each time.
- (4) If victim is unconscious, but breathing—
 - (a) Keep head and neck aligned with body.
 - (b) Roll victim on side (drains the mouth and prevents the tongue from blocking airway).
- (5) If breathing difficulty is caused by chest trauma, refer to **page V-7, paragraph 1d, *Treat Chest Injuries.***

CAUTION: DO NOT remove an impaled object unless it interferes with the airway. You may cause more tissue damage and increase bleeding. For travel, you may shorten and secure the object.

- b. Control bleeding as follows:
 - (1) Apply a pressure dressing (**Figure V-2**).
 - (2) If **STILL** bleeding—
 - (a) Use direct pressure over the wound.
 - (b) Elevate the wounded area above the heart.

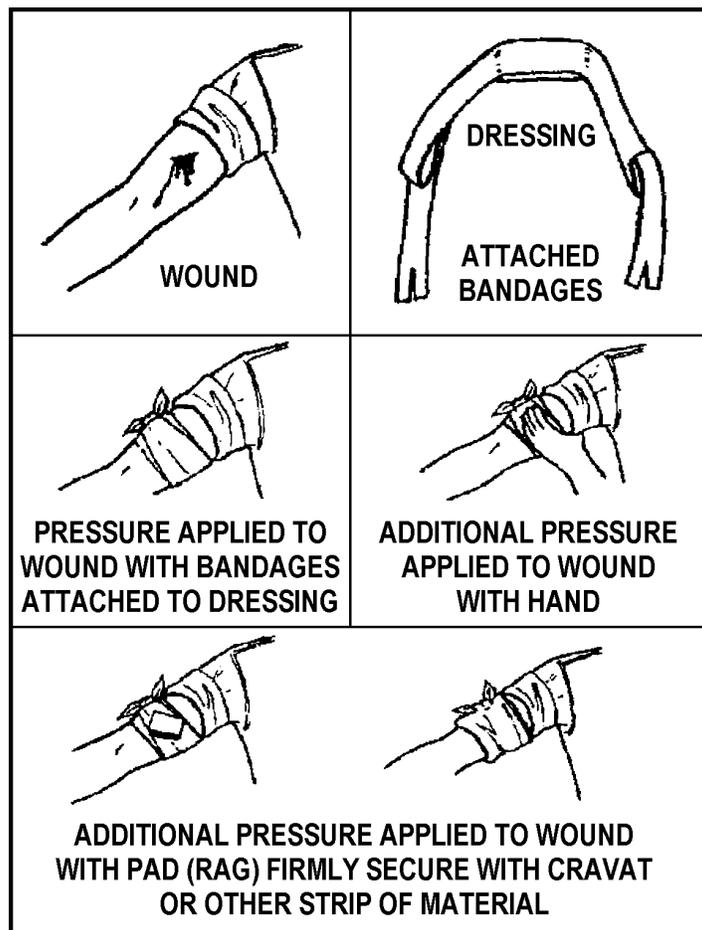


Figure V-2. Application of a Pressure Dressing

- (3) If **STILL** bleeding—
- (a) Use a pressure point between the injury and the heart (**Figure V-3**).
 - (b) Maintain pressure for 6 to 10 minutes before checking to see if bleeding has stopped.

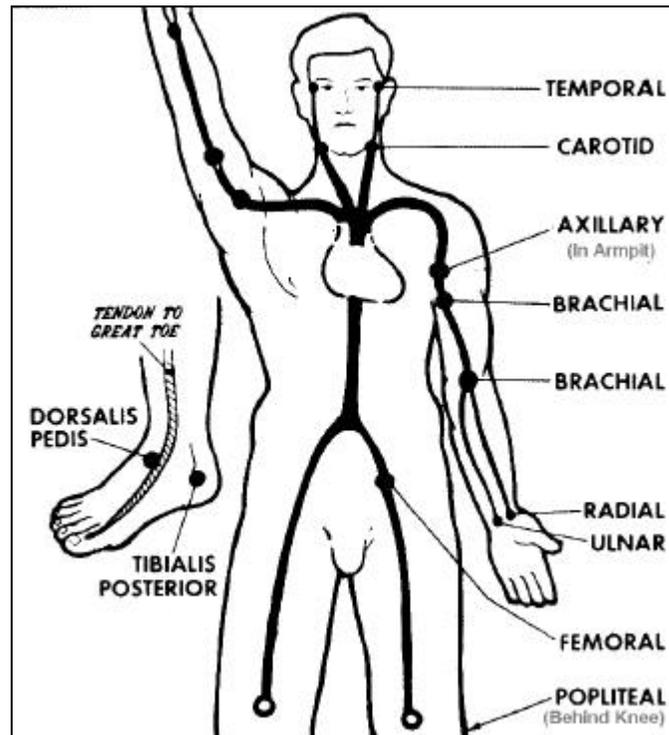


Figure V-3. Pressure Points

(4) If a limb wound is **STILL** bleeding—

CAUTION: Use of a tourniquet is a **LAST RESORT** measure. Use **ONLY** when severe, uncontrolled bleeding will cause loss of life. Recognize that long-term use of a tourniquet may cause loss of limb.

- (a) Apply tourniquet (TK) band just above bleeding site on limb. A band at least 3 inches (7.5 cm) or wider is best.
- (b) Follow steps illustrated in **Figure V-4**.
- (c) Use a stick at least 6 inches (15 cm) long.
- (d) Tighten only enough to stop arterial bleeding.
- (e) Mark a **TK** on the forehead with the time applied.
- (f) **DO NOT** cover the tourniquet.

CAUTION: The following directions apply **ONLY** in survival situations where rescue is **UNLIKELY** and **NO** medical aid is available.

- (g) If rescue or medical aid is not available for over 2 hours, an attempt to **SLOWLY** loosen the tourniquet may be made 20 minutes after application. Before loosening—
 - Ensure pressure dressing is in place.
 - Ensure bleeding has stopped
 - Loosen tourniquet **SLOWLY** to restore circulation.
 - Leave loosened tourniquet in position in case bleeding resumes.

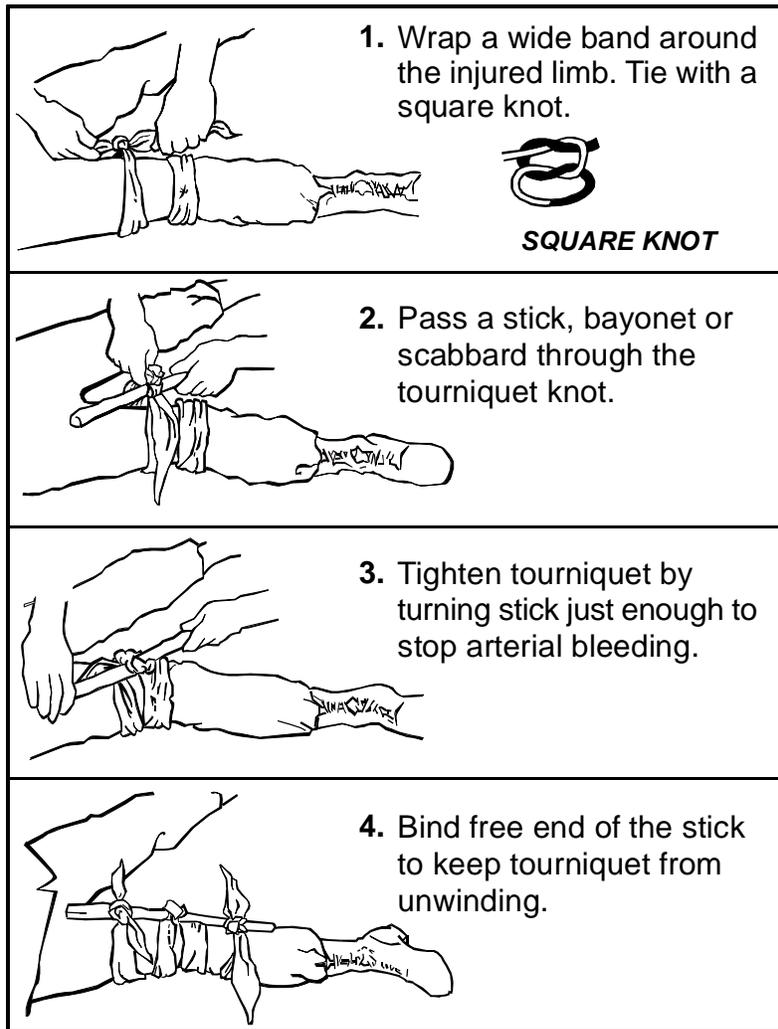


Figure V-4. Application of a Tourniquet

- c. Treat shock. (Shock is difficult to identify or treat under field conditions. It may be present with or without visible injury.)
- (1) Identify by one or more of the following:
 - (a) Pale, cool, and sweaty skin.
 - (b) Fast breathing and a weak, fast pulse.
 - (c) Anxiety or mental confusion.
 - (d) Decreased urine output.
 - (2) Maintain circulation.
 - (3) Treat underlying injury.
 - (4) Maintain normal body temperature.
 - (a) Remove wet clothing.
 - (b) Give warm fluids.
 - DO NOT** give fluids to an unconscious victim.
 - DO NOT** give fluids if they cause victim to gag.
 - (c) Insulate from ground.
 - (d) Shelter from the elements.
 - (5) Place conscious victim on back.
 - (6) Place very weak or unconscious victim on side, this will—
 - (a) Allow mouth to drain.
 - (b) Prevent tongue from blocking airway.
- d. Treat chest injuries.
- (1) Sucking chest wound. This occurs when chest wall is penetrated; may cause victim to gasp for breath; may cause sucking sound; may create bloody froth as air escapes the chest.
 - (a) **Immediately** seal wound with hand or airtight material.
 - (b) Tape airtight material over wound on **3 sides only** (**Figure V-5**) to allow air to escape from the wound but not to enter.
 - (c) Monitor breathing and check dressing.
 - (d) Lift untapped side of dressing as victim **exhales** to allow trapped air to escape, as necessary.
 - (2) Flail chest. Results from blunt trauma when **3 or more** ribs are broken in **2** or more places. The flail segment is the broken area that moves in a direction opposite to the rest of chest during breathing.

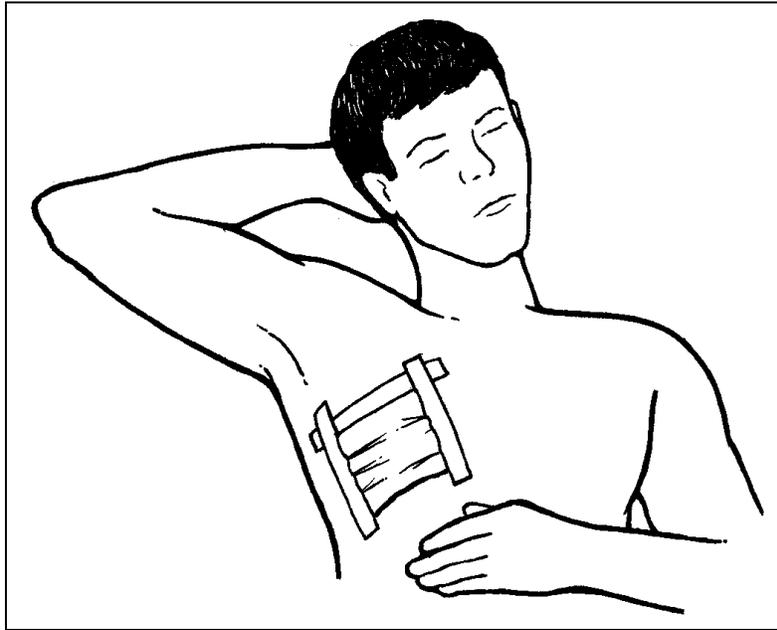


Figure V-5. Sucking Chest Wound Dressing

- (a) Stabilize the flail segment as follows:
 - Place rolled-up clothing or bulky pad over site.
 - Tape pad to site
 - DO NOT** wrap tape around chest.
- (b) Have victim keep segment still with hand pressure.
- (c) Roll victim onto side of flail segment injury (as other injuries allow).
- (3) Fractured ribs.
 - (a) Encourage deep breathing (painful, but necessary to prevent the possible development of pneumonia).
 - (b) **DO NOT** constrict breathing by taping ribs.
- e. Treat fractures, sprains, and dislocations.
 - (1) Control bleeding.
 - (2) Remove watches, jewelry, and constrictive clothing.
 - (3) If fracture penetrates the skin—

- (a) Clean wound by gentle irrigation with water.
- (b) Apply dressing over wound.
- (4) Position limb as normally as possible.
- (5) Splint in position found (if **unable** to straighten limb).
- (6) Improvise a splint with available materials:
 - (a) Sticks or straight, stiff materials from equipment.
 - (b) Body parts (for example, opposite leg, arm-to-chest).
- (7) Attach with strips of cloth, parachute cord, etc.
- (8) Keep the fractured bones from moving by immobilizing the joints on both sides of the fracture. If fracture is in a joint, immobilize the bones on both sides of the joint.

CAUTION: Splint fingers in a slightly flexed position, **NOT** in straight position. Hand should look like it is grasping an apple.

- (9) Use **RICES** treatment for 72 hours.
 - (a) **Rest**.
 - (b) **Ice**.
 - (c) **Compression**.
 - (d) **Elevation**.
 - (e) **Stabilization**.
- (10) Apply cold to acute injuries.
- (11) Use 15 to 20 minute periods of cold application.
 - (a) **DO NOT** use continuous cold therapy.
 - (b) Repeat 3 to 4 times per day.
 - (c) Avoid cooling that can cause frostbite or hypothermia.
- (12) Wrap with a compression bandage after cold therapy.
- (13) Elevate injured area above heart level to reduce swelling.
- (14) Check periodically for a pulse beyond the injury site.
- (15) Loosen bandage or reapply splint if no pulse is felt or if swelling occurs because bandage is too tight.

2. Common Injuries and Illnesses

- a. Burns.
 - (1) Cool the burned area with water.
 - (a) Use immersion or cool compresses.
 - (b) Avoid aggressive cooling with ice or frigid water.
 - (2) Remove watches, jewelry, constrictive clothing.

- (3) **DO NOT** remove embedded, charred material that will cause burned areas to bleed.
- (4) Cover with sterile dressings.
- (5) **DO NOT** use lotion or grease.
- (6) Avoid moving or rubbing the burned part.
- (7) Drink **extra** water to compensate for increased fluid loss from burns. (Add **1/4 teaspoon of salt** [if available] to **each quart** of **water**.)
- (8) Change dressings when soaked or dirty.
- b. Eye injuries.
 - (1) Sun/snow blindness (gritty, burning sensation, and possible reduction in vision caused by sun exposure).
 - (a) Prevent with improvised goggles. (**See Chapter VI, page VI-3, Figure VI-2.**)
 - (b) Treat by patching affected eye(s).
 - Check after 12 hours.
 - Replace patch for another 12 hours if not healed.
 - (c) Use cool compresses to reduce pain.
 - (2) Foreign body in eye.
 - (a) Irrigate with clean water from the **inside** to the **outside** corner of the eye.
 - (b) If foreign body is not removed by irrigation, improvise a small swab. Moisten and wipe gently over the affected area.
 - (c) If foreign body is **STILL** not removed, patch eye for 24 hours and then reattempt removal using steps **(a)** and **(b)**.
- c. Heat injury.
 - (1) Heat cramps (cramps in legs or abdomen).
 - (a) Rest.
 - (b) Drink water. Add **1/4 teaspoon** of salt **per quart**.
 - (2) Heat exhaustion (pale, sweating, moist, cool skin).
 - (a) Rest in shade.
 - (b) Drink water.
 - (c) Protect from further heat exposure.
 - (3) Heat stroke (victim disoriented or unconscious, skin is hot and flushed [sweating **may** or **may not** occur], fast pulse).

<p>CAUTION: Handle heat stroke victim gently. Shock, seizures, and cardiac arrest can occur.</p>

(a) Cool as rapidly as possible (saturate clothing with water and fan the victim). Remember to cool the groin and armpit areas. (Avoid overcooling.)

(b) Maintain airway, breathing, and circulation.

d. Cold injuries:

(1) Frostnip and frostbite—

(a) Are progressive injuries.

- Ears, nose, fingers, and toes are affected first.

- Areas will feel cold and may tingle leading to—

- Numbness that progresses to—

- Waxy appearance with stiff skin that cannot glide freely over a joint.

(b) Frostnipped areas rewarm with body heat. If body heat **WILL NOT** rewarm area in 15 to 20 minutes, then frostbite is present.

(c) Frostbitten areas are deeply frozen and require medical treatment.

CAUTION: In frostbite, repeated freezing and thawing causes severe pain and increases damage to the tissue. **DO NOT** rub frozen tissue. **DO NOT** thaw frozen tissue.

(2) Hypothermia—

(a) Is a progressive injury.

- Intense shivering with impaired ability to perform complex tasks leads to—

- Violent shivering, difficulty speaking, sluggish thinking go to—

- Muscular rigidity with blue, puffy skin; jerky movements go to—

- Coma, respiratory and cardiac failure.

(b) Protect victim from the environment as follows:

- Remove wet clothing.

- Put on dry clothing (if available).

- Prevent further heat loss.

- Cover top of head.

- Insulate from above and below.

- Warm with blankets, sleeping bags, or shelter.

- Warm central areas before extremities.
 - Place heat packs in groin, armpits, and around neck.
 - Avoid causing burns to skin.

CAUTION: Handle hypothermia victim gently. Avoid overly rapid rewarming which may cause cardiac arrest. Rewarming of victim with skin-to-skin contact by volunteer(s) inside of a sleeping bag is a survival technique but can cause internal temperatures of all to drop.

- e. Skin tissue damage.
 - (1) Immersion injuries. Skin becomes wrinkled as in **dishpan hands**.
 - (a) Avoid walking on affected feet.
 - (b) Pat dry; **DO NOT** rub. Skin tissue will be sensitive.
 - (c) Dry socks and shoes. Keep feet protected.
 - (d) Loosen boots, cuffs, etc., to improve circulation.
 - (e) Keep area dry, warm, and open to air.
 - (f) **DO NOT** apply creams or ointments.
 - (2) Saltwater sores.
 - (a) Change body positions frequently.
 - (b) Keep sores dry.
 - (c) Use antiseptic (if available).
 - (d) **DO NOT** open or squeeze sores.
- f. Snakebite.

CAUTION: This snakebite treatment recommendation is for situations where medical aid and specialized equipment are not available.

- (1) Nonpoisonous. Clean and bandage wound.
- (2) Poisonous.
 - (a) Remove constricting items.
 - (b) Minimize activity.
 - (c) **DO NOT** cut the bite site; **DO NOT** use your mouth to create suction.
 - (d) Clean bite with soap and water; cover with a dressing.

- (e) Overwrap the bite site with a tight (elastic) bandage
- (Figure V-6).** The intent is to slow capillary and venous blood flow but not arterial flow. Check for pulse below the overwrap.
- (f) Splint bitten extremity to prevent motion.
- (g) Treat for shock **(page V-7, paragraph 1c).**
- (h) Position extremity below level of heart.
- (i) Construct shelter if necessary (let the victim rest).
- (j) For conscious victims, force fluids.
- g. Marine life.
 - (1) Stings.
 - (a) Flush wound with salt water (fresh water stimulates toxin release).
 - (b) Remove jewelry and watches.
 - (c) Remove tentacles and gently scrape or shave skin.
 - (d) Apply a steroid cream (if available).
 - (e) **DO NOT** rub area with sand.
 - (f) Treat for shock; artificial respiration may be required **(page V-1, paragraph 1a).**
 - (g) **DO NOT** use urine to flush or treat wounds.
 - (2) Punctures.
 - (a) Immerse affected part in hot water or apply hot compresses for 30-60 minutes (as hot as victim can tolerate).
 - (b) Cover with clean dressing.
 - (c) Treat for shock as needed.
- h. Skin irritants (includes poison oak and poison ivy).
 - (1) Wash with large amounts of water. Use soap (if available).
 - (2) Keep covered to prevent scratching.
- i. Infection.
 - (1) Keep wound clean.
 - (2) Use iodine tablet solution or diluted betadine to prevent or treat infection.
 - (3) Change bandages as needed.

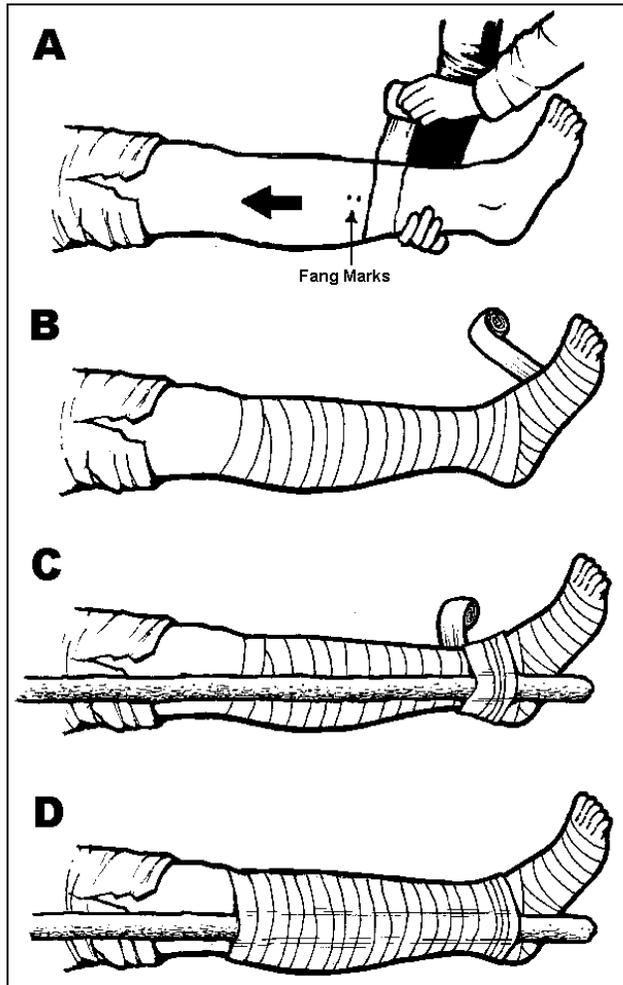


Figure V-6. Compression Bandage for Snake Bite

- j. Dysentery and diarrhea.
 - (1) Drink **extra** water.
 - (2) Use a liquid diet.
 - (3) Eat charcoal. Make a paste by mixing fine charcoal particles with water. (It may relieve symptoms by absorbing toxins.)
- k. Constipation (can be expected in survival situations).
 - (1) **DO NOT** take laxatives.
 - (2) Exercise.
 - (3) Drink **extra** water.

3. Plant Medicine

- a. Tannin.
 - (1) Medical uses. Burns, diarrhea, dysentery, skin problems, and parasites. Tannin solution prevents infection and aids healing.
 - (2) Sources. Found in the outer bark of all trees, acorns, banana plants, common plantain, strawberry leaves, and blackberry stems.
 - (3) Preparation.
 - (a) Place crushed outer bark, acorns, or leaves in water.
 - (b) Leach out the tannin by soaking or boiling.
 - Increase tannin content by longer soaking time.
 - Replace depleted material with fresh bark/plants.
 - (4) Treatments.
 - (a) Burns.
 - Moisten bandage with cooled tannin tea.
 - Apply compress to burned area.
 - Pour cooled tea on burned areas to ease pain.
 - (b) Diarrhea, dysentery, and worms. Drink strong tea solution (may promote voiding of worms).
 - (c) Skin problems (dry rashes and fungal infections). Apply cool compresses or soak affected part to relieve itching and promote healing.
 - (d) Lice and insect bites. Wash affected areas with tea to ease itching.
- b. Salicin/salicylic acid.
 - (1) Medical uses. Aches, colds, fever, inflammation, pain, sprains, and sore throat (aspirin-like qualities).
 - (2) Sources. Willow and aspen trees (**Figure V-7**).

- (3) Preparation.
 - (a) Gather twigs, buds, or cambium layer (soft, moist layer between the outer bark and the wood) of willow or aspen.
 - (b) Prepare tea as described in paragraph **3a(3)**.
 - (c) Make poultice.
 - Crush the plant or stems.
 - Make a pulpy mass.
- (4) Treatments.
 - (a) Chew on twigs, buds, or cambium for symptom relief.
 - (b) Drink tea for colds and sore throat.
 - (c) Use warm, moist poultice for aches and sprains.
 - Apply pulpy mass over injury.
 - Hold in place with a dressing.
- c. Common plantain.
 - (1) Medical uses. Itching, wounds, abrasions, stings, diarrhea, and dysentery.
 - (2) Source. There are over 200 plantain species with similar medicinal properties. The common plantain is shown in **Figure V-7**.
 - (3) Preparation.
 - (a) Brew tea from seeds.
 - (b) Brew tea from leaves.
 - (c) Make poultice of leaves.
 - (4) Treatments.
 - (a) Drink tea made from seeds for diarrhea or dysentery.
 - (b) Drink tea made from leaves for vitamin and minerals.
 - (c) Use poultice to treat cuts, sores, burns, and stings.
- d. Papain.
 - (1) Medical uses. Digestive aid, meat tenderizer, and a food source.
 - (2) Source. Fruit of the papaya tree (**Figure V-7**).
 - (3) Preparation.
 - (a) Make cuts in **unripe** fruit.
 - (b) Gather milky white sap for its papain content.
 - (c) Avoid getting sap in eyes or wounds.
 - (4) Treatments.
 - (a) Use sap to tenderize tough meat.
 - (b) Eat **ripe** fruit for food, vitamins, and minerals.

- e. Common Cattail.
- (1) Medical uses. Wounds, sores, boils, inflammations, burns, and an excellent food source.
 - (2) Source. Cattail plant found in marshes (**Figure V-7**).
 - (3) Preparation.
 - (a) Pound roots into a pulpy mass for a poultice.
 - (b) Cook and eat green bloom spikes.
 - (c) Collect yellow pollen for flour substitute.
 - (d) Peel and eat tender shoots (raw or cooked).
 - (4) Treatments.
 - (a) Apply poultice to affected area.
 - (b) Use plant for food, vitamins, and minerals.

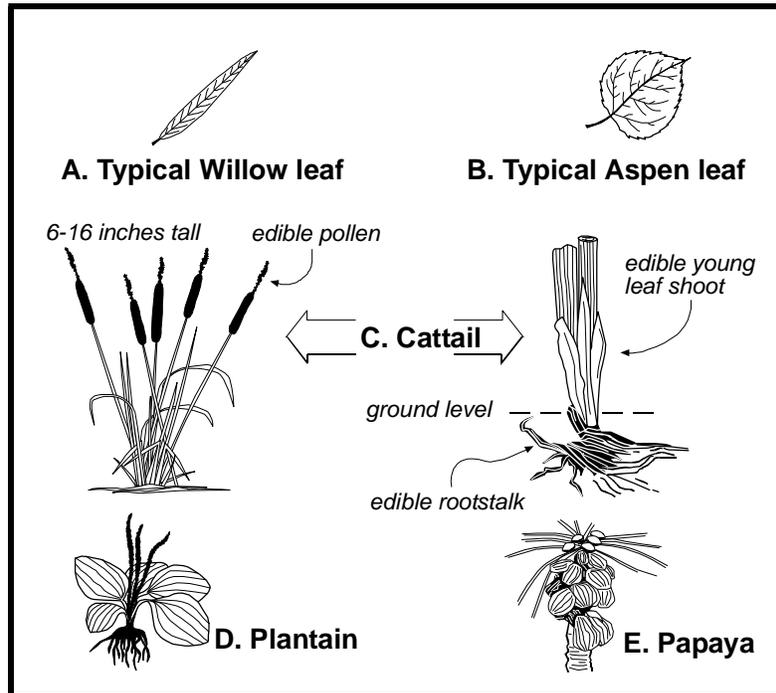


Figure V-7. Useful Plants

4. Health and Hygiene

- a. Stay clean (daily regimen).
 - (1) Minimize infection by washing. (Use white ashes, sand, or loamy soil as soap substitutes.)
 - (2) Comb and clean debris from hair.
 - (3) Cleanse mouth and brush teeth.
 - (a) Use hardwood twig as toothbrush (fray it by chewing on one end then use as brush).
 - (b) Use single strand of an inner core string from parachute cord for dental floss.
 - (c) Use clean finger to stimulate gum tissues by rubbing.
 - (d) Gargle with salt water to help prevent sore throat and aid in cleaning teeth and gums.
 - (4) Clean and protect feet.
 - (a) Change and wash socks
 - (b) Wash, dry, and massage.
 - (c) Check frequently for blisters and red areas.
 - (d) Use adhesive tape/mole skin to prevent damage.
- b. Exercise daily.
- c. Prevent and control parasites.
 - (1) Check body for lice, fleas, ticks, etc.
 - (a) Check body regularly.
 - (b) Pick off insects and eggs (**DO NOT** crush).
 - (2) Wash clothing and use repellents.
 - (3) Use smoke to fumigate clothing and equipment.

5. Rules for Avoiding Illness

- a. Purify all water obtained from natural sources by using iodine tablets, bleach, or boiling for 5 minutes.
- b. Locate latrines 200 feet from water and away from shelter.
- c. Wash hands before preparing food or water.
- d. Clean all eating utensils after each meal.
- e. Prevent insect bites by using repellent, netting, and clothing.
- f. Dry wet clothing as soon as possible.
- g. Eat varied diet.
- h. Try to get 7-8 hours sleep per day.

Chapter VI

PERSONAL PROTECTION

1. Priorities

- a. Evaluate available resources and situation, then accomplish individual tasks accordingly.
- b. First 24 hours in order of situational needs—
 - (1) Construct survival shelter according to selection criteria.
 - (2) Procure water.
 - (3) Establish multiple survival signals.
 - (4) Build Fire.
- c. Second 24 hours in order of situational needs—
 - (1) Construct necessary tools and weapons.
 - (2) Procure food.

2. Care and Use of Clothing

- a. Never discard clothing.
- b. Wear loose and layered clothing.
 - (1) Tight clothing restricts blood flow regulating body temperature.
 - (2) Layers create more dead air space.
- c. Keep entire body covered to prevent sunburn and dehydration in hot climates. When fully clothed, the majority of body heat escapes through the head and neck areas.
- d. Avoid overheating.
 - (1) Remove layers of clothing before strenuous activities.
 - (2) Use a hat to regulate body heat.
 - (3) Wear a hat when in direct sunlight (in hot environment).
- e. Dampen clothing when on the ocean in hot weather.
 - (1) Use salt water, **NOT** drinking water.
 - (2) Dry clothing before dark to prevent hypothermia.
- f. Keep clothing dry to maintain its insulation qualities (dry damp clothing in the sun or by a fire).
- g. If you fall into the water in the winter—
 - (1) Build fire.
 - (2) Remove wet clothing and rewarm by fire.
 - (3) Finish drying clothing by fire.

- h. If no fire is available—
 - (1) Remove clothing and get into sleeping bag (if available).
 - (2) Allow wet clothes to freeze.
 - (3) Break ice out of clothing.
- i. Keep clothing clean (dirt reduces its insulation qualities).
Examine clothing frequently for damage.
 - (1) **DO NOT** sit or lie directly on the ground.
 - (2) Wash clothing whenever possible.
 - (3) Repair when necessary by using—
 - (a) Needle and thread.
 - (b) Safety pins.
 - (c) Tape.
- j. Improvised foot protection (**Figure VI-1**).
 - (1) Cut **2** to **4** layers of cloth into a 30-inch square.
 - (2) Fold into a triangle.
 - (3) Center foot on triangle with toes toward corner.

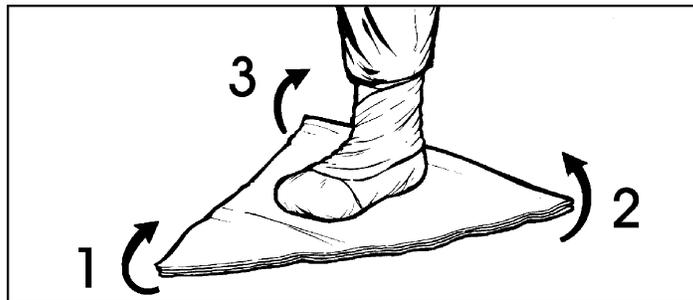


Figure VI-1 Improvised Foot Wear

- (4) Fold front over the toes.
- (5) Fold side corners, one at a time, over the instep.
- (6) Secure by rope, vines, tape, etc., or tuck into other layers of material.

3. Other Protective Equipment

- a. Sleeping bag.
 - (1) Fluff before use, **especially** at foot of bag.
 - (2) Air and dry daily to remove body moisture.

(3) Improvise with available material, dry grass, leaves, dry moss, etc.

b. Sun and snow goggles (**Figure VI-2**).

(1) Wear in bright sun or snow conditions.

(2) Improvise by cutting small horizontal slits in webbing, bark, or similar materials.

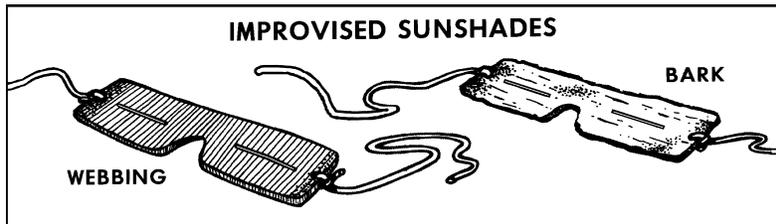


Figure VI-2. Sun and Snow Goggles

c. Gaiters (**Figure VI-3**). Used to protect from sand, snow, insects, and scratches (wrap material around lower leg and top of boots).

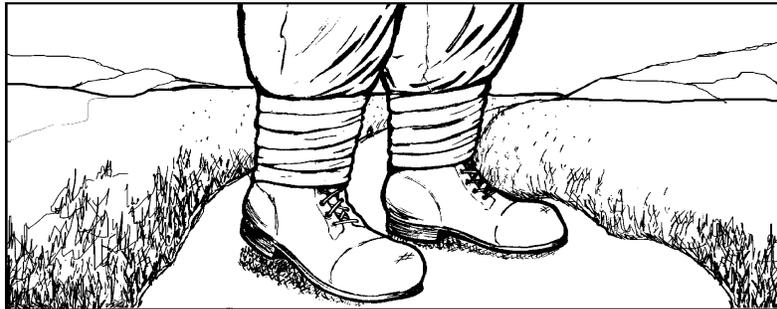


Figure VI-3. Gaiters

4. Shelters

Evasion considerations apply.

a. Site selection.

- (1) Near signal and recovery site.
- (2) Available food and water.
- (3) Avoid natural hazards:

- (a) Dead standing trees.
 - (b) Drainage and dry river beds except in combat areas.
 - (c) Avalanche areas.
- (4) Location large and level enough to lie down in.
- b. Types.
- (1) Immediate shelters. Find shelter needing minimal improvements (**Figure VI-4**).

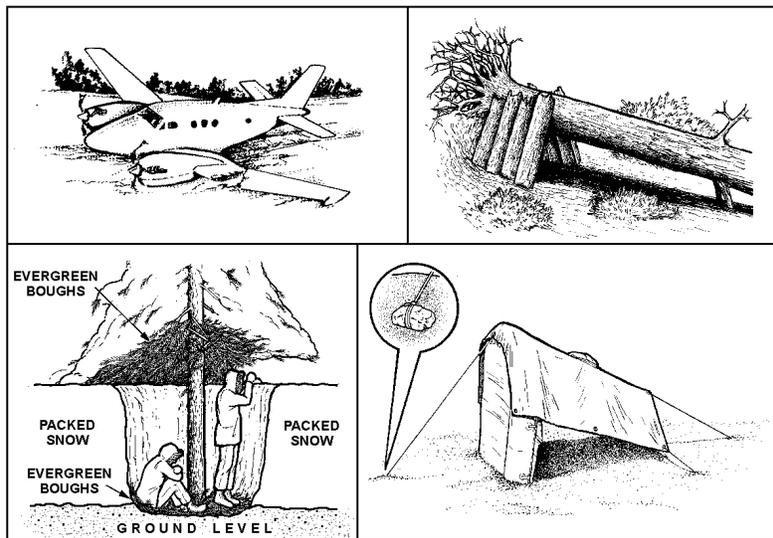


Figure VI-4. Immediate Shelters

(2) General shelter. Temperate climates require any shelter that gives protection from wind and rain.

(3) Thermal A Frame, Snow Trench, Snow Cave. (**Figures VI-5 through VI-7**). Cold climates require an enclosed, insulated shelter.

(a) Snow is the most abundant insulating material.

(b) Air vent is required to prevent carbon monoxide poisoning when using an open flame inside enclosed shelters.

Note: As a general rule, unless you can see your breath, your snow shelter is too warm and should be cooled down to preclude melting and dripping.

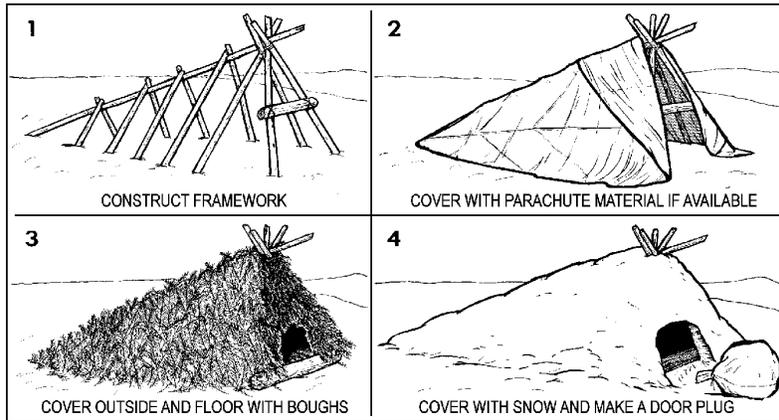


Figure VI-5. Thermal A Frame

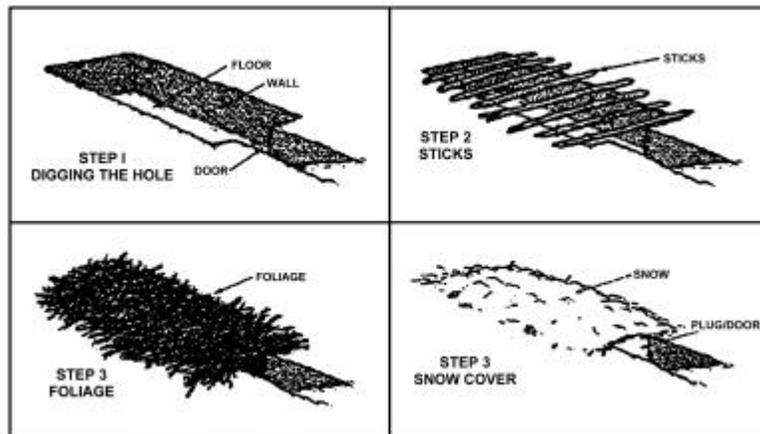


Figure VI-6. Snow Trench

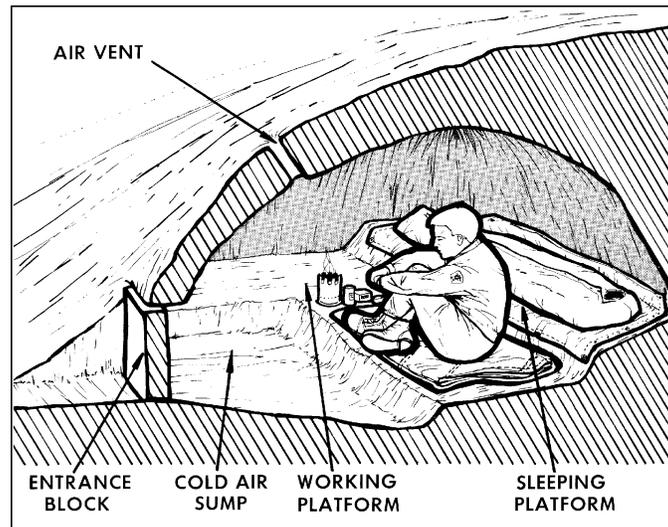


Figure VI-7. Snow Cave

(4) Shade shelter. Hot climates require a shade shelter to protect from ultraviolet rays (**Figure VI-8**).

(a) To reduce the surface temperature, the shelter floor should be elevated or dug down (approximately 18 inches).

(b) For thermal protection, a minimum of **2** layers of material suspended 12-18 inches above the head is required. White is the best color to reflect heat (inner most layer should be of darker material).

(5) Elevated platform shelter (**Figure VI-9**). Tropical/wet climates require enclosed, elevated shelter for protection from dampness and insects.

c. Shelter construction.

(1) Have entrance 45-90 degrees from prevailing wind.

(2) Cover with available material.

(a) If natural materials are used, arrange them in layers starting at the bottom with each layer overlapping the previous one. See **Figure VI-10** for an example.

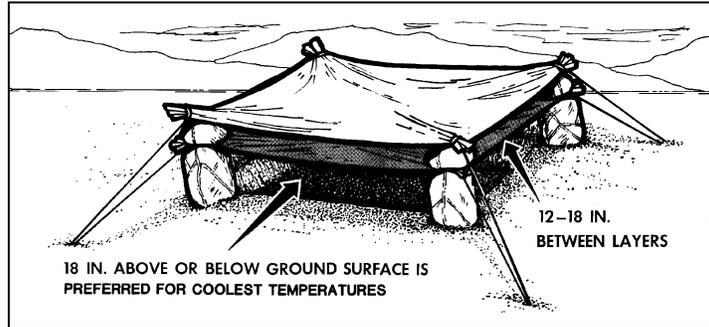


Figure VI-8. Poncho/Parachute Shade Shelter

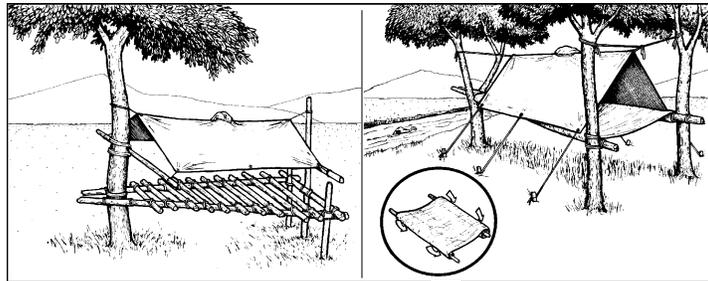


Figure VI-9. Elevated Platform Shelter

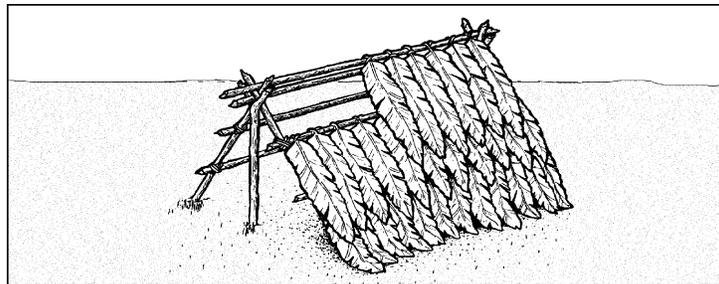


Figure VI-10. Shingle Method

- (b) If using porous material like parachute, blankets,
etc.—
- Stretch as tight as possible
 - Use a 40–60 degree slope.
 - Use additional layers in heavy rain.
- d. Shelter construction materials:
- (1) Raft and raft parts.
 - (2) Vehicle or aircraft parts.
 - (3) Blankets, poncho, or parachute material.
 - (4) Sheet of plastic or plastic bag.
 - (5) Bark peeled off dead trees.
 - (6) Boughs, broad leaves, dry moss.
 - (7) Grass and sod.
 - (8) Snow.
 - (9) Sand and rocks.
- e. Bed construction. Construct a bed to protect from cold, damp,
ground using—
- (1) Raft or foam rubber from vehicle seats.
 - (2) Boughs, leaves, or dry moss.

5. Fires

CAUTION: Weigh hazards and risks of detection against the need for a fire.

- a. Evasion considerations:
- (1) Use trees or other sources to dissipate smoke.
 - (2) Use fires at dusk, dawn, or during inclement weather.
 - (3) Use fires at times when the local populace is cooking.
- b. Fire building. The **3** essential elements for starting a fire are heat, fuel, and oxygen.
- (1) Heat sources:
 - (a) Matches or lighter.
 - (b) Flint and steel (experiment with various rocks and metals until a good spark is produced).
 - (c) Sparks from batteries.
 - (d) Concentrated sunlight (use magnifying glass or flashlight reflectors).
 - (e) Pyrotechnics, such as flares (**last resort**), etc.

(f) Friction method (**Figure VI-11**). Without prior training, this method is difficult to master and requires a lot of time to build the device.

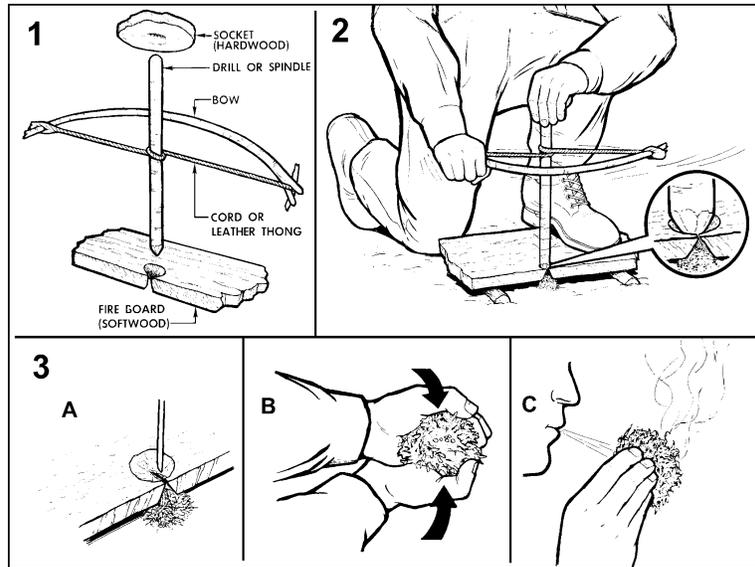


Figure VI-11. Friction Method

Note: If possible, carry a fire-starting device with you.

(2) Fuel is divided into **3** categories: tinder, kindling, and fuel. (Gather large amounts of each category before igniting the fire.)

(a) **Tinder.** Tinder must be very finely shaved or shredded to provide a low combustion point and fluffed to allow oxygen to flow through. (To get tinder to burn hotter and longer, saturate with Vaseline, Chapstick, insect repellent, aircraft fuel, etc.) Examples of tinder include—

- Cotton.
- Candle (shred the wick, not the wax).
- Plastic spoon, fork, or knife.
- Foam rubber.

- Dry bark.
- Dry grasses.
- Gun powder.
- Pitch.
- Petroleum products.

(b) **Kindling.** Kindling must be small enough to ignite from the small flame of the tinder. Gradually add larger kindling until arriving at the size of fuel to burn.

(c) **Fuel.** Examples of fuel include—

- Dry hardwood (removing bark reduces smoke).
- Bamboo (open chambers to prevent explosion).
- Dry dung.

c. Types. Fires are built to meet specific needs or uses.

(1) Tepee fire (**Figure VI-12**). Use the tepee fire to produce a concentrated heat source for cooking, lighting, or signaling.

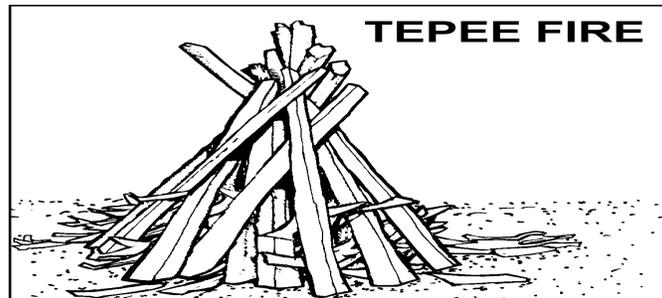


Figure VI-12. Tepee Fire

(2) Log cabin fire (**Figure VI-13**). Use the log cabin fire to produce large amounts of light and heat, to dry out wet wood, and provide coals for cooking, etc.

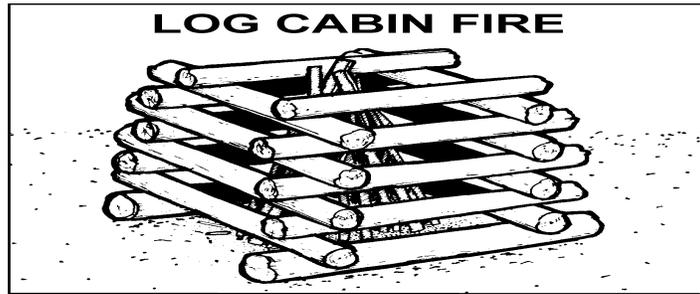


Figure VI-13. Log Cabin or Pyramid Fires

(3) Sod fire and reflector (**Figure VI-14**). Use fire reflectors to get the most warmth from a fire. Build fires against rocks or logs.

CAUTION: DO NOT use porous rocks or riverbed rock—they may explode when heated.

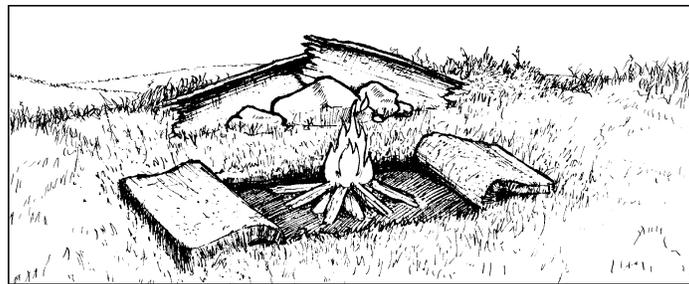


Figure VI-14. Sod Fire and Reflector

(4) Dakota fire hole (Figure VI-15). Use the Dakota fire hole for high winds or evasion situations.

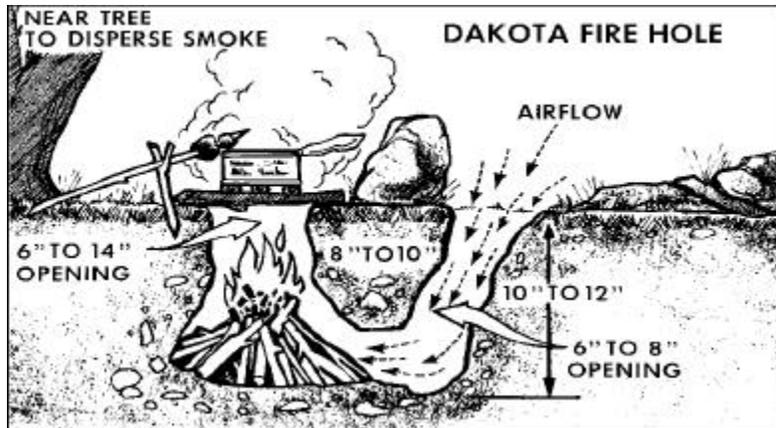


Figure VI-15. Dakota Fire Hole

(5) Improved stoves (Figure VI-16). These are very efficient.

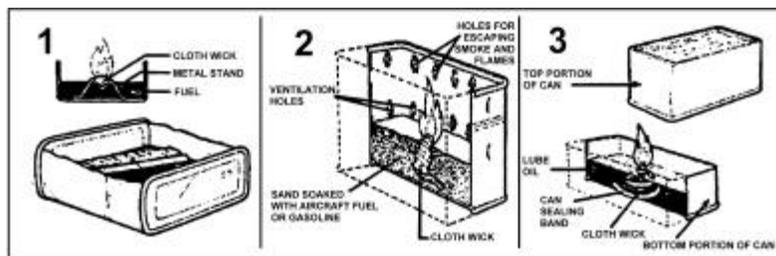


Figure VI-16. Improved Stove

Chapter VII

Water

1. Water Requirements

Drink **extra** water. Minimum 2 quarts per day to maintain fluid level. Exertion, heat, injury, or an illness increases water loss.

Note: Pale yellow urine indicates adequate hydration.

2. Water Procurement

a. **DO NOT** drink—

- (1) Urine.
- (2) Fish juices.
- (3) Blood.
- (4) Sea water.
- (5) Alcohol.
- (6) Melted water from new sea ice.

b. Water sources:

- (1) Surface water (streams, lakes, and springs).
- (2) Precipitation (rain, snow, dew, sleet) (**Figure VII-1**).
- (3) Subsurface (wells and cisterns).
- (4) Ground water (when no surface water is available)

(**Figure VII-2**).

- (a) Abundance of lush green vegetation.
- (b) Drainages and low-lying areas.
- (c) “**V**” intersecting game trails often point to water.
- (d) Presence of swarming insects indicates water is near.
- (e) Bird flight in the early morning or late afternoon

might indicate the direction to water.

(5) Snow or ice.

(a) **DO NOT** eat ice or snow.

- Lowers body temperature.
- Induces dehydration.
- Causes minor cold injury to lips and mouth.

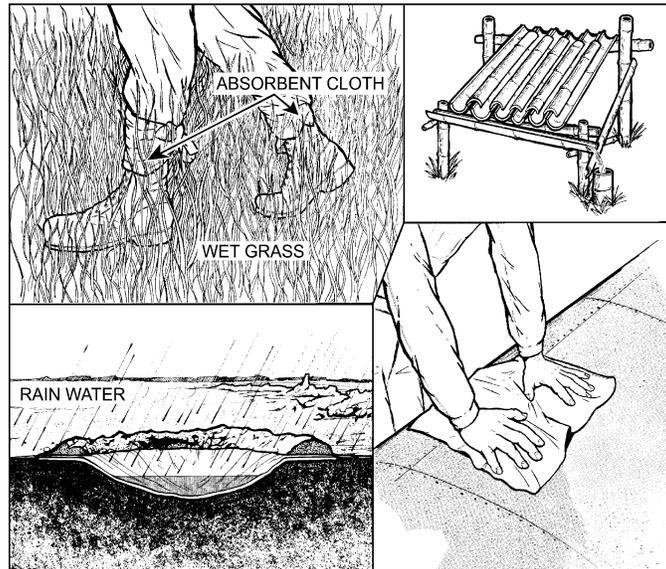


Figure VII-1. Water Procurement

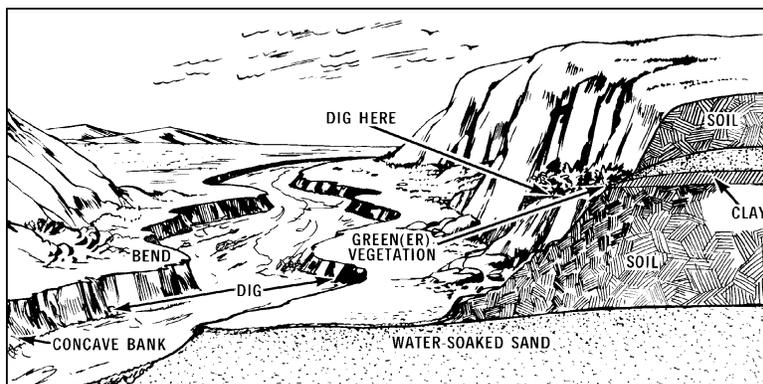


Figure VII-2. Water Indicators

- (b) Melt with fire.
 - Stir frequently to prevent damaging container.
 - Speed the process by adding hot rocks or water.
- (c) Melt with body heat.
 - Use waterproof container.
 - Place between layers of clothing.
 - DO NOT place next to the skin.**
- (d) Use a water generator (**Figure VII-3**).

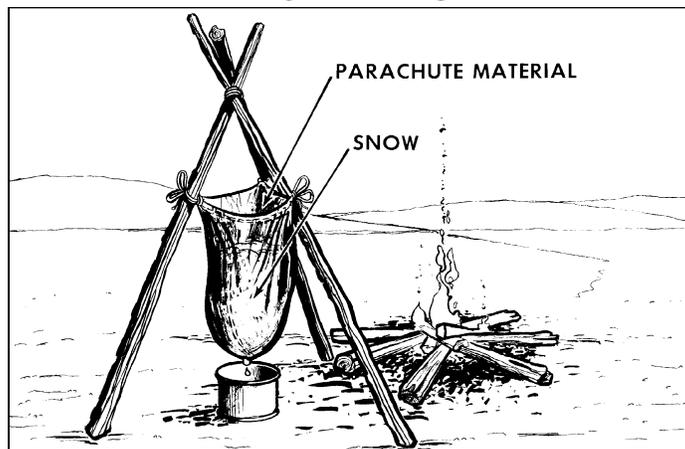


Figure VII-3. Water Generator

- (6) Open seas.
 - (a) Water available in survival kits.
 - (b) Precipitation.
 - Drink as much as possible.
 - Catch rain in spray shields and life raft covers.
 - Collect dew off raft.
 - (c) Old sea ice or icebergs (**Table VII-1**).

Table VII-1. Old Sea Ice or Icebergs

OLD SEA ICE	NEW SEA ICE
Bluish or blackish	Milky or grey
Shatters easily	Does not break easily
Rounded corners	Sharp edges
Tastes relatively salt-free	Tastes extremely salty

- (7) Tropical areas.
 - (a) All open sources previously mentioned.
 - (b) Vegetation.
 - Plants with hollow sections can collect moisture.
 - Leaning Tree. Cloth absorbs rain running down tree and drips into container (**Figure VII-4**).

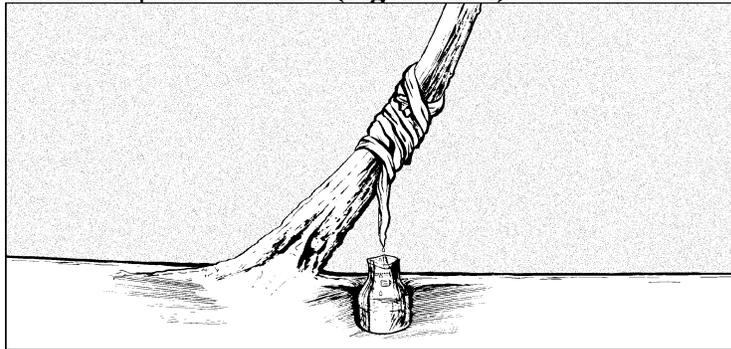


Figure VII-4. Leaning Tree

- Banana plants.
- Water trees (avoid milky sap).
 - Tap before dark. Let sap stop running and harden during the daytime.
 - Produce most water at night.
 - For evasion situations, bore into the roots and collect water.
- Vines (**Figure VII-5A**).
 - Cut bark (**DO NOT** use milky sap).
 - If juice is clear and water like, cut as large a piece of vine as possible (cut the top first).
 - Pour into hand to check smell, color, and taste to determine if drinkable.
 - DO NOT** touch vine to lips.
 - When water flow stops, cut off 6 inches of opposite end, water will flow again.
- Old bamboo.
 - Shake and listen for water.
 - Bore hole at bottom of section to obtain water.

- Cut out entire section to carry with you.
- Filter and purify.
- Green bamboo (**Figure VII-5B**).

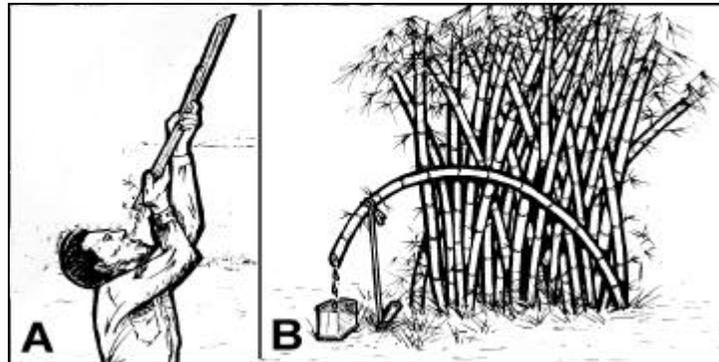


Figure VII-5 A and B. Water Vines and Green Bamboo

CAUTION: Liquid contained in green coconuts (**ripe** coconuts may cause diarrhea).

- Beach well. Along the coast, obtain water by digging a beach well (**Figure VII-6**).

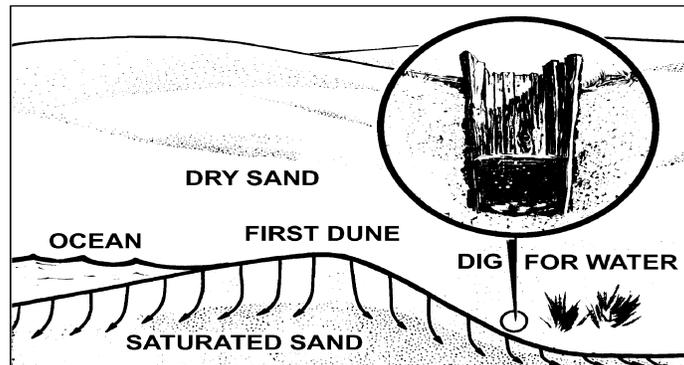


Figure VII-6. Beach Well

- (8) Dry areas.
 (a) Solar still (**Figure VII-7**).
 (b) Vegetation bag (**Figure VII-8**).

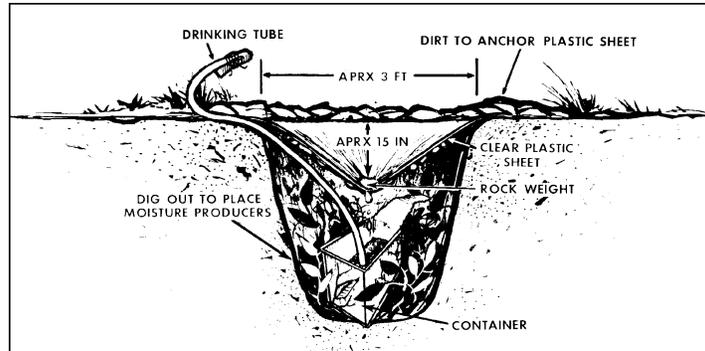


Figure VII-7. Solar Still

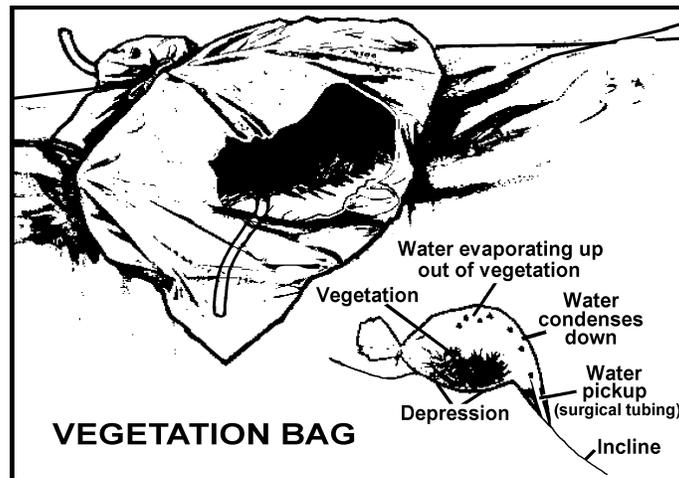


Figure VII-8. Vegetation Bag

- (c) Transpiration bag (**Figure VII-9**).
 •Water bag must be clear.
 •Water will taste like the plant smells.

(d) Seepage basin (**Figure VII-10**).

CAUTION: DO NOT use poisonous/toxic plants in vegetation/transpiration bags.



Figure VII-9. Transpiration Bag

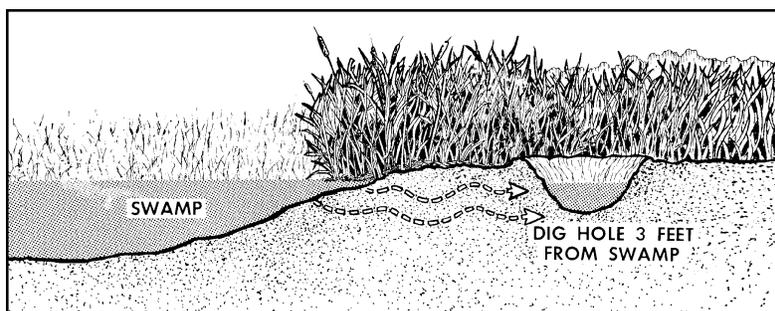


Figure VII-10. Seepage Basin

3. Water Preparation and Storage

- a. Filtration. Filter through porous material (sand/charcoal).
- b. Purification.
 - (1) Water from live plants requires no further treatment.
 - (2) Purify all other water.
 - (a) Boil at least 1 minute.

- (b) Pour from one container to another to improve taste to aerate.
- (c) Water purification tablets. Follow instructions on package.
- c. Potable Water.
 - (1) If water cannot be purified, obtain water from a clear, cold, clean, and fast running source (if possible).
 - (2) Put in clear container and expose to the sun's ultraviolet rays to kill bacteria.
- d. Storage. To prevent contamination, use a clean, covered or sealed container.
 - (1) Trash bag.
 - (2) Prophylactic.
 - (3) Section of bamboo.
 - (4) Flotation gear.

Chapter VIII

FOOD

1. Food Procurement

a. Sources and location.

- (1) Mammals can be found where—
 - (a) Trails lead to watering, feeding, and bedding areas.
 - (b) Droppings or tracks look fresh.
- (2) Birds can be found by—
 - (a) Observing the direction of flight in the early morning and late afternoon (leads to feeding, watering, and roosting areas).
 - (b) Listening for bird noises (indication of nesting areas)
- (3) Fish and other marine life locations (**Figure VIII-1**).



Figure VIII-1. Fishing Locations

- (4) Reptiles and amphibians are found almost worldwide.
 - (5) Insects are found—
 - (a) In dead logs and stumps.
 - (b) At ant and termite mounds.
 - (c) On ponds, lakes, and slow moving streams.
- ##### b. Procurement techniques.
- (1) Snares—
 - (a) Work while unattended.

- (b) Location:
- Trails leading to water, feeding, and bedding areas.
 - Mouth of dens (**Figure VIII-2**).



Figure VIII-2. Snare Placement

- (c) Construction of simple loop snare.
- Use materials that will not break under the strain of holding an animal.
 - Use a figure 8 (locking loop) if wire is used (**Figure VIII-3**).
 - Once tightened, the wire locks in place, preventing reopening, and the animal's escape.
 - To construct a squirrel pole (**Figure VIII-4**) use simple loop snares.
 - Make noose opening slightly larger than the animal's head (**3-finger** width for squirrels, **fist-sized** for rabbits).
- (d) Placement of snares (set as many as possible).
- Avoid disturbing the area.
 - Use funneling (natural or improvised) (**Figure VIII-5**).

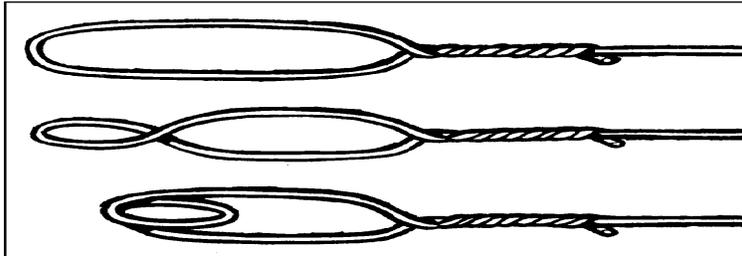


Figure VIII-3. Locking Loop

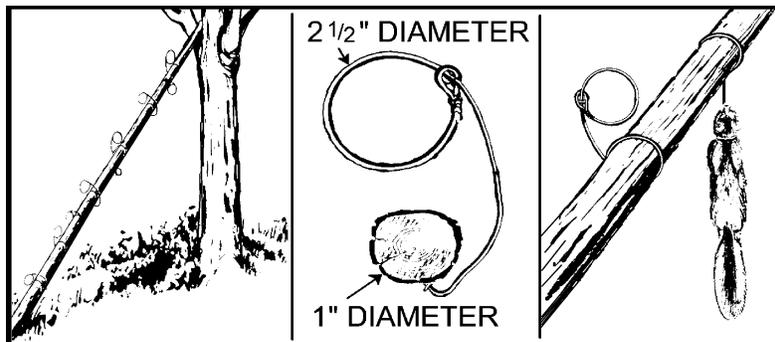


Figure VIII-4. Squirrel Pole



Figure VIII-5. Funneling

- (2) Noose stick (easier and safer to use than the hands).
- (3) Twist stick (**Figure VIII-6**).
 - (a) Insert forked stick into a den until something soft is met.
 - (b) Twist the stick, binding the animal's hide in the fork.
 - (c) Remove the animal from the den.
 - (d) Be ready to **kill** the animal; **it may be dangerous**.

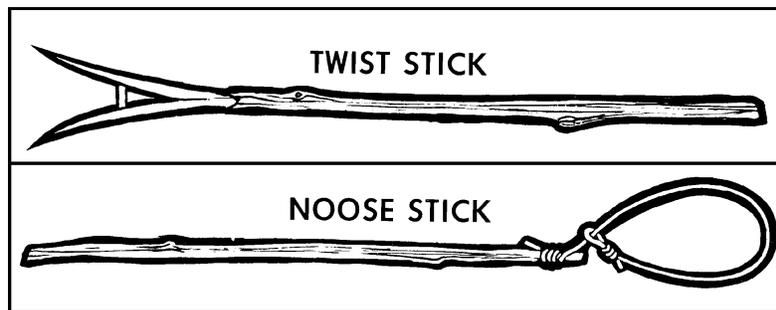


Figure VIII-6. Procurement Devices

- (4) Hunting and fishing devices. (See **Figure VIII-7** for fishing procurement methods.)
 - (a) Club or rock.
 - (b) Spear.
 - (c) Slingshot.
 - (d) Pole, line, and hook.
 - (e) Net.
 - (f) Trap.

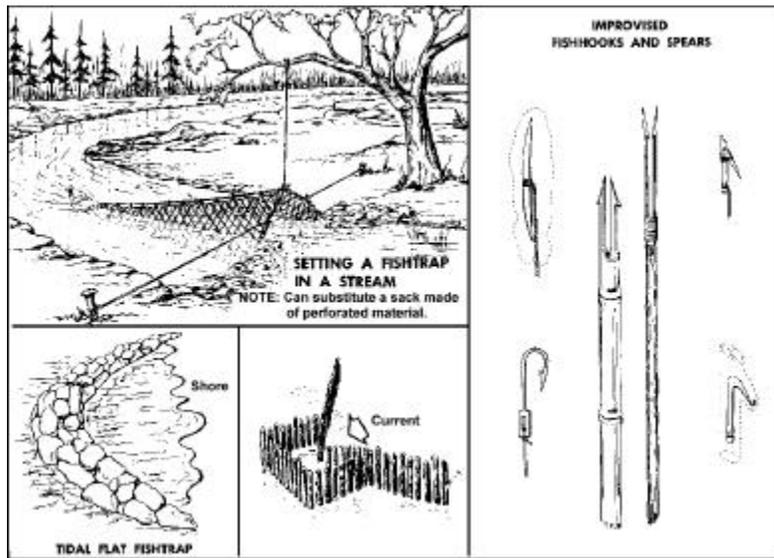


Figure VIII-7. Procurement Methods

- (5) Precautions:
- (a) Wear shoes to protect the feet when wading in water.
 - (b) Avoid reaching into dark holes.
 - (c) **Kill** animals before handling. Animals in distress may attract the enemy.
 - (d) **DO NOT** secure fishing lines to yourself or the raft.
 - (e) **Kill** fish before bringing them into the raft.
 - (f) **DO NOT** eat fish with—
 - Spines.
 - Unpleasant odor.
 - Pale, slimy gills.
 - Sunken eyes.
 - Flabby skin.
 - Flesh that remains dented when pressed.
 - (g) **DO NOT** eat fish eggs or liver (entrails).
 - (h) Avoid all crustaceans above the high tide mark.
 - (i) Avoid cone-shaped shells (**Figure VIII-8**).

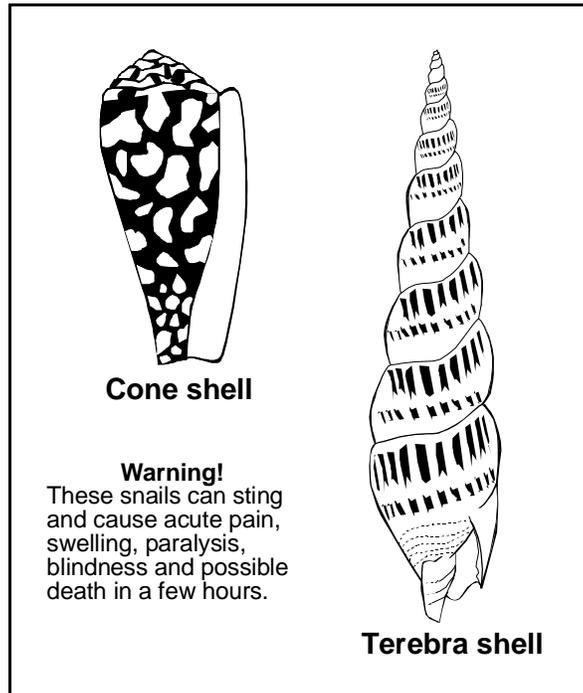


Figure VIII-8. Cone-Shaped Shells of Venomous Snails

- (j) Avoid hairy insects; the hairs could cause irritation or infection.
- (k) Avoid poisonous insects, for example:
- Centipedes.
 - Scorpions.
 - Poisonous spiders.
- (l) Avoid disease carrying insects, such as—
- Flies.
 - Mosquitoes.
 - Ticks.

c. Plant Foods. **Before using the following guide use your evasion chart to identify edible plants:**

Note: If you cannot positively identify an edible plant and choose to try an unknown plant, these guidelines may help determine edibility.

(1) Selection criteria.

(a) Before testing for edibility, ensure there are enough plants to make testing worth your time and effort. Each part of a plant (roots, leaves, stems, bark, etc.) requires more than 24 hours to test. **DO NOT** waste time testing a plant that is not abundant.

(b) Test only **1** part of **1** plant at a time.

(c) Remember that eating large portions of plant food on an empty stomach may cause diarrhea, nausea, or cramps. **Two** good examples are **green apples** and **wild onions**. Even after testing food and finding it safe, eat in moderation.

(2) Avoid plants with the following characteristics:

Note: Using these guidelines in selecting plants for food may eliminate some edible plants; however, these guidelines will help prevent choosing potentially toxic plants.

(a) Milky sap (dandelion has milky sap but is safe to eat and easily recognizable).

(b) Spines, fine hairs, and thorns (skin irritants/contact dermatitis). **Prickly pear** and **thistles** are exceptions. **Bracken fern fiddleheads** also violate this guideline.

(c) Mushrooms and fungus.

(d) Umbrella shaped flowers (hemlock is eliminated).

(e) Bulbs (**only** onions smell like onions).

(f) Grain heads with pink, purplish, or black spurs.

(g) Beans, bulbs, or seeds inside pods.

(h) Old or wilted leaves.

(i) Plants with shiny leaves.

(j) White and yellow berries. (Aggregate berries such as black and dewberries are always edible, test all others before eating.)

(k) Almond scent in woody parts and leaves.

d. Test procedures.

CAUTION: Test all parts of the plant for edibility. Some plants have both edible and inedible parts. **NEVER ASSUME** a part that proved edible when cooked is edible raw, test the part raw before eating. The same part or plant may produce varying reactions in different individuals.

- (1) Test only **1** part of a plant at a time.
- (2) Separate the plant into its basic components (stems, roots, buds, and flowers).
- (3) Smell the food for strong acid odors. Remember, smell alone does not indicate a plant is edible or inedible.
- (4) **DO NOT** eat 8 hours before the test and drink only purified water.
- (5) During the 8 hours you abstain from eating, test for contact poisoning by placing a piece of the plant on the inside of your elbow or wrist. The sap or juice should contact the skin. Usually 15 minutes is enough time to allow for a reaction.
- (6) During testing, take **NOTHING** by mouth **EXCEPT** purified water and the plant you are testing.
- (7) Select a small portion of a single part and prepare it the way you plan to eat it.
- (8) Before placing the prepared plant in your mouth, touch a small portion (a pinch) to the outer surface of your lip to test for burning or itching.
- (9) If after 3 minutes there is no reaction on your lip, place the plant on your tongue and hold it for 15 minutes.
- (10) If there is no reaction, thoroughly chew a pinch and hold it in your mouth for 15 minutes (**DO NOT SWALLOW**). If any ill effects occur, rinse out your mouth with water.
- (11) If nothing abnormal occurs, swallow the food and wait 8 hours. If **any ill effects** occur during this period, **induce** vomiting and drink a water and charcoal mixture.
- (12) If no ill effects occur, eat **¼ cup** of the same plant prepared the same way. Wait another 8 hours. If no ill effects occur, the plant part as prepared is safe for eating.

CAUTION:

1. Ripe tropical fruits should be peeled and eaten raw. Softness, rather than color, is the best indicator of ripeness. Cook unripe fruits and discard seeds and skin.
2. Cook underground portions when possible to reduce bacterial contamination and ease digestion of their generally high starch content.
3. During evasion, you may not be able to cook. Concentrate your efforts on leafy green plants, ripe fruits, and above ground ripe vegetables not requiring significant preparation.

2. Food Preparation

Animal food gives the greatest food value per pound.

a. Butchering and skinning.

(1) Mammals.

(a) Remove the skin and save for other uses.

(a) One cut skinning of small game (**Figure VIII-9**).

- Open the abdominal cavity.

- Avoid rupturing the intestines.

- Remove the intestines.

- Save inner organs (heart, liver, and kidneys) and all

meaty parts of the skull, brain, tongue, and eyes.

(b) Wash when ready to use.

(c) If preserving the meat, remove it from the bones.

(d) Unused or inedible organs and entrails may be used as bait for other game.

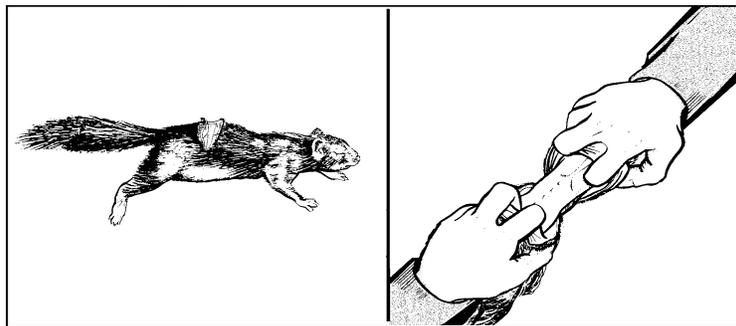


Figure VIII-9. Small Game Skinning

- (2) Frogs and snakes.
 - (a) Skin.
 - (b) Discard skin, head with 2 inches of body, and internal organs.
- (3) Fish.
 - (a) Scale (if necessary) and gut fish soon after it is caught.
 - (b) Insert knifepoint into anus of fish and cut open the belly.
 - (c) Remove entrails.
 - (d) Remove gills to prevent spoilage.
- (4) Birds.
 - (a) Gut soon after killing.
 - (b) Protect from flies.
 - (c) Skin or pluck them.
 - (d) Skin scavengers and sea birds.
- (5) Insects.
 - (a) Remove all hard portions such as the legs of grasshoppers or crickets. (The rest is edible.)
 - (b) Recommend cooking grasshopper-size insects.

CAUTION: Dead insects spoil rapidly, **DO NOT** save.

- (6) Fruits, berries, and most nuts can be eaten raw.
- b. Cooking.

CAUTION: To kill parasites, thoroughly cook all wild game, freshwater fish, clams, mussels, snails, crawfish, and scavenger birds. Saltwater fish may be eaten raw.

- (1) Boiling (most nutritious method of cooking—drink the broth).
 - (a) Make metal cooking containers from ration cans.
 - (b) Drop heated rocks into containers to boil water or cook food.
- (2) Baking.
 - (a) Wrap in leaves or pack in mud.
 - (b) Bury food in dirt under coals of fire.

- (3) Leaching. Some nuts (acorns) must be leached to remove the bitter taste of tannin. Use one of the following leaching methods:
- (a) First method:
 - Soaking and pouring the water off.
 - Crushing and pouring water through. Cold water should be tried first; however, boiling water is sometimes best.
 - Discarding water.
 - (b) Second method:
 - Boil, pour off water, and taste the plant.
 - If bitter, repeat process until palatable.
- (4) Roasting.
- (a) Shake shelled nuts in a container with hot coals.
 - (b) Roast thinly sliced meat and insects over a candle.

3. Food Preservation

- b. Keeping an animal alive.
- c. Refrigerating.
 - (1) Long term.
 - (a) Food buried in snow maintains a temperature of approximately 32 degrees F.
 - (b) Frozen food will not decompose (freeze in meal-size portions).
 - (2) Short term.
 - (a) Food wrapped in waterproof material and placed in a stream remains cool in summer months.
 - (b) Earth below the surface, particularly in shady areas or along streams, is cooler than the surface.
 - (c) Wrap food in absorbent material such as cotton and re-wet as the water evaporates.
- c. Drying and smoking removes moisture and preserves food.
 - (1) Use salt to improve flavor and promote drying.
 - (2) Cut or pound meat into thin strips.
 - (3) Remove fat.
 - (4) **DO NOT** use pitch woods such as fir or pine; they produce soot giving the meat an undesirable taste.

- d. Protecting meat from animals and insects.
 - (1) Wrapping food.
 - (a) Use clean material.
 - (b) Wrap pieces individually.
 - (c) Ensure all corners of the wrapping are insect proof.
 - (d) Wrap soft fruits and berries in leaves or moss.
 - (2) Hanging meat.
 - (a) Hang meat in the shade.
 - (b) Cover during daylight hours to protect from insects.
 - (3) Packing meat on the trail.
 - (a) Wrap before flies appear in the morning.
 - (b) Place meat in fabric or clothing for insulation.
 - (c) Place meat inside the pack for carrying. Soft material acts as insulation helping keep the meat cool.
 - (d) Carry shellfish, crabs, and shrimp in wet seaweed.
- e. **DO NOT** store food in the shelter; it attracts unwanted animals.

Chapter IX
INDUCED CONDITIONS

(NUCLEAR, BIOLOGICAL, AND CHEMICAL CONSIDERATIONS)

1. Nuclear Conditions

CAUTION: Radiation protection depends on time of exposure, distance from the source, and shielding.

a. Protection.

- (1) **FIND PROTECTIVE SHELTER IMMEDIATELY!**
- (2) Gather all equipment for survival (time permitting).
- (3) Avoid detection and capture.

(a) Seek existing shelter that may be improved (**Figure**

IX-1).



Figure IX-1. Immediate Action Shelter

- (b) If no shelter is available, dig a trench or foxhole as follows:
- Dig trench deep enough for protection, then enlarge for comfort (**Figure IX-2**).
 - Cover with available material.

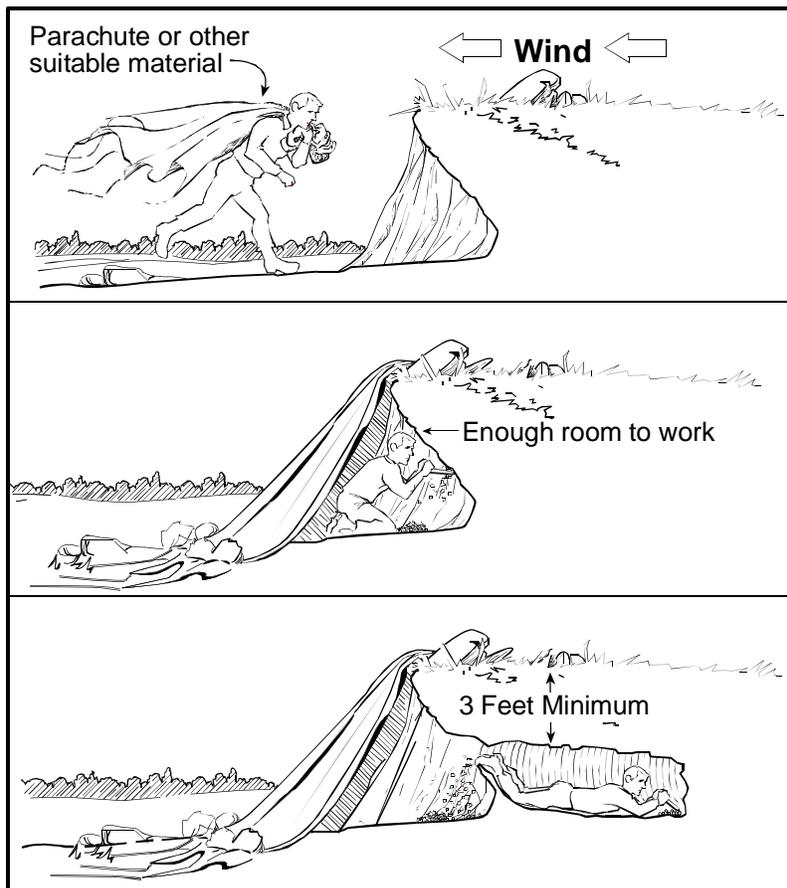


Figure IX-2. Improvised Shelter

(4) Radiation shielding efficiencies (**Figure IX-3**).

NUCLEAR EXPLOSIONS: Fall flat. Cover exposed body parts. Present minimal profile to direction of blast. DO NOT look at fireball! Remain prone until blast effects are over.				
SHELTER: Pick, as soon as possible, 5 minutes unsheltered is maximum! Priority: (1) Cave or tunnel covered with 3 or more feet of earth. (2) Storm/storage cellars (3) Culverts. (4) Basements. (5) Abandoned stone/mud buildings. (6) Foxhole 4 feet deep (remove topsoil within 2 feet radius of foxhole lip).				
RADIATION SHIELDING EFFICIENCIES				
Iron/Steel	.7 inches	Cinder Block	5.3 inches	One thickness reduces received radiation dose by 1/2. Additional thickness added to any amount of thickness reduces received radiation dose by 1/2.
Brick	2.0 inches	Ice	6.8 inches	
Concrete	2.2 inches	Wood (Soft)	8.8 inches	
Earth	3.3 inches	Snow	20.3 inches	
SHELTER SURVIVAL: Keep contaminated materials out of shelter. Good Weather: Bury contaminated clothing outside of shelter (recover later). Bad Weather: Shake strongly or beat with branches. Rinse and /or shake wet clothing. DO NOT wring out!				
PERSONAL HYGIENE: Wash entire body with soap and <i>any</i> water; give close attention to fingernails and hairy parts. No Water: Wipe all exposed skin surfaces with clean cloth or uncontaminated soil. Fallout/dusty conditions--keep entire body covered. Keep handkerchief/cloth over mouth and nose. Improvise goggles. DO NOT smoke!				
DAILY RADIATION TIME TABLE for NO RATE METER				
4-6	Complete isolation	9-12	2-4 hours exposure per day	
3-7	Brief exposure (30 minutes maximum)	13	Normal movement.	
8	Brief exposure (1 hour maximum)			

Figure IX-3. Radiation Shielding Efficiencies

(5) Leave contaminated equipment and clothing near shelter for retrieval after radioactive decay.

(6) Lie down, keep warm, sleep, and rest.

b. Substance:

(1) Water. Allow no more than 30 minutes exposure on **3d** day for water procurement.

(a) Water sources (in order of preference):

- Springs, wells, or underground sources are **safest**.
- Water in pipes/containers in abandoned buildings.
- Snow (**6 or more inches below** the surface during

the fallout).

- Streams and rivers (filtered before drinking).
 - Lakes, ponds, pools, etc.
 - Water from below the surface (**DO NOT** stir up the water).
- Use a seep well.
- (b) Water preparation (**Figures IX-4 and IX-5**).
- Filtering through earth removes 99 percent of radioactivity.
 - Purify all water sources.
- (2) Food.
- (a) Processed foods (canned or packaged) are preferred; wash and wipe containers before use.
- (b) Animal foods.
- Avoid animals that appear to be sick or dying.
 - Skin carefully to avoid contaminating the meat.
 - Before cooking, cut meat away from the bone, leaving at least 1/8 inch of meat on the bone.
 - Discard all internal organs.
 - Cook all meat until **very well** done.
- (c) Avoid.
- Aquatic food sources (use only in extreme emergencies because of high concentration of radiation).
 - Shells of all eggs (contents will be safe to eat).
 - Milk from animals.
- (d) Plant foods (in order of preference).
- Plants whose edible portions grow underground (for example, potatoes, turnips, carrots, etc.). Wash and remove skin.
 - Edible portions growing above ground that can be washed and peeled or skinned (bananas, apples, etc.).
 - Smooth skinned vegetables, fruits, or above ground plants that are not easily peeled or washed.

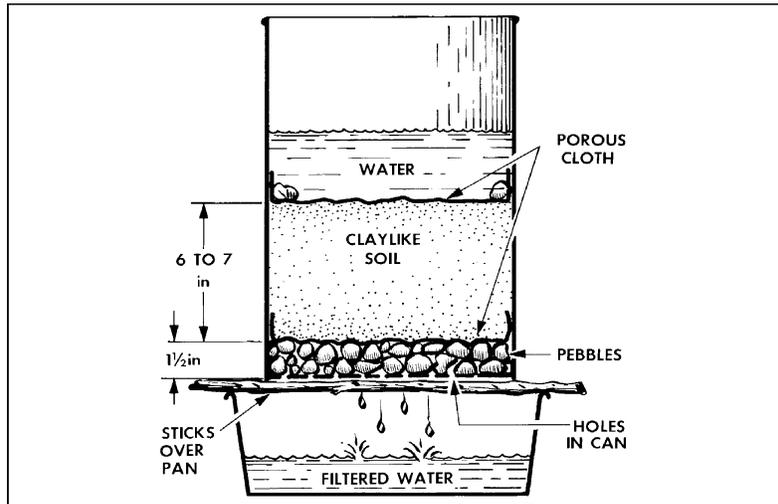


Figure IX-4. Filtration Systems, Filtering Water

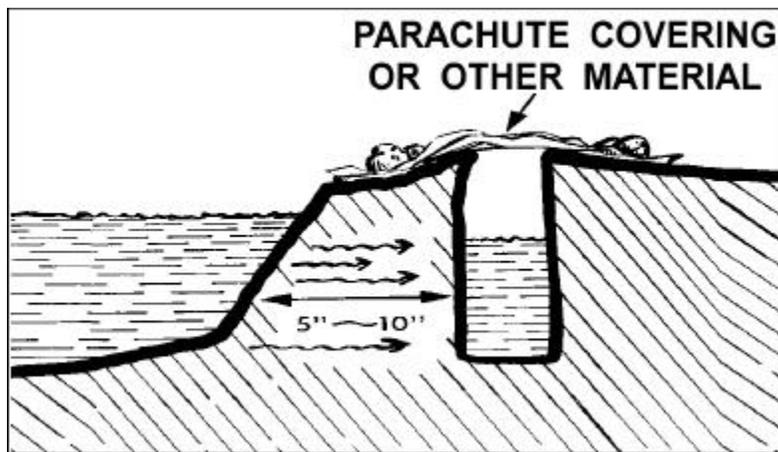


Figure IX-5. Filtration Systems, Settling Water

- c. Self-aid:
 - (1) General rules:
 - (a) Prevent exposure to contaminants.
 - (b) Use personal hygiene practices and remove body waste from shelter.
 - (c) Rest, avoid fatigue.
 - (d) Drink liquids.
 - (2) Wounds.
 - (a) Clean affected area.
 - (b) Use antibacterial ointment or cleaning solution.
 - (c) Cover with clean dressing.
 - (d) Watch for signs of infection.
 - (3) Burns.
 - (a) Clean affected area.
 - (b) Cover with clean dressing.
 - (4) Radiation sickness (nausea, weakness, fatigue, vomiting, diarrhea, loss of hair, radiation burns).
 - (a) Time is required to overcome.
 - (b) Rest.
 - (c) Drink fluids.
 - (d) Maintain food intake.
 - (e) Prevent additional exposure.

2. Biological Conditions

- a. Clues which may alert you to a biological attack follow:
 - (1) Enemy aircraft dropping objects or spraying.
 - (2) Breakable containers or unusual bombs, particularly those bursting with little or no blast, and muffled explosions.
 - (3) Smoke or mist of unknown origin.
 - (4) Unusual substances on the ground or vegetation; sick looking plants or crops.
- b. Protection from biological agents follow:
 - (1) Use protective equipment.
 - (2) Bathe as soon as the situation permits.
 - (3) Wash hair and body thoroughly with soap and water.
 - (4) Clean thoroughly under fingernails.
 - (5) Clean teeth, gums, tongue, and roof of mouth frequently.

- c. Survival tips for biological conditions follow:
 - (1) Keep your body and living area clean.
 - (2) Stay alert for clues of biological attack.
 - (3) Keep nose, mouth, and skin covered.
 - (4) Keep food and water protected. Bottled or canned foods are safe if sealed. If in doubt, boil food and water for 10 minutes.
 - (5) Construct shelter in a clear area, away from vegetation, with entrance 90 degrees to the prevailing wind.
 - (6) If traveling, travel crosswind or upwind (taking advantage of terrain to stay away from depressions).

3. Chemical Conditions

- a. Detecting.
 - (1) Smell. Many agents have little or no odor.
 - (2) Sight. Many agents are colorless:
 - (a) Color. Yellow, orange, or red smoke or mist.
 - (b) Liquid. Oily, dark patches on leaves, ground, etc.
 - (c) Gas. Some agents appear as a mist immediately after shell burst.
 - (d) Solid. Most solid state agents have some color.
 - (3) Sound. Muffled explosions are possible indications of chemical agent bombs.
 - (4) Feel. Irritation to the nose, eyes, or skin and/or moisture on the skin are danger signs.
 - (5) Taste. Strange taste in food or water indicates contamination.
 - (6) General indications. Tears, difficult breathing, choking, itching, coughing, dizziness.
 - (7) Wildlife. Presence of sick or dying animals.
- b. Protection against chemical agents follows:
 - (1) Use protective equipment.
 - (2) Avoid contaminated areas.
 - (a) Exit contaminated area by moving crosswind.
 - (b) Select routes on high ground.
 - (c) Avoid cellars, ditches, trenches, gullies, valleys, etc.
 - (d) Avoid woods, tall grasses, and bushes as they tend to hold chemical agent vapors.

- (e) Decontaminate body and equipment as soon as possible by—
 - Removing. Pinch-blotting.
 - Neutralizing. Warm water.
 - Destroying. Burying.
- c. Self-aid in chemically contaminated areas.
 - (1) If a chemical defense ensemble is available—
 - (a) Use all protective equipment.
 - (b) Follow antidote directions when needed.
 - (2) If a chemical defense ensemble is not available—
 - (a) Remove or tear away contaminated clothing.
 - (b) Rinse contaminated areas with water.
 - (c) Improvise a breathing filter using materials available (T-shirt, handkerchief, fabric, etc.).
- d. Tips for the survivor:
 - (1) **DO NOT** use wood from a contaminated area for fire.
 - (2) Look for signs of chemical agents around water sources before procurement (oil spots, foreign odors, dead fish, or animals).
 - (3) Keep food and water protected.
 - (4) **DO NOT** use plants for food or water in contaminated areas.

Appendix A
THE WILL TO SURVIVE

ARTICLE VI CODE OF CONDUCT

I will never forget that I am an American fighting for freedom, responsible for my actions, and dedicated to the principles which made my country free. I will trust in my God and in the United States of America.

1. Psychology of Survival

- a. Preparation—
 - (1) Know your capabilities and limitations.
 - (2) Keep a positive attitude.
 - (3) Develop a realistic plan.
 - (4) Anticipate fears.
 - (5) Combat psychological stress by—
 - (a) Recognizing and anticipating existing *stressors* (injury, death, fatigue, illness, environment, hunger, isolation).
 - (b) Attributing normal reactions to existing *stressors* (fear, anxiety, guilt, boredom, depression, anger).
 - (c) Identifying signals of distress created by *stressors* (indecision, withdrawal, forgetfulness, carelessness, and propensity to make mistakes).
- b. Strengthen your will to survive with—
 - (1) The Code of Conduct.
 - (2) Pledge of Allegiance.
 - (3) Faith in America.
 - (4) Patriotic songs.
 - (5) Thoughts of return to family and friends.
- c. Group dynamics of survival include—
 - (1) Leadership, good organization, and cohesiveness promote high morale:
 - (a) Preventing panic.
 - (b) Creating strength and trust in one another.
 - (c) Favoring persistency in overcoming failure.
 - (d) Facilitating formulation of group goals.
 - (2) Taking care of your buddy.
 - (3) Working as a team.
 - (4) Reassuring and encouraging each other.

- (5) Influencing factors are—
 - (a) Enforcing the chain of command.
 - (b) Organizing according to individual capabilities.
 - (c) Accepting suggestions and criticism.

2. Spiritual Considerations

- a. Collect your thoughts and emotions.
- b. Identify your personal beliefs.
- c. Use self-control.
- d. Meditate.
- e. Remember past inner sources to help you overcome adversity.
- f. Pray for your God's help, strength, wisdom, and rescue.
 - (1) Talk to your God.
 - (2) Give thanks that God is with you.
 - (3) Ask for God's help.
 - (4) Pray for protection and a positive outcome.
- g. Remember scripture, verses, or hymns; repeat them to yourself and to your God.
- h. Worship without aid of written scripture, clergy, or others.
- i. Forgive—
 - (1) Yourself for what you have done or said that was wrong.
 - (2) Those who have failed you.
- j. Praise God and give thanks because—
 - (1) God is bigger than your circumstances.
 - (2) God will see you through (no matter what happens).
 - (3) Hope comes from a belief in heaven and/or an after-life.
- k. Trust.
 - (1) Faith and trust in your God.
 - (2) Love for family and self.
 - (3) Never lose hope.
 - (4) Never give up.
- l. With other survivors—
 - (1) Identify or appoint a religious lay leader.
 - (2) Discuss what is important to you.
 - (3) Share scriptures and songs.
 - (4) Pray for each other.
 - (5) Try to have worship services.

- (6) Write down scriptures and songs that you remember.
- (7) Encourage each other while waiting for rescue,
remember—
 - (a) Your God loves you.
 - (b) Praise your God.

Appendix B

Publication Information

1. Scope

This UNCLASSIFIED multiservice tactics, techniques, and procedures publication is designed to assist Service members in a survival situation regardless of geographic location.

2. Purpose

This publication provides Service members a quick reference, weatherproof, pocket-sized guide on basic survival, evasion, and recovery information.

3. Application

The target audience for this publication is any Service member requiring basic survival, evasion, and recovery information.

4. Implementation Plan

Participating Service command offices of primary responsibility (OPRs) will review this publication, validate the information, and reference and incorporate it in Service and command manuals, regulations, and curricula as follows:

Army. The Army will incorporate the procedures in this publication in US Army training and doctrinal publications as directed by the commander, US Army Training and Doctrine Command (TRADOC). Distribution is in accordance with the Department of Army Form 12-99-R.

Marine Corps. The Marine Corps will incorporate the procedures in this publication in US Marine Corps training and doctrinal publications as directed by the commanding general, US Marine Corps Combat Development Command (MCCDC). Distribution is in accordance with Marine Corps Publication Distribution System.

Navy. The Navy will incorporate these procedures in US Navy doctrinal and training publications as directed by the commander, Navy Warfare Development Command (NWDC). Distribution is in accordance with Military Standard Requisitioning and Issue Procedures Desk Guide and Navy Standing Operating Procedures Publication 409.

Air Force. Air Force units will validate and incorporate appropriate procedures in accordance with applicable governing directives. Distribution is in accordance with Air Force Instructions 33-360.

5. User Information

a. The TRADOC-MCCDC-NWDC-AFDC Air Land Sea Application (ALSA) Center developed this publication with the joint participation of the approving Service commands. ALSA will review and update this publication as necessary.

b. This publication reflects current joint and Service doctrine, command and control (C2) organizations, facilities, personnel, responsibilities, and procedures. Changes in Service protocol, appropriately reflected in joint and Service publications, will likewise be incorporated in revisions to this document.

c. We encourage recommended changes for improving this publication. Key your comments to the specific page and paragraph and provide a rationale for each recommendation. Send comments and recommendation directly to—

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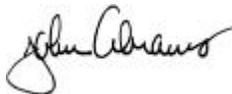
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CHAPTER 1 - INTRODUCTION



This manual is based entirely on the keyword SURVIVAL. The letters in this word can help guide you in your actions in any survival situation. Whenever faced with a survival situation, remember the word SURVIVAL.

SURVIVAL ACTIONS

The following [paragraphs](#) expand on the meaning of each letter of the word survival. Study and remember what each letter signifies because you may some day have to make it work for you.

S -Size Up the Situation

If you are in a combat situation, find a place where you can conceal yourself from the enemy. Remember, security takes priority. Use your senses of hearing, smell, and sight to get a feel for the battlefield. What is the enemy doing? Advancing? Holding in place? Retreating? You will have to consider what is developing on the battlefield when you make your survival plan.

Size Up Your Surroundings

Determine the pattern of the area. Get a feel for what is going on around you. Every environment, whether forest, jungle, or desert, has a rhythm or pattern. This rhythm or pattern includes animal and bird noises and movements and insect sounds. It may also include enemy traffic and civilian movements.

Size Up Your Physical Condition

The pressure of the battle you were in or the trauma of being in a survival situation may have caused you to overlook wounds you received. Check your wounds and give yourself first aid. Take care to prevent further bodily harm. For instance, in any climate, drink plenty of water to prevent dehydration. If you are in a cold or wet climate, put on additional clothing to prevent hypothermia.

Size Up Your Equipment

Perhaps in the heat of battle, you lost or damaged some of your equipment. Check to see what equipment you have and what condition it is in.

Now that you have sized up your situation, surroundings, physical condition, and equipment, you are ready to make your survival plan. In doing so, keep in mind your basic physical needs--water, food, and shelter.

U -Use All Your Senses, Undue Haste Makes Waste

You may make a wrong move when you react quickly without thinking or planning. That move may result in your capture or death. Don't move just for the sake of taking action.

Consider all aspects of your situation (size up your situation) before you make a decision and a move. If you act in haste, you may forget or lose some of your equipment. In your haste you may also become disoriented so that you don't know which way to go. Plan your moves. Be ready to move out quickly without endangering yourself if the enemy is near you. Use all your senses to evaluate the situation. Note sounds and smells. Be sensitive to temperature changes. Be observant.

R -Remember Where You Are

Spot your location on your map and relate it to the surrounding terrain. This is a basic principle that you must always follow. If there are other persons with you, make sure they also know their location. Always know who in your group, vehicle, or aircraft has a map and compass. If that person is killed, you will have to get the map and compass from him. Pay close attention to where you are and to where you are going. Do not rely on others in the group to keep track of the route. Constantly orient yourself. Always try to determine, as a minimum, how your location relates to--

- The location of enemy units and controlled areas.
- The location of friendly units and controlled areas.
- The location of local water sources (especially important in the desert).
- Areas that will provide good cover and concealment.

This information will allow you to make intelligent decisions when you are in a survival and evasion situation.

V -Vanquish Fear and Panic

The greatest enemies in a combat survival and evasion situation are fear and panic. If uncontrolled, they can destroy your ability to make an intelligent decision. They may cause you to react to your feelings and imagination rather than to your situation. They can drain your energy and thereby cause other negative emotions. Previous survival and evasion training and self-confidence will enable you to vanquish fear and panic.

I -Improvise

In the United States, we have items available for all our needs. Many of these items are cheap to replace when damaged. Our easy come, easy go, easy-to-replace culture makes it unnecessary for us to improvise. This inexperience in improvisation can be an enemy in a survival situation. Learn to improvise. Take a tool designed for a specific purpose and see how many other uses you can make of it.

Learn to use natural objects around you for different needs. An example is using a rock for a hammer. No matter how complete a survival kit you have with you, it will run out or wear out after a while. Your imagination must take over when your kit wears out.

V -Value Living

All of us were born kicking and fighting to live, but we have become used to the soft life. We have become creatures of comfort. We dislike inconveniences and discomforts. What happens when we are faced with a survival situation with its stresses, inconveniences, and discomforts? This is when the will to live- placing a high value on living-is vital. The experience and knowledge you have gained through life and your Army training will have a bearing on your will to live. Stubbornness, a refusal to give in to problems and obstacles that face you, will give you the mental and physical strength to endure.

A -Act Like the Natives

The natives and animals of a region have adapted to their environment. To get a feel of the area, watch how the people go about their daily routine. When and what do they eat? When, where, and how do they get their food? When and where do they go for water? What time do they usually go to bed and get up? These actions are important to you when you are trying to avoid capture.

Animal life in the area can also give you clues on how to survive. Animals also require food, water, and shelter. By watching them, you can find sources of water and food.

Keep in mind that the reaction of animals can reveal your presence to the enemy.

If in a friendly area, one way you can gain rapport with the natives is to show interest in their tools and how they get food and water. By studying the people, you learn to respect them, you often make valuable friends, and, most important, you learn how to adapt to their environment and increase your chances of survival.

L -Live by Your Wits, *But for Now*, Learn Basic Skills

Without training in basic skills for surviving and evading on the battlefield, your chances of living through a combat survival and evasion situation are slight.

Learn these basic skills **now**--not when you are headed for or are in the battle. How you decide to equip yourself before deployment will impact on whether or not you survive. You need to know about the environment to which you are going, and you must practice basic skills geared to that environment. For instance, if you are going to a desert, you need to know how to get water in the desert.

Practice basic survival skills during all training programs and exercises. Survival training reduces fear of the unknown and gives you self-confidence. It teaches you to *live by your wits*.

S **Size Up the Situation**
(Surroundings, Physical Condition, Equipment)

U **Use All Your Senses,**
Undue Haste Makes Waste

R **Remember Where You Are**

V **Vanquish Fear and Panic**

I **Improvise**

V **Value Living**

A **Act Like the Natives**

L **Live by Your Wits, *But for Now, Learn Basic Skills***

PATTERN FOR SURVIVAL

Develop a survival pattern that lets you beat the enemies of survival. This survival pattern must include food, water, shelter, fire, first aid, and signals placed in order of importance. For example, in a cold environment, you would need a *fire* to get warm; a *shelter* to protect you from the cold, wind, and rain or snow; traps or snares to get *food*; a means to *signal* friendly aircraft; and *first aid* to maintain health. *If injured, first aid has top priority* no matter what climate you are in.

Change your survival pattern to meet your immediate physical needs as the environment changes.

As you read the rest of this manual, keep in mind the keyword SURVIVAL and the need for a survival pattern.

CHAPTER 2 - PSYCHOLOGY OF SURVIVAL



It takes much more than the knowledge and skills to build shelters, get food, make fires, and travel without the aid of standard navigational devices to live successfully through a survival situation. Some people with little or no survival training have managed to survive life-threatening circumstances. Some people with survival training have not used their skills and died. A key ingredient in any survival situation is the mental attitude of the individual(s) involved. Having survival skills is important; having the will to survive is essential. Without a desire to survive, acquired skills serve little purpose and invaluable knowledge goes to waste.

*There is a psychology to survival. The soldier in a survival environment faces many stresses that ultimately impact on his mind. These stresses can produce thoughts and emotions that, if poorly understood, can transform a confident, well-trained soldier into an indecisive, ineffective individual with questionable ability to survive. Thus, every soldier must be aware of and be able to recognize those stresses commonly associated with survival. Additionally, it is imperative that soldiers be aware of their reactions to the wide variety of stresses associated with survival. This chapter will identify and explain the nature of stress, the stresses of survival, and those internal reactions soldiers will naturally experience when faced with the stresses of a real-world survival situation. The knowledge you, the soldier, gain from this chapter and other chapters in this manual, will prepare you to come through the toughest times **alive**.*

A LOOK AT STRESS

Before we can understand our psychological reactions in a survival setting, it is helpful to first know a little bit about stress.

Stress is not a disease that you cure and eliminate. Instead, it is a condition we all experience. Stress can be described as our reaction to pressure. It is the name given to the experience we have as we physically, mentally, emotionally, and spiritually respond to life's tensions.

Need for Stress

We need stress because it has many positive benefits. Stress provides us with challenges; it gives us chances to learn about our values and strengths. Stress can show our ability to

handle pressure without breaking; it tests our adaptability and flexibility; it can stimulate us to do our best. Because we usually do not consider unimportant events stressful, stress can also be an excellent indicator of the significance we attach to an event--in other words, it highlights what is important to us.

We need to have some stress in our lives, but too much of anything can be bad. The goal is to have stress, but not an excess of it. Too much stress can take its toll on people and organizations. Too much stress leads to distress. Distress causes an uncomfortable tension that we try to escape and, preferably, avoid. Listed below are a few of the common signs of distress you may find in your fellow soldiers or yourself when faced with too much stress:

- Difficulty making decisions.

- Angry outbursts.

- Forgetfulness.

- Low energy level.

- Constant worrying.

- Propensity for mistakes.

- Thoughts about death or suicide.

- Trouble getting along with others.

- Withdrawing from others.

- Hiding from responsibilities.

- Carelessness.

As you can see, stress can be constructive or destructive. It can encourage or discourage, move us along or stop us dead in our tracks, and make life meaningful or seemingly meaningless. Stress can inspire you to operate successfully and perform at your maximum efficiency in a survival situation. It can also cause you to panic and forget all your training. Key to your survival is your ability to manage the inevitable stresses you will encounter. The survivor is the soldier who works with his stresses instead of letting his stresses work on him.

Survival Stressors

Any event can lead to stress and, as everyone has experienced, events don't always come one at a time. Often, stressful events occur simultaneously. These events are not stress, but they produce it and are called "stressors." Stressors are the obvious cause while stress is the response. Once the body recognizes the presence of a stressor, it then begins to act to protect itself.

In response to a stressor, the body prepares either to "fight or flee." This preparation involves an internal SOS sent throughout the body. As the body responds to this SOS, several actions take place. The body releases stored fuels (sugar and fats) to provide quick energy; breathing rate increases to supply more oxygen to the blood; muscle tension increases to prepare for action; blood clotting mechanisms are activated to reduce bleeding from cuts; senses become more acute (hearing becomes more sensitive, eyes become big, smell becomes sharper) so that you are more aware of your surrounding and heart rate and blood pressure rise to provide more blood to the muscles. This protective posture lets a person cope with potential dangers; however, a person cannot maintain such a level of alertness indefinitely.

Stressors are not courteous; one stressor does not leave because another one arrives. Stressors add up. The cumulative effect of minor stressors can be a major distress if they all happen too close together. As the body's resistance to stress wears down and the sources of stress continue (or increase), eventually a state of exhaustion arrives. At this point, the ability to resist stress or use it in a positive way gives out and signs of distress appear. Anticipating stressors and developing strategies to cope with them are two ingredients in the effective management of stress. It is therefore essential that the soldier in a survival setting be aware of the types of stressors he will encounter. Let's take a look at a few of these.

Injury, Illness, or Death

Injury, illness, and death are real possibilities a survivor has to face. Perhaps nothing is more stressful than being alone in an unfamiliar environment where you could die from hostile action, an accident, or from eating something lethal. Illness and injury can also add to stress by limiting your ability to maneuver, get food and drink, find shelter, and defend yourself. Even if illness and injury don't lead to death, they add to stress through the pain and discomfort they generate. It is only by controlling the stress associated with the vulnerability to injury, illness, and death that a soldier can have the courage to take the risks associated with survival tasks.

Uncertainly and Lack of Control

Some people have trouble operating in settings where everything is not clear-cut. The only guarantee in a survival situation is that nothing is guaranteed. It can be extremely stressful operating on limited information in a setting where you have limited control of your surroundings. This uncertainty and lack of control also add to the stress of being ill, injured, or killed.

Environment

Even under the most ideal circumstances, nature is quite formidable. In survival, a soldier will have to contend with the stressors of weather, terrain, and the variety of creatures inhabiting an area. Heat, cold, rain, winds, mountains, swamps, deserts, insects, dangerous reptiles, and other animals are just a few of the challenges awaiting the soldier working to survive. Depending on how a soldier handles the stress of his environment, his surroundings can be either a source of food and protection or can be a cause of extreme discomfort leading to injury, illness, or death.

Hunger and Thirst

Without food and water a person will weaken and eventually die. Thus, getting and preserving food and water takes on increasing importance as the length of time in a survival setting increases. For a soldier used to having his provisions issued, foraging can be a big source of stress.

Fatigue

Forcing yourself to continue surviving is not easy as you grow more tired. It is possible to become so fatigued that the act of just staying awake is stressful in itself.

Isolation

There are some advantages to facing adversity with others. As soldiers we learn individual skills, but we train to function as part of a team. Although we, as soldiers, complain about higher headquarters, we become used to the information and guidance it provides, especially during times of confusion. Being in contact with others also provides a greater sense of security and a feeling someone is available to help if problems occur. A significant stressor in survival situations is that often a person or team has to rely solely on its own resources.

The survival stressors mentioned in this section are by no means the only ones you may face. Remember, what is stressful to one person may not be stressful to another. Your experiences, training, personal outlook on life, physical and mental conditioning, and level of self-confidence contribute to what you will find stressful in a survival environment. The object is not to avoid stress, but rather to manage the stressors of survival and make them work for you.

We now have a general knowledge of stress and the stressors common to survival; the next step is to examine our reactions to the stressors we may face.

NATURAL REACTIONS

Man has been able to survive many shifts in his environment throughout the centuries. His ability to adapt physically and mentally to a changing world kept him alive while other species around him gradually died off. The same survival mechanisms that kept our forefathers alive can help keep us alive as well! However, these survival mechanisms that can help us can also work against us if we don't understand and anticipate their presence. It is not surprising that the average person will have some psychological reactions in a survival situation. We will now examine some of the major internal reactions you and anyone with you might experience with the survival stressors addressed in the earlier paragraphs. Let's begin.

Fear

Fear is our emotional response to dangerous circumstances that we believe have the potential to cause death, injury, or illness. This harm is not just limited to physical damage; the threat to one's emotional and mental well-being can generate fear as well. For the soldier trying to survive, fear can have a positive function if it encourages him to be cautious in situations where recklessness could result in injury. Unfortunately, fear can also immobilize a person. It can cause him to become so frightened that he fails to perform activities essential for survival. Most soldiers will have some degree of fear when placed in unfamiliar surroundings under adverse conditions. There is no shame in this! Each soldier must train himself not to be overcome by his fears. Ideally, through realistic training, we can acquire the knowledge and skills needed to increase our confidence and thereby manage our fears.

Anxiety

Associated with fear is anxiety. Because it is natural for us to be afraid, it is also natural for us to experience anxiety. Anxiety can be an uneasy, apprehensive feeling we get when faced with dangerous situations (physical, mental, and emotional). When used in a healthy way, anxiety urges us to act to end, or at least master, the dangers that threaten our existence. If we were never anxious, there would be little motivation to make changes in our lives. The soldier in a survival setting reduces his anxiety by performing those tasks that will ensure his coming through the ordeal alive. As he reduces his anxiety, the soldier is also bringing under control the source of that anxiety--his fears. In this form, anxiety is good; however, anxiety can also have a devastating impact. Anxiety can overwhelm a soldier to the point where he becomes easily confused and has difficulty thinking. Once this happens, it becomes more and more difficult for him to make good judgments and sound

decisions. To survive, the soldier must learn techniques to calm his anxieties and keep them in the range where they help, not hurt.

Anger and Frustration

Frustration arises when a person is continually thwarted in his attempts to reach a goal. The goal of survival is to stay alive until you can reach help or until help can reach you. To achieve this goal, the soldier must complete some tasks with minimal resources. It is inevitable, in trying to do these tasks, that something will go wrong; that something will happen beyond the soldier's control; and that with one's life at stake, every mistake is magnified in terms of its importance. Thus, sooner or later, soldiers will have to cope with frustration when a few of their plans run into trouble. One outgrowth of this frustration is anger. There are many events in a survival situation that can frustrate or anger a soldier. Getting lost, damaged or forgotten equipment, the weather, inhospitable terrain, enemy patrols, and physical limitations are just a few sources of frustration and anger. Frustration and anger encourage impulsive reactions, irrational behavior, poorly thought-out decisions, and, in some instances, an "I quit" attitude (people sometimes avoid doing something they can't master). If the soldier can harness and properly channel the emotional intensity associated with anger and frustration, he can productively act as he answers the challenges of survival. If the soldier does not properly focus his angry feelings, he can waste much energy in activities that do little to further either his chances of survival or the chances of those around him.

Depression

It would be a rare person indeed who would not get sad, at least momentarily, when faced with the privations of survival. As this sadness deepens, we label the feeling "depression." Depression is closely linked with frustration and anger. The frustrated person becomes more and more angry as he fails to reach his goals. If the anger does not help the person to succeed, then the frustration level goes even higher. A destructive cycle between anger and frustration continues until the person becomes worn down-physically, emotionally, and mentally. When a person reaches this point, he starts to give up, and his focus shifts from "What can I do" to "There is nothing I can do." Depression is an expression of this hopeless, helpless feeling. There is nothing wrong with being sad as you temporarily think about your loved ones and remember what life is like back in "civilization" or "the world." Such thoughts, in fact, can give you the desire to try harder and live one more day. On the other hand, if you allow yourself to sink into a depressed state, then it can sap all your energy and, more important, your will to survive. It is imperative that each soldier resist succumbing to depression.

Loneliness and Boredom

Man is a social animal. This means we, as human beings, enjoy the company of others. Very few people want to be alone *all the time!* As you are aware, there is a distinct chance of isolation in a survival setting. This is not bad. Loneliness and boredom can bring to the surface qualities you thought only others had. The extent of your imagination and creativity may surprise you. When required to do so, you may discover some hidden talents and abilities. Most of all, you may tap into a reservoir of inner strength and fortitude you never knew you had. Conversely, loneliness and boredom can be another source of depression. As a soldier surviving alone, or with others, you must find ways to keep your mind productively occupied. Additionally, you must develop a degree of self-sufficiency. You must have faith in your capability to "go it alone."

Guilt

The circumstances leading to your being in a survival setting are sometimes dramatic and tragic. It may be the result of an accident or military mission where there was a loss of life. Perhaps you were the only, or one of a few, survivors. While naturally relieved to be alive, you simultaneously may be mourning the deaths of others who were less fortunate. It is not uncommon for survivors to feel guilty about being spared from death while others were not. This feeling, when used in a positive way, has encouraged people to try harder to survive with the belief they were allowed to live for some greater purpose in life. Sometimes, survivors tried to stay alive so that they could carry on the work of those killed. Whatever reason you give yourself, do not let guilt feelings prevent you from living. The living who abandon their chance to survive accomplish nothing. Such an act would be the greatest tragedy.

PREPARING YOURSELF

Your mission as a soldier in a survival situation is to stay alive. As you can see, you are going to experience an assortment of thoughts and emotions. These can work for you, or they can work to your downfall. Fear, anxiety, anger, frustration, guilt, depression, and loneliness are all possible reactions to the many stresses common to survival. These reactions, when controlled in a healthy way, help to increase a soldier's likelihood of surviving. They prompt the soldier to pay more attention in training, to fight back when scared, to take actions that ensure sustenance and security, to keep faith with his fellow soldiers, and to strive against large odds. When the survivor cannot control these reactions in a healthy way, they can bring him to a standstill. Instead of rallying his internal resources, the soldier listens to his internal fears. This soldier experiences psychological defeat long before he physically succumbs. Remember, survival is natural to everyone; being unexpectedly thrust into the life and death struggle of survival is not. Don't be afraid of your "natural reactions to this unnatural situation." Prepare yourself to rule over these reactions so they serve your ultimate interest--staying alive with the honor and dignity associated with being an American soldier.

It involves preparation to ensure that your reactions in a survival setting are productive, not destructive. The challenge of survival has produced countless examples of heroism, courage, and self-sacrifice. These are the qualities it can bring out in you if you have prepared yourself. Below are a few [tips](#) to help prepare yourself psychologically for survival. Through studying this manual and attending survival training you can develop the *survival attitude*.

Know Yourself

Through training, family, and friends take the time to discover who you are on the inside. Strengthen your stronger qualities and develop the areas that you know are necessary to survive.

Anticipate Fears

Don't pretend that you will have no fears. Begin thinking about what would frighten you the most if forced to survive alone. Train in those areas of concern to you. The goal is not to eliminate the fear, but to build confidence in your ability to function despite your fears.

Be Realistic

Don't be afraid to make an honest appraisal of situations. See circumstances as they are, not as you want them to be. Keep your hopes and expectations within the estimate of the situation. When you go into a survival setting with unrealistic expectations, you may be laying the groundwork for bitter disappointment. Follow the adage, "Hope for the best, prepare for the worst." It is much easier to adjust to pleasant surprises about one's unexpected good fortunes than to be upset by one's unexpected harsh circumstances.

Adopt a Positive Attitude

Learn to see the potential good in everything. Looking for the good not only boosts morale, it also is excellent for exercising your imagination and creativity.

Remind Yourself What Is at Stake

Remember, failure to prepare yourself psychologically to cope with survival leads to reactions such as depression, carelessness, inattention, loss of confidence, poor decision-making, and giving up before the body gives in. At stake is your life and the lives of others who are depending on you to do your share.

Train

Through military training and life experiences, begin today to prepare yourself to cope with the rigors of survival. Demonstrating your skills in training will give you the confidence to call upon them should the need arise. Remember, the more realistic the training, the less overwhelming an actual survival setting will be.

Learn Stress Management Techniques

People under stress have a potential to panic if they are not well-trained and not prepared psychologically to face whatever the circumstances may be. While we often cannot control the survival circumstances in which we find ourselves, it is within our ability to control our response to those circumstances. Learning stress management techniques can enhance significantly your capability to remain calm and focused as you work to keep yourself and others alive. A few good techniques to develop include relaxation skills, time management skills, assertiveness skills, and cognitive restructuring skills (the ability to control how you view a situation).

Remember, "the will to survive" can also be considered to be "the refusal to give up."

CHAPTER 3 - SURVIVAL PLANNING AND SURVIVAL KITS



Survival planning is nothing more than realizing something could happen that would put you in a survival situation and, with that in mind, taking steps to increase your chances of survival. Thus, survival planning means preparation. Preparation means having survival items and knowing how to use them. People who live in snow regions prepare their vehicles for poor road conditions. They put snow tires on their vehicles, add extra weight in the back for traction, and they carry a shovel, salt, and a blanket. Another example of preparation is finding the emergency exits on an aircraft when you board it for a flight. Preparation could also mean knowing your intended route of travel and familiarizing yourself with the area. Finally, emergency planning is essential.

IMPORTANCE OF PLANNING

Detailed prior planning is essential in potential survival situations. Including survival considerations in mission planning will enhance your chances of survival if an emergency occurs. For example, if your job requires that you work in a small, enclosed area that limits what you can carry on your person, plan where you can put your rucksack or your load-bearing equipment. Put it where it will not prevent you from getting out of the area quickly, yet where it is readily accessible.

One important aspect of prior planning is preventive medicine. Ensuring that you have no dental problems and that your immunizations are current will help you avoid potential dental or health problems. A dental problem in a survival situation will reduce your ability to cope with other problems that you face. Failure to keep your shots current may mean your body is not immune to diseases that are prevalent in the area.

Preparing and carrying a survival kit is as important as the considerations mentioned above. All Army aircraft normally have survival kits on board for the type area(s) over which they will fly. There are kits for over-water survival, for hot climate survival, and an aviator survival vest (see Appendix A for a description of these survival kits and their contents). If you are not an aviator, you will probably not have access to the survival vests or survival kits. However, if you know what these kits contain, it will help you to plan and to prepare your own survival kit.

Even the smallest survival kit, if properly prepared, is invaluable when faced with a survival problem. Before making your survival kit, however, consider your unit's mission, the operational environment, and the equipment and vehicles assigned to your unit.

SURVIVAL KITS

The environment is the key to the types of items you will need in your survival kit. How much equipment you put in your kit depends on how you will carry the kit. A kit carried on your body will have to be smaller than one carried in a vehicle. Always layer your survival kit, keeping the most important items on your body. For example, your map and compass should always be on your body. Carry less important items on your load-bearing equipment. Place bulky items in the rucksack.

In preparing your survival kit, select items you can use for more than one purpose. If you have two items that will serve the same function, pick the one you can use for another function. Do not duplicate items, as this increases your kit's size and weight.

Your survival kit need not be elaborate. You need only functional items that will meet your needs and a case to hold the items. For the case, you might want to use a Band-Aid box, a first aid case, an ammunition pouch, or another suitable case. This case should be--

- Water repellent or waterproof.
- Easy to carry or attach to your body.
- Suitable to accept varisized components.
- Durable.

In your survival kit, you should have--

- First aid items.
- Water purification tablets or drops.
- Fire starting equipment.
- Signaling items.
- Food procurement items.
- Shelter items.

Some examples of these items are--

- Lighter, metal match, waterproof matches.
- Snare wire.
- Signaling mirror.
- Wrist compass.
- Fish and snare line.

- Fishhooks.
- Candle.
- Small hand lens.
- Oxytetracycline tablets (diarrhea or infection).
- Water purification tablets.
- Solar blanket.
- Surgical blades.
- Butterfly sutures.
- Condoms for water storage.
- Chap Stick.
- Needle and thread.
- Knife.

Include a weapon only if the situation so dictates. Read about and practice the survival techniques in this manual. Consider your unit's mission and the environment in which your unit will operate. Then prepare your survival kit.

CHAPTER 4 - BASIC SURVIVAL MEDICINE



Foremost among the many problems that can compromise a survivor's ability to return to safety are medical problems resulting from parachute descent and landing, extreme climates, ground combat, evasion, and illnesses contracted in captivity.

Many evaders and survivors have reported difficulty in treating injuries and illness due to the lack of training and medical supplies. For some, this led to capture or surrender.

Survivors have related feeling of apathy and helplessness because they could not treat themselves in this environment. The ability to treat themselves increased their morale and cohesion and aided in their survival and eventual return to friendly forces.

One man with a fair amount of basic medical knowledge can make a difference in the lives of many. Without qualified medical personnel available, it is you who must know what to do to stay alive.

REQUIREMENTS FOR MAINTENANCE OF HEALTH

To survive, you need water and food. You must also have and apply high personal hygiene standards.

Water

Your body loses water through normal body processes (sweating, urinating, and defecating). During average daily exertion when the atmospheric temperature is 20 degrees Celsius (C) (68 degrees Fahrenheit), the average adult loses and therefore requires 2 to 3 liters of water daily. Other factors, such as heat exposure, cold exposure, intense activity, high altitude, burns, or illness, can cause your body to lose more water. You must replace this water.

Dehydration results from inadequate replacement of lost body fluids. It decreases your efficiency and, if injured, increases your susceptibility to severe shock. Consider the following results of body fluid loss:

- A 5 percent loss of body fluids results in thirst, irritability, nausea, and weakness.
- A 10 percent loss results in dizziness, headache, inability to walk, and a tingling sensation in the limbs.
- A 15 percent loss results in dim vision, painful urination, swollen tongue, deafness, and a numb feeling in the skin.
- A loss greater than 15 percent of body fluids may result in death.

The most common signs and symptoms of dehydration are--

- Dark urine with a very strong odor.
- Low urine output.
- Dark, sunken eyes.
- Fatigue.
- Emotional instability.
- Loss of skin elasticity.
- Delayed capillary refill in fingernail beds.
- Trench line down center of tongue.
- Thirst. Last on the list because you are already 2 percent dehydrated by the time you crave fluids.

You replace the water as you lose it. Trying to make up a deficit is difficult in a survival situation, and thirst is not a sign of how much water you need.

Most people cannot comfortably drink more than 1 liter of water at a time. So, even when not thirsty, drink small amounts of water at regular intervals each hour to prevent dehydration.

If you are under physical and mental stress or subject to severe conditions, increase your water intake. Drink enough liquids to maintain a urine output of at least 0.5 liter every 24 hours.

In any situation where food intake is low, drink 6 to 8 liters of water per day. In an extreme climate, especially an arid one, the average person can lose 2.5 to 3.5 liters of water *per hour*. In this type of climate, you should drink 14 to 30 liters of water per day.

With the loss of water there is also a loss of electrolytes (body salts). The average diet can usually keep up with these losses but in an extreme situation or illness, additional sources need to be provided. A mixture of 0.25 teaspoon of salt to 1 liter of water will provide a concentration that the body tissues can readily absorb.

Of all the physical problems encountered in a survival situation, the loss of water is the most preventable. The following are basic guidelines for the prevention of dehydration:

- *Always drink water when eating.* Water is used and consumed as a part of the digestion process and can lead to dehydration.
- *Acclimatize.* The body performs more efficiently in extreme conditions when acclimatized.
- *Conserve sweat not water.* Limit sweat-producing activities but drink water.
- *Ration water.* Until you find a suitable source, ration your water sensibly. A daily intake of 500 cubic centimeter (0.5 liter) of a sugar-water mixture (2 teaspoons per liter) will suffice to prevent severe dehydration for at least a week, provided you keep water losses to a minimum by limiting activity and heat gain or loss.

You can estimate fluid loss by several means. A standard field dressing holds about 0.25 liter (one-fourth canteen) of blood. A soaked T-shirt holds 0.5 to 0.75 liter.

You can also use the pulse and breathing rate to estimate fluid loss. Use the following as a guide:

- With a 0.75 liter loss the wrist pulse rate will be under 100 beats per minute and the breathing rate 12 to 20 breaths per minute.
- With a 0.75 to 1.5 liter loss the pulse rate will be 100 to 120 beats per minute and 20 to 30 breaths per minute.
- With a 1.5 to 2 liter loss the pulse rate will be 120 to 140 beats per minute and 30 to 40 breaths per minute. Vital signs above these rates require more advanced care.

Food

Although you can live several weeks without food, you need an adequate amount to stay healthy. Without food your mental and physical capabilities will deteriorate rapidly, and you will become weak. Food replenishes the substances that your body burns and provides energy. It provides vitamins, minerals, salts, and other elements essential to good health. Possibly more important, it helps morale.

The two basic sources of food are plants and animals (including fish). In varying degrees both provide the calories, carbohydrates, fats, and proteins needed for normal daily body functions.

Calories are a measure of heat and potential energy. The average person needs 2,000 calories per day to function at a minimum level. An adequate amount of carbohydrates, fats, and proteins without an adequate caloric intake will lead to starvation and cannibalism of the body's own tissue for energy.

Plant Foods

These foods provide carbohydrates--the main source of energy. Many plants provide enough protein to keep the body at normal efficiency. Although plants may not provide a balanced diet, they will sustain you even in the arctic, where meat's heat-producing qualities are normally essential. Many plant foods such as nuts and seeds will give you enough protein and oils for normal efficiency. Roots, green vegetables, and plant food containing natural sugar will provide calories and carbohydrates that give the body natural energy.

The food value of plants becomes more and more important if you are eluding the enemy or if you are in an area where wildlife is scarce. For instance--

- You can dry plants by wind, air, sun, or fire. This retards spoilage so that you can store or carry the plant food with you to use when needed.
- You can obtain plants more easily and more quietly than meat. This is extremely important when the enemy is near.

Animal Foods

Meat is more nourishing than plant food. In fact, it may even be more readily available in some places. However, to get meat, you need to know the habits of, and how to capture, the various wildlife.

To satisfy your immediate food needs, first seek the more abundant and more easily obtained wildlife, such as insects, crustaceans, mollusks, fish, and reptiles. These can satisfy your immediate hunger while you are preparing traps and snares for larger game.

Personal Hygiene

In any situation, cleanliness is an important factor in preventing infection and disease. It becomes even more important in a survival situation. Poor hygiene can reduce your chances of survival.

A daily shower with hot water and soap is ideal, but you can stay clean without this luxury. Use a cloth and soapy water to wash yourself. Pay special attention to the feet, armpits, crotch, hands, and hair as these are prime areas for infestation and infection. If water is scarce, take an "air" bath. Remove as much of your clothing as practical and expose your body to the sun and air for at least 1 hour. Be careful not to sunburn.

If you don't have soap, use ashes or sand, or make soap from animal fat and wood ashes, if your situation allows. To make soap--

- Extract grease from animal fat by cutting the fat into small pieces and cooking them in a pot.

- Add enough water to the pot to keep the fat from sticking as it cooks.
- Cook the fat slowly, stirring frequently.
- After the fat is rendered, pour the grease into a container to harden.
- Place ashes in a container with a spout near the bottom.
- Pour water over the ashes and collect the liquid that drips out of the spout in a separate container. This liquid is the potash or lye. Another way to get the lye is to pour the slurry (the mixture of ashes and water) through a straining cloth.
- In a cooking pot, mix two parts grease to one part potash.
- Place this mixture over a fire and boil it until it thickens.

After the mixture--the soap--cools, you can use it in the semiliquid state directly from the pot. You can also pour it into a pan, allow it to harden, and cut it into bars for later use.

Keep Your Hands Clean

Germs on your hands can infect food and wounds. Wash your hands after handling any material that is likely to carry germs, after visiting the latrine, after caring for the sick, and before handling any food, food utensils, or drinking water. Keep your fingernails closely trimmed and clean, and keep your fingers out of your mouth.

Keep Your Hair Clean

Your hair can become a haven for bacteria or fleas, lice, and other parasites. Keeping your hair clean, combed, and trimmed helps you avoid this danger.

Keep Your Clothing Clean

Keep your clothing and bedding as clean as possible to reduce the chance of skin infection as well as to decrease the danger of parasitic infestation. Clean your outer clothing whenever it becomes soiled. Wear clean underclothing and socks each day. If water is scarce, "air" clean your clothing by shaking, airing, and sunning it for 2 hours. If you are using a sleeping bag, turn it inside out after each use, fluff it, and air it.

Keep Your Teeth Clean

Thoroughly clean your mouth and teeth with a toothbrush at least once each day. If you don't have a toothbrush, make a chewing stick. Find a twig about 20 centimeters long and 1 centimeter wide. Chew one end of the stick to separate the fibers. Now brush your teeth thoroughly. Another way is to wrap a clean strip of cloth around your fingers and rub your

teeth with it to wipe away food particles. You can also brush your teeth with small amounts of sand, baking soda, salt, or soap. Then rinse your mouth with water, salt water, or willow bark tea. Also, flossing your teeth with string or fiber helps oral hygiene.

If you have cavities, you can make temporary fillings by placing candle wax, tobacco, aspirin, hot pepper, tooth paste or powder, or portions of a ginger root into the cavity. Make sure you clean the cavity by rinsing or picking the particles out of the cavity before placing a filling in the cavity.

Take Care of Your Feet

To prevent serious foot problems, break in your shoes before wearing them on any mission. Wash and massage your feet daily. Trim your toenails straight across. Wear an insole and the proper size of dry socks. Powder and check your feet daily for blisters.

If you get a small blister, do not open it. An intact blister is safe from infection. Apply a padding material around the blister to relieve pressure and reduce friction. If the blister bursts, treat it as an open wound. Clean and dress it daily and pad around it. Leave large blisters intact. To avoid having the blister burst or tear under pressure and cause a painful and open sore, do the following:

- Obtain a sewing-type needle and a clean or sterilized thread.
- Run the needle and thread through the blister after cleaning the blister.
- Detach the needle and leave both ends of the thread hanging out of the blister. The thread will absorb the liquid inside. This reduces the size of the hole and ensures that the hole does not close up.
- Pad around the blister.

Get Sufficient Rest

You need a certain amount of rest to keep going. Plan for regular rest periods of at least 10 minutes per hour during your daily activities. Learn to make yourself comfortable under less than ideal conditions. A change from mental to physical activity or vice versa can be refreshing when time or situation does not permit total relaxation.

Keep Camp Site Clean

Do not soil the ground in the camp site area with urine or feces. Use latrines, if available. When latrines are not available, dig "cat holes" and cover the waste. Collect drinking water upstream from the camp site. Purify all water.

MEDICAL EMERGENCIES

Medical problems and emergencies you may be faced with include breathing problems, severe bleeding, and shock.

Breathing Problems

Any one of the following can cause airway obstruction, resulting in stopped breathing:

- Foreign matter in mouth of throat that obstructs the opening to the trachea.
- Face or neck injuries.
- Inflammation and swelling of mouth and throat caused by inhaling smoke, flames, and irritating vapors or by an allergic reaction.
- "Kink" in the throat (caused by the neck bent forward so that the chin rests upon the chest) may block the passage of air.
- Tongue blocks passage of air to the lungs upon unconsciousness. When an individual is unconscious, the muscles of the lower jaw and tongue relax as the neck drops forward, causing the lower jaw to sag and the tongue to drop back and block the passage of air.

Severe Bleeding

Severe bleeding from any major blood vessel in the body is extremely dangerous. The loss of 1 liter of blood will produce moderate symptoms of shock. The loss of 2 liters will produce a severe state of shock that places the body in extreme danger. The loss of 3 liters is usually fatal.

Shock

Shock (acute stress reaction) is not a disease in itself. It is a clinical condition characterized by symptoms that arise when cardiac output is insufficient to fill the arteries with blood under enough pressure to provide an adequate blood supply to the organs and tissues.

LIFESAVING STEPS

Control panic, both your own and the victim's. Reassure him and try to keep him quiet. Perform a rapid physical exam. Look for the cause of the injury and follow the ABCs of first aid, starting with the airway and breathing, but be discerning. A person may die from arterial bleeding more quickly than from an airway obstruction in some cases.

Open Airway and Maintain

You can open an airway and maintain it by using the following [steps](#).

Step 1. Check if the victim has a partial or complete airway obstruction. If he can cough or speak, allow him to clear the obstruction naturally. Stand by, reassure the victim, and be ready to clear his airway and perform mouth-to-mouth resuscitation should he become unconscious. If his airway is completely obstructed, administer abdominal thrusts until the obstruction is cleared.

Step 2. Using a finger, quickly sweep the victim's mouth clear of any foreign objects, broken teeth, dentures, sand.

Step 3. Using the jaw thrust method, grasp the angles of the victim's lower jaw and lift with both hands, one on each side, moving the jaw forward. For stability, rest your elbows on the surface on which the victim is lying. If his lips are closed, gently open the lower lip with your thumb (Figure 4-1).

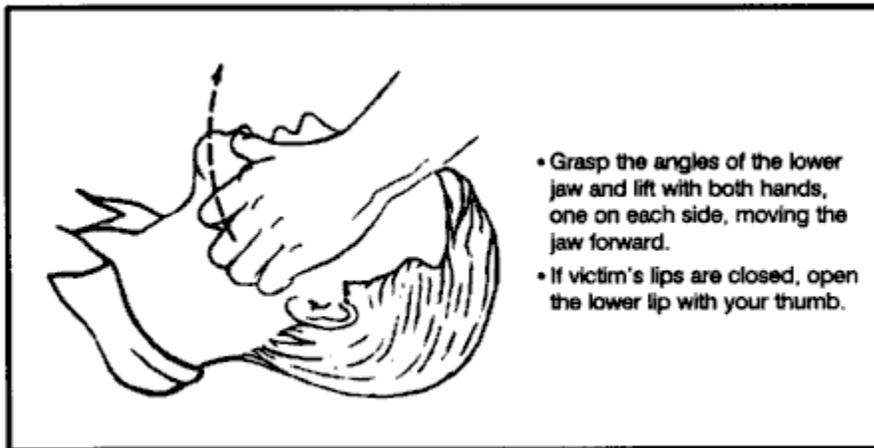


Figure 4-1. Jaw thrust method.

Step 4. With the victim's airway open, pinch his nose closed with your thumb and forefinger and blow two complete breaths into his lungs. Allow the lungs to deflate after the second inflation and perform the following:

- *Look* for his chest to rise and fall.
- *Listen* for escaping air during exhalation.
- *Feel* for flow of air on your cheek.

Step 5. If the forced breaths do not stimulate spontaneous breathing, maintain the victim's breathing by performing mouth-to-mouth resuscitation.

Step 6. There is danger of the victim vomiting during mouth-to-mouth resuscitation. Check the victim's mouth periodically for vomit and clear as needed.

Note: Cardiopulmonary resuscitation (CPR) may be necessary after cleaning the airway, but only after major bleeding is under control. See FM 21-20, the American Heart Association manual, the Red Cross manual, or most other first aid books for detailed instructions on CPR.

Control Bleeding

In a survival situation, you must control serious bleeding immediately because replacement fluids normally are not available and the victim can die within a matter of minutes. External bleeding falls into the following classifications (according to its source):

- *Arterial.* Blood vessels called arteries carry blood away from the heart and through the body. A cut artery issues *bright red* blood from the wound in *distinct spurts* or pulses that correspond to the rhythm of the heartbeat. Because the blood in the arteries is under high pressure, an individual can lose a large volume of blood in a short period when damage to an artery of significant size occurs. Therefore, arterial

bleeding is the most serious type of bleeding. If not controlled promptly, it can be fatal.

- *Venous*. Venous blood is blood that is returning to the heart through blood vessels called veins. A steady flow of *dark red, maroon, or bluish blood* characterizes bleeding from a vein. You can usually control venous bleeding more easily than arterial bleeding.
- *Capillary*. The capillaries are the extremely small vessels that connect the arteries with the veins. Capillary bleeding most commonly occurs in minor cuts and scrapes. This type of bleeding is not difficult to control.

You can control external bleeding by direct pressure, indirect (pressure points) pressure, elevation, digital ligation, or tourniquet.

Direct Pressure

The most effective way to control external bleeding is by applying pressure directly over the wound. This pressure must not only be firm enough to stop the bleeding, but it must also be maintained long enough to "seal off" the damaged surface.

If bleeding continues after having applied direct pressure for 30 minutes, apply a pressure dressing. This dressing consists of a thick dressing of gauze or other suitable material applied directly over the wound and held in place with a tightly wrapped bandage ([Figure 4-2](#)). It should be tighter than an ordinary compression bandage but not so tight that it impairs circulation to the rest of the limb. Once you apply the dressing, *do not remove it*, even when the dressing becomes blood soaked.

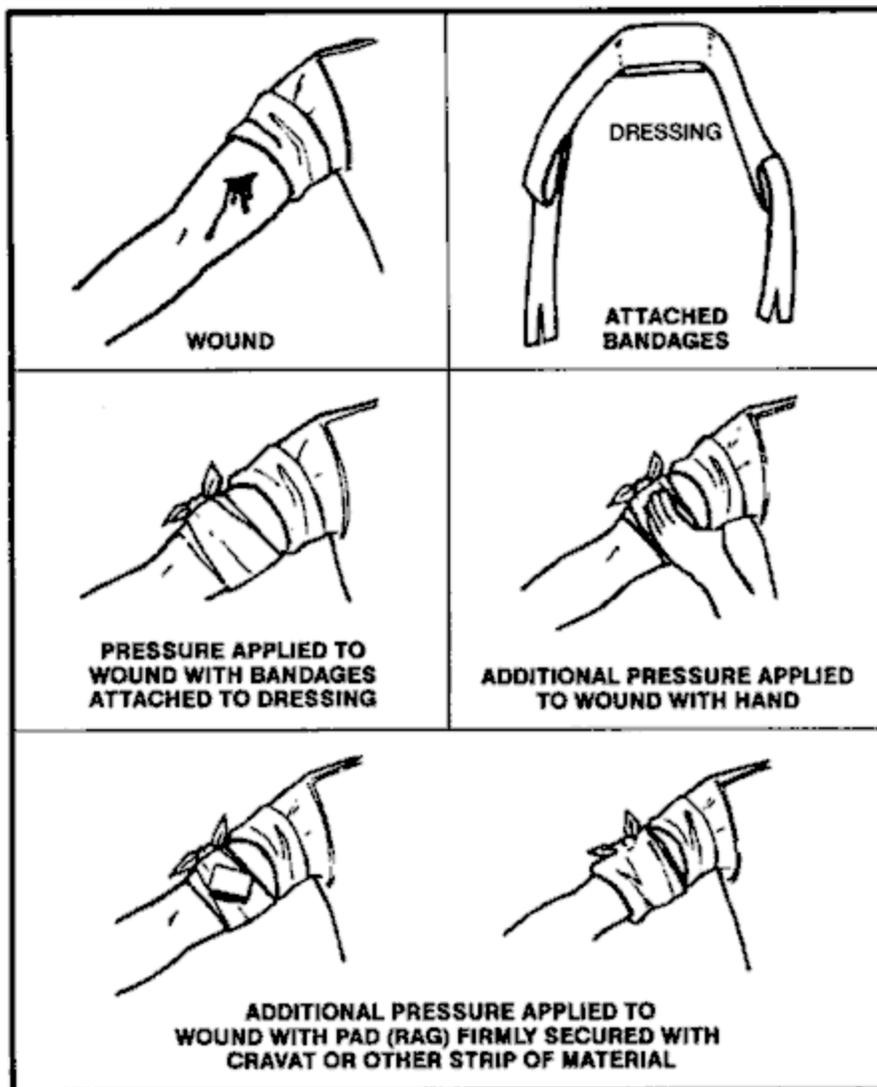


Figure 4-2. Application of a pressure dressing.

Leave the pressure dressing in place for 1 or 2 days, after which you can remove and replace it with a smaller dressing.

In the long-term survival environment, make fresh, daily dressing changes and inspect for signs of infection.

Elevation

Raising an injured extremity as high as possible above the heart's level slows blood loss by aiding the return of blood to the heart and lowering the blood pressure at the wound. However, elevation alone will not control bleeding entirely; you must also apply direct pressure over the wound. When treating a snakebite, however, keep the extremity lower than the heart.

Pressure Points

A pressure point is a location where the main artery to the wound lies near the surface of the skin or where the artery passes directly over a bony prominence ([Figure 4-3](#)). You can use digital pressure on a pressure point to slow arterial bleeding until the application of a pressure dressing. Pressure point control is not as effective for controlling bleeding as

direct pressure exerted on the wound. It is rare when a single major compressible artery supplies a damaged vessel.

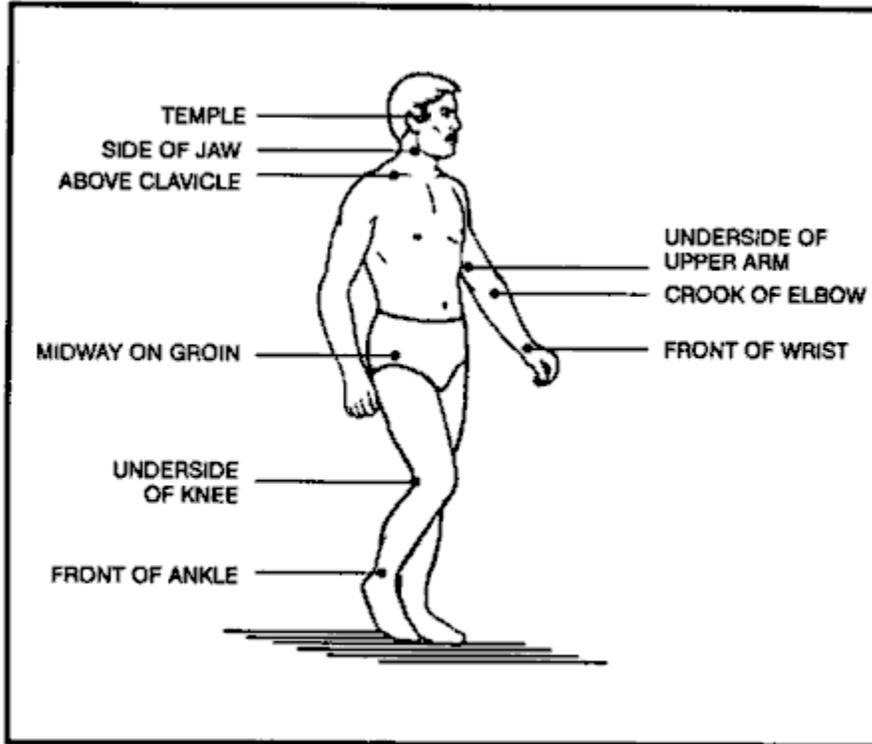


Figure 4-3. Pressure points.

If you cannot remember the exact location of the pressure points, follow this rule: Apply pressure at the end of the joint just above the injured area. On hands, feet, and head, this will be the wrist, ankle, and neck, respectively.

WARNING

Use caution when applying pressure to the neck. Too much pressure for too long may cause unconsciousness or death. Never place a tourniquet around the neck.

Maintain pressure points by placing a round stick in the joint, bending the joint over the stick, and then keeping it tightly bent by lashing. By using this method to maintain pressure, it frees your hands to work in other areas.

Digital Ligation

You can stop major bleeding immediately or slow it down by applying pressure with a finger or two on the bleeding end of the vein or artery. Maintain the pressure until the bleeding stops or slows down enough to apply a pressure bandage, elevation, and so forth.

Tourniquet

Use a tourniquet only when direct pressure over the bleeding point and all other methods did not control the bleeding. If you leave a tourniquet in place too long, the damage to the tissues can progress to gangrene, with a loss of the limb later. An improperly applied tourniquet can also cause permanent damage to nerves and other tissues at the site of the constriction.

If you must use a tourniquet, place it around the extremity, between the wound and the heart, 5 to 10 centimeters above the wound site ([Figure 4-4](#)). Never place it directly over the wound or a fracture. Use a stick as a handle to tighten the tourniquet and tighten it only

enough to stop blood flow. When you have tightened the tourniquet, bind the free end of the stick to the limb to prevent unwinding.

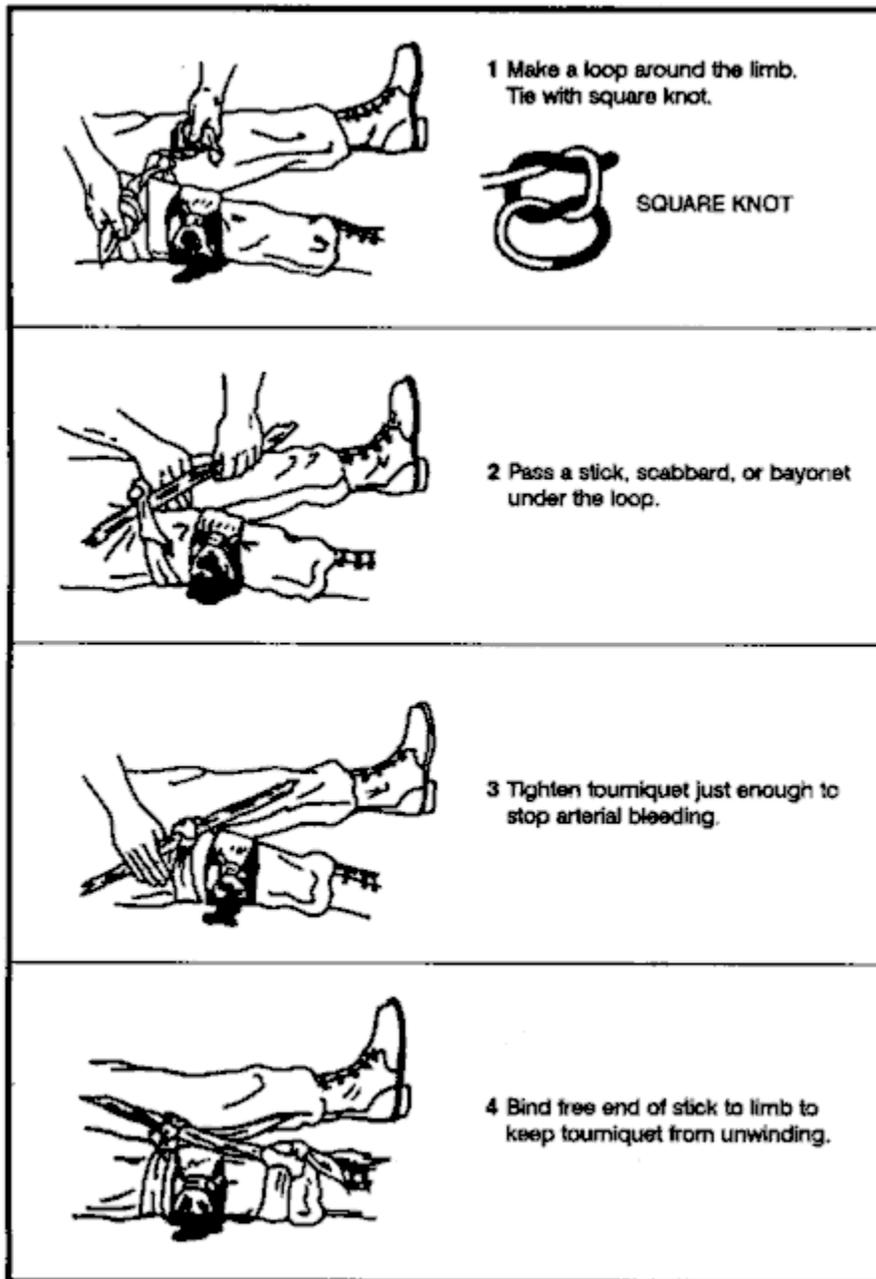


Figure 4-4. Application of tourniquet.

After you secure the tourniquet, clean and bandage the wound. A lone survivor **does not** remove or release an applied tourniquet. In a buddy system, however, the buddy can release the tourniquet pressure every 10 to 15 minutes for 1 or 2 minutes to let blood flow to the rest of the extremity to prevent limb loss.

Prevent and Treat Shock

Anticipate shock in all injured personnel. Treat all injured persons as follows, regardless of what symptoms appear ([Figure 4-5](#)):

- If the victim is conscious, place him on a level surface with the lower extremities elevated 15 to 20 centimeters.

- If the victim is unconscious, place him on his side or abdomen with his head turned to one side to prevent choking on vomit, blood, or other fluids.
- If you are unsure of the best position, place the victim perfectly flat. Once the victim is in a shock position, do not move him.
- Maintain body heat by insulating the victim from the surroundings and, in some instances, applying external heat.
- If wet, remove all the victim's wet clothing as soon as possible and replace with dry clothing.
- Improvise a shelter to insulate the victim from the weather.
- Use warm liquids or foods, a prewarmed sleeping bag, another person, warmed water in canteens, hot rocks wrapped in clothing, or fires on either side of the victim to provide external warmth.
- If the victim is conscious, slowly administer small doses of a warm salt or sugar solution, if available.
- If the victim is unconscious or has abdominal wounds, do not give fluids by mouth.
- Have the victim rest for at least 24 hours.
- If you are a lone survivor, lie in a depression in the ground, behind a tree, or any other place out of the weather, with your head lower than your feet.
- If you are with a buddy, reassess your patient constantly.

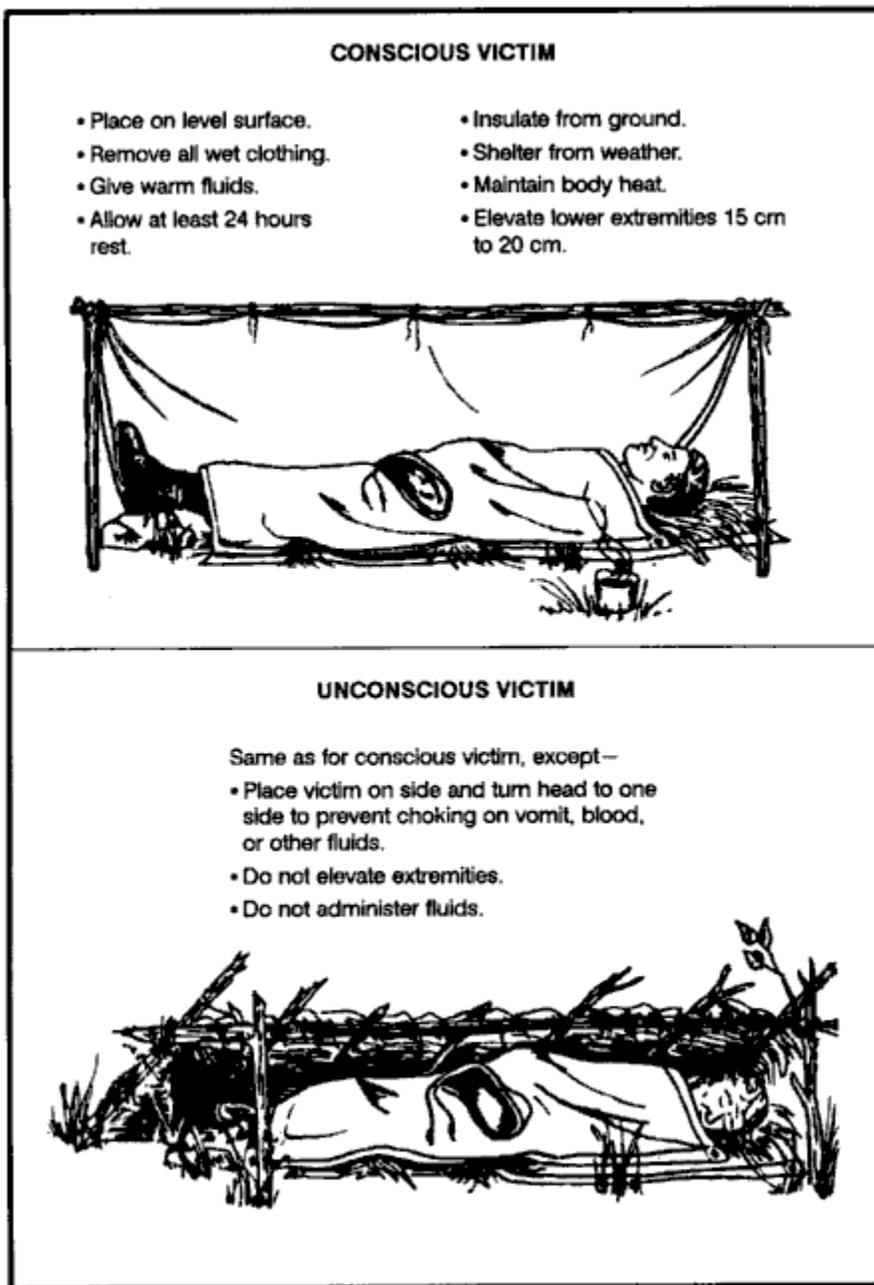


Figure 4-5. Treatment for shock.

BONE AND JOINT INJURY

You could face bone and joint injuries that include fractures, dislocations, and sprains.

Fractures

There are basically two types of fractures: open and closed. With an open (or compound) fracture, the bone protrudes through the skin and complicates the actual fracture with an open wound. After setting the fracture, treat the wound as any other open wound.

The closed fracture has no open wounds. Follow the [guidelines](#) for immobilization, and set and splint the fracture.

The signs and symptoms of a fracture are pain, tenderness, discoloration, swelling deformity, loss of function, and grating (a sound or feeling that occurs when broken bone ends rub together).

The dangers with a fracture are the severing or the compression of a nerve or blood vessel at the site of fracture. For this reason minimum manipulation should be done, and only very cautiously. If you notice the area below the break becoming numb, swollen, cool to the touch, or turning pale, and the victim shows signs of shock, a major vessel may have been severed. You must control this internal bleeding. Rest the victim for shock, and replace lost fluids.

Often you must maintain traction during the splinting and healing process. You can effectively pull smaller bones such as the arm or lower leg by hand. You can create traction by wedging a hand or foot in the V-notch of a tree and pushing against the tree with the other extremity. You can then splint the break.

Very strong muscles hold a broken thighbone (femur) in place making it difficult to maintain traction during healing. You can make an improvised traction splint using natural material ([Figure 4-6](#)) as follows:

- Get two forked branches or saplings at least 5 centimeters in diameter. Measure one from the patient's armpit to 20 to 30 centimeters past his unbroken leg. Measure the other from the groin to 20 to 30 centimeters past the unbroken leg. Ensure that both extend an equal distance beyond the end of the leg.
- Pad the two splints. Notch the ends without forks and lash a 20- to 30-centimeter cross member made from a 5-centimeter diameter branch between them.

Using available material (vines, cloth, rawhide), tie the splint around the upper portion of the body and down the length of the broken leg. Follow the splinting [guidelines](#).

- With available material, fashion a wrap that will extend around the ankle, with the two free ends tied to the cross member.
- Place a 10- by 2.5-centimeter stick in the middle of the free ends of the ankle wrap between the cross member and the foot. Using the stick, twist the material to make the traction easier.
- Continue twisting until the broken leg is as long or slightly longer than the unbroken leg.
- Lash the stick to maintain traction.

Note: Over time you may lose traction because the material weakened. Check the traction periodically. If you must change or repair the splint, maintain the traction manually for a short time.

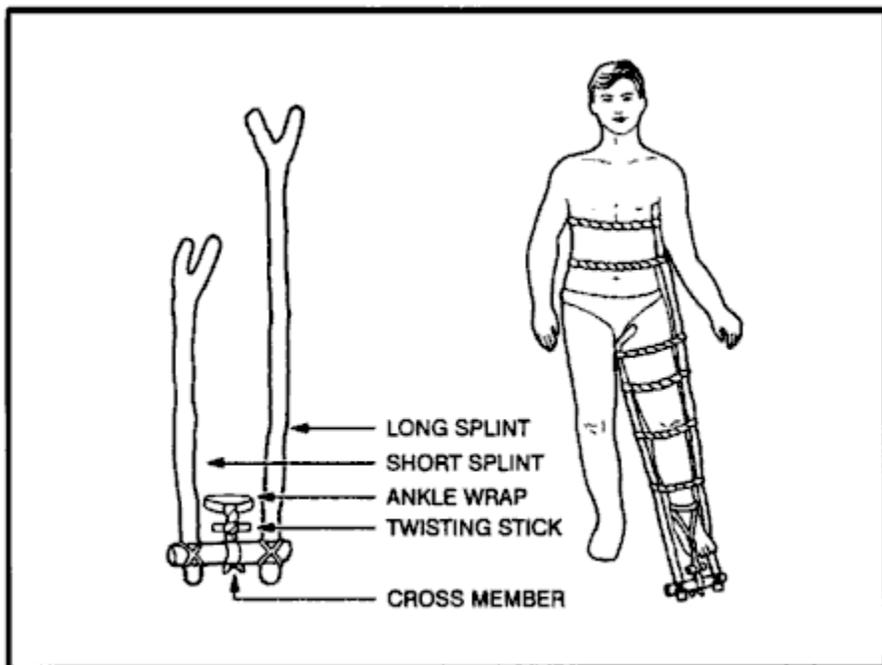


Figure 4-6. Improvised traction splint.

Dislocations

Dislocations are the separations of bone joints causing the bones to go out of proper alignment. These misalignments can be extremely painful and can cause an impairment of nerve or circulatory function below the area affected. You must place these joints back into alignment as quickly as possible.

Signs and symptoms of dislocations are joint pain, tenderness, swelling, discoloration, limited range of motion, and deformity of the joint. You treat dislocations by reduction, immobilization, and rehabilitation.

Reduction or "setting" is placing the bones back into their proper alignment. You can use several methods, but manual traction or the use of weights to pull the bones are the safest and easiest. Once performed, reduction decreases the victim's pain and allows for normal function and circulation. Without an X ray, you can judge proper alignment by the look and feel of the joint and by comparing it to the joint on the opposite side.

Immobilization is nothing more than splinting the dislocation after reduction. You can use any field-expedient material for a splint or you can splint an extremity to the body. The basic guidelines for splinting are--

- Splint above and below the fracture site.
- Pad splints to reduce discomfort.
- Check circulation below the fracture after making each tie on the splint.

To rehabilitate the dislocation, remove the splints after 7 to 14 days. Gradually use the injured joint until fully healed.

Sprains

The accidental overstretching of a tendon or ligament causes sprains. The signs and symptoms are pain, swelling, tenderness, and discoloration (black and blue).

When treating sprains, think RICE--

R Rest injured area.

-

I Ice for 24 hours, then heat after that.

-

C Compression-wrapping and/or splinting to help stabilize. If possible, leave the boot on a sprained ankle unless circulation is compromised.

-

E - Elevation of the affected area.

BITES AND STINGS

Insects and related pests are hazards in a survival situation. They not only cause irritations, but they are often carriers of diseases that cause severe allergic reactions in some individuals. In many parts of the world you will be exposed to serious, even fatal, diseases not encountered in the United States.

Ticks can carry and transmit diseases, such as Rocky Mountain spotted fever common in many parts of the United States. Ticks also transmit the Lyme disease.

Mosquitoes may carry malaria, dengue, and many other diseases.

Flies can spread disease from contact with infectious sources. They are causes of sleeping sickness, typhoid, cholera, and dysentery.

Fleas can transmit plague.

Lice can transmit typhus and relapsing fever.

The best way to avoid the complications of insect bites and stings is to keep immunizations (including booster shots) up-to-date, avoid insect-infested areas, use netting and insect repellent, and wear all clothing properly.

If you get bitten or stung, do not scratch the bite or sting, it might become infected. Inspect your body at least once a day to ensure there are no insects attached to you. If you find ticks attached to your body, cover them with a substance, such as Vaseline, heavy oil, or tree sap, that will cut off their air supply. Without air, the tick releases its hold, and you can remove it. Take care to remove the whole tick. Use tweezers if you have them. Grasp the tick where the mouth parts are attached to the skin. Do not squeeze the tick's body. Wash your hands after touching the tick. Clean the tick wound daily until healed.

Treatment

It is impossible to list the treatment of all the different types of bites and stings. Treat bites and stings as follows:

- If antibiotics are available for your use, become familiar with them before deployment and use them.
- Predeployment immunizations can prevent most of the common diseases carried by mosquitoes and some carried by flies.
- The common fly-borne diseases are usually treatable with penicillins or erythromycin.

- Most tick-, flea-, louse-, and mite-borne diseases are treatable with tetracycline.
- Most antibiotics come in 250 milligram (mg) or 500 mg tablets. If you cannot remember the exact dose rate to treat a disease, 2 tablets, 4 times a day for 10 to 14 days will usually kill any bacteria.

Bee and Wasp Stings

If stung by a bee, immediately remove the stinger and venom sac, if attached, by scraping with a fingernail or a knife blade. Do not squeeze or grasp the stinger or venom sac, as squeezing will force more venom into the wound. Wash the sting site thoroughly with soap and water to lessen the chance of a secondary infection.

If you know or suspect that you are allergic to insect stings, always carry an insect sting kit with you.

Relieve the itching and discomfort caused by insect bites by applying--

- Cold compresses.
- A cooling paste of mud and ashes.
- Sap from dandelions.
- Coconut meat.
- Crushed cloves of garlic.
- Onion.

Spider Bites and Scorpion Stings

The black widow spider is identified by a red hourglass on its abdomen. Only the female bites, and it has a neurotoxic venom. The initial pain is not severe, but severe local pain rapidly develops. The pain gradually spreads over the entire body and settles in the abdomen and legs. Abdominal cramps and progressive nausea, vomiting, and a rash may occur. Weakness, tremors, sweating, and salivation may occur. Anaphylactic reactions can occur. Symptoms begin to regress after several hours and are usually gone in a few days. Threat for shock. Be ready to perform CPR. Clean and dress the bite area to reduce the risk of infection. An antivenin is available.

The funnelweb spider is a large brown or gray spider found in Australia. The symptoms and the treatment for its bite are as for the black widow spider.

The brown house spider or brown recluse spider is a small, light brown spider identified by a dark brown violin on its back. There is no pain, or so little pain, that usually a victim is not aware of the bite. Within a few hours a painful red area with a mottled cyanotic center

appears. Necrosis does not occur in all bites, but usually in 3 to 4 days, a star-shaped, firm area of deep purple discoloration appears at the bite site. The area turns dark and mummified in a week or two. The margins separate and the scab falls off, leaving an open ulcer. Secondary infection and regional swollen lymph glands usually become visible at this stage. The outstanding characteristic of the brown recluse bite is an ulcer that does not heal but persists for weeks or months. In addition to the ulcer, there is often a systemic reaction that is serious and may lead to death. Reactions (fever, chills, joint pain, vomiting, and a generalized rash) occur chiefly in children or debilitated persons.

Tarantulas are large, hairy spiders found mainly in the tropics. Most do not inject venom, but some South American species do. They have large fangs. If bitten, pain and bleeding are certain, and infection is likely. Treat a tarantula bite as for any open wound, and try to prevent infection. If symptoms of poisoning appear, treat as for the bite of the black widow spider.

Scorpions are all poisonous to a greater or lesser degree. There are two different reactions, depending on the species:

- Severe local reaction only, with pain and swelling around the area of the sting. Possible prickly sensation around the mouth and a thick-feeling tongue.
- Severe systemic reaction, with little or no visible local reaction. Local pain may be present. Systemic reaction includes respiratory difficulties, thick-feeling tongue, body spasms, drooling, gastric distention, double vision, blindness, involuntary rapid movement of the eyeballs, involuntary urination and defecation, and heart failure. Death is rare, occurring mainly in children and adults with high blood pressure or illnesses.

Treat scorpion stings as you would a black widow bite.

Snakebites

The chance of a snakebite in a survival situation is rather small, if you are familiar with the various types of snakes and their habitats. However, it could happen and you should know how to treat a snakebite. Deaths from snakebites are rare. More than one-half of the snakebite victims have little or no poisoning, and only about one-quarter develop serious systemic poisoning. However, the chance of a snakebite in a survival situation can affect morale, and failure to take preventive measures or failure to treat a snakebite properly can result in needless tragedy.

The primary concern in the treatment of snakebite is to limit the amount of eventual tissue destruction around the bite area.

A bite wound, regardless of the type of animal that inflicted it, can become infected from bacteria in the animal's mouth. With nonpoisonous as well as poisonous snakebites, this local infection is responsible for a large part of the residual damage that results.

Snake venoms not only contain poisons that attack the victim's central nervous system (neurotoxins) and blood circulation (hemotoxins), but also digestive enzymes (cytotoxins) to aid in digesting their prey. These poisons can cause a very large area of tissue death, leaving a large open wound. This condition could lead to the need for eventual amputation if not treated.

Shock and panic in a person bitten by a snake can also affect the person's recovery.

Excitement, hysteria, and panic can speed up the circulation, causing the body to absorb the toxin quickly. Signs of shock occur within the first 30 minutes after the bite.

Before you start treating a snakebite, determine whether the snake was poisonous or nonpoisonous. Bites from a nonpoisonous snake will show rows of teeth. Bites from a

poisonous snake may have rows of teeth showing, but will have one or more distinctive puncture marks caused by fang penetration. Symptoms of a poisonous bite may be spontaneous bleeding from the nose and anus, blood in the urine, pain at the site of the bite, and swelling at the site of the bite within a few minutes or up to 2 hours later. Breathing difficulty, paralysis, weakness, twitching, and numbness are also signs of neurotoxic venoms. These signs usually appear 1.5 to 2 hours after the bite. If you determine that a poisonous snake bit an individual, take the following steps:

- Reassure the victim and keep him still.
- Set up for shock and force fluids or give an intravenous (IV).
- Remove watches, rings, bracelets, or other constricting items.
- Clean the bite area.
- Maintain an airway (especially if bitten near the face or neck) and be prepared to administer mouth-to-mouth resuscitation or CPR.
- Use a constricting band between the wound and the heart.
- Immobilize the site.
- Remove the poison as soon as possible by using a mechanical suction device or by squeezing.

Do not--

- Give the victim alcoholic beverages or tobacco products.
- Give morphine or other central nervous system (CNS) depressors.
- Make any deep cuts at the bite site. Cutting opens capillaries that in turn open a direct route into the blood stream for venom and infection.

*Note: If medical treatment is over one hour away, make an incision (no longer than 6 millimeters and no deeper than 3 millimeter) over each puncture, cutting just deep enough to enlarge the fang opening, but only through the first or second layer of skin. Place a suction cup over the bite so that you have a good vacuum seal. Suction the bite site 3 to 4 times. Use mouth suction **only as a last resort and only if you do not have open sores in your***

mouth. Spit the envenomed blood out and rinse your mouth with water. This method will draw out 25 to 30 percent of the venom.

- Put your hands on your face or rub your eyes, as venom may be on your hands. Venom may cause blindness.
- Break open the large blisters that form around the bite site.

After caring for the victim as [described](#) above, take the following actions to minimize local effects:

- If infection appears, keep the wound open and clean.
- Use heat after 24 to 48 hours to help prevent the spread of local infection. Heat also helps to draw out an infection.
- Keep the wound covered with a dry, sterile dressing.
- Have the victim drink large amounts of fluids until the infection is gone.

WOUNDS

An interruption of the skin's integrity characterizes wounds. These wounds could be open wounds, skin diseases, frostbite, trench foot, and burns.

Open Wounds

Open wounds are serious in a survival situation, not only because of tissue damage and blood loss, but also because they may become infected. Bacteria on the object that made the wound, on the individual's skin and clothing, or on other foreign material or dirt that touches the wound may cause infection.

By taking proper care of the wound you can reduce further contamination and promote healing. Clean the wound as soon as possible after it occurs by--

- Removing or cutting clothing away from the wound.
- Always looking for an exit wound if a sharp object, gun shot, or projectile caused a wound.
- Thoroughly cleaning the skin around the wound.

- Rinsing (not scrubbing) the wound with large amounts of water under pressure. You can use fresh urine if water is not available.

The "open treatment" method is the safest way to manage wounds in survival situations. Do not try to close any wound by suturing or similar procedures. Leave the wound open to allow the drainage of any pus resulting from infection. As long as the wound can drain, it generally will not become life-threatening, regardless of how unpleasant it looks or smells. Cover the wound with a clean dressing. Place a bandage on the dressing to hold it in place. Change the dressing daily to check for infection.

If a wound is gaping, you can bring the edges together with adhesive tape cut in the form of a "butterfly" or "dumbbell" (Figure 4-7).

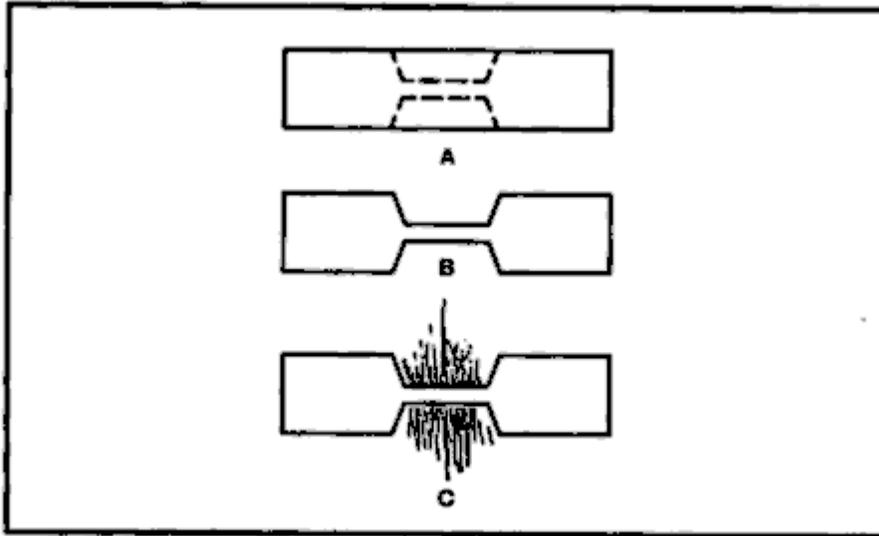


Figure 4-7. Butterfly closure.

In a survival situation, some degree of wound infection is almost inevitable. Pain, swelling, and redness around the wound, increased temperature, and pus in the wound or on the dressing indicate infection is present.

To treat an infected wound--

- Place a warm, moist compress directly on the infected wound. Change the compress when it cools, keeping a warm compress on the wound for a total of 30 minutes. Apply the compresses three or four times daily.
- Drain the wound. Open and gently probe the infected wound with a sterile instrument.
- Dress and bandage the wound.
- Drink a lot of water.

Continue this treatment daily until all signs of infection have disappeared.

If you do not have antibiotics and the wound has become severely infected, does not heal, and ordinary debridement is impossible, consider maggot therapy, despite its hazards:

- Expose the wound to flies for one day and then cover it.

- Check daily for maggots.
- Once maggots develop, keep wound covered but check daily.
- Remove all maggots when they have cleaned out all dead tissue and before they start on healthy tissue. Increased pain and bright red blood in the wound indicate that the maggots have reached healthy tissue.
- Flush the wound repeatedly with sterile water or fresh urine to remove the maggots.
- Check the wound every four hours for several days to ensure all maggots have been removed.
- Bandage the wound and treat it as any other wound. It should heal normally.

Skin Diseases and Ailments

Although boils, fungal infections, and rashes rarely develop into a serious health problem, they cause discomfort and you should treat them.

Boils

Apply warm compresses to bring the boil to a head. Then open the boil using a sterile knife, wire, needle, or similar item. Thoroughly clean out the pus using soap and water. Cover the boil site, checking it periodically to ensure no further infection develops.

Fungal Infections

Keep the skin clean and dry, and expose the infected area to as much sunlight as possible. *Do not scratch* the affected area. During the Southeast Asian conflict, soldiers used antifungal powders, lye soap, chlorine bleach, alcohol, vinegar, concentrated salt water, and iodine to treat fungal infections with varying degrees of success. *As with any "unorthodox" method of treatment, use it with caution.*

Rashes

To treat a skin rash effectively, first determine what is causing it. This determination may be difficult even in the best of situations. Observe the following rules to treat rashes:

- If it is moist, keep it dry.
- If it is dry, keep it moist.

- Do not scratch it.

Use a compress of vinegar or tannic acid derived from tea or from boiling acorns or the bark of a hardwood tree to dry weeping rashes. Keep dry rashes moist by rubbing a small amount of rendered animal fat or grease on the affected area.

Remember, treat rashes as open wounds and clean and dress them daily. There are many substances available to survivors in the wild or in captivity for use as antiseptics to treat wound:

- *Iodine tablets*. Use 5 to 15 tablets in a liter of water to produce a good rinse for wounds during healing.
- *Garlic*. Rub it on a wound or boil it to extract the oils and use the water to rinse the affected area.
- *Salt water*. Use 2 to 3 tablespoons per liter of water to kill bacteria.
- *Bee honey*. Use it straight or dissolved in water.
- *Sphagnum moss*. Found in boggy areas worldwide, it is a natural source of iodine. Use as a dressing.

Again, use noncommercially prepared materials with caution.

Frostbite

This injury results from frozen tissues. Light frostbite involves only the skin that takes on a dull, whitish pallor. Deep frostbite extends to a depth below the skin. The tissues become solid and immovable. Your feet, hands, and exposed facial areas are particularly vulnerable to frostbite.

When with others, prevent frostbite by using the buddy system. Check your buddy's face often and make sure that he checks yours. If you are alone, periodically cover your nose and lower part of your face with your mittens.

Do not try to thaw the affected areas by placing them close to an open flame. Gently rub them in lukewarm water. Dry the part and place it next to your skin to warm it at body temperature.

Trench Foot

This condition results from many hours or days of exposure to wet or damp conditions at a temperature just above freezing. The nerves and muscles sustain the main damage, but gangrene can occur. In extreme cases the flesh dies and it may become necessary to have the foot or leg amputated. The best prevention is to keep your feet dry. Carry extra socks with you in a waterproof packet. Dry wet socks against your body. Wash your feet daily and put on dry socks.

Burns

The following field treatment for burns relieves the pain somewhat, seems to help speed healing, and offers some protection against infection:

- First, stop the burning process. Put out the fire by removing clothing, dousing with water or sand, or by rolling on the ground. Cool the burning skin with ice or water. For burns caused by white phosphorous, pick out the white phosphorous with tweezers; do not douse with water.
- Soak dressings or clean rags for 10 minutes in a boiling tannic acid solution (obtained from tea, inner bark of hardwood trees, or acorns boiled in water).
- Cool the dressings or clean rags and apply over burns.
- Treat as an open wound.
- Replace fluid loss.
- Maintain airway.
- Treat for shock.
- Consider using morphine, unless the burns are near the face.

ENVIRONMENTAL INJURIES

Heatstroke, hypothermia, diarrhea, and intestinal parasites are environmental injuries you could face.

Heatstroke

The breakdown of the body's heat regulatory system (body temperature more than 40.5 degrees C [105 degrees F]) causes a heatstroke. Other heat injuries, such as cramps or dehydration, do not always precede a heatstroke. Signs and symptoms of heatstroke are--

- Swollen, beet-red face.
- Reddened whites of eyes.
- Victim not sweating.

- Unconsciousness or delirium, which can cause pallor, a bluish color to lips and nail beds (cyanosis), and cool skin.

Note: By this time the victim is in severe shock. Cool the victim as rapidly as possible. Cool him by dipping him in a cool stream. If one is not available, douse the victim with urine, water, or at the very least, apply cool wet compresses to all the joints, especially the neck, armpits, and crotch. Be sure to wet the victim's head. Heat loss through the scalp is great. Administer IVs and provide drinking fluids. You may fan the individual.

Expect, during cooling--

- Vomiting.
- Diarrhea.
- Struggling.
- Shivering.
- Shouting.
- Prolonged unconsciousness.
- Rebound heatstroke within 48 hours.
- Cardiac arrest; be ready to perform CPR.

Note: Treat for dehydration with lightly salted water.

Hypothermia

Defined as the body's failure to maintain a temperature of 36 degrees C (97 degrees F). Exposure to cool or cold temperature over a short or long time can cause hypothermia. Dehydration and lack of food and rest predispose the survivor to hypothermia. Unlike heatstroke, you must gradually warm the hypothermia victim. Get the victim into dry clothing. Replace lost fluids, and warm him.

Diarrhea

A common, debilitating ailment caused by a change of water and food, drinking contaminated water, eating spoiled food, becoming fatigued, and using dirty dishes. You can avoid most of these causes by practicing preventive medicine. If you get diarrhea, however, and do not have antidiarrheal medicine, one of the following treatments may be effective:

- Limit your intake of fluids for 24 hours.
- Drink one cup of a strong tea solution every 2 hours until the diarrhea slows or stops. The tannic acid in the tea helps to control the diarrhea. Boil the inner bark of a hardwood tree for 2 hours or more to release the tannic acid.
- Make a solution of one handful of ground chalk, charcoal, or dried bones and treated water. If you have some apple pomace or the rinds of citrus fruit, add an equal portion to the mixture to make it more effective. Take 2 tablespoons of the solution every 2 hours until the diarrhea slows or stops.

Intestinal Parasites

You can usually avoid worm infestations and other intestinal parasites if you take preventive measures. For example, never go barefoot. The most effective way to prevent intestinal parasites is to avoid uncooked meat and raw vegetables contaminated by raw sewage or human waste used as a fertilizer. However, should you become infested and lack proper medicine, you can use home remedies. Keep in mind that these home remedies work on the principle of changing the environment of the gastrointestinal tract. The following are home remedies you could use:

- *Salt water.* Dissolve 4 tablespoons of salt in 1 liter of water and drink. Do not repeat this treatment.
- *Tobacco.* Eat 1 to 1.5 cigarettes. The nicotine in the cigarette will kill or stun the worms long enough for your system to pass them. If the infestation is severe, repeat the treatment in 24 to 48 hours, *but no sooner.*
- *Kerosene.* Drink 2 tablespoons of kerosene *but no more.* If necessary, you can repeat this treatment in 24 to 48 hours. Be careful not to inhale the fumes. They may cause lung irritation.
- *Hot peppers.* Peppers are effective only if they are a steady part of your diet. You can eat them raw or put them in soups or rice and meat dishes. They create an environment that is prohibitive to parasitic attachment.

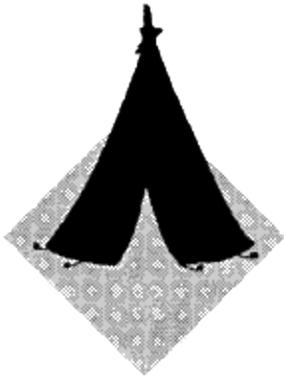
HERBAL MEDICINES

Our modern wonder drugs, laboratories, and equipment have obscured more primitive types of medicine involving determination, common sense, and a few simple treatments. In many areas of the world, however, the people still depend on local "witch doctors" or healers to cure their ailments. Many of the herbs (plants) and treatments they use are as effective as the most modern medications available. In fact, many modern medications come from refined herbs.

WARNING

Use herbal medicines with extreme care, however, and only when you lack or have limited medical supplies. Some herbal medicines are dangerous and may cause further damage or even death. See Chapter 9, Survival Use of Plants, for some basic herbal medicine treatments.

CHAPTER 5 - SHELTERS



A shelter can protect you from the sun, insects, wind, rain, snow, hot or cold temperatures, and enemy observation. It can give you a feeling of well-being. It can help you maintain your will to survive.

In some areas, your need for shelter may take precedence over your need for food and possibly even your need for water. For example, prolonged exposure to cold can cause excessive fatigue and weakness (exhaustion). An exhausted person may develop a "passive" outlook, thereby losing the will to survive.

The most common error in making a shelter is to make it too large. A shelter must be large enough to protect you. It must also be small enough to contain your body heat, especially in cold climates.

SHELTER SITE SELECTION

When you are in a survival situation and realize that shelter is a high priority, start looking for shelter as soon as possible. As you do so, remember what you will need at the site. Two requisites are--

- It must contain material to make the type of shelter you need.
- It must be large enough and level enough for you to lie down comfortably.

When you consider these requisites, however, you cannot ignore your tactical situation or your safety. You must also consider whether the site--

- Provides concealment from enemy observation.
- Has camouflaged escape routes.

- Is suitable for signaling, if necessary.
- Provides protection against wild animals and rocks and dead trees that might fall.
- Is free from insects, reptiles, and poisonous plants.

You must also remember the problems that could arise in your environment. For instance--

- Avoid flash flood areas in foothills.
- Avoid avalanche or rockslide areas in mountainous terrain.
- Avoid sites near bodies of water that are below the high water mark.

In some areas, the season of the year has a strong bearing on the site you select. Ideal sites for a shelter differ in winter and summer. During cold winter months you will want a site that will protect you from the cold and wind, but will have a source of fuel and water. During summer months in the same area you will want a source of water, but you will want the site to be almost insect free.

When considering shelter site selection, use the word BLISS as a guide.

B - Blend in with the surroundings.

L - Low silhouette.

I - Irregular shape.

S - Small.

S - Secluded location.

TYPES OF SHELTERS

When looking for a shelter site, keep in mind the type of shelter (protection) you need. However, you must also consider--

- How much time and effort you need to build the shelter.
- If the shelter will adequately protect you from the elements (sun, wind, rain, snow).
- If you have the tools to build it. If not, can you make improvised tools?
- If you have the type and amount of materials needed to build it.

To answer these questions, you need to know how to make various types of shelters and what materials you need to make them.

Poncho Lean-To

It takes only a short time and minimal equipment to build this lean-to ([Figure 5-1](#)). You need a poncho, 2 to 3 meters of rope or parachute suspension line, three stakes about 30 centimeters long, and two trees or two poles 2 to 3 meters apart. Before selecting the trees you will use or the location of your poles, check the wind direction. Ensure that the back of your lean-to will be into the wind.

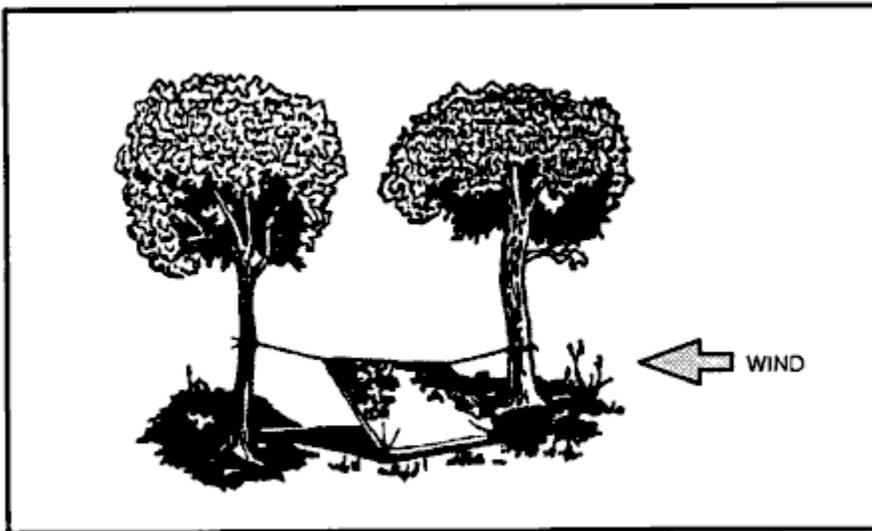


Figure 5-1. Poncho lean-to.

To make the lean-to--

- Tie off the hood of the poncho. Pull the drawstring tight, roll the hood longways, fold it into thirds, and tie it off with the drawstring.
- Cut the rope in half. On one long side of the poncho, tie half of the rope to the corner grommet. Tie the other half to the other corner grommet.
- Attach a drip stick (about a 10-centimeter stick) to each rope about 2.5 centimeters from the grommet. These drip sticks will keep rainwater from running down the ropes into the lean-to. Tying strings (about 10 centimeters long) to each grommet along the poncho's top edge will allow the water to run to and down the line without dripping into the shelter.
- Tie the ropes about waist high on the trees (uprights). Use a round turn and two half hitches with a quick-release knot.
- Spread the poncho and anchor it to the ground, putting sharpened sticks through the grommets and into the ground.

If you plan to use the lean-to for more than one night, or you expect rain, make a center support for the lean-to. Make this support with a line. Attach one end of the line to the poncho hood and the other end to an overhanging branch. Make sure there is no slack in the line.

Another method is to place a stick upright under the center of the lean-to. This method, however, will restrict your space and movements in the shelter.

For additional protection from wind and rain, place some brush, your rucksack, or other equipment at the sides of the lean-to.

To reduce heat loss to the ground, place some type of insulating material, such as leaves or pine needles, inside your lean-to.

Note: When at rest, you lose as much as 80 percent of your body heat to the ground.

To increase your security from enemy observation, lower the lean-to's silhouette by making two changes. First, secure the support lines to the trees at knee height (not at waist height) using two knee-high sticks in the two center grommets (sides of lean-to). Second, angle the poncho to the ground, securing it with [sharpened sticks](#), as above.

Poncho Tent

This tent ([Figure 5-2](#)) provides a low silhouette. It also protects you from the elements on two sides. It has, however, less usable space and observation area than a lean-to, decreasing your reaction time to enemy detection. To make this tent, you need a poncho, two 1.5- to 2.5-meter ropes, six sharpened sticks about 30 centimeters long, and two trees 2 to 3 meters apart.

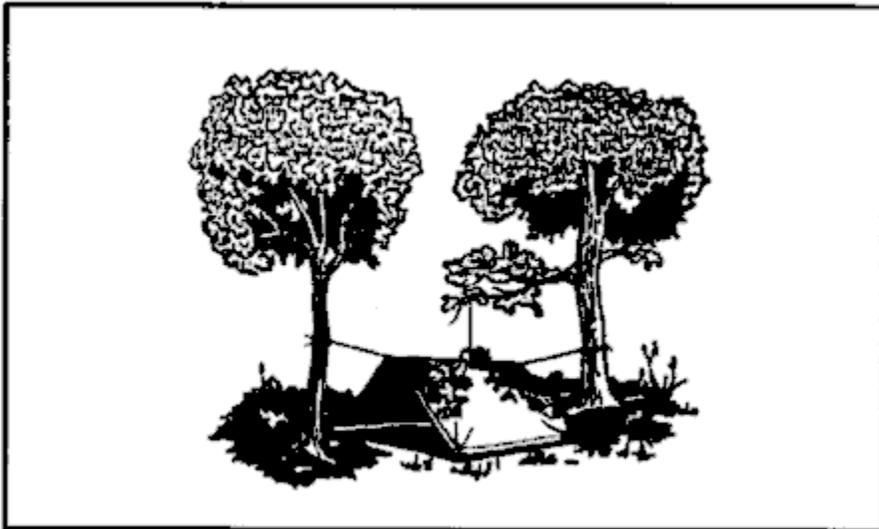


Figure 5-2. Poncho tent using overhanging branch.

To make the tent--

- Tie off the poncho hood in the same way as the poncho lean-to.
- Tie a 1.5- to 2.5-meter rope to the center grommet on each side of the poncho.
- Tie the other ends of these ropes at about knee height to two trees 2 to 3 meters apart and stretch the poncho tight.
- Draw one side of the poncho tight and secure it to the ground pushing sharpened sticks through the grommets.

- Follow the same procedure on the other side.

If you need a center support, use the same methods as for the poncho lean-to. Another center support is an A-frame set outside but over the center of the tent ([Figure 5-3](#)). Use two 90- to 120-centimeter-long sticks, one with a forked end, to form the A-frame. Tie the hood's drawstring to the A-frame to support the center of the tent.

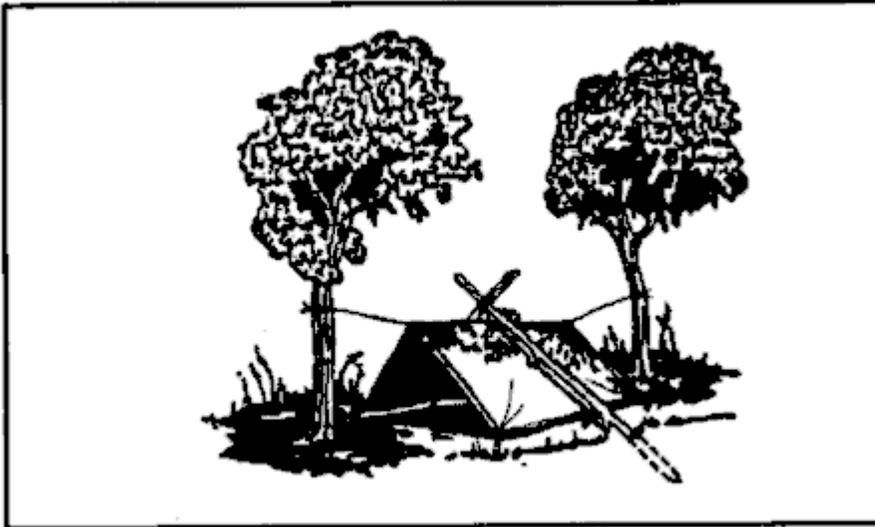


Figure 5-3. Poncho tent with A-frame.

Three-Pole Parachute Tepee

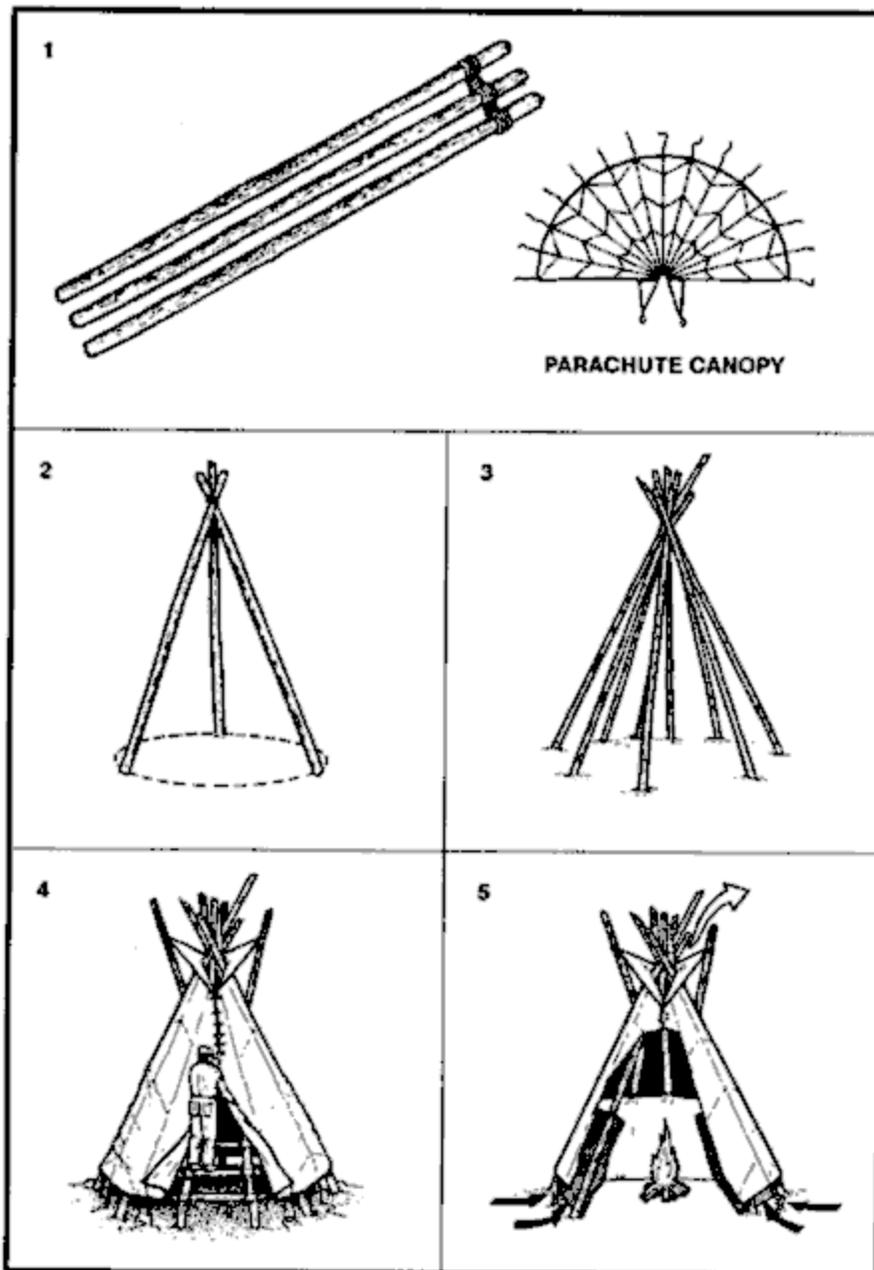
If you have a parachute and three poles and the tactical situation allows, make a parachute tepee. It is easy and takes very little time to make this tepee. It provides protection from the elements and can act as a signaling device by enhancing a small amount of light from a fire or candle. It is large enough to hold several people and their equipment and to allow sleeping, cooking, and storing firewood.

You can make this tepee using parts of or a whole personnel main or reserve parachute canopy. If using a standard personnel parachute, you need three poles 3.5 to 4.5 meters long and about 5 centimeters in diameter.

To make this tepee ([Figure 5-4](#))--

- Lay the poles on the ground and lash them together at one end.
- Stand the framework up and spread the poles to form a tripod.
- For more support, place additional poles against the tripod. Five or six additional poles work best, but do not lash them to the tripod.
- Determine the wind direction and locate the entrance 90 degrees or more from the mean wind direction.
- Lay out the parachute on the "backside" of the tripod and locate the bridle loop (nylon web loop) at the top (apex) of the canopy.

- Place the bridle loop over the top of a free-standing pole. Then place the pole back up against the tripod so that the canopy's apex is at the same height as the lashing on the three poles.
- Wrap the canopy around one side of the tripod. The canopy should be of double thickness, as you are wrapping an entire parachute. You need only wrap half of the tripod, as the remainder of the canopy will encircle the tripod in the opposite direction.
- Construct the entrance by wrapping the folded edges of the canopy around two free-standing poles. You can then place the poles side by side to close the tepee's entrance.
- Place all extra canopy underneath the tepee poles and inside to create a floor for the shelter.
- Leave a 30- to 50-centimeter opening at the top for ventilation if you intend to have a fire inside the tepee.



One-Pole Parachute Tepee

You need a 14-gore section (normally) of canopy, stakes, a stout center pole, and inner core and needle to construct this tepee. You cut the suspension lines except for 40- to 45-centimeter lengths at the canopy's lower lateral band.

To make this tepee ([Figure 5-5](#))--

- Select a shelter site and scribe a circle about 4 meters in diameter on the ground.
- Stake the parachute material to the ground using the lines remaining at the lower lateral band.

- After deciding where to place the shelter door, emplace a stake and tie the first line (from the lower lateral band) securely to it.
- Stretch the parachute material taut to the next line, emplace a stake on the scribed line, and tie the line to it.
- Continue the staking process until you have tied all the lines.
- Loosely attach the top of the parachute material to the center pole with a suspension line you previously cut and, through trial and error, determine the point at which the parachute material will be pulled tight once the center pole is upright.
- Then securely attach the material to the pole.
- Using a suspension line (or inner core), sew the end gores together leaving 1 or 1.2 meters for a door.

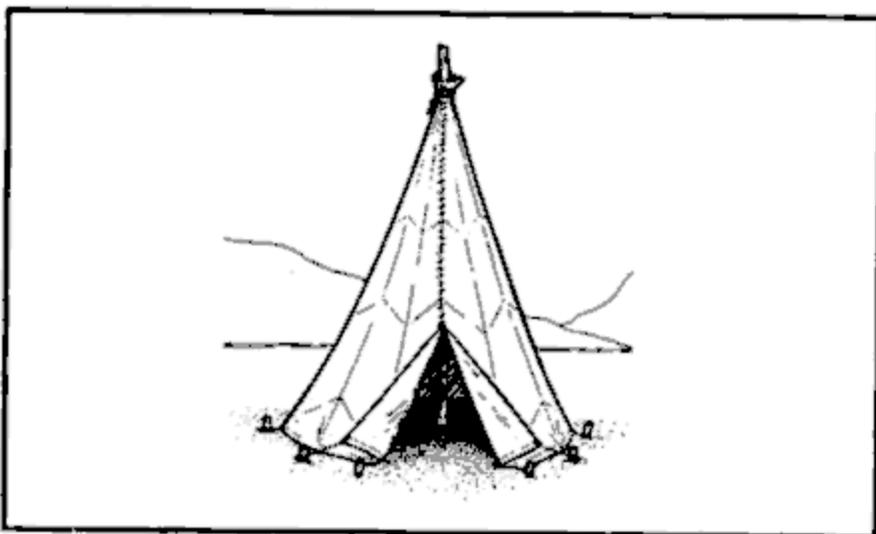


Figure 5-5. One-pole parachute tepee.

No-Pole Parachute Tepee

You use the same materials, except for the center pole, as for the one-pole parachute tepee.

To make this tepee ([Figure 5-6](#))--

- Tie a line to the top of parachute material with a previously cut suspension line.
- Throw the line over a tree limb, and tie it to the tree trunk.

- Starting at the opposite side from the door, emplace a stake on the scribed 3.5- to 4.3-meter circle.
- Tie the first line on the lower lateral band.
- Continue emplacing the stakes and tying the lines to them.
- After staking down the material, unfasten the line tied to the tree trunk, tighten the tepee material by pulling on this line, and tie it securely to the tree trunk.

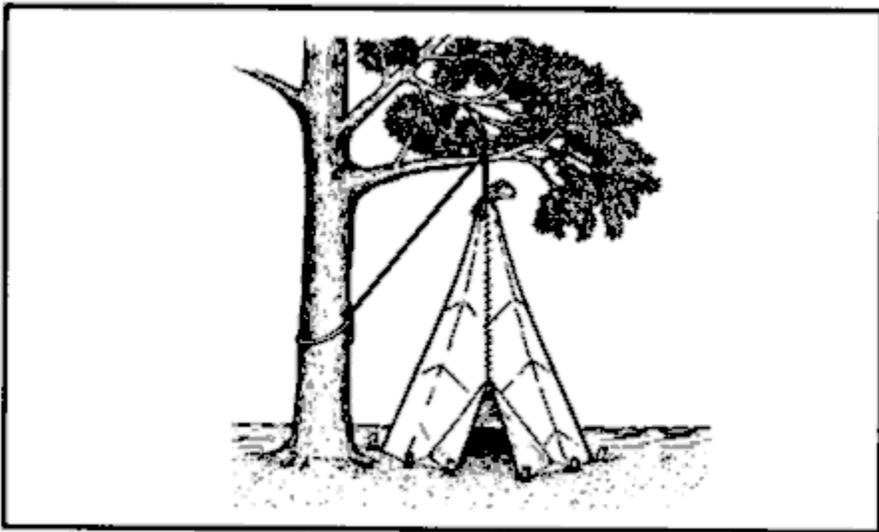


Figure 5-6. No-pole parachute tepee.

One-Man Shelter

A one-man shelter you can easily make using a parachute requires a tree and three poles. One pole should be about 4.5 meters long and the other two about 3 meters long. To make this shelter ([Figure 5-7](#))--

- Secure the 4.5-meter pole to the tree at about waist height.
- Lay the two 3-meter poles on the ground on either side of and in the same direction as the 4.5-meter pole.
- Lay the folded canopy over the 4.5 meter pole so that about the same amount of material hangs on both sides.
- Tuck the excess material under the 3-meter poles, and spread it on the ground inside to serve as a floor.

- Stake down or put a spreader between the two 3-meter poles at the shelter's entrance so they will not slide inward.
- Use any excess material to cover the entrance.

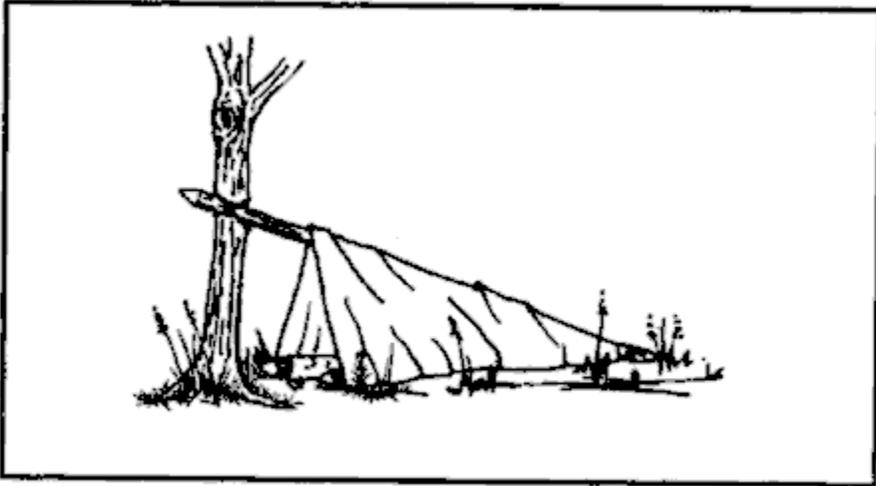


Figure 5-7. One-man shelter.

The parachute cloth makes this shelter wind resistant, and the shelter is small enough that it is easily warmed. A candle, used carefully, can keep the inside temperature comfortable. This shelter is unsatisfactory, however, when snow is falling as even a light snowfall will cave it in.

Parachute Hammock

You can make a hammock using 6 to 8 gores of parachute canopy and two trees about 4.5 meters apart ([Figure 5-8](#)).

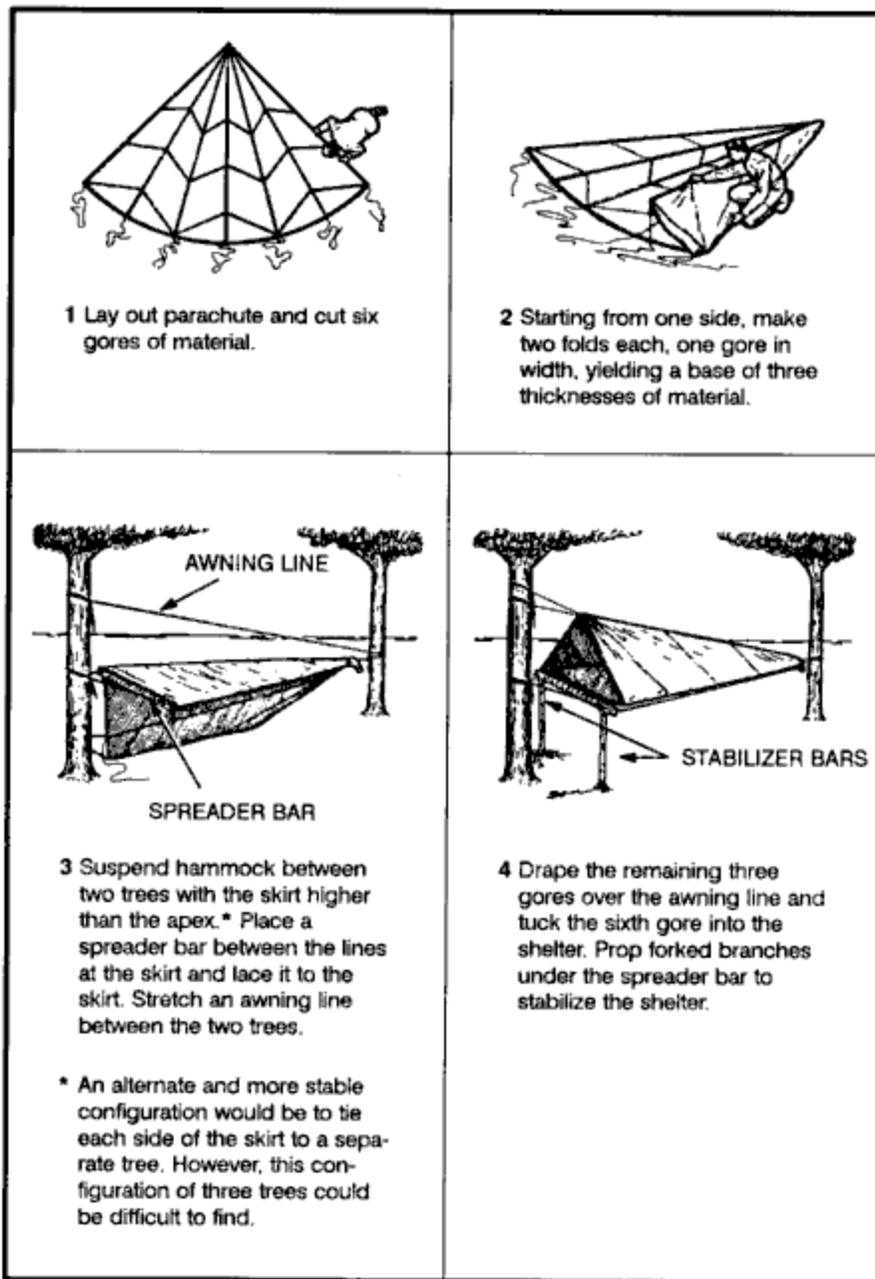


Figure 5-8. Parachute hammock.

Field-Expedient Lean-To

If you are in a wooded area and have enough natural materials, you can make a field-expedient lean-to ([Figure 5-9](#)) without the aid of tools or with only a knife. It takes longer to make this type of shelter than it does to make other types, but it will protect you from the elements.

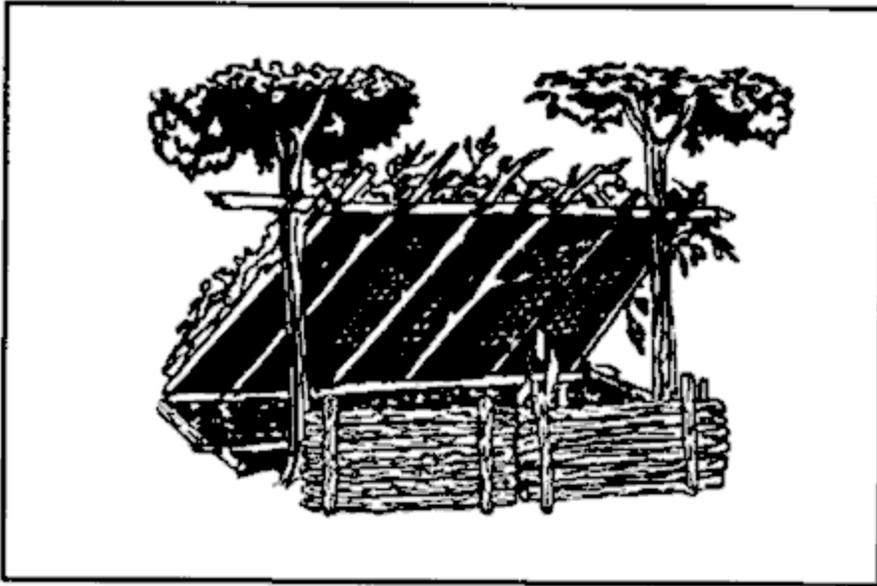


Figure 5-9. Field-expedient lean-to and fire reflector.

You will need two trees (or upright poles) about 2 meters apart; one pole about 2 meters long and 2.5 centimeters in diameter; five to eight poles about 3 meters long and 2.5 centimeters in diameter for beams; cord or vines for securing the horizontal support to the trees; and other poles, saplings, or vines to crisscross the beams.

To make this lean-to--

- Tie the 2-meter pole to the two trees at waist to chest height. This is the horizontal support. If a standing tree is not available, construct a biped using Y-shaped sticks or two tripods.
- Place one end of the beams (3-meter poles) on one side of the horizontal support. As with all lean-to type shelters, be sure to place the lean-to's backside into the wind.
- Crisscross saplings or vines on the beams.
- Cover the framework with brush, leaves, pine needles, or grass, starting at the bottom and working your way up like shingling.
- Place straw, leaves, pine needles, or grass inside the shelter for bedding.

In cold weather, add to your lean-to's comfort by building a fire reflector wall ([Figure 5-9](#)). Drive four 1.5-meter-long stakes into the ground to support the wall. Stack green logs on top of one another between the support stakes. Form two rows of stacked logs to create an inner space within the wall that you can fill with dirt. This action not only strengthens the wall but makes it more heat reflective. Bind the top of the support stakes so that the green logs and dirt will stay in place.

With just a little more effort you can have a drying rack. Cut a few 2-centimeter-diameter poles (length depends on the distance between the lean-to's horizontal support and the top of the fire reflector wall). Lay one end of the poles on the lean-to support and the other end

on top of the reflector wall. Place and tie into place smaller sticks across these poles. You now have a place to dry clothes, meat, or fish.

Swamp Bed

In a marsh or swamp, or any area with standing water or continually wet ground, the swamp bed ([Figure 5-10](#)) keeps you out of the water. When selecting such a site, consider the weather, wind, tides, and available materials.

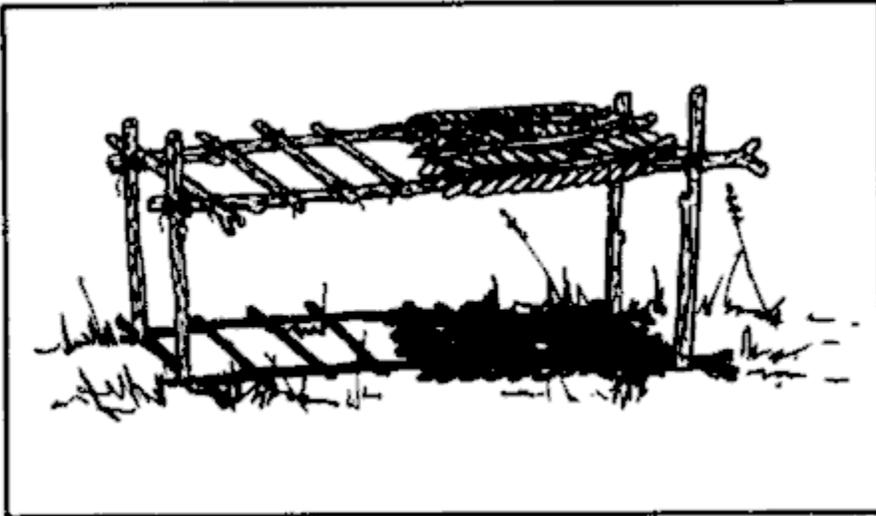


Figure 5-10, Swamp bed.

To make a swamp bed--

- Look for four trees clustered in a rectangle, or cut four poles (bamboo is ideal) and drive them firmly into the ground so they form a rectangle. They should be far enough apart and strong enough to support your height and weight, to include equipment.
- Cut two poles that span the width of the rectangle. They, too, must be strong enough to support your weight.
- Secure these two poles to the trees (or poles). Be sure they are high enough above the ground or water to allow for tides and high water.
- Cut additional poles that span the rectangle's length. Lay them across the two side poles, and secure them.
- Cover the top of the bed frame with broad leaves or grass to form a soft sleeping surface.
- Build a fire pad by laying clay, silt, or mud on one corner of the swamp bed and allow it to dry.

Another shelter designed to get you above and out of the water or wet ground uses the same rectangular configuration as the swamp bed. You very simply lay sticks and branches lengthwise on the inside of the trees (or poles) until there is enough material to raise the sleeping surface above the water level.

Natural Shelters

Do not overlook natural formations that provide shelter. Examples are caves, rocky crevices, clumps of bushes, small depressions, large rocks on leeward sides of hills, large trees with low-hanging limbs, and fallen trees with thick branches. However, when selecting a natural formation--

- Stay away from low ground such as ravines, narrow valleys, or creek beds. Low areas collect the heavy cold air at night and are therefore colder than the surrounding high ground. Thick, brushy, low ground also harbors more insects.
- Check for poisonous snakes, ticks, mites, scorpions, and stinging ants.
- Look for loose rocks, dead limbs, coconuts, or other natural growth that could fall on your shelter.

Debris Hut

For warmth and ease of construction, this shelter is one of the best. When shelter is essential to survival, build this shelter.

To make a debris hut ([Figure 5-11](#))--

- Build it by making a tripod with two short stakes and a long ridgepole or by placing one end of a long ridgepole on top of a sturdy base.
- Secure the ridgepole (pole running the length of the shelter) using the tripod method or by anchoring it to a tree at about waist height.
- Prop large sticks along both sides of the ridgepole to create a wedge-shaped ribbing effect. Ensure the ribbing is wide enough to accommodate your body and steep enough to shed moisture.
- Place finer sticks and brush crosswise on the ribbing. These form a latticework that will keep the insulating material (grass, pine needles, leaves) from falling through the ribbing into the sleeping area.
- Add light, dry, if possible, soft debris over the ribbing until the insulating material is at least 1 meter thick--the thicker the better.

- Place a 30-centimeter layer of insulating material inside the shelter.
- At the entrance, pile insulating material that you can drag to you once inside the shelter to close the entrance or build a door.
- As a final step in constructing this shelter, add shingling material or branches on top of the debris layer to prevent the insulating material from blowing away in a storm.

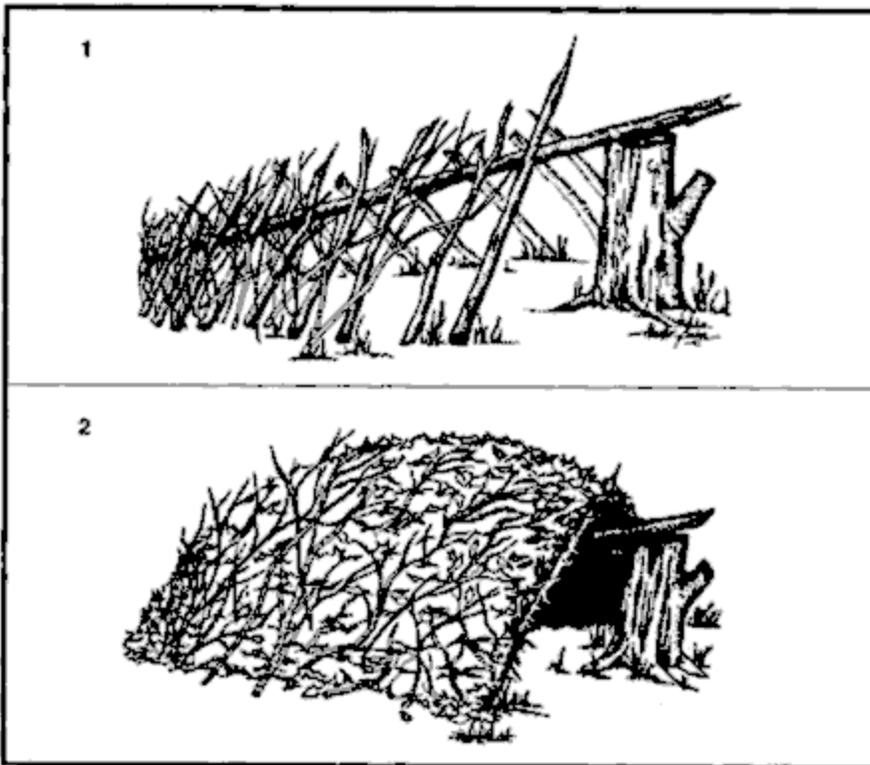


Figure 5-11. Debris hut.

Tree-Pit Snow Shelter

If you are in a cold, snow-covered area where evergreen trees grow and you have a digging tool, you can make a tree-pit shelter ([Figure 5-12](#)).

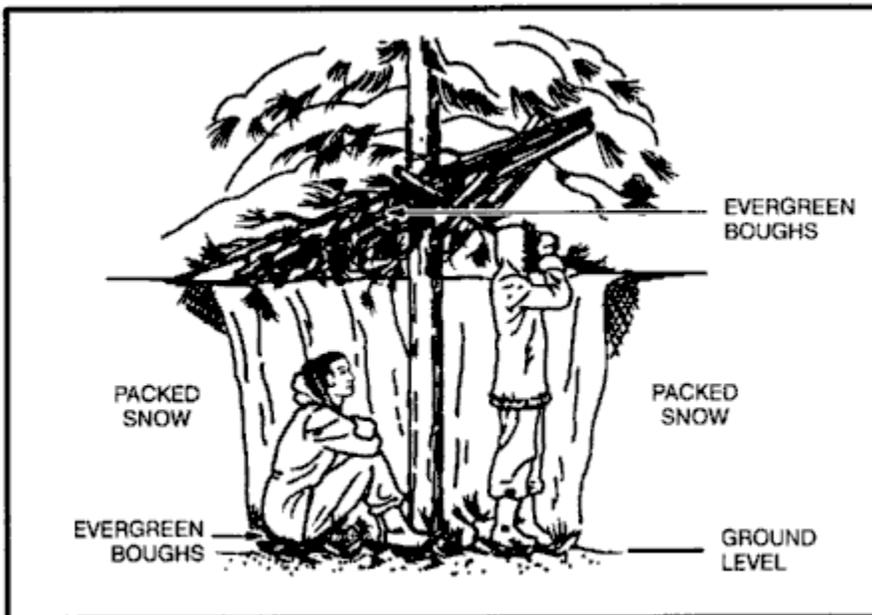


Figure 5-12. Tree-pit snow shelter.

To make this shelter--

- Find a tree with bushy branches that provides overhead cover.
- Dig out the snow around the tree trunk until you reach the depth and diameter you desire, or until you reach the ground.
- Pack the snow around the top and the inside of the hole to provide support.
- Find and cut other evergreen boughs. Place them over the top of the pit to give you additional overhead cover. Place evergreen boughs in the bottom of the pit for insulation.

See Chapter 15 for other arctic or cold weather shelters.

Beach Shade Shelter

This shelter protects you from the sun, wind, rain, and heat. It is easy to make using natural materials.

To make this shelter ([Figure 5-13](#))--

- Find and collect driftwood or other natural material to use as support beams and as a digging tool.
- Select a site that is above the high water mark.

- Scrape or dig out a trench running north to south so that it receives the least amount of sunlight. Make the trench long and wide enough for you to lie down comfortably.
- Mound soil on three sides of the trench. The higher the mound, the more space inside the shelter.
- Lay support beams (driftwood or other natural material) that span the trench on top of the mound to form the framework for a roof.
- Enlarge the shelter's entrance by digging out more sand in front of it.
- Use natural materials such as grass or leaves to form a bed inside the shelter.

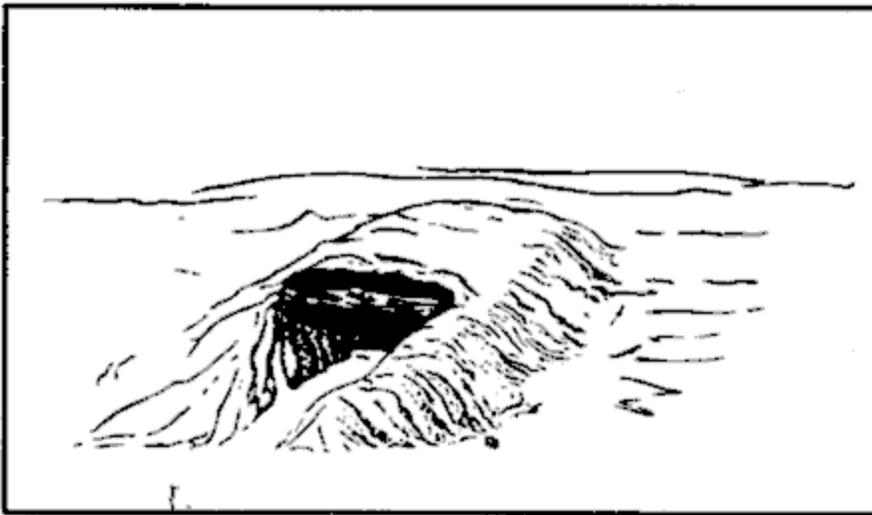


Figure 5-13. Beach shade shelter.

Desert Shelters

In an arid environment, consider the time, effort, and material needed to make a shelter. If you have material such as a poncho, canvas, or a parachute, use it along with such terrain features as rock outcropping, mounds of sand, or a depression between dunes or rocks to make your shelter.

Using rock outcroppings--

- Anchor one end of your poncho (canvas, parachute, or other material) on the edge of the outcrop using rocks or other weights.
- Extend and anchor the other end of the poncho so it provides the best possible shade.

In a sandy area--

- Build a mound of sand or use the side of a sand dune for one side of the shelter.
- Anchor one end of the material on top of the mound using sand or other weights.
- Extend and anchor the other end of the material so it provides the best possible shade.

Note: If you have enough material, fold it in half and form a 30-centimeter to 45-centimeter airspace between the two halves. This airspace will reduce the temperature under the shelter.

A belowground shelter ([Figure 5-14](#)) can reduce the midday heat as much as 16 to 22 degrees C (30 to 40 degrees F). Building it, however, requires more time and effort than for other shelters. Since your physical effort will make you sweat more and increase dehydration, construct it before the heat of the day.

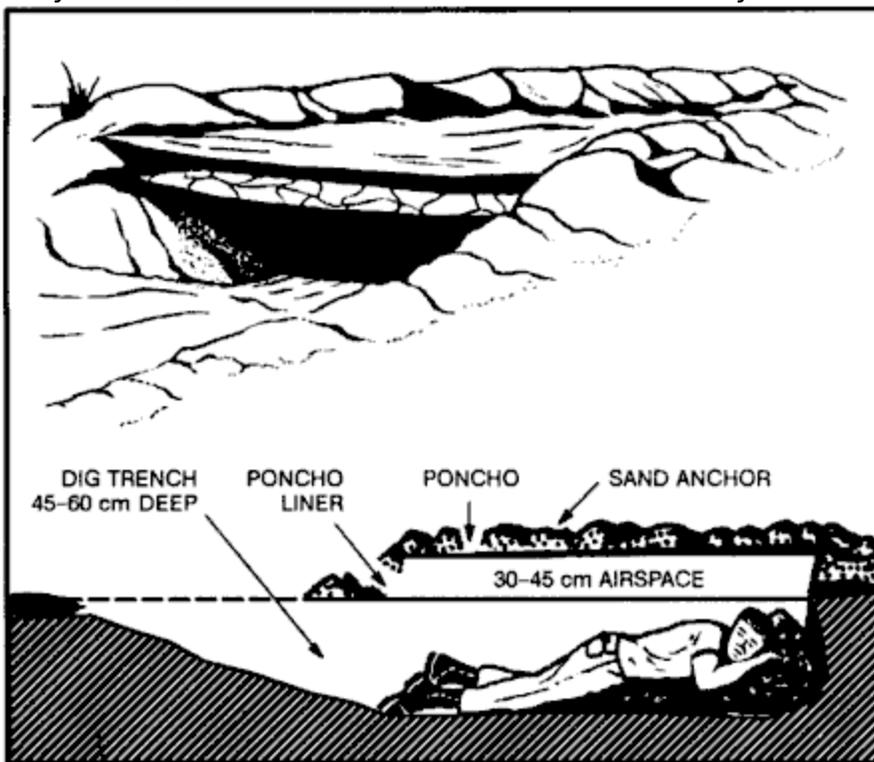


Figure 5-14. Belowground desert shelter.

To make this shelter--

- Find a low spot or depression between dunes or rocks. If necessary, dig a trench 45 to 60 centimeters deep and long and wide enough for you to lie in comfortably.
- Pile the sand you take from the trench to form a mound around three sides.

- On the open end of the trench, dig out more sand so you can get in and out of your shelter easily.
- Cover the trench with your material.
- Secure the material in place using sand, rocks, or other weights.

If you have extra material, you can further decrease the midday temperature in the trench by securing the material 30 to 45 centimeters above the other cover. This layering of the material will reduce the inside temperature 11 to 22 degrees C (20 to 40 degrees F). Another type of belowground shade shelter is of similar construction, except all sides are open to air currents and circulation. For maximum protection, you need a minimum of two layers of parachute material ([Figure 5-15](#)). White is the best color to reflect heat; the innermost layer should be of darker material.

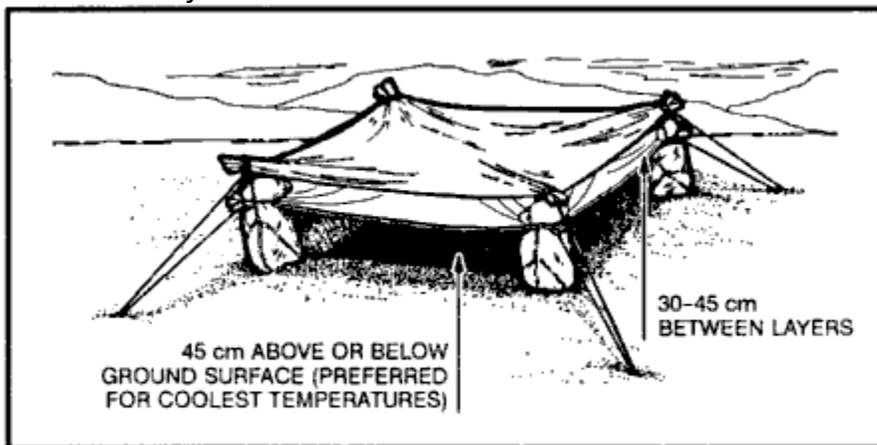
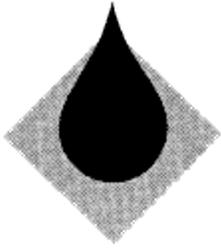


Figure 5-15. Open desert shelter.

CHAPTER 6 - WATER PROCUREMENT



Water is one of your most urgent needs in a survival situation. You can't live long without it, especially in hot areas where you lose water rapidly through perspiration. Even in cold areas, you need a minimum of 2 liters of water each day to maintain efficiency.

More than three-fourths of your body is composed of fluids. Your body loses fluid as a result of heat, cold, stress, and exertion. To function effectively, you must replace the fluid your body loses. So, one of your first goals is to obtain an adequate supply of water.

WATER SOURCES

Almost any environment has water present to some degree. [Figure 6-1](#) lists possible sources of water in various environments. It also provides information on how to make the water potable.

Environment	Source of Water	Means of Obtaining and/or Making Potable	Remarks
At sea	Sea	Use desalter kit.	Do not drink seawater without desalting.
	Rain	Catch rain in tarps or in other water-holding material or containers.	If tarp or water-holding material has become encrusted with salt, wash it in the sea before using (very little salt will remain on it).
	Sea ice		See remarks above for frigid areas.
Frigid areas	Snow and ice	Melt and purify.	<p>Do not eat without melting! Eating snow and ice can reduce body temperature and will lead to more dehydration.</p> <p>Snow and ice are no purer than the water from which they come.</p> <p>Sea ice that is gray in color or opaque is salty. Do not use it without desalting it. Sea ice that is crystalline with a bluish cast has little salt in it.</p>

Figure 6-1. Water sources in different environments.

Environment	Source of Water	Means of Obtaining and/or Making Potable	Remarks
Beach	Ground	Dig hole deep enough to allow water to seep in; obtain rocks, build fire, and heat rocks; drop hot rocks in water; hold cloth over hole to absorb steam; wring water from cloth.	Alternate method if a container or bark pot is available: Fill container or pot with seawater; build fire and boil water to produce steam; hold cloth over container to absorb steam; wring water from cloth.
Desert	Ground <ul style="list-style-type: none"> • in valleys and low areas • at foot of concave banks of dry river beds • at foot of cliffs or rock outcrops • at first depression behind first sand dune of dry desert lakes • wherever you find damp surface sand • wherever you find green vegetation 	Dig holes deep enough to allow water to seep in.	In a sand dune belt, any available water will be found beneath the original valley floor at the edge of dunes.
	Cacti	Cut off the top of a barrel cactus and mash or squeeze the pulp. CAUTION: Do not eat pulp. Place pulp in mouth, suck out juice, and discard pulp.	Without a machete, cutting into a cactus is difficult and takes time since you must get past the long, strong spines and cut through the tough rind.

Figure 6-1. Water sources in different environments (continued).

Environment	Source of Water	Means of Obtaining and/or Making Potable	Remarks
Desert (continued)	Depressions or holes in rocks		Periodic rainfall may collect in pools, seep into fissures, or collect in holes in rocks.
	Fissures in rock	Insert flexible tubing and siphon water. If fissure is large enough, you can lower a container into it.	
	Porous rock	Insert flexible tubing and siphon water.	
	Condensation on metal	Use cloth to absorb water, then wring water from cloth.	<p>Extreme temperature variations between night and day may cause condensation on metal surfaces.</p> <p>Following are signs to watch for in the desert to help you find water:</p> <ul style="list-style-type: none"> • All trails lead to water. You should follow in the direction in which the trails converge. Signs of camps, campfire ashes, animal droppings, and trampled terrain may mark trails. • Flocks of birds will circle over water holes. Some birds fly to water holes at dawn and sunset. Their flight at these times is generally fast and close to the ground. Bird tracks or chirping sounds in the evening or early morning sometimes indicate that water is nearby.

Figure 6-1. Water sources in different environments (continued).

Note: If you do not have a canteen, a cup, a can, or other type of container, improvise one from plastic or water-resistant cloth. Shape the plastic or cloth into a bowl by pleating it. Use pins or other suitable items--even your hands--to hold the pleats.

If you do not have a reliable source to replenish your water supply, stay alert for ways in which your environment can help you.

CAUTION

Do not substitute the fluids listed in [Figure 6-2](#) for water.

Fluid	Remarks
Alcoholic beverages	Dehydrate the body and cloud judgment.
Urine	Contains harmful body wastes. Is about 2 percent salt.
Blood	Is salty and considered a food; therefore, requires additional body fluids to digest. May transmit disease.
Seawater	Is about 4 percent salt. It takes about 2 liters of body fluids to rid the body of waste from 1 liter of seawater. Therefore, by drinking seawater you deplete your body's water supply, which can cause death.

Figure 6-2. The effects of substitute fluids.

Heavy dew can provide water. Tie rags or tufts of fine grass around your ankles and walk through dew-covered grass before sunrise. As the rags or grass tufts absorb the dew, wring the water into a container. Repeat the process until you have a supply of water or until the dew is gone. Australian natives sometimes mop up as much as a liter an hour this way.

Bees or ants going into a hole in a tree may point to a water-filled hole. Siphon the water with plastic tubing or scoop it up with an improvised dipper. You can also stuff cloth in the hole to absorb the water and then wring it from the cloth.

Water sometimes gathers in tree crotches or rock crevices. Use the above [procedures](#) to get the water. In arid areas, bird droppings around a crack in the rocks may indicate water in or near the crack.

Green bamboo thickets are an excellent source of fresh water. Water from green bamboo is clear and odorless. To get the water, bend a green bamboo stalk, tie it down, and cut off the top ([Figure 6-3](#)). The water will drip freely during the night. Old, cracked bamboo may contain water.



Figure 6-3. Water from green bamboo.

CAUTION

Purify the water before drinking it.

Wherever you find banana or plantain trees, you can get water. Cut down the tree, leaving about a 30-centimeter stump, and scoop out the center of the stump so that the hollow is bowl-shaped. Water from the roots will immediately start to fill the hollow. The first three fillings of water will be bitter, but succeeding fillings will be palatable. The stump ([Figure 6-4](#)) will supply water for up to four days. Be sure to cover it to keep out insects.

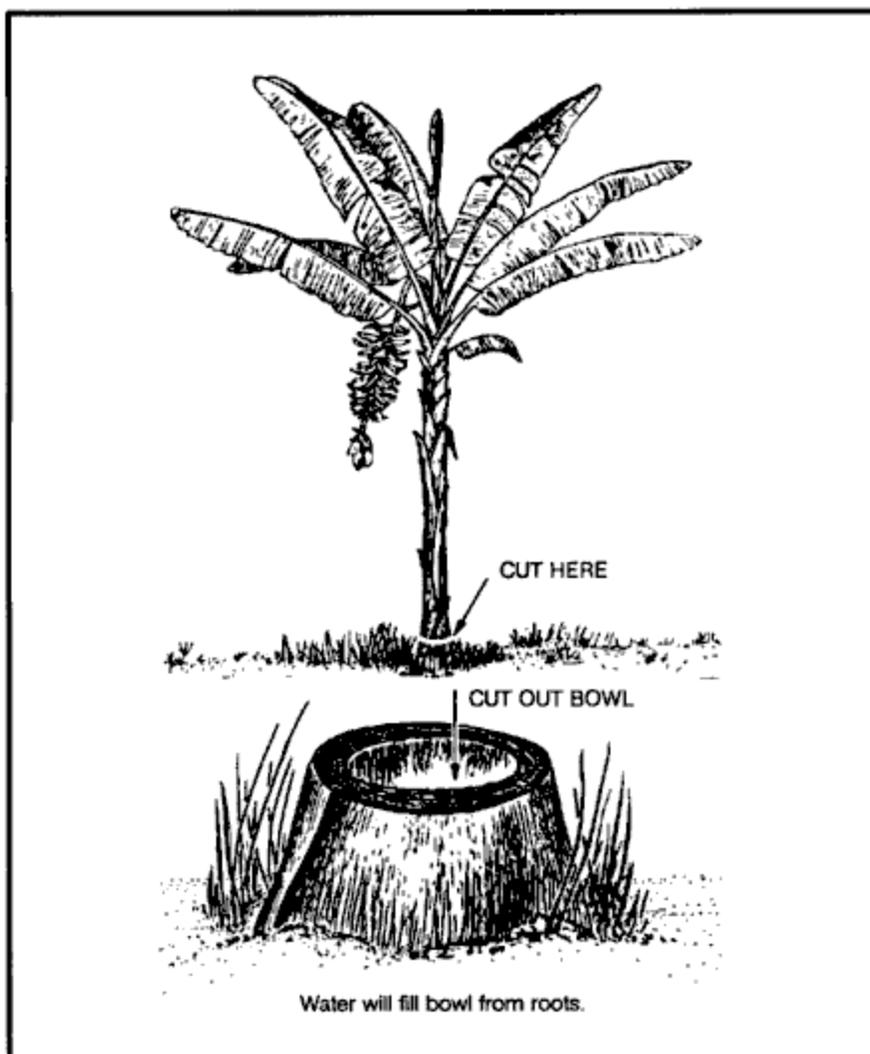


Figure 6-4. Water from plantain or banana tree stump.

Some tropical vines can give you water. Cut a notch in the vine as high as you can reach, then cut the vine off close to the ground. Catch the dropping liquid in a container or in your mouth ([Figure 6-5](#)).

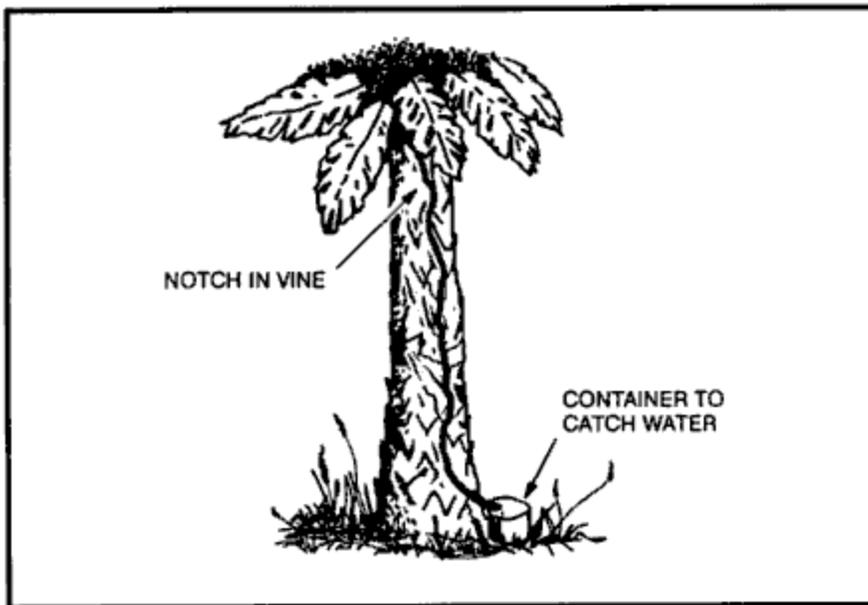


Figure 6-5. Water from a vine.

CAUTION

Do not drink the liquid if it is sticky, milky, or bitter tasting.

The milk from green (unripe) coconuts is a good thirst quencher. However, the milk from mature coconuts contains an oil that acts as a laxative. Drink in moderation only.

In the American tropics you may find large trees whose branches support air plants. These air plants may hold a considerable amount of rainwater in their overlapping, thickly growing leaves. Strain the water through a cloth to remove insects and debris.

You can get water from plants with moist pulpy centers. Cut off a section of the plant and squeeze or smash the pulp so that the moisture runs out. Catch the liquid in a container. Plant roots may provide water. Dig or pry the roots out of the ground, cut them into short pieces, and smash the pulp so that the moisture runs out. Catch the liquid in a container. Fleshy leaves, stems, or stalks, such as bamboo, contain water. Cut or notch the stalks at the base of a joint to drain out the liquid.

The following trees can also provide water:

- *Palms*. Palms, such as the buri, coconut, sugar, rattan, and nips, contain liquid. Bruise a lower frond and pull it down so the tree will "bleed" at the injury.
- *Traveler's tree*. Found in Madagascar, this tree has a cuplike sheath at the base of its leaves in which water collects.
- *Umbrella tree*. The leaf bases and roots of this tree of western tropical Africa can provide water.
- *Baobab tree*. This tree of the sandy plains of northern Australia and Africa collects water in its bottlelike trunk during the wet season. Frequently, you can find clear, fresh water in these trees after weeks of dry weather.

CAUTION

Do not keep the sap from plants longer than 24 hours. It begins fermenting, becoming dangerous as a water source.

STILL CONSTRUCTION

You can use stills in various areas of the world. They draw moisture from the ground and from plant material. You need certain materials to build a still, and you need time to let it collect the water. It takes about 24 hours to get 0.5 to 1 liter of water.

Aboveground Still

To make the aboveground still, you need a sunny slope on which to place the still, a clear plastic bag, green leafy vegetation, and a small rock ([Figure 6-6](#)).

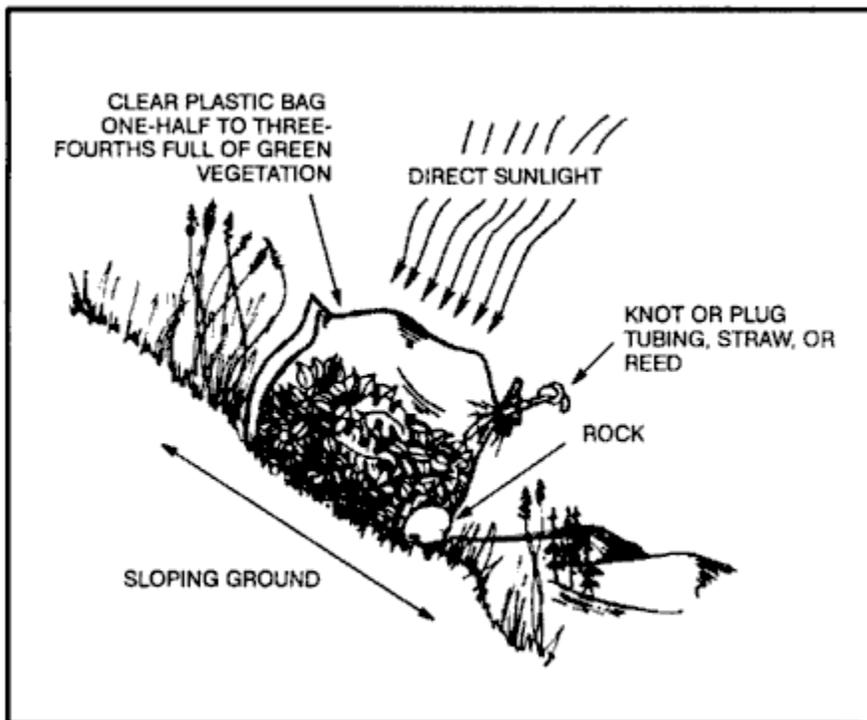


Figure 6-6. Aboveground solar water still.

To make the still--

- Fill the bag with air by turning the opening into the breeze or by "scooping" air into the bag.
- Fill the plastic bag half to three-fourths full of green leafy vegetation. Be sure to remove all hard sticks or sharp spines that might puncture the bag.

CAUTION

Do not use poisonous vegetation. It will provide poisonous liquid.

- Place a small rock or similar item in the bag.

- Close the bag and tie the mouth securely as close to the end of the bag as possible to keep the maximum amount of air space. If you have a piece of tubing, a small straw, or a hollow reed, insert one end in the mouth of the bag before you tie it securely. Then tie off or plug the tubing so that air will not escape. This tubing will allow you to drain out condensed water without untying the bag.
- Place the bag, mouth downhill, on a slope in full sunlight. Position the mouth of the bag slightly higher than the low point in the bag.
- Settle the bag in place so that the rock works itself into the low point in the bag.

To get the condensed water from the still, loosen the tie around the bag's mouth and tip the bag so that the water collected around the rock will drain out. Then retie the mouth securely and reposition the still to allow further condensation. Change the vegetation in the bag after extracting most of the water from it. This will ensure maximum output of water.

Belowground Still

To make a belowground still, you need a digging tool, a container, a clear plastic sheet, a drinking tube, and a rock ([Figure 6-7](#)).

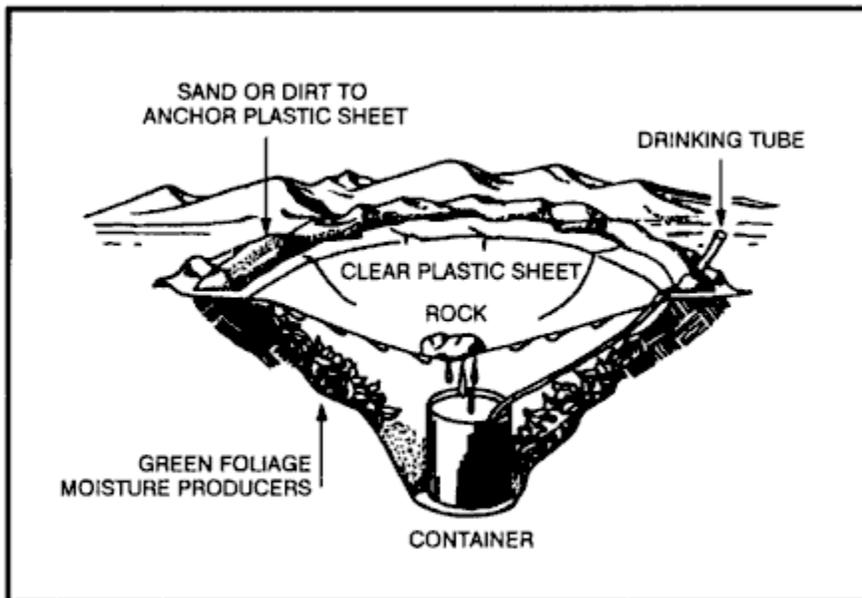


Figure 6-7. Belowground still.

Select a site where you believe the soil will contain moisture (such as a dry stream bed or a low spot where rainwater has collected). The soil at this site should be easy to dig, and sunlight must hit the site most of the day.

To construct the still--

- Dig a bowl-shaped hole about 1 meter across and 60 centimeters deep.

- Dig a sump in the center of the hole. The sump's depth and perimeter will depend on the size of the container that you have to place in it. The bottom of the sump should allow the container to stand upright.
- Anchor the tubing to the container's bottom by forming a loose overhand knot in the tubing.
- Place the container upright in the sump.
- Extend the unanchored end of the tubing up, over, and beyond the lip of the hole.
- Place the plastic sheet over the hole, covering its edges with soil to hold it in place.
- Place a rock in the center of the plastic sheet.
- Lower the plastic sheet into the hole until it is about 40 centimeters below ground level. It now forms an inverted cone with the rock at its apex. Make sure that the cone's apex is directly over your container. Also make sure the plastic cone does not touch the sides of the hole because the earth will absorb the condensed water.
- Put more soil on the edges of the plastic to hold it securely in place and to prevent the loss of moisture.
- Plug the tube when not in use so that the moisture will not evaporate.

You can drink water without disturbing the still by using the tube as a straw.

You may want to use plants in the hole as a moisture source. If so, dig out additional soil from the sides of the hole to form a slope on which to place the plants. Then [proceed](#) as above.

If polluted water is your only moisture source, dig a small trough outside the hole about 25 centimeters from the still's lip ([Figure 6-8](#)). Dig the trough about 25 centimeters deep and 8 centimeters wide. Pour the polluted water in the trough. Be sure you do not spill any polluted water around the rim of the hole where the plastic sheet touches the soil. The trough holds the polluted water and the soil filters it as the still draws it. The water then condenses on the plastic and drains into the container. This process works extremely well when your only water source is salt water.

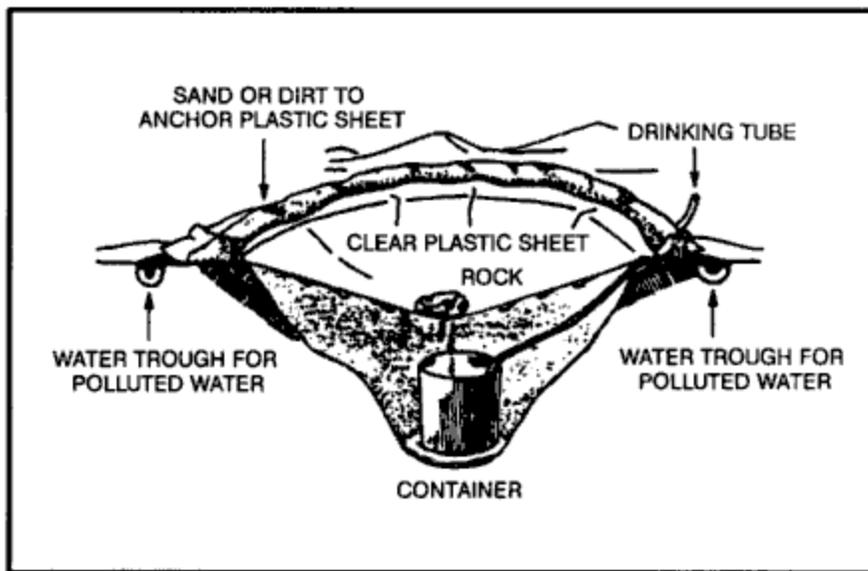


Figure 6-8. Belowground still to get potable water from polluted water.

You will need at least three stills to meet your individual daily water intake needs.

WATER PURIFICATION

Rainwater collected in clean containers or in plants is usually safe for drinking. However, purify water from lakes, ponds, swamps, springs, or streams, especially the water near human settlements or in the tropics.

When possible, purify all water you got from vegetation or from the ground by using iodine or chlorine, or by boiling.

Purify water by--

- Using water purification tablets. (Follow the directions provided.)
- Placing 5 drops of 2 percent tincture of iodine in a canteen full of clear water. If the canteen is full of cloudy or cold water, use 10 drops. (Let the canteen of water stand for 30 minutes before drinking.)
- Boiling water for 1 minute at sea level, adding 1 minute for each additional 300 meters above sea level, or boil for 10 minutes no matter where you are.

By drinking nonpotable water you may contract diseases or swallow organisms that can harm you. Examples of such diseases or organisms are--

- *Dysentery*. Severe, prolonged diarrhea with bloody stools, fever, and weakness.
- *Cholera and typhoid*. You may be susceptible to these diseases regardless of inoculations.

- *Flukes.* Stagnant, polluted water--especially in tropical areas--often contains blood flukes. If you swallow flukes, they will bore into the bloodstream, live as parasites, and cause disease.
- *Leeches.* If you swallow a leech, it can hook onto the throat passage or inside the nose. It will suck blood, create a wound, and move to another area. Each bleeding wound may become infected.

WATER FILTRATION DEVICES

If the water you find is also muddy, stagnant, and foul smelling, you can clear the water--

- By placing it in a container and letting it stand for 12 hours.
- By pouring it through a filtering system.

Note: These procedures only clear the water and make it more palatable. You will have to purify it.

To make a filtering system, place several centimeters or layers of filtering material such as sand, crushed rock, charcoal, or cloth in bamboo, a hollow log, or an article of clothing (Figure 6-9).

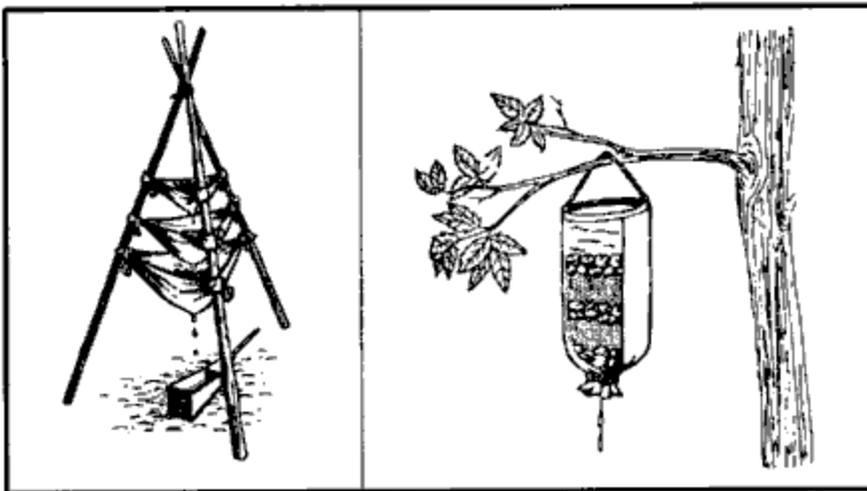


Figure 6-9. Water filtering systems.

Remove the odor from water by adding charcoal from your fire. Let the water stand for 45 minutes before drinking it.

CHAPTER 7 - FIRECRAFT



In many survival situations, the ability to start a fire can make the difference between living and dying. Fire can fulfill many needs. It can provide warmth and comfort. It not only cooks and preserves food, it also provides warmth in the form of heated food that saves calories our body normally uses to produce body heat. You can use fire to purify water, sterilize bandages, signal for rescue, and provide protection from animals. It can be a psychological boost by providing peace of mind and companionship. You can also use fire to produce tools and weapons.

Fire can cause problems, as well. The enemy can detect the smoke and light it produces. It can cause forest fires or destroy essential equipment. Fire can also cause burns carbon monoxide poisoning when used in shelters.

Remember weigh your need for fire against your need to avoid enemy detection.

BASIC FIRE PRINCIPLES

To build a fire, it helps to understand the basic principles of a fire. Fuel (in a nongaseous state) does not burn directly. When you apply heat to a fuel, it produces a gas. This gas, combined with oxygen in the air, burns.

Understanding the concept of the fire triangle is very important in correctly constructing and maintaining a fire. The three sides of the triangle represent *air*, *heat*, and *fuel*. If you remove any of these, the fire will go out. The correct ratio of these components is very important for a fire to burn at its greatest capability. The only way to learn this ratio is to practice.

SITE SELECTION AND PREPARATION

You will have to decide what site and arrangement to use. Before building a fire consider--

- The area (terrain and climate) in which you are operating.
- The materials and tools available.

- Time: how much time you have?
- Need: why you need a fire?
- Security: how close is the enemy?

Look for a dry spot that--

- Is protected from the wind.
- Is suitably placed in relation to your shelter (if any).
- Will concentrate the heat in the direction you desire.

Has a supply of wood or other fuel available. (See [Figure 7-4](#) for types of material you can use.)

Tinder	Kindling	Fuel
<ul style="list-style-type: none"> • Birch bark • Shredded inner bark from cedar, chestnut, red elm trees • Fine wood shavings • Dead grass, ferns, moss, fungi • Straw • Sawdust • Very fine pitchwood scrapings • Dead evergreen needles • Punk (the completely rotted portions of dead logs or trees) • Evergreen tree knots • Bird down (fine feathers) • Down seed heads (milkweed, dry cattails, bulrush, or thistle) • Fine, dried vegetable fibers • Spongy threads of dead puffball • Dead palm leaves • Skinlike membrane lining bamboo • Lint from pocket and seams • Charred cloth • Waxed paper • Outer bamboo shavings • Gunpowder • Cotton • Lint 	<ul style="list-style-type: none"> • Small twigs • Small strips of wood • Split wood • Heavy cardboard • Pieces of wood removed from the inside of larger pieces • Wood that has been doused with highly flammable materials, such as gasoline, oil, or wax 	<ul style="list-style-type: none"> • Dry, standing wood and dry, dead branches • Dry inside (heart) of fallen tree trunks and large branches • Green wood that is finely split • Dry grasses twisted into bunches • Peat dry enough to burn (this may be found at the top of undercut banks) • Dried animal dung • Animal fats • Coal, oil shale, or oil lying on the surface

Figure 7-4. Materials for building fires.

If you are in a wooded or brush-covered area, clear the brush and scrape the surface soil from the spot you have selected. Clear a circle at least 1 meter in diameter so there is little chance of the fire spreading.

If time allows, construct a fire wall using logs or rocks. This wall will help to reflector direct the heat where you want it (Figure 7-1). It will also reduce flying sparks and cut down on the amount of wind blowing into the fire. However, you will need enough wind to keep the fire burning.

CAUTION

Do not use wet or porous rocks as they may explode when heated.

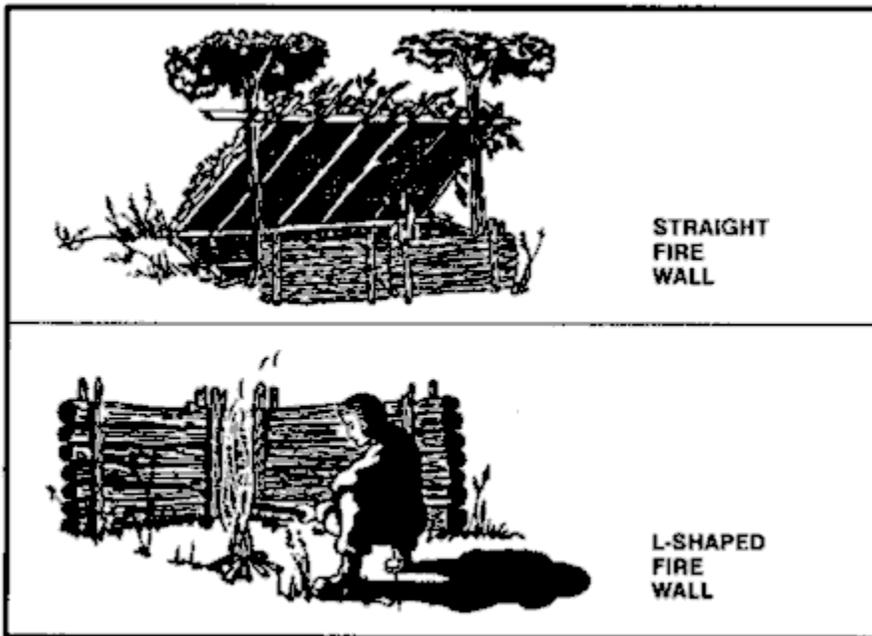


Figure 7-1. Types of fire walls.

In some situations, you may find that an underground fireplace will best meet your needs. It conceals the fire and serves well for cooking food. To make an underground fireplace or Dakota fire hole ([Figure 7-2](#))--

- Dig a hole in the ground.
- On the upwind side of this hole, poke or dig a large connecting hole for ventilation.
- Build your fire in the hole as illustrated.

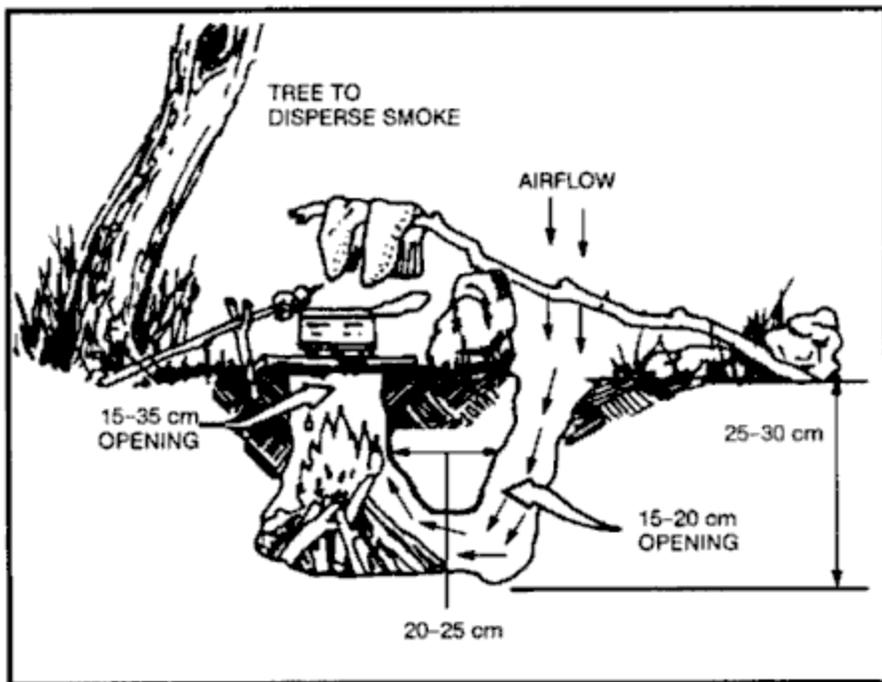


Figure 7-2. Dakota fire hole.

If you are in a snow-covered area, use green logs to make a dry base for your fire ([Figure 7-3](#)). Trees with wrist-sized trunks are easily broken in extreme cold. Cut or break several green logs and lay them side by side on top of the snow. Add one or two more layers. Lay the top layer of logs opposite those below it.



Figure 7-3. Base for fire in snow-covered area.

FIRE MATERIAL SELECTION

You need three types of materials ([Figure 7-4](#)) to build a fire--tinder, kindling, and fuel. Tinder is dry material that ignites with little heat--a spark starts a fire. The tinder must be absolutely dry to be sure just a spark will ignite it. If you only have a device that generates sparks, charred cloth will be almost essential. It holds a spark for long periods, allowing you to put tinder on the hot area to generate a small flame. You can make charred cloth by heating cotton cloth until it turns black, but does not burn. Once it is black, you must keep it in an airtight container to keep it dry. Prepare this cloth well in advance of any survival situation. Add it to your individual survival kit.

Kindling is readily combustible material that you add to the burning tinder. Again, this material should be absolutely dry to ensure rapid burning. Kindling increases the fire's temperature so that it will ignite less combustible material.

Fuel is less combustible material that burns slowly and steadily once ignited.

HOW TO BUILD A FIRE

There are several methods for laying a fire, each of which has advantages. The situation you find yourself in will determine which fire to use.

Tepee

To make this fire ([Figure 7-5](#)), arrange the tinder and a few sticks of kindling in the shape of a tepee or cone. Light the center. As the tepee burns, the outside logs will fall inward, feeding the fire. This type of fire burns well even with wet wood.

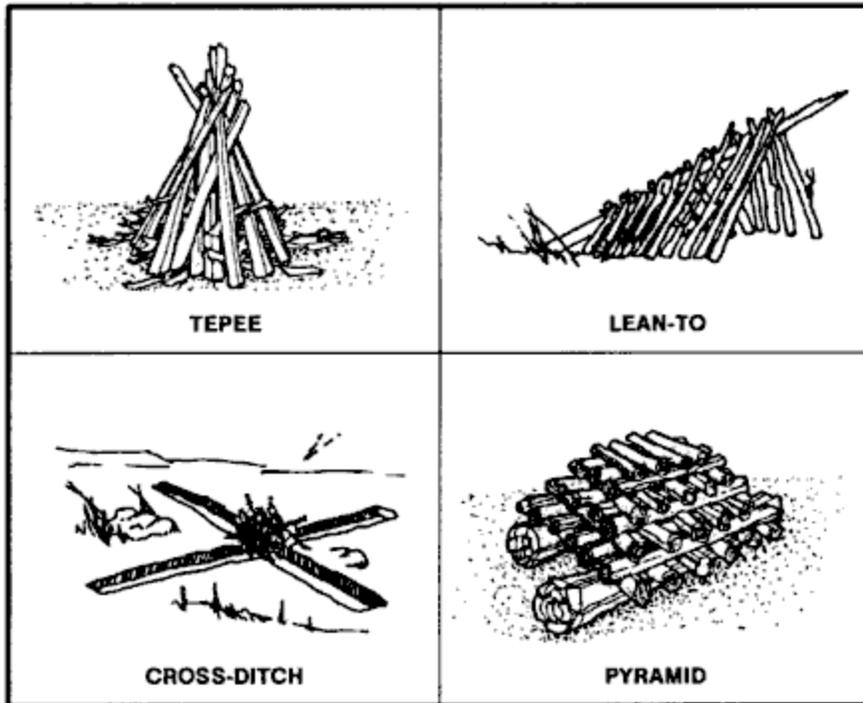


Figure 7-5. Methods for laying fires.

Lean-To

To lay this fire ([Figure 7-5](#)), push a green stick into the ground at a 30-degree angle. Point the end of the stick in the direction of the wind. Place some tinder deep under this lean-to stick. Lean pieces of kindling against the lean-to stick. Light the tinder. As the kindling catches fire from the tinder, add more kindling.

Cross-Ditch

To use this method ([Figure 7-5](#)), scratch a cross about 30 centimeters in size in the ground. Dig the cross 7.5 centimeters deep. Put a large wad of tinder in the middle of the cross. Build a kindling pyramid above the tinder. The shallow ditch allows air to sweep under the tinder to provide a draft.

Pyramid

To lay this fire ([Figure 7-5](#)), place two small logs or branches parallel on the ground. Place a solid layer of small logs across the parallel logs. Add three or four more layers of logs or branches, each layer smaller than and at a right angle to the layer below it. Make a starter

fire on top of the pyramid. As the starter fire burns, it will ignite the logs below it. This gives you a fire that burns downward, requiring no attention during the night. There are several other ways to lay a fire that are quite effective. Your situation and the material available in the area may make another method more suitable.

HOW TO LIGHT A FIRE

Always light your fire from the upwind side. Make sure to lay your tinder, kindling, and fuel so that your fire will burn as long as you need it. Igniters provide the initial heat required to start the tinder burning. They fall into two categories: modern methods and primitive methods.

Modern Methods

Modern igniters use modern devices--items we normally think of to start a fire.

Matches

Make sure these matches are waterproof. Also, store them in a waterproof container along with a dependable striker pad.

Convex Lens

Use this method ([Figure 7-6](#)) only on bright, sunny days. The lens can come from binoculars, camera, telescopic sights, or magnifying glasses. Angle the lens to concentrate the sun's rays on the tinder. Hold the lens over the same spot until the tinder begins to smolder. Gently blow or fan the tinder into flame, and apply it to the fire lay.

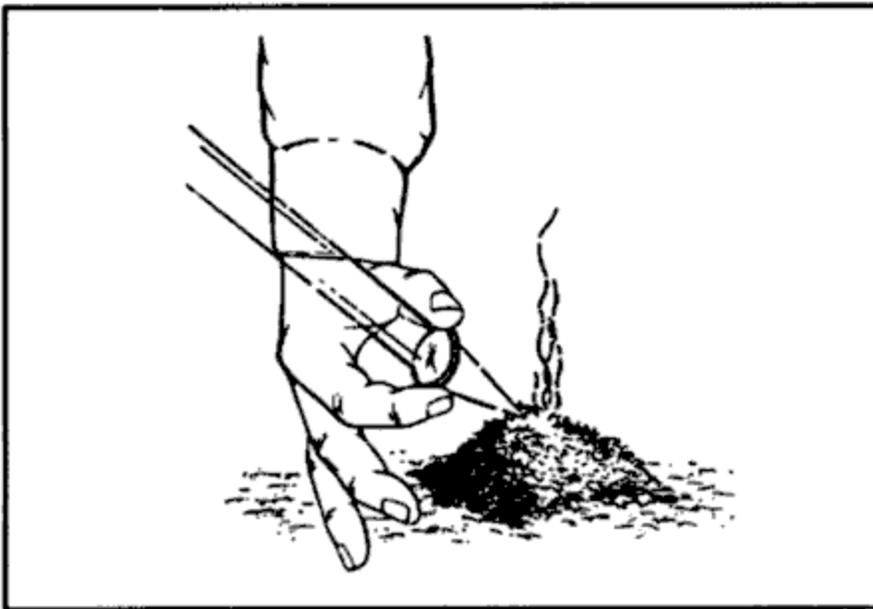


Figure 7-6. Lens method.

Metal Match

Place a flat, dry leaf under your tinder with a portion exposed. Place the tip of the metal match on the dry leaf, holding the metal match in one hand and a knife in the other. Scrape your knife against the metal match to produce sparks. The sparks will hit the tinder. When the tinder starts to smolder, [proceed](#) as above.

Battery

Use a battery to generate a spark. Use of this method depends on the type of battery available. Attach a wire to each terminal. Touch the ends of the bare wires together next to the tinder so the sparks will ignite it.

Gunpowder

Often, you will have ammunition with your equipment. If so, carefully extract the bullet from the shell casing, and use the gunpowder as tinder. A spark will ignite the powder. Be extremely careful when extracting the bullet from the case.

Primitive Methods

Primitive igniters are those attributed to our early ancestors.

Flint and Steel

The direct spark method is the easiest of the primitive methods to use. The flint and steel method is the most reliable of the direct spark methods. Strike a flint or other hard, sharp-edged rock edge with a piece of carbon steel (stainless steel will not produce a good spark). This method requires a loose-jointed wrist and practice. When a spark has caught in the tinder, blow on it. The spark will spread and burst into flames.

Fire-Plow

The fire-plow ([Figure 7-7](#)) is a friction method of ignition. You rub a hardwood shaft against a softer wood base. To use this method, cut a straight groove in the base and plow the blunt tip of the shaft up and down the groove. The plowing action of the shaft pushes out small particles of wood fibers. Then, as you apply more pressure on each stroke, the friction ignites the wood particles.

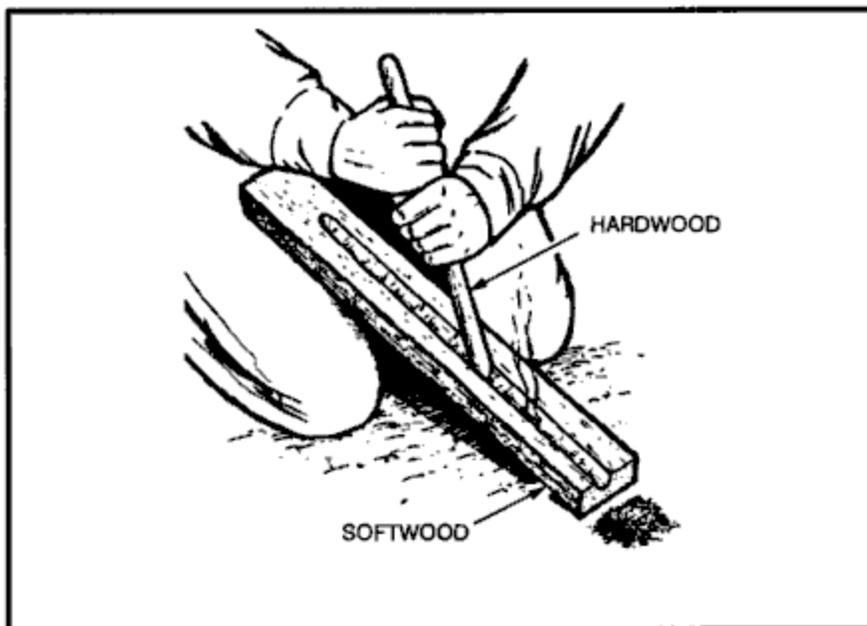


Figure 7-7. Fire-plow.

Bow and Drill

The technique of starting a fire with a bow and drill ([Figure 7-8](#)) is simple, but you must exert much effort and be persistent to produce a fire. You need the following items to use this method:

- *Socket.* The socket is an easily grasped stone or piece of hardwood or bone with a slight depression in one side. Use it to hold the drill in place and to apply downward pressure.
- *Drill.* The drill should be a straight, seasoned hardwood stick about 2 centimeters in diameter and 25 centimeters long. The top end is round and the low end blunt (to produce more friction).
- *Fire board.* Its size is up to you. A seasoned softwood board about 2.5 centimeters thick and 10 centimeters wide is preferable. Cut a depression about 2 centimeters from the edge on one side of the board. On the underside, make a V-shaped cut from the edge of the board to the depression.
- *Bow.* The bow is a resilient, green stick about 2.5 centimeters in diameter and a string. The type of wood is not important. The bowstring can be any type of cordage. You tie the bowstring from one end of the bow to the other, without any slack.

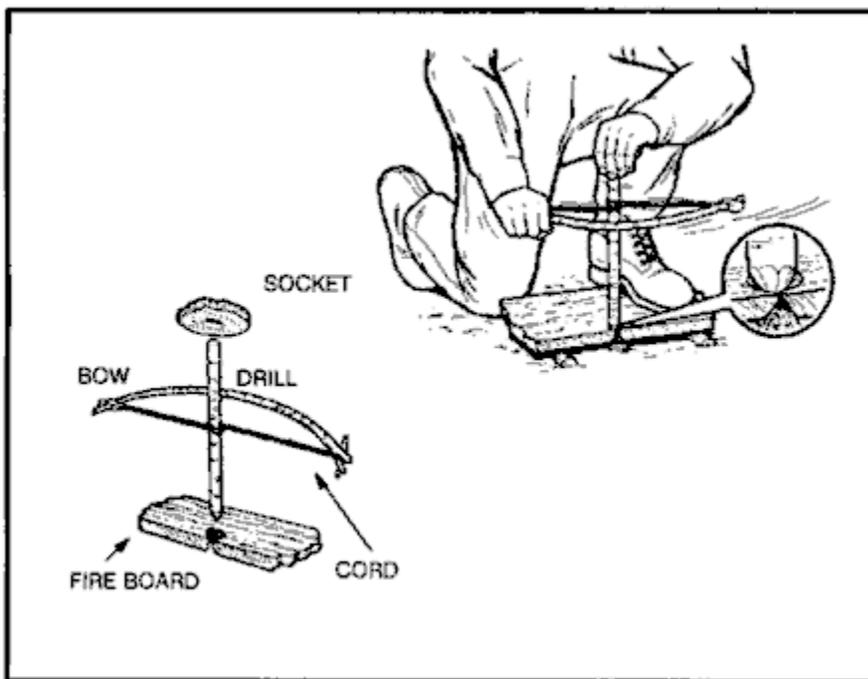


Figure 7-8. Bow and drill.

To use the bow and drill, first prepare the fire lay. Then place a bundle of tinder under the V-shaped cut in the fire board. Place one foot on the fire board. Loop the bowstring over the drill and place the drill in the pre-cut depression on the fire board. Place the socket, held in one hand, on the top of the drill to hold it in position. Press down on the drill and saw the

bow back and forth to twirl the drill ([Figure 7-8](#)). Once you have established a smooth motion, apply more downward pressure and work the bow faster. This action will grind hot black powder into the tinder, causing a spark to catch. Blow on the tinder until it ignites.

Note: Primitive fire-building methods are exhaustive and require practice to ensure success.

HELPFUL HINTS

Use nonaromatic seasoned hardwood for fuel, if possible.

Collect kindling and tinder along the trail.

Add insect repellent to the tinder.

Keep the firewood dry.

Dry damp firewood near the fire.

Bank the fire to keep the coals alive overnight.

Carry lighted punk, when possible.

Be sure the fire is out before leaving camp.

Do not select wood lying on the ground. It may appear to be dry but generally doesn't provide enough friction.

CHAPTER 8 - FOOD PROCUREMENT



After water, man's most urgent requirement is food. In contemplating virtually any hypothetical survival situation, the mind immediately turns to thoughts of food. Unless the situation occurs in an arid environment, even water, which is more important to maintaining body functions, will almost always follow food in our initial thoughts. The survivor must remember that the three essentials of survival--water, food, and shelter--are prioritized according to the estimate of the actual situation. This estimate must not only be timely but accurate as well. Some situations may well dictate that shelter precede both food and water.

ANIMALS FOR FOOD

Unless you have the chance to take large game, concentrate your efforts on the smaller animals, due to their abundance. The smaller animal species are also easier to prepare. You must not know all the animal species that are suitable as food. Relatively few are poisonous, and they make a smaller list to remember. What is important is to learn the habits and behavioral patterns of classes of animals. For example, animals that are excellent choices for trapping, those that inhabit a particular range and occupy a den or nest, those that have somewhat fixed feeding areas, and those that have trails leading from one area to another. Larger, herding animals, such as elk or caribou, roam vast areas and are somewhat more difficult to trap. Also, you must understand the food choices of a particular species.

You can, with relatively few exceptions, eat anything that crawls, swims, walks, or flies. The first obstacle is overcoming your natural aversion to a particular food source. Historically, people in starvation situations have resorted to eating everything imaginable for nourishment. A person who ignores an otherwise healthy food source due to a personal bias, or because he feels it is unappetizing, is risking his own survival. Although it may prove difficult at first, a survivor must eat what is available to maintain his health.

Insects

The most abundant life-form on earth, insects are easily caught. Insects provide 65 to 80 percent protein compared to 20 percent for beef. This fact makes insects an important, if not overly appetizing, food source. Insects to avoid include all adults that sting or bite, hairy or brightly colored insects, and caterpillars and insects that have a pungent odor. Also avoid spiders and common disease carriers such as ticks, flies, and mosquitoes.

Rotting logs lying on the ground are excellent places to look for a variety of insects including ants, termites, beetles, and grubs, which are beetle larvae. Do not overlook insect nests on or in the ground. Grassy areas, such as fields, are good areas to search because the insects are easily seen. Stones, boards, or other materials lying on the ground provide the insects with good nesting sites. Check these sites. Insect larvae are also edible. Insects such as beetles and grasshoppers that have a hard outer shell will have parasites. Cook them before eating. Remove any wings and barbed legs also. You can eat most insects raw. The taste varies from one species to another. Wood grubs are bland, while some species of ants store honey in their bodies, giving them a sweet taste. You can grind a collection of insects into a paste. You can mix them with edible vegetation. You can cook them to improve their taste.

Worms

Worms (*Annelidea*) are an excellent protein source. Dig for them in damp humus soil or watch for them on the ground after a rain. After capturing them, drop them into clean, potable water for a few minutes. The worms will naturally purge or wash themselves out, after which you can eat them raw.

Crustaceans

Freshwater shrimp range in size from 0.25 centimeter up to 2.5 centimeters. They can form rather large colonies in mats of floating algae or in mud bottoms of ponds and lakes. Crayfish are akin to marine lobsters and crabs. You can distinguish them by their hard exoskeleton and five pairs of legs, the front pair having oversized pincers. Crayfish are active at night, but you can locate them in the daytime by looking under and around stones in streams. You can also find them by looking in the soft mud near the chimneylike breathing holes of their nests. You can catch crayfish by tying bits of offal or internal organs to a string. When the crayfish grabs the bait, pull it to shore before it has a chance to release the bait.

You find saltwater lobsters, crabs, and shrimp from the surf's edge out to water 10 meters deep. Shrimp may come to a light at night where you can scoop them up with a net. You can catch lobsters and crabs with a baited trap or a baited hook. Crabs will come to bait placed at the edge of the surf, where you can trap or net them. Lobsters and crabs are nocturnal and caught best at night.

Mollusks

This class includes octopuses and freshwater and saltwater shellfish such as snails, clams, mussels, bivalves, barnacles, periwinkles, chitons, and sea urchins ([Figure 8-1](#)). You find bivalves similar to our freshwater mussel and terrestrial and aquatic snails worldwide under all water conditions.

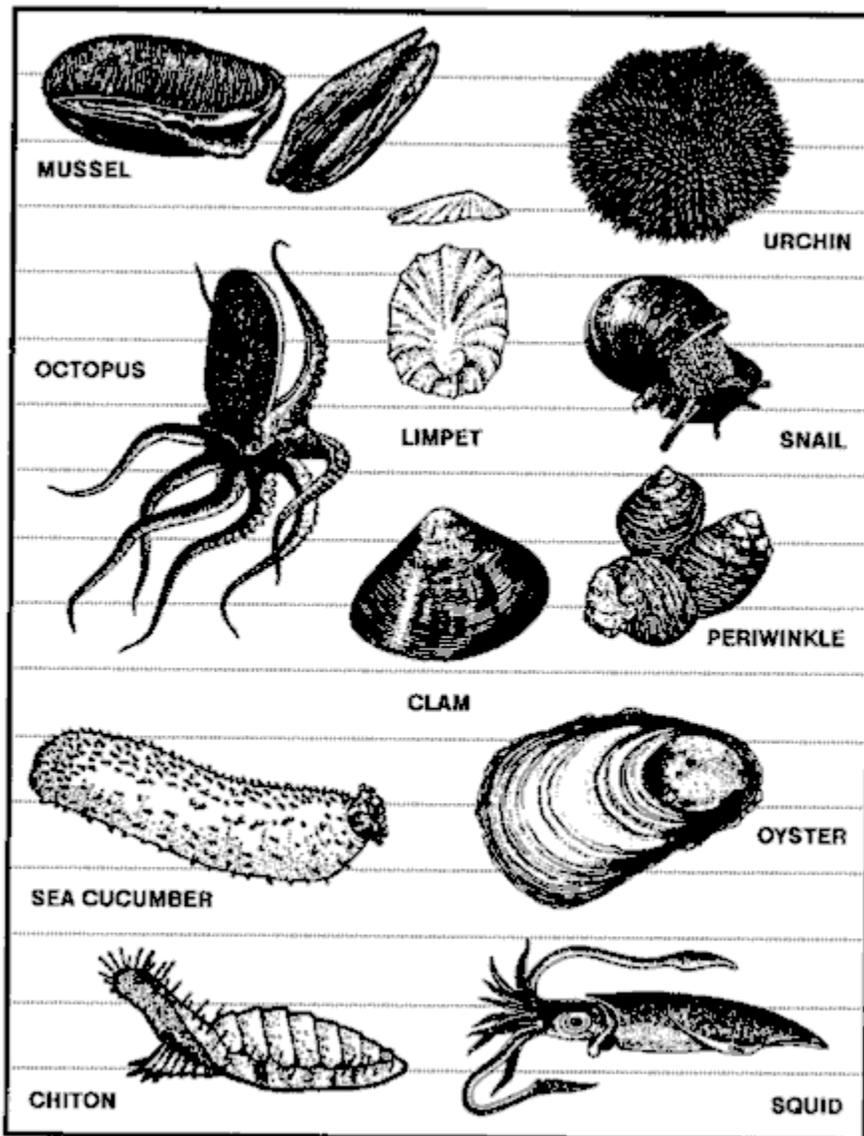


Figure 8-1. Edible mollusks.

River snails or freshwater periwinkles are plentiful in rivers, streams, and lakes of northern coniferous forests. These snails may be pencil point or globular in shape.

In fresh water, look for mollusks in the shallows, especially in water with a sandy or muddy bottom. Look for the narrow trails they leave in the mud or for the dark elliptical slit of their open valves.

Near the sea, look in the tidal pools and the wet sand. Rocks along beaches or extending as reefs into deeper water often bear clinging shellfish. Snails and limpets cling to rocks and seaweed from the low water mark upward. Large snails, called chitons, adhere tightly to rocks above the surf line.

Mussels usually form dense colonies in rock pools, on logs, or at the base of boulders.

CAUTION

Mussels may be poisonous in tropical zones during the summer!

Steam, boil, or bake mollusks in the shell. They make excellent stews in combination with greens and tubers.

CAUTION

Do not eat shellfish that are not covered by water at high tide!

Fish

Fish represent a good source of protein and fat. They offer some distinct advantages to the survivor or evader. They are usually more abundant than mammal wildlife, and the ways to get them are silent. To be successful at catching fish, you must know their habits. For instance, fish tend to feed heavily before a storm. Fish are not likely to feed after a storm when the water is muddy and swollen. Light often attracts fish at night. When there is a heavy current, fish will rest in places where there is an eddy, such as near rocks. Fish will also gather where there are deep pools, under overhanging brush, and in and around submerged foliage, logs, or other objects that offer them shelter.

There are no poisonous freshwater fish. However, the catfish species has sharp, needlelike protrusions on its dorsal fins and barbels. These can inflict painful puncture wounds that quickly become infected.

Cook all freshwater fish to kill parasites. Also cook saltwater fish caught within a reef or within the influence of a freshwater source as a precaution. Any marine life obtained farther out in the sea will not contain parasites because of the saltwater environment. You can eat these raw.

Certain saltwater species of fish have poisonous flesh. In some species the poison occurs seasonally in others, it is permanent. Examples of poisonous saltwater fish are the porcupine fish, triggerfish, cowfish, thorn fish, oilfish, red snapper, jack, and puffer ([Figure 8-2](#)). The barracuda, while not actually poisonous itself, may transmit ciguatera (fish poisoning) if eaten raw.

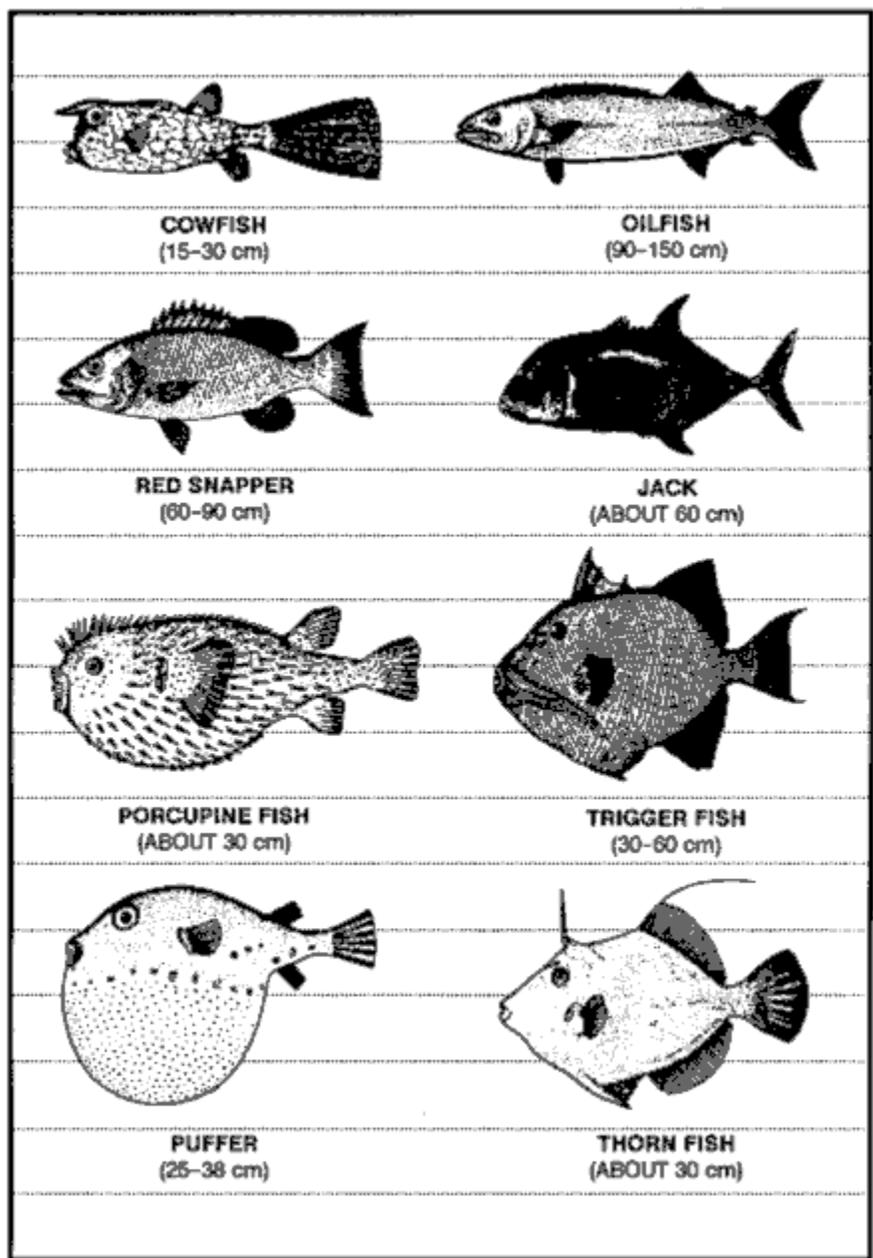


Figure 8-2. Fish with poisonous flesh.

Amphibians

Frogs and salamanders are easily found around bodies of fresh water. Frogs seldom move from the safety of the water's edge. At the first sign of danger, they plunge into the water and bury themselves in the mud and debris. There are few poisonous species of frogs. Avoid any brightly colored frog or one that has a distinct "X" mark on it's back. Do not confuse toads with frogs. You normally find toads in drier environments. Several species of toads secrete a poisonous substance through their skin as a defense against attack. Therefore, to avoid poisoning, do not handle or eat toads. Salamanders are nocturnal. The best time to catch them is at night using a light. They can range in size from a few centimeters to well over 60 centimeters in length. Look in water around rocks and mud banks for salamanders.

Reptiles

Reptiles are a good protein source and relatively easy to catch. You should cook them, but in an emergency, you can eat them raw. Their raw flesh may transmit parasites, but because reptiles are cold-blooded, they do not carry the blood diseases of the warm-blooded animals.

The box turtle is a commonly encountered turtle that you should not eat. It feeds on poisonous mushrooms and may build up a highly toxic poison in its flesh. Cooking does not destroy this toxin. Avoid the hawksbill turtle, found in the Atlantic Ocean, because of its poisonous thorax gland. Poisonous snakes, alligators, crocodiles, and large sea turtles present obvious hazards to the survivor.

Birds

All species of birds are edible, although the flavor will vary considerably. You may skin fish-eating birds to improve their taste. As with any wild animal, you must understand birds' common habits to have a realistic chance of capturing them. You can take pigeons, as well as some other species, from their roost at night by hand. During the nesting season, some species will not leave the nest even when approached. Knowing where and when the birds nest makes catching them easier (Figure 8-3). Birds tend to have regular flyways going from the roost to a feeding area, to water, and so forth. Careful observation should reveal where these flyways are and indicate good areas for catching birds in nets stretched across the flyways (Figure 8-4). Roosting sites and waterholes are some of the most promising areas for trapping or snaring.

Types of Birds	Frequent Nesting Places	Nesting Periods
Inland birds	Trees, woods, or fields	Spring and early summer in temperate and arctic regions; year round in the tropics
Cranes and herons	Mangrove swamps or high trees near water	Spring and early summer
Some species of owls	High trees	Late December through March
Ducks, geese, and swans	Tundra areas near ponds, rivers, or lakes	Spring and early summer in arctic regions
Some sea birds	Sandbars or low sand islands	Spring and early summer in temperate and arctic regions
Gulls, auks, murres, and cormorants	Steep rocky coasts	Spring and early summer in temperate and arctic regions

Figure 8-3. Bird nesting places.

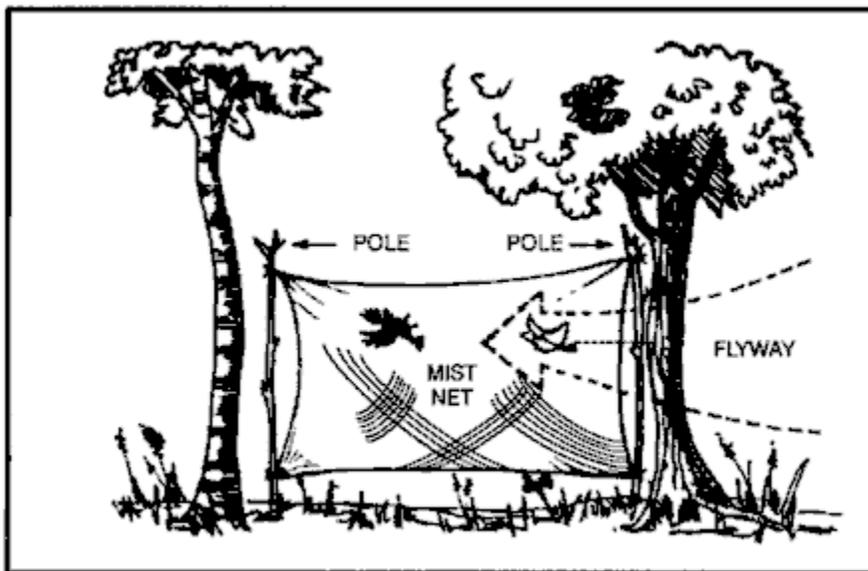


Figure 8-4. Catching birds in a net.

Nesting birds present another food source--eggs. Remove all but two or three eggs from the clutch, marking the ones that you leave. The bird will continue to lay more eggs to fill the clutch. Continue removing the fresh eggs, leaving the ones you marked.

Mammals

Mammals are excellent protein sources and, for Americans, the most tasty food source. There are some drawbacks to obtaining mammals. In a hostile environment, the enemy may detect any traps or snares placed on land. The amount of injury an animal can inflict is in direct proportion to its size. All mammals have teeth and nearly all will bite in self-defense. Even a squirrel can inflict a serious wound and any bite presents a serious risk of infection. Also, a mother can be extremely aggressive in defense of her young. Any animal with no route of escape will fight when cornered.

All mammals are edible; however, the polar bear and bearded seal have toxic levels of vitamin A in their livers. The platypus, native to Australia and Tasmania, is an egg-laying, semiaquatic mammal that has poisonous glands. Scavenging mammals, such as the opossum, may carry diseases.

TRAPS AND SNARES

For an unarmed survivor or evader, or when the sound of a rifle shot could be a problem, trapping or snaring wild game is a good alternative. Several well-placed traps have the potential to catch much more game than a man with a rifle is likely to shoot. To be effective with any type of trap or snare, you must--

- Be familiar with the species of animal you intend to catch.
- Be capable of constructing a proper trap.
- Not alarm the prey by leaving signs of your presence.

There are no catchall traps you can set for all animals. You must determine what species are in a given area and set your traps specifically with those animals in mind. Look for the following:

- Runs and trails.
- Tracks.
- Droppings.
- Chewed or rubbed vegetation.
- Nesting or roosting sites.
- Feeding and watering areas.

Position your traps and snares where there is proof that animals pass through. You must determine if it is a "run" or a "trail." A trail will show signs of use by several species and will be rather distinct. A run is usually smaller and less distinct and will only contain signs of one species. You may construct a perfect snare, but it will not catch anything if haphazardly placed in the woods. Animals have bedding areas, waterholes, and feeding areas with trails leading from one to another. You must place snares and traps around these areas to be effective.

For an evader in a hostile environment, trap and snare concealment is important. It is equally important, however, not to create a disturbance that will alarm the animal and cause it to avoid the trap. Therefore, if you must dig, remove all fresh dirt from the area. Most animals will instinctively avoid a pitfall-type trap. Prepare the various parts of a trap or snare away from the site, carry them in, and set them up. Such actions make it easier to avoid disturbing the local vegetation, thereby alerting the prey. Do not use freshly cut, live vegetation to construct a trap or snare. Freshly cut vegetation will "bleed" sap that has an odor the prey will be able to smell. It is an alarm signal to the animal.

You must remove or mask the human scent on and around the trap you set. Although birds do not have a developed sense of smell, nearly all mammals depend on smell even more than on sight. Even the slightest human scent on a trap will alarm the prey and cause it to avoid the area. Actually removing the scent from a trap is difficult but masking it is relatively easy. Use the fluid from the gall and urine bladders of previous kills. Do not use human urine. Mud, particularly from an area with plenty of rotting vegetation, is also good. Use it to coat your hands when handling the trap and to coat the trap when setting it. In nearly all parts of the world, animals know the smell of burned vegetation and smoke. It is only when a fire is actually burning that they become alarmed. Therefore, smoking the trap parts is an effective means to mask your scent. If one of the above [techniques](#) is not practical, and if time permits, allow a trap to weather for a few days and then set it. Do not handle a trap while it is weathering. When you position the trap, camouflage it as naturally as possible to prevent detection by the enemy and to avoid alarming the prey.

Traps or snares placed on a trail or run should use channelization. To build a channel, construct a funnel-shaped barrier extending from the sides of the trail toward the trap, with the narrowest part nearest the trap. Channelization should be inconspicuous to avoid

alerting the prey. As the animal gets to the trap, it cannot turn left or right and continues into the trap. Few wild animals will back up, preferring to face the direction of travel. Channelization does not have to be an impassable barrier. You only have to make it inconvenient for the animal to go over or through the barrier. For best effect, the channelization should reduce the trail's width to just slightly wider than the targeted animal's body. Maintain this constriction at least as far back from the trap as the animal's body length, then begin the widening toward the mouth of the funnel.

Use of Bait

Baiting a trap or snare increases your chances of catching an animal. When catching fish, you must bait nearly all the devices. Success with an unbaited trap depends on its placement in a good location. A baited trap can actually draw animals to it. The bait should be something the animal knows. This bait, however, should not be so readily available in the immediate area that the animal can get it close by. For example, baiting a trap with corn in the middle of a corn field would not be likely to work. Likewise, if corn is not grown in the region, a corn-baited trap may arouse an animal's curiosity and keep it alerted while it ponders the strange food. Under such circumstances it may not go for the bait. One bait that works well on small mammals is the peanut butter from a meal, ready-to-eat (MRE) ration. Salt is also a good bait. When using such baits, scatter bits of it around the trap to give the prey a chance to sample it and develop a craving for it. The animal will then overcome some of its caution before it gets to the trap.

If you set and bait a trap for one species but another species takes the bait without being caught, try to determine what the animal was. Then set a proper trap for that animal, using the same bait.

Note: Once you have successfully trapped an animal, you will not only gain confidence in your ability, you also will have resupplied yourself with bait for several more traps.

Trap and Snare Construction

Traps and snares *crush, choke, hang, or entangle* the prey. A single trap or snare will commonly incorporate two or more of these principles. The mechanisms that provide power to the trap are almost always very simple. The struggling victim, the force of gravity, or a bent sapling's tension provides the power.

The heart of any trap or snare is the trigger. When planning a trap or snare, ask yourself how it should affect the prey, what is the source of power, and what will be the most efficient trigger. Your answers will help you devise a specific trap for a specific species. Traps are designed to catch and hold or to catch and kill. Snares are traps that incorporate a noose to accomplish either function.

Simple Snare

A simple snare ([Figure 8-5](#)) consists of a noose placed over a trail or den hole and attached to a firmly planted stake. If the noose is some type of cordage placed upright on a game trail, use small twigs or blades of grass to hold it up. Filaments from spider webs are excellent for holding nooses open. Make sure the noose is large enough to pass freely over the animal's head. As the animal continues to move, the noose tightens around its neck. The more the animal struggles, the tighter the noose gets. This type of snare usually does

not kill the animal. If you use cordage, it may loosen enough to slip off the animal's neck. Wire is therefore the best choice for a simple snare.

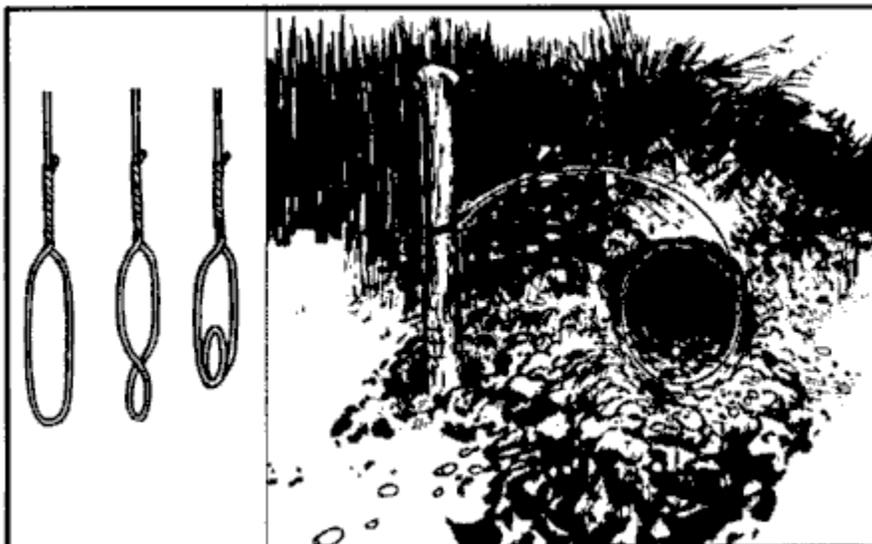


Figure 8-5. Simple snare.

Drag Noose

Use a drag noose on an animal run ([Figure 8-6](#)). Place forked sticks on either side of the run and lay a sturdy crossmember across them. Tie the noose to the crossmember and hang it at a height above the animal's head. (Nooses designed to catch by the head should never be low enough for the prey to step into with a foot.) As the noose tightens around the animal's neck, the animal pulls the crossmember from the forked sticks and drags it along. The surrounding vegetation quickly catches the crossmember and the animal becomes entangled.

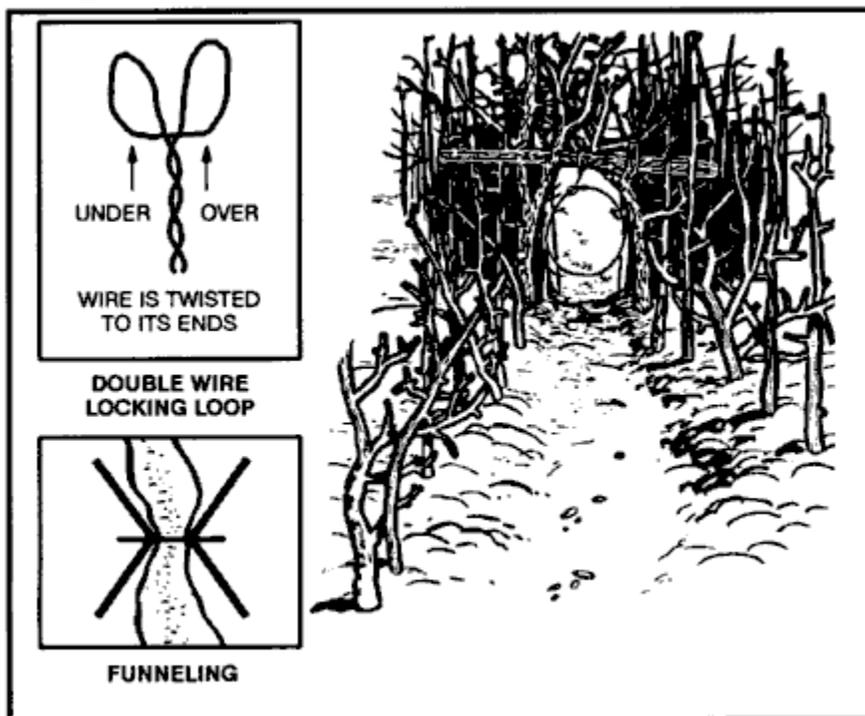


Figure 8-6. Drag noose.

Twitch-Up

A twitch-up is a supple sapling, which, when bent over and secured with a triggering device, will provide power to a variety of snares. Select a hardwood sapling along the trail. A twitch-up will work much faster and with more force if you remove all the branches and foliage.

Twitch-Up Snare

A simple twitch-up snare uses two forked sticks, each with a long and short leg ([Figure 8-7](#)). Bend the twitch-up and mark the trail below it. Drive the long leg of one forked stick firmly into the ground at that point. Ensure the cut on the short leg of this stick is parallel to the ground. Tie the long leg of the remaining forked stick to a piece of cordage secured to the twitch-up. Cut the short leg so that it catches on the short leg of the other forked stick. Extend a noose over the trail. Set the trap by bending the twitch-up and engaging the short legs of the forked sticks. When an animal catches its head in the noose, it pulls the forked sticks apart, allowing the twitch-up to spring up and hang the prey.

Note: Do not use green sticks for the trigger. The sap that oozes out could glue them together.

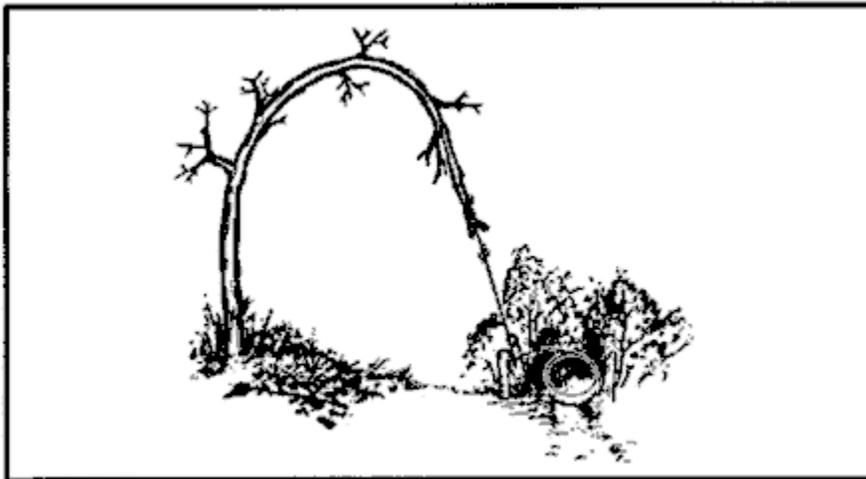


Figure 8-7. Twitch-up snare.

Squirrel Pole

A squirrel pole is a long pole placed against a tree in an area showing a lot of squirrel activity ([Figure 8-8](#)). Place several wire nooses along the top and sides of the pole so that a squirrel trying to go up or down the pole will have to pass through one or more of them. Position the nooses (5 to 6 centimeters in diameter) about 2.5 centimeters off the pole. Place the top and bottom wire nooses 45 centimeters from the top and bottom of the pole to prevent the squirrel from getting its feet on a solid surface. If this happens, the squirrel will chew through the wire. Squirrels are naturally curious. After an initial period of caution, they will try to go up or down the pole and will get caught in a noose. The struggling animal will soon fall from the pole and strangle. Other squirrels will soon follow and, in this way, you can catch several squirrels. You can emplace multiple poles to increase the catch.

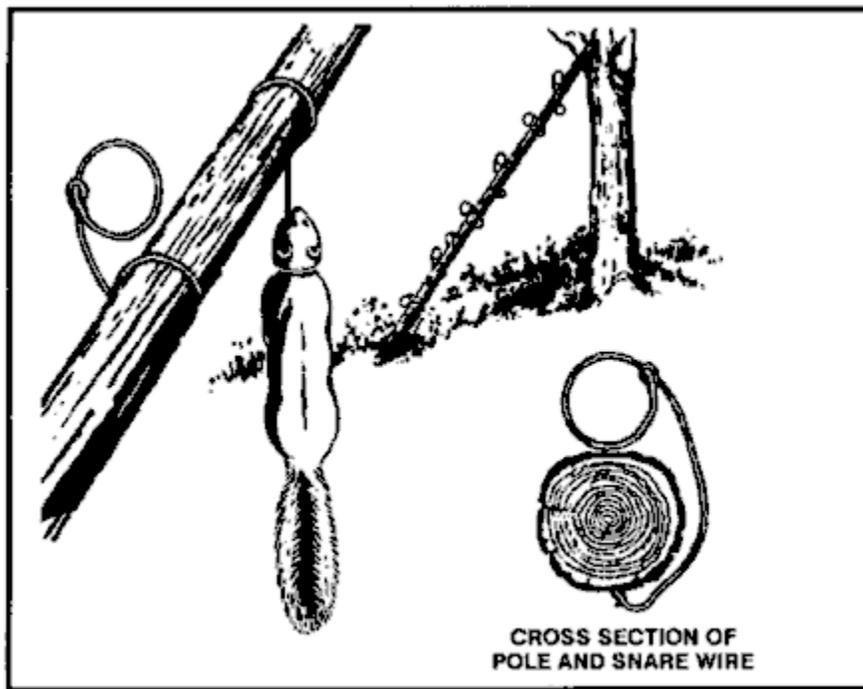


Figure 8-8. Squirrel pole.

Ojibwa Bird Pole

An Ojibwa bird pole is a snare used by native Americans for centuries ([Figure 8-9](#)). To be effective, place it in a relatively open area away from tall trees. For best results, pick a spot near feeding areas, dusting areas, or watering holes. Cut a pole 1.8 to 2.1 meters long and trim away all limbs and foliage. Do not use resinous wood such as pine. Sharpen the upper end to a point, then drill a small diameter hole 5 to 7.5 centimeters down from the top. Cut a small stick 10 to 15 centimeters long and shape one end so that it will almost fit into the hole. This is the perch. Plant the long pole in the ground with the pointed end up. Tie a small weight, about equal to the weight of the targeted species, to a length of cordage. Pass the free end of the cordage through the hole, and tie a slip noose that covers the perch. Tie a single overhand knot in the cordage and place the perch against the hole. Allow the cordage to slip through the hole until the overhand knot rests against the pole and the top of the perch. The tension of the overhand knot against the pole and perch will hold the perch in position. Spread the noose over the perch, ensuring it covers the perch and drapes over on both sides. Most birds prefer to rest on something above ground and will land on the perch. As soon as the bird lands, the perch will fall, releasing the overhand knot and allowing the weight to drop. The noose will tighten around the bird's feet, capturing it. If the weight is too heavy, it will cut the bird's feet off, allowing it to escape.

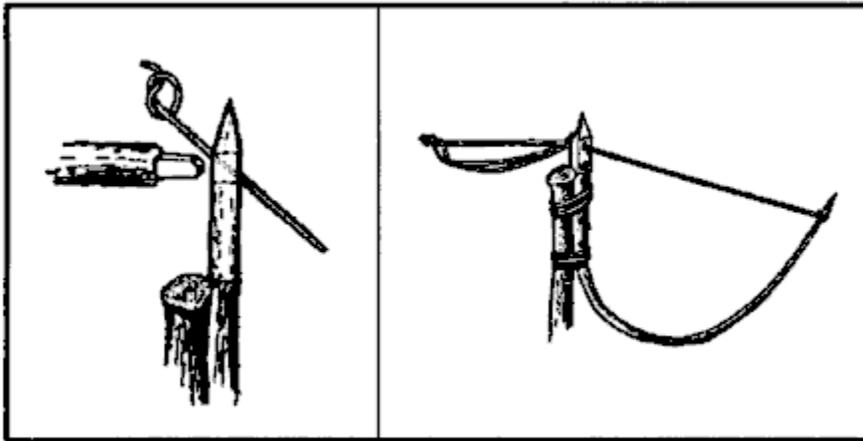


Figure 8-9. Ojibwa bird pole.

Noosing Wand

A noose stick or "noosing wand" is useful for capturing roosting birds or small mammals ([Figure 8-10](#)). It requires a patient operator. This wand is more a weapon than a trap. It consists of a pole (as long as you can effectively handle) with a slip noose of wire or stiff cordage at the small end. To catch an animal, you slip the noose over the neck of a roosting bird and pull it tight. You can also place it over a den hole and hide in a nearby blind. When the animal emerges from the den, you jerk the pole to tighten the noose and thus capture the animal. Carry a stout club to kill the prey.

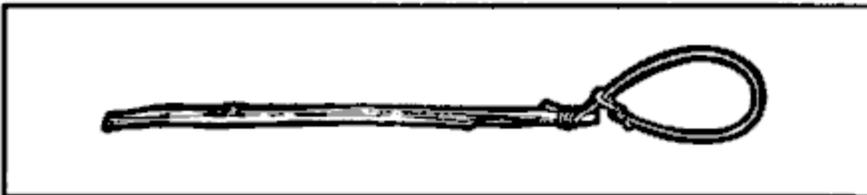


Figure 8-10. Noosing wand.

Treadle Spring Snare

Use a treadle snare against small game on a trail ([Figure 8-11](#)). Dig a shallow hole in the trail. Then drive a forked stick (fork down) into the ground on each side of the hole on the same side of the trail. Select two fairly straight sticks that span the two forks. Position these two sticks so that their ends engage the forks. Place several sticks over the hole in the trail by positioning one end over the lower horizontal stick and the other on the ground on the other side of the hole. Cover the hole with enough sticks so that the prey must step on at least one of them to set off the snare. Tie one end of a piece of cordage to a twitch-up or to a weight suspended over a tree limb. Bend the twitch-up or raise the suspended weight to determine where you will tie a 5 centimeter or so long trigger. Form a noose with the other end of the cordage. Route and spread the noose over the top of the sticks over the hole. Place the trigger stick against the horizontal sticks and route the cordage behind the sticks so that the tension of the power source will hold it in place. Adjust the bottom horizontal stick so that it will barely hold against the trigger. As the animal places its foot on a stick across the hole, the bottom horizontal stick moves down, releasing the trigger and allowing the noose to catch the animal by the foot. Because of the disturbance on the trail, an animal will be wary. You must therefore use channelization.

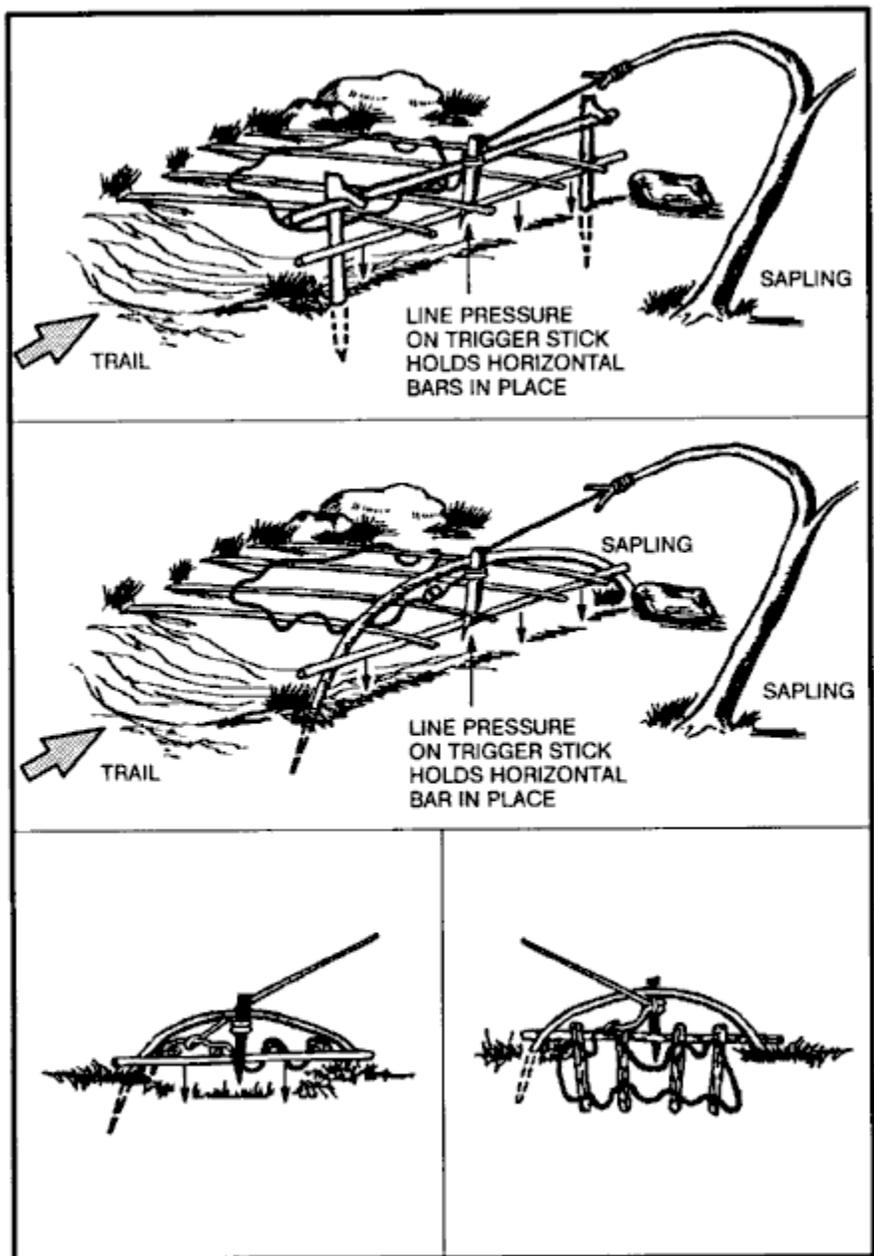


Figure 8-11. Treadle spring snare.

Figure 4 Deadfall

The figure 4 is a trigger used to drop a weight onto a prey and crush it (Figure 8-12). The type of weight used may vary, but it should be heavy enough to kill or incapacitate the prey immediately. Construct the figure 4 using three notched sticks. These notches hold the sticks together in a figure 4 pattern when under tension. Practice making this trigger before-hand; it requires close tolerances and precise angles in its construction.

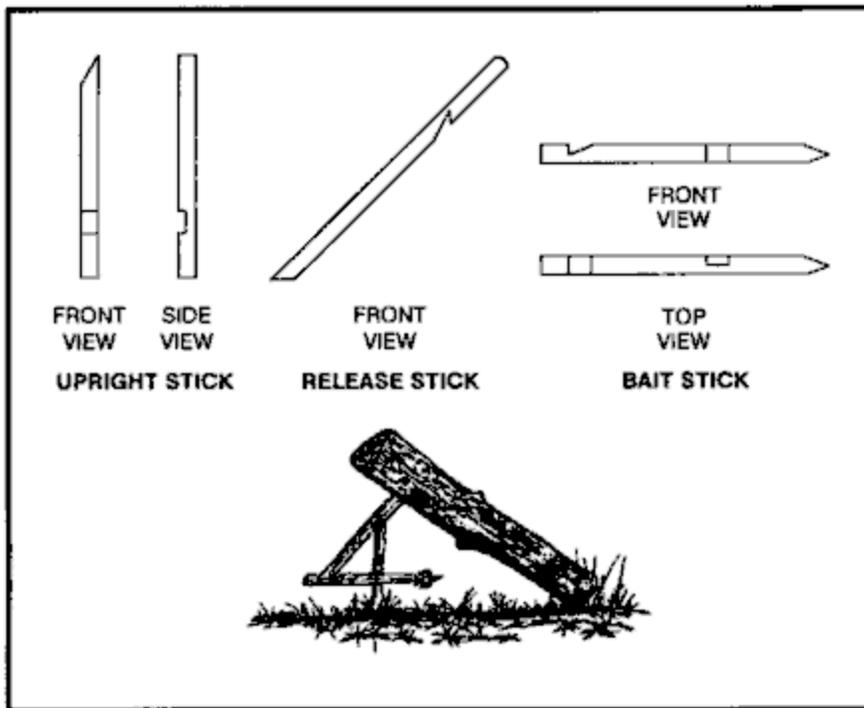


Figure 8-12. Figure 4 deadfall.

Paiute Deadfall

The Paiute deadfall is similar to the figure 4 but uses a piece of cordage and a catch stick (Figure 8-13). It has the advantage of being easier to set than the figure 4. Tie one end of a piece of cordage to the lower end of the diagonal stick. Tie the other end of the cordage to another stick about 5 centimeters long. This 5-centimeter stick is the catch stick. Bring the cord halfway around the vertical stick with the catch stick at a 90-degree angle. Place the bait stick with one end against the drop weight, or a peg driven into the ground, and the other against the catch stick. When a prey disturbs the bait stick, it falls free, releasing the catch stick. As the diagonal stick flies up, the weight falls, crushing the prey.

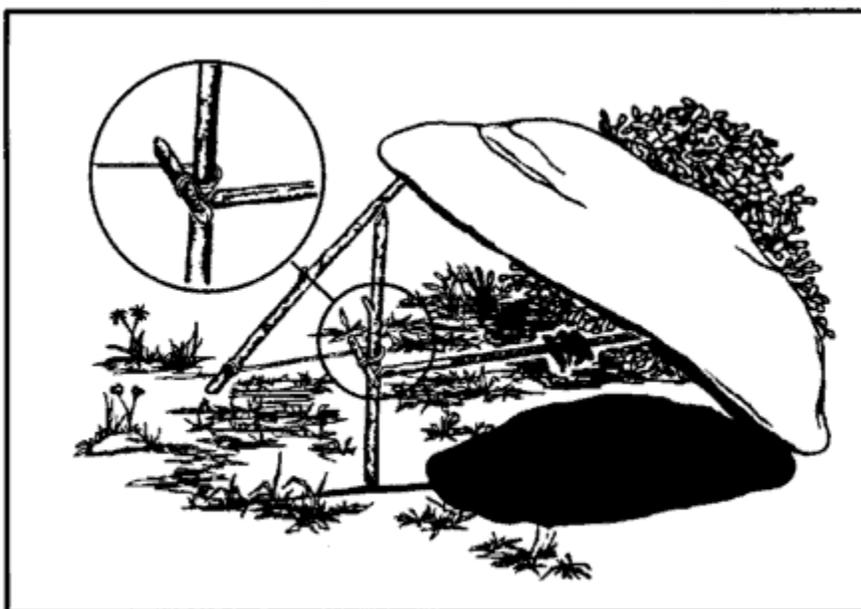


Figure 8-13. Paiute deadfall.

Bow Trap

A bow trap is one of the deadliest traps. It is dangerous to man as well as animals ([Figure 8-14](#)). To construct this trap, build a bow and anchor it to the ground with pegs. Adjust the aiming point as you anchor the bow. Lash a toggle stick to the trigger stick. Two upright sticks driven into the ground hold the trigger stick in place at a point where the toggle stick will engage the pulled bow string. Place a catch stick between the toggle stick and a stake driven into the ground. Tie a trip wire or cordage to the catch stick and route it around stakes and across the game trail where you tie it off (as in [Figure 8-14](#)). When the prey trips the trip wire, the bow looses an arrow into it. A notch in the bow serves to help aim the arrow.

WARNING

This is a lethal trap. Approach it with caution and from the rear only!

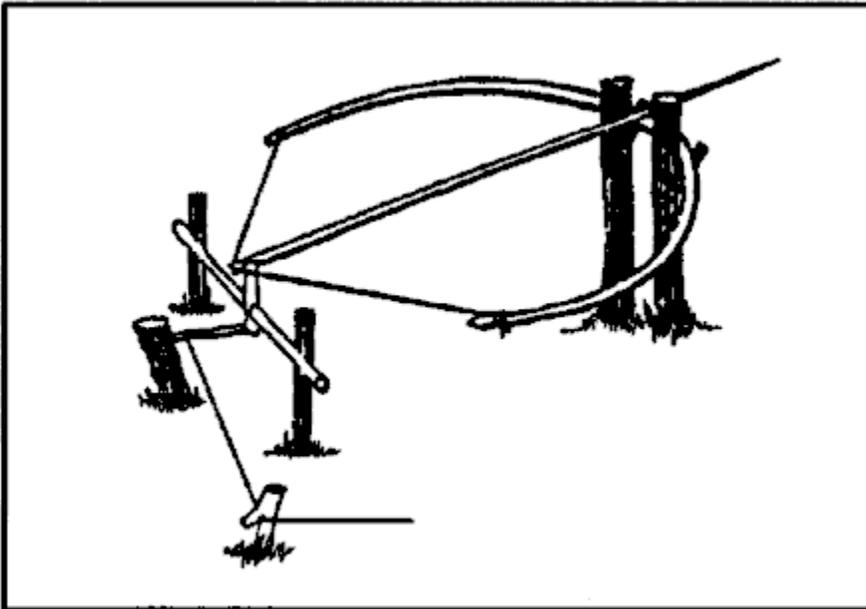


Figure 8-14. Bow trap.

Pig Spear Shaft

To construct the pig spear shaft, select a stout pole about 2.5 meters long ([Figure 8-15](#)). At the smaller end, firmly lash several small stakes. Lash the large end tightly to a tree along the game trail. Tie a length of cordage to another tree across the trail. Tie a sturdy, smooth stick to the other end of the cord. From the first tree, tie a trip wire or cord low to the ground, stretch it across the trail, and tie it to a catch stick. Make a slip ring from vines or other suitable material. Encircle the trip wire and the smooth stick with the slip ring. Emplace one end of another smooth stick within the slip ring and its other end against the second tree. Pull the smaller end of the spear shaft across the trail and position it between the short cord and the smooth stick. As the animal trips the trip wire, the catch stick pulls the slip ring off the smooth sticks, releasing the spear shaft that springs across the trail and impales the prey against the tree.

WARNING

This is a lethal trap. Approach it with caution!

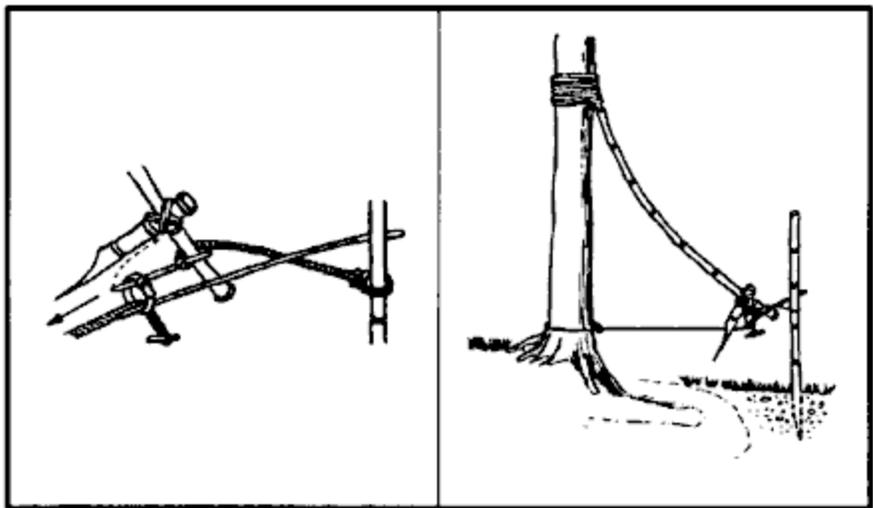


Figure 8-15. Pig spear shaft.

Bottle Trap

A bottle trap is a simple trap for mice and voles ([Figure 8-16](#)). Dig a hole 30 to 45 centimeters deep that is wider at the bottom than at the top. Make the top of the hole as small as possible. Place a piece of bark or wood over the hole with small stones under it to hold it up 2.5 to 5 centimeters off the ground. Mice or voles will hide under the cover to escape danger and fall into the hole. They cannot climb out because of the wall's backward slope. Use caution when checking this trap; it is an excellent hiding place for snakes.

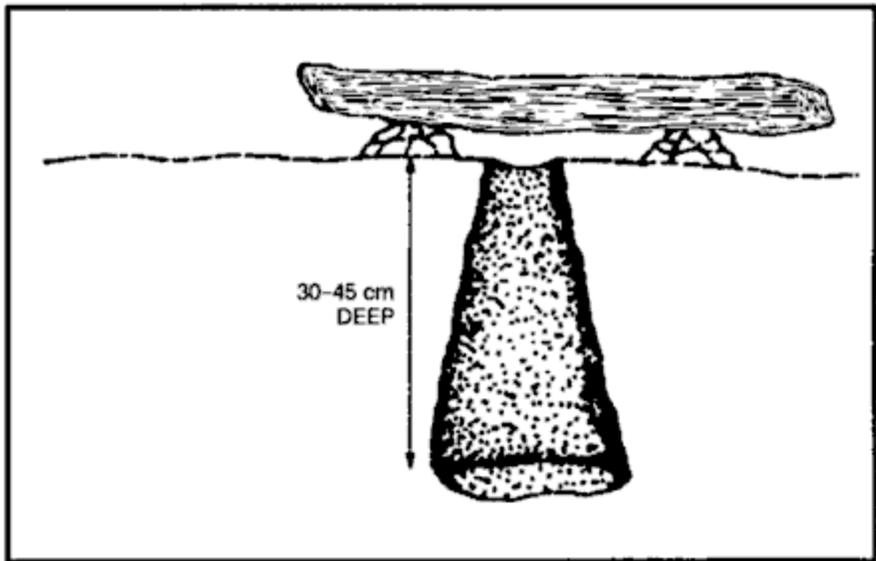


Figure 8-16. Bottle trap.

KILLING DEVICES

There are several killing devices that you can construct to help you obtain small game to help you survive. The rabbit stick, the spear, the bow and arrow, and the sling are such devices.

Rabbit Stick

One of the simplest and most effective killing devices is a stout stick as long as your arm, from fingertip to shoulder, called a "rabbit stick." You can throw it either overhand or sidearm and with considerable force. It is very effective against small game that stops and freezes as a defense.

Spear

You can make a spear to kill small game and to fish. Jab with the spear, do not throw it. See [spearfishing](#) below.

Bow and Arrow

A good bow is the result of many hours of work. You can construct a suitable short-term bow fairly easily. When it loses its spring or breaks, you can replace it. Select a hardwood stick about one meter long that is free of knots or limbs. Carefully scrape the large end down until it has the same pull as the small end. Careful examination will show the natural curve of the stick. Always scrape from the side that faces you, or the bow will break the first time you pull it. Dead, dry wood is preferable to green wood. To increase the pull, lash a second bow to the first, front to front, forming an "X" when viewed from the side. Attach the tips of the bows with cordage and only use a bowstring on one bow.

Select arrows from the straightest dry sticks available. The arrows should be about half as long as the bow. Scrape each shaft smooth all around. You will probably have to straighten the shaft. You can bend an arrow straight by heating the shaft over hot coals. Do not allow the shaft to scorch or bum. Hold the shaft straight until it cools.

You can make arrowheads from bone, glass, metal, or pieces of rock. You can also sharpen and fire harden the end of the shaft. To fire harden wood, hold it over hot coals, being careful not to bum or scorch the wood.

You must notch the ends of the arrows for the bowstring. Cut or file the notch; do not split it. Fletching (adding feathers to the notched end of an arrow) improves the arrow's flight characteristics, but is not necessary on a field-expedient arrow.

Sling

You can make a sling by tying two pieces of cordage, about sixty centimeters long, at opposite ends of a palm-sized piece of leather or cloth. Place a rock in the cloth and wrap one cord around the middle finger and hold in your palm. Hold the other cord between the forefinger and thumb. To throw the rock, spin the sling several times in a circle and release the cord between the thumb and forefinger. Practice to gain proficiency. The sling is very effective against small game.

FISHING DEVICES

You can make your own fishhooks, nets and traps and use several methods to obtain fish in a survival situation.

Improvised Fishhooks

You can make field-expedient fishhooks from pins, needles, wire, small nails, or any piece of metal. You can also use wood, bone, coconut shell, thorns, flint, seashell, or tortoise shell. You can also make fishhooks from any combination of these items ([Figure 8-17](#)).

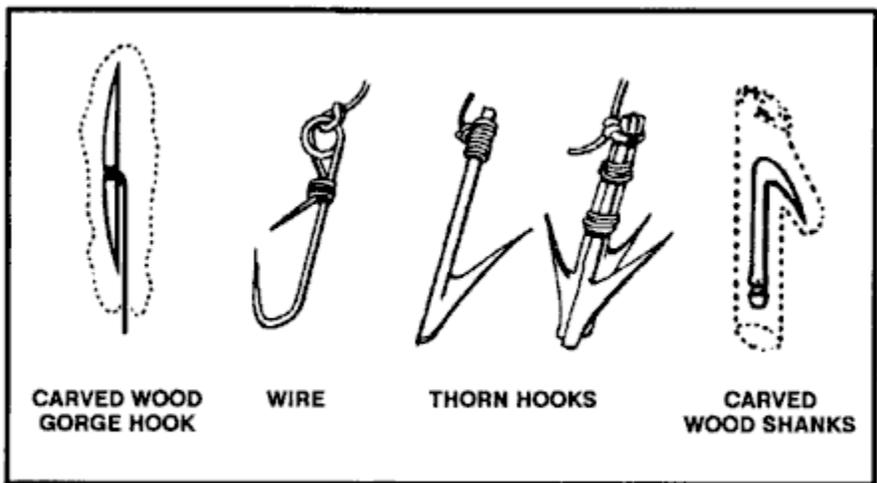


Figure 8-17. Improvised fishhooks.

To make a wooden hook, cut a piece of hardwood about 2.5 centimeters long and about 6 millimeters in diameter to form the shank. Cut a notch in one end in which to place the point. Place the point (piece of bone, wire, nail) in the notch. Hold the point in the notch and tie securely so that it does not move out of position. This is a fairly large hook. To make smaller hooks, use smaller material.

A gorge is a small shaft of wood, bone, metal, or other material. It is sharp on both ends and notched in the middle where you tie cordage. Bait the gorge by placing a piece of bait on it lengthwise. When the fish swallows the bait, it also swallows the gorge.

Stakeout

A stakeout is a fishing device you can use in a hostile environment (Figure 8-18). To construct a stakeout, drive two supple saplings into the bottom of the lake, pond, or stream with their tops just below the water surface. Tie a cord between them and slightly below the surface. Tie two short cords with hooks or gorges to this cord, ensuring that they cannot wrap around the poles or each other. They should also not slip along the long cord. Bait the hooks or gorges.

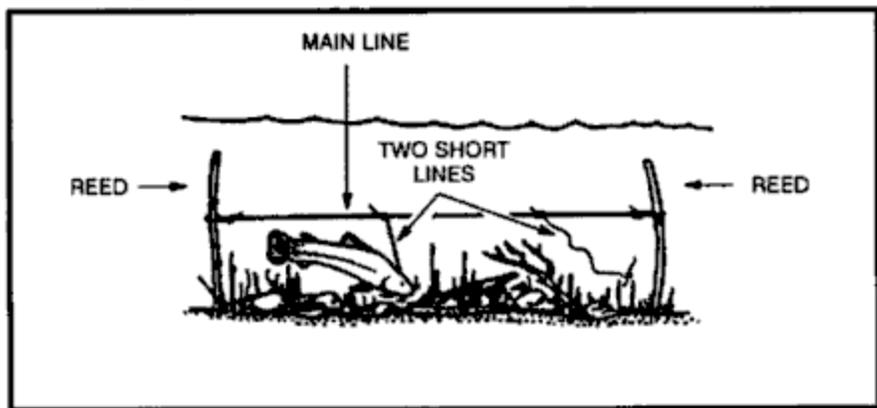


Figure 8-18. Stakeout.

Gill Net

If a gill net is not available, you can make one using parachute suspension line or similar material (Figure 8-19). Remove the core lines from the suspension line and tie the easing between two trees. Attach several core lines to the easing by doubling them over and tying them with prusik knots or girth hitches. The length of the desired net and the size of the

mesh determine the number of core lines used and the space between them. Starting at one end of the easing, tie the second and the third core lines together using an overhand knot. Then tie the fourth and fifth, sixth and seventh, and so on, until you reach the last core line. You should now have all core lines tied in pairs with a single core line hanging at each end. Start the second row with the first core line, tie it to the second, the third to the fourth, and so on.

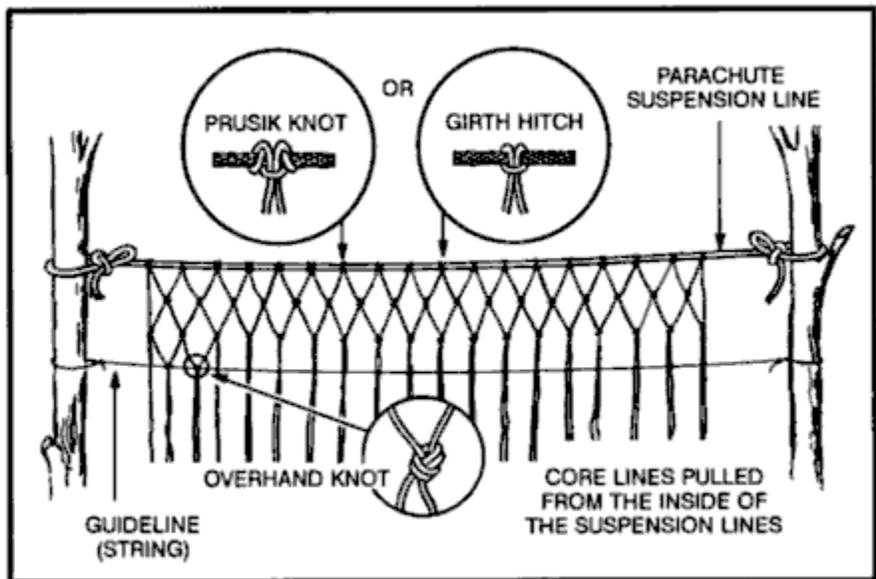


Figure 8-19. Making a gill net.

To keep the rows even and to regulate the size of the mesh, tie a guideline to the trees. Position the guideline on the opposite side of the net you are working on. Move the guideline down after completing each row. The lines will always hang in pairs and you always tie a cord from one pair to a cord from an adjoining pair. Continue tying rows until the net is the desired width. Thread a suspension line easing along the bottom of the net to strengthen it. Use the gill net as shown in [Figure 8-20](#).

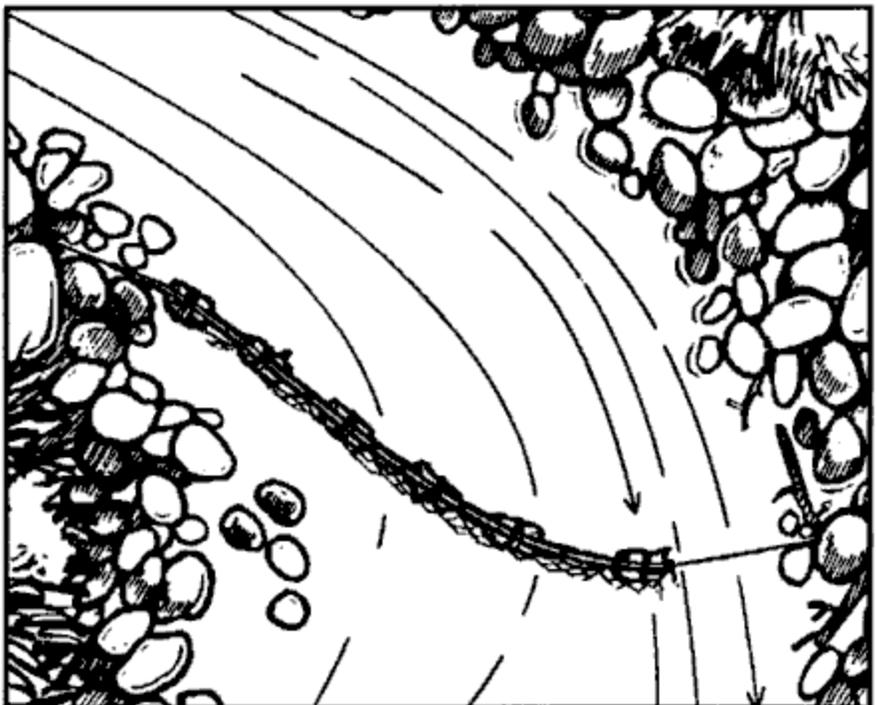


Figure 8-20. Setting a gill net in the stream.

Fish Traps

You may trap fish using several methods ([Figure 8-21](#)). Fish baskets are one method. You construct them by lashing several sticks together with vines into a funnel shape. You close the top, leaving a hole large enough for the fish to swim through.

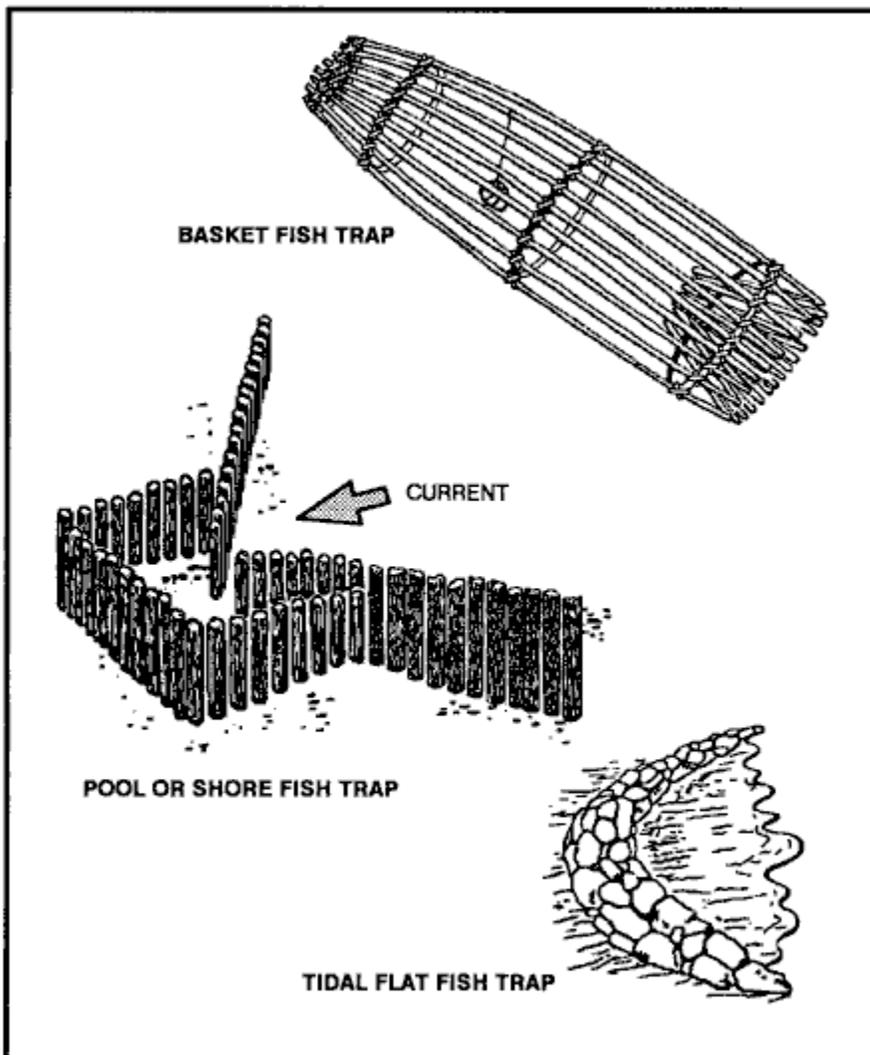


Figure 8-21. Various types of fish traps.

You can also use traps to catch saltwater fish, as schools regularly approach the shore with the incoming tide and often move parallel to the shore. Pick a location at high tide and build the trap at low tide. On rocky shores, use natural rock pools. On coral islands, use natural pools on the surface of reefs by blocking the openings as the tide recedes. On sandy shores, use sandbars and the ditches they enclose. Build the trap as a low stone wall extending outward into the water and forming an angle with the shore.

Spearfishing

If you are near shallow water (about waist deep) where the fish are large and plentiful, you can spear them. To make a spear, cut a long, straight sapling ([Figure 8-22](#)). Sharpen the end to a point or attach a knife, jagged piece of bone, or sharpened metal. You can also make a spear by splitting the shaft a few inches down from the end and inserting a piece of wood to act as a spreader. You then sharpen the two separated halves to points. To spear fish, find an area where fish either gather or where there is a fish run. Place the spear point

into the water and slowly move it toward the fish. Then, with a sudden push, impale the fish on the stream bottom. Do not try to lift the fish with the spear, as it will probably slip off and you will lose it; hold the spear with one hand and grab and hold the fish with the other. Do not throw the spear, especially if the point is a knife. You cannot afford to lose a knife in a survival situation. Be alert to the problems caused by light refraction when looking at objects in the water.

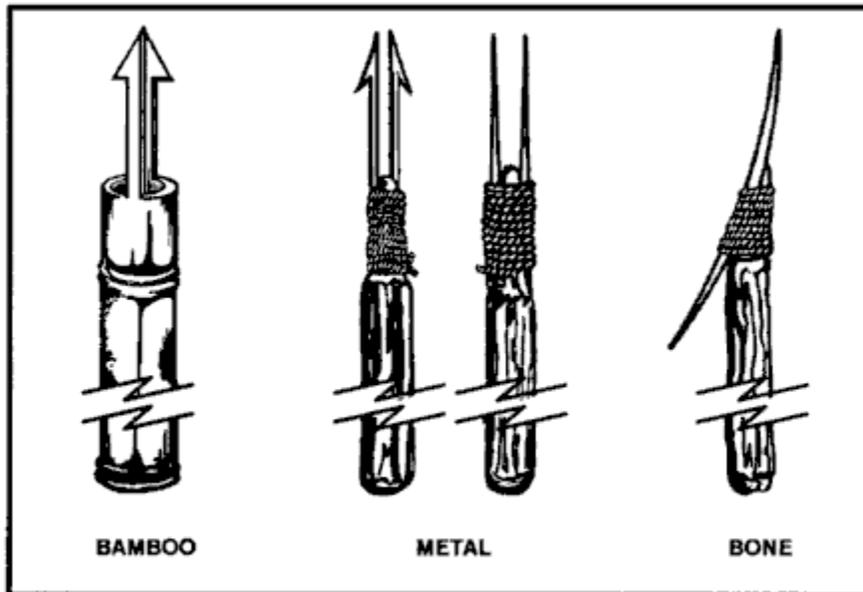


Figure 8-22. Types of spear points.

Chop Fishing

At night, in an area with a good fish density, you can use a light to attract fish. Then, armed with a machete or similar weapon, you can gather fish using the back side of the blade to strike them. Do not use the sharp side as you will cut them in two pieces and end up losing some of the fish.

Fish Poison

Another way to catch fish is by using poison. Poison works quickly. It allows you to remain concealed while it takes effect. It also enables you to catch several fish at one time. When using fish poison, be sure to gather all of the affected fish, because many dead fish floating downstream could arouse suspicion. Some plants that grow in warm regions of the world contain rotenone, a substance that stuns or kills cold-blooded animals but does not harm persons who eat the animals. The best place to use rotenone, or rotenone-producing plants, is in ponds or the headwaters of small streams containing fish. Rotenone works quickly on fish in water 21 degrees C (70 degrees F) or above. The fish rise helplessly to the surface. It works slowly in water 10 to 21 degrees C (50 to 70 degrees F) and is ineffective in water below 10 degrees C (50 degrees F). The following plants, used as indicated, will stun or kill fish:

Anamirta cocculus (Figure 8-23). This woody vine grows in southern Asia and on islands of the South Pacific. Crush the bean-shaped seeds and throw them in the water.

Croton tiglium (Figure 8-23). This shrub or small tree grows in waste areas on islands of the South Pacific. It bears seeds in three angled capsules. Crush the seeds and throw them into the water.

Barringtonia ([Figure 8-23](#)). These large trees grow near the sea in Malaya and parts of Polynesia. They bear a fleshy one-seeded fruit. Crush the seeds and bark and throw into the water.

Derris elliptica ([Figure 8-23](#)). This large genus of tropical shrubs and woody vines is the main source of commercially produced rotenone. Grind the roots into a powder and mix with water. Throw a large quantity of the mixture into the water.

Duboisia ([Figure 8-23](#)). This shrub grows in Australia and bears white clusters of flowers and berrylike fruit. Crush the plants and throw them into the water.

Tephrosia ([Figure 8-23](#)). This species of small shrubs, which bears beanlike pods, grows throughout the tropics. Crush or bruise bundles of leaves and stems and throw them into the water.

- *Lime*. You can get lime from commercial sources and in agricultural areas that use large quantities of it. You may produce your own by burning coral or seashells. Throw the lime into the water.
- *Nut husks*. Crush green husks from butternuts or black walnuts. Throw the husks into the water.

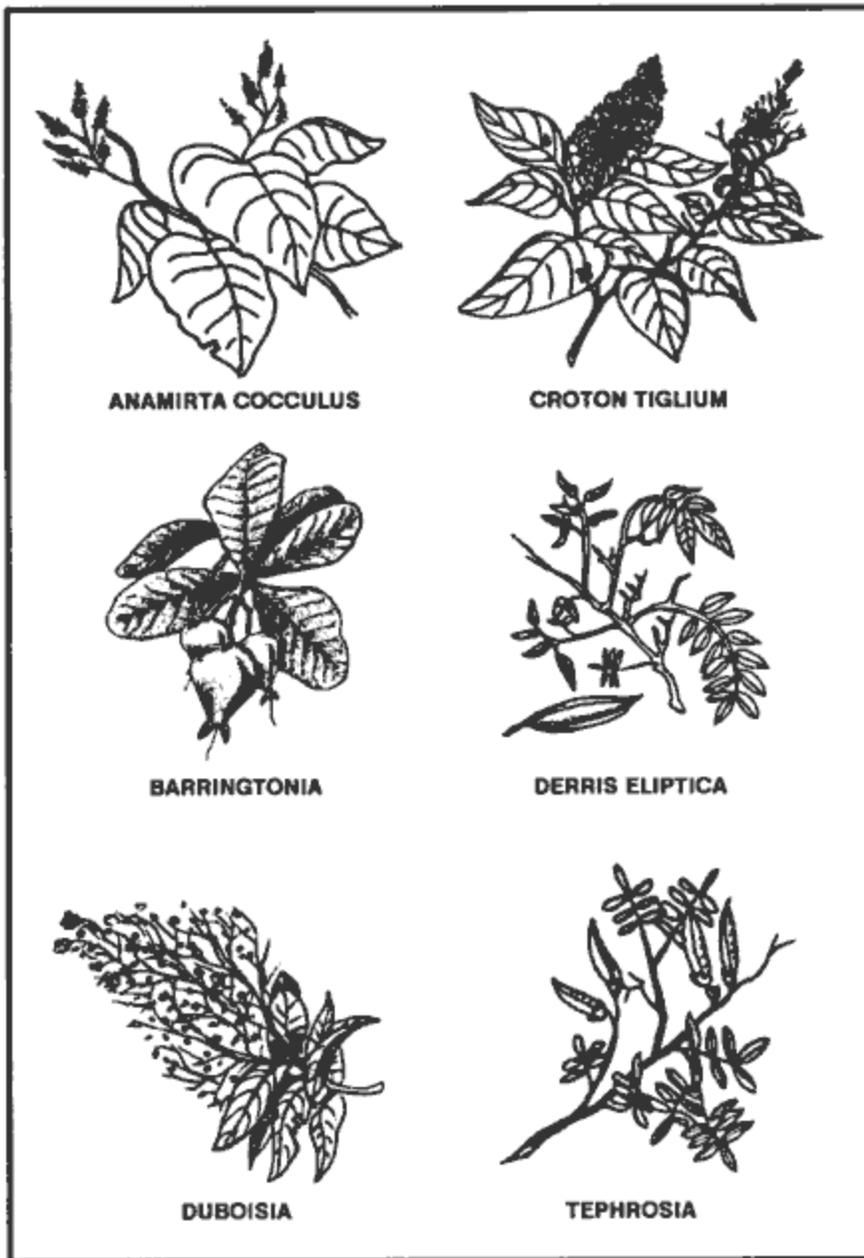


Figure 8-23. Fish-poisoning plants.

PREPARATION OF FISH AND GAME FOR COOKING AND STORAGE

You must know how to prepare fish and game for cooking and storage in a survival situation. Improper cleaning or storage can result in inedible fish or game.

Fish

Do not eat fish that appears spoiled. Cooking does not ensure that spoiled fish will be edible. Signs of spoilage are--

- Sunken eyes.

- Peculiar odor.
- Suspicious color. (Gills should be red to pink. Scales should be a pronounced shade of gray, not faded.)
- Dents stay in the fish's flesh after pressing it with your thumb.
- Slimy, rather than moist or wet body.
- Sharp or peppery taste.

Eating spoiled or rotten fish may cause diarrhea, nausea, cramps, vomiting, itching, paralysis, or a metallic taste in the mouth. These symptoms appear suddenly, one to six hours after eating. Induce vomiting if symptoms appear.

Fish spoils quickly after death, especially on a hot day. Prepare fish for eating as soon as possible after catching it. Cut out the gills and large blood vessels that lie near the spine. Gut fish that is more than 10 centimeters long. Scale or skin the fish.

You can impale a whole fish on a stick and cook it over an open fire. However, boiling the fish with the skin on is the best way to get the most food value. The fats and oil are under the skin and, by boiling, you can save the juices for broth. You can use any of the methods used to cook plant food to cook fish. Pack fish into a ball of clay and bury it in the coals of a fire until the clay hardens. Break open the clay ball to get to the cooked fish. Fish is done when the meat flakes off. If you plan to keep the fish for later, smoke or fry it. To prepare fish for smoking, cut off the head and remove the backbone.

Snakes

To skin a snake, first cut off its head and bury it. Then cut the skin down the body 15 to 20 centimeters ([Figure 8-24](#)). Peel the skin back, then grasp the skin in one hand and the body in the other and pull apart. On large, bulky snakes it may be necessary to slit the belly skin. Cook snakes in the same manner as small game. Remove the entrails and discard. Cut the snake into small sections and boil or roast it.

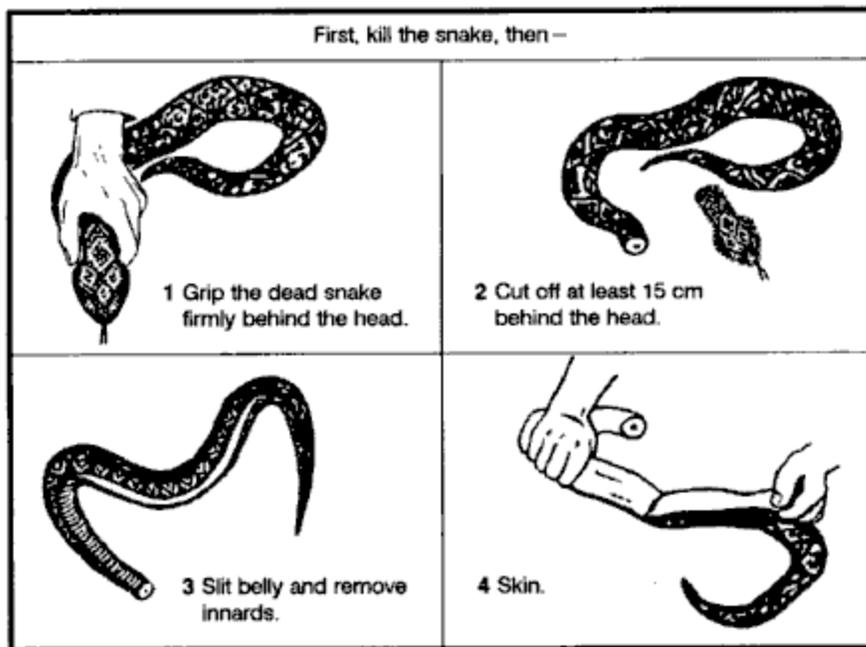


Figure 8-24. Cleaning a snake.

Birds

After killing the bird, remove its feathers by either plucking or skinning. Remember, skinning removes some of the food value. Open up the body cavity and remove its entrails, saving the craw (in seed-eating birds), heart, and liver. Cut off the feet. Cook by boiling or roasting over a spit. Before cooking scavenger birds, boil them at least 20 minutes to kill parasites.

Skinning and Butchering Game

Bleed the animal by cutting its throat. If possible, clean the carcass near a stream. Place the carcass belly up and split the hide from throat to tail, cutting around all sexual organs ([Figure 8-25](#)). Remove the musk glands at points A and B to avoid tainting the meat. For smaller mammals, cut the hide around the body and insert two fingers under the hide on both sides of the cut and pull both pieces off ([Figure 8-26](#)).

Note: When cutting the hide, insert the knife blade under the skin and turn the blade up so that only the hide gets cut. This will also prevent cutting hair and getting it on the meat.

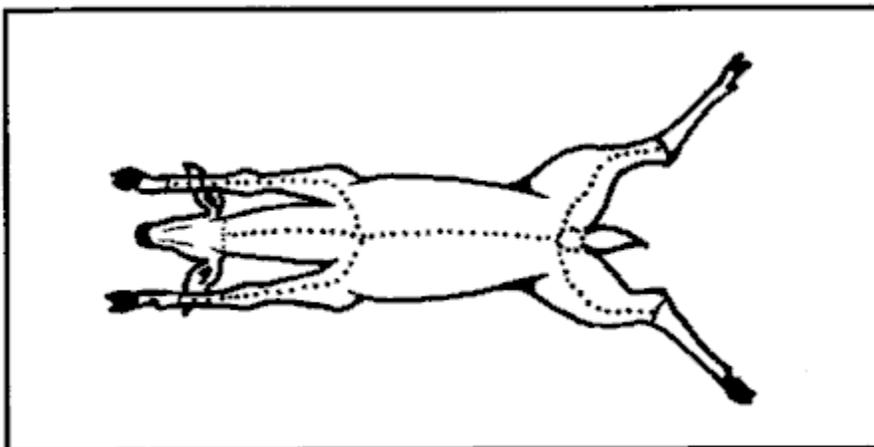


Figure 8-25. Skinning and butchering large game.

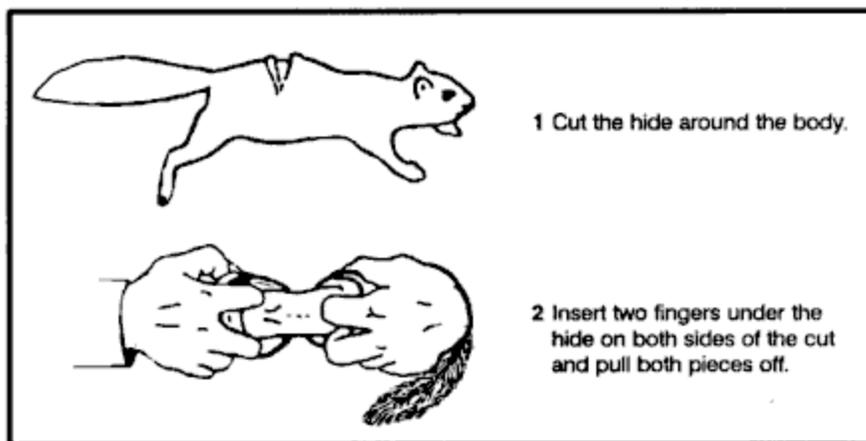


Figure 8-26. Skinning small game.

Remove the entrails from smaller game by splitting the body open and pulling them out with the fingers. Do not forget the chest cavity. For larger game, cut the gullet away from the diaphragm. Roll the entrails out of the body. Cut around the anus, then reach into the lower abdominal cavity, grasp the lower intestine, and pull to remove. Remove the urine bladder by pinching it off and cutting it below the fingers. If you spill urine on the meat, wash it to avoid tainting the meat. Save the heart and liver. Cut these open and inspect for signs of worms or other parasites. Also inspect the liver's color; it could indicate a diseased animal. The liver's surface should be smooth and wet and its color deep red or purple. If the liver appears diseased, discard it. However, a diseased liver does not indicate you cannot eat the muscle tissue.

Cut along each leg from above the foot to the previously made body cut. Remove the hide by pulling it away from the carcass, cutting the connective tissue where necessary. Cut off the head and feet.

Cut larger game into manageable pieces. First, slice the muscle tissue connecting the front legs to the body. There are no bones or joints connecting the front legs to the body on four-legged animals. Cut the hindquarters off where they join the body. You must cut around a large bone at the top of the leg and cut to the ball and socket hip joint. Cut the ligaments around the joint and bend it back to separate it. Remove the large muscles (the tenderloin) that lie on either side of the spine. Separate the ribs from the backbone. There is less work and less wear on your knife if you break the ribs first, then cut through the breaks.

Cook large meat pieces over a spit or boil them. You can stew or boil smaller pieces, particularly those that remain attached to bone after the initial butchering, as soup or broth. You can cook body organs such as the heart, liver, pancreas, spleen, and kidneys

using the same methods as for muscle meat. You can also cook and eat the brain. Cut the tongue out, skin it, boil it until tender, and eat it.

Smoking Meat

To smoke meat, prepare an enclosure around a fire ([Figure 8-27](#)). Two ponchos snapped together will work. The fire does not need to be big or hot. The intent is to produce smoke, not heat. Do not use resinous wood in the fire because its smoke will ruin the meat. Use hardwoods to produce good smoke. The wood should be somewhat green. If it is too dry, soak it. Cut the meat into thin slices, no more than 6 centimeters thick, and drape them over a framework. Make sure none of the meat touches another piece. Keep the poncho enclosure around the meat to hold the smoke and keep a close watch on the fire. Do not let the fire get too hot. Meat smoked overnight in this manner will last about 1 week. Two days of continuous smoking will preserve the meat for 2 to 4 weeks. Properly smoked meat will look like a dark, curled, brittle stick and you can eat it without further cooking. You can also use a pit to smoke meat ([Figure 8-28](#)).

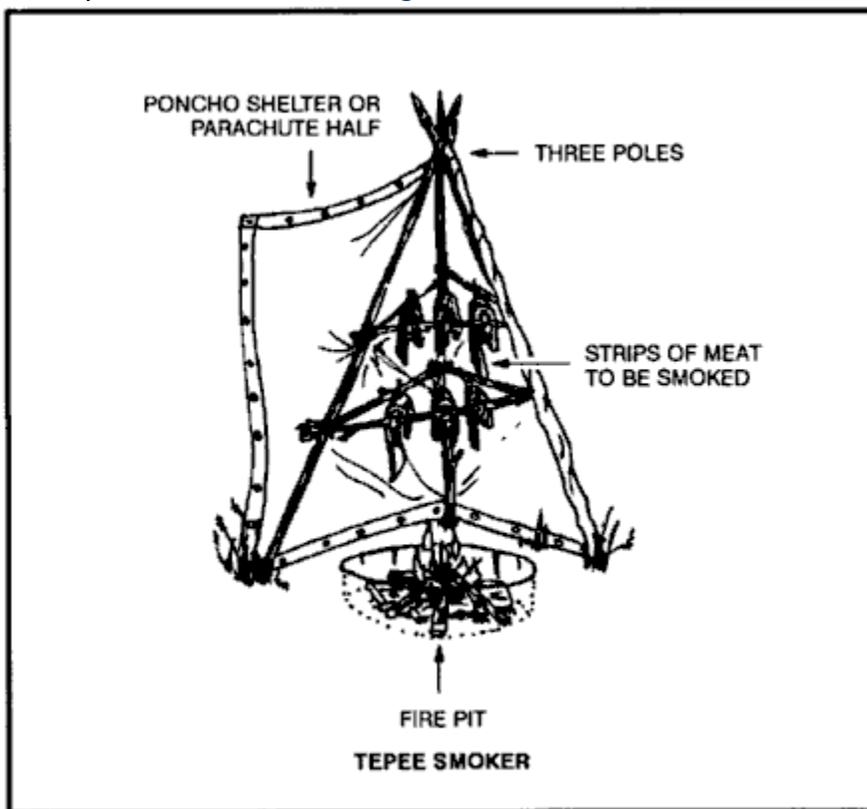


Figure 8-27. Smoking meat.

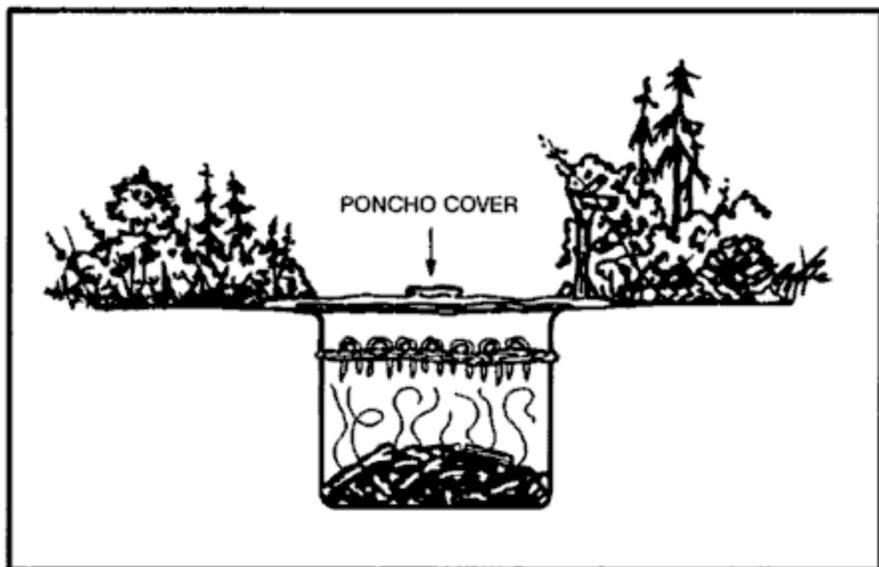


Figure 8-28. Smoking meat over a pit.

Drying Meat

To preserve meat by drying, cut it into 6-millimeter strips with the grain. Hang the meat strips on a rack in a sunny location with good air flow. Keep the strips out of the reach of animals and cover them to keep blowflies off. Allow the meat to dry thoroughly before eating. Properly dried meat will have a dry, crisp texture and will not feel cool to the touch.

Other Preservation Methods

You can also preserve meats using the freezing or brine and salt methods.

Freezing

In cold climates, you can freeze and keep meat indefinitely. Freezing is not a means of preparing meat. You must still cook it before eating.

Brine and Salt

You can preserve meat by soaking it thoroughly in a saltwater solution. The solution must cover the meat. You can also use salt by itself. Wash off the salt before cooking.

CHAPTER 9 - SURVIVAL USE OF PLANTS



After having solved the problems of finding water, shelter, and animal food, you will have to consider the use of plants you can eat. In a survival situation you should always be on the lookout for familiar wild foods and live off the land whenever possible.

You must not count on being able to go for days without food as some sources would suggest. Even in the most static survival situation, maintaining health through a complete and nutritious diet is essential to maintaining strength and peace of mind.

Nature can provide you with food that will let you survive any ordeal, if you don't eat the wrong plant. You must therefore learn as much as possible beforehand about the flora of the region where you will be operating. Plants can provide you with medicines in a survival situation. Plants can supply you with weapons and raw materials to construct shelters and build fires. Plants can even provide you with chemicals for poisoning fish, preserving animal hides, and for camouflaging yourself and your equipment.

Note: You will find illustrations of the plants described in this chapter in Appendixes B and C.

EDIBILITY OF PLANTS

Plants are valuable sources of food because they are widely available, easily procured, and, in the proper combinations, can meet all your nutritional needs.

WARNING

The critical factor in using plants for food is to avoid accidental poisoning. Eat only those plants you can positively identify and you know are safe to eat.

Absolutely identify plants before using them as food. Poison hemlock has killed people who mistook it for its relatives, wild carrots and wild parsnips.

At times you may find yourself in a situation for which you could not plan. In this instance you may not have had the chance to learn the plant life of the region in which you must

survive. In this case you can use the [Universal Edibility Test](#) to determine which plants you can eat and those to avoid.

It is important to be able to recognize both cultivated and wild edible plants in a survival situation. Most of the information in this chapter is directed towards identifying wild plants because information relating to cultivated plants is more readily available.

Remember the following when collecting wild plants for food:

- Plants growing near homes and occupied buildings or along roadsides may have been sprayed with pesticides. Wash them thoroughly. In more highly developed countries with many automobiles, avoid roadside plants, if possible, due to contamination from exhaust emissions.
- Plants growing in contaminated water or in water containing *Giardia lamblia* and other parasites are contaminated themselves. Boil or disinfect them.
- Some plants develop extremely dangerous fungal toxins. To lessen the chance of accidental poisoning, do not eat any fruit that is starting to spoil or showing signs of mildew or fungus.
- Plants of the same species may differ in their toxic or subtoxic compounds content because of genetic or environmental factors. One example of this is the foliage of the common chokecherry. Some chokecherry plants have high concentrations of deadly cyanide compounds while others have low concentrations or none. Horses have died from eating wilted wild cherry leaves. Avoid any weed, leaves, or seeds with an almondlike scent, a characteristic of the cyanide compounds.
- Some people are more susceptible to gastric distress (from plants) than others. If you are sensitive in this way, avoid unknown wild plants. If you are extremely sensitive to poison ivy, avoid products from this family, including any parts from sumacs, mangoes, and cashews.
- Some edible wild plants, such as acorns and water lily rhizomes, are bitter. These bitter substances, usually tannin compounds, make them unpalatable. Boiling them in several changes of water will usually remove these bitter properties.
- Many valuable wild plants have high concentrations of oxalate compounds, also known as oxalic acid. Oxalates produce a sharp burning sensation in your mouth and throat and damage the kidneys. Baking, roasting, or drying usually destroys these oxalate crystals. The corm (bulb) of the jack-in-the-pulpit is known as the "Indian turnip," but you can eat it only after removing these crystals by slow baking or by drying.

WARNING

Do not eat mushrooms in a survival situation! The only way to tell if a mushroom is edible is by positive identification. There is no room for experimentation. Symptoms of the most dangerous mushrooms affecting the central nervous system may show up after several days have passed when it is too late to reverse their effects.

Plant Identification

You identify plants, other than by memorizing particular varieties through familiarity, by using such factors as leaf shape and margin, leaf arrangements, and root structure. The basic leaf margins ([Figure 9-1](#)) are toothed, lobed, and toothless or smooth.

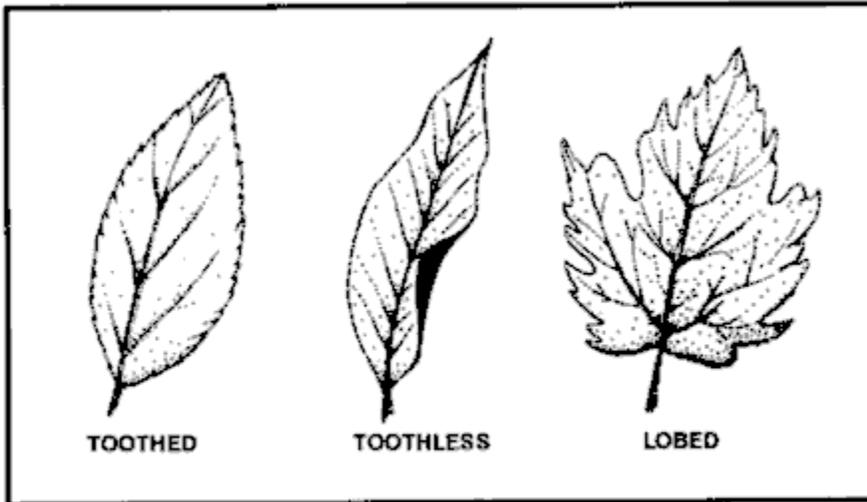


Figure 9-1. Leaf margins.

These leaves may be lance-shaped, elliptical, egg-shaped, oblong, wedge-shaped, triangular, long-pointed, or top-shaped ([Figure 9-2](#)).

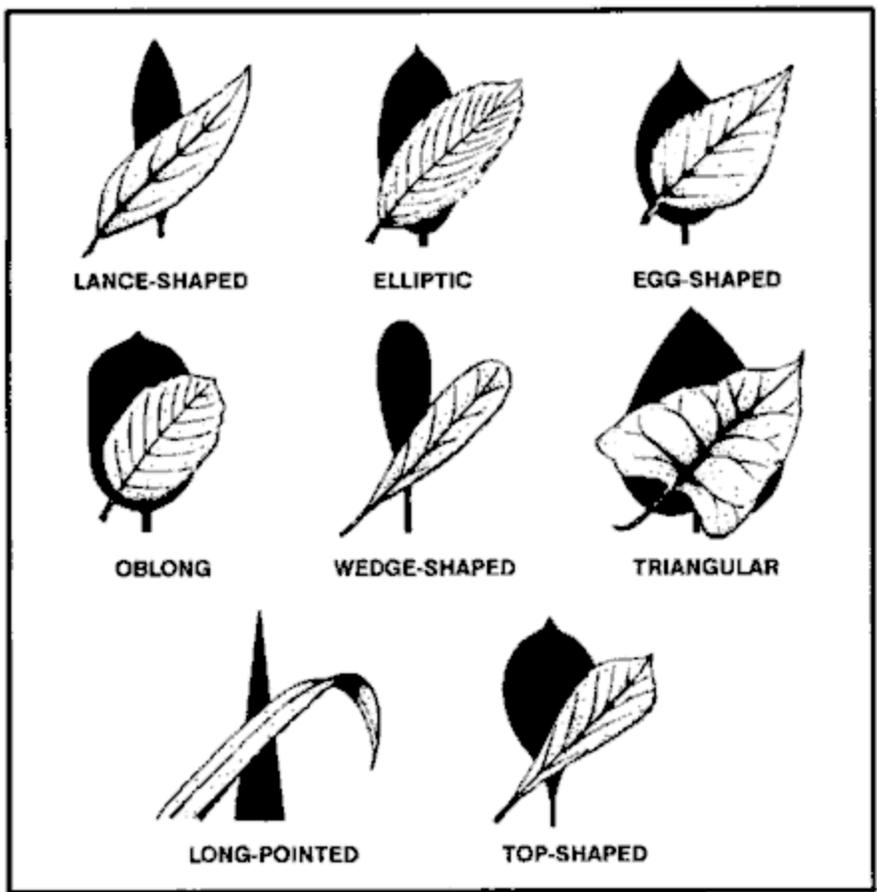


Figure 9-2. Leaf shapes.

The basic types of leaf arrangements ([Figure 9-3](#)) are opposite, alternate, compound, simple, and basal rosette.

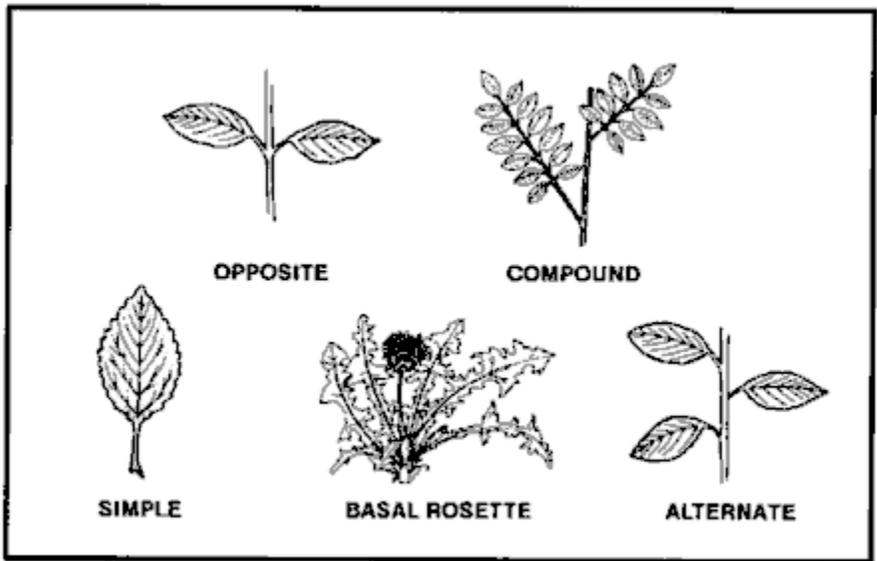


Figure 9-3. Leaf arrangements.

The basic types of root structures ([Figure 9-4](#)) are the bulb, clove, taproot, tuber, rhizome, corm, and crown. Bulbs are familiar to us as onions and, when sliced in half, will show concentric rings. Cloves are those bulblike structures that remind us of garlic and will separate into small pieces when broken apart. This characteristic separates wild onions from wild garlic. Taproots resemble carrots and may be single-rooted or branched, but usually only one plant stalk arises from each root. Tubers are like potatoes and daylilies

and you will find these structures either on strings or in clusters underneath the parent plants. Rhizomes are large creeping rootstock or underground stems and many plants arise from the "eyes" of these roots. Corms are similar to bulbs but are solid when cut rather than possessing rings. A crown is the type of root structure found on plants such as asparagus and looks much like a mophead under the soil's surface.

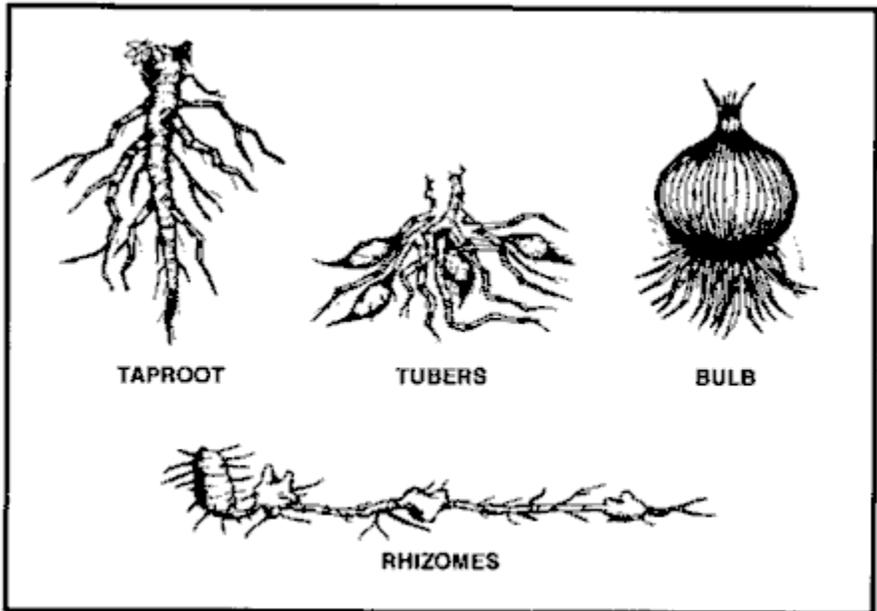


Figure 9-4. Root structures.

Learn as much as possible about plants you intend to use for food and their unique characteristics. Some plants have both edible and poisonous parts. Many are edible only at certain times of the year. Others may have poisonous relatives that look very similar to the ones you can eat or use for medicine.

Universal Edibility Test

There are many plants throughout the world. Tasting or swallowing even a small portion of some can cause severe discomfort, extreme internal disorders, and even death. Therefore, if you have the slightest doubt about a plant's edibility, apply the Universal Edibility Test ([Figure 9-5](#)) before eating any portion of it.

1	Test only one part of a potential food plant at a time.
2	Separate the plant into its basic components – leaves, stems, roots, buds, and flowers.
3	Smell the food for strong or acid odors. Remember, smell alone does not indicate a plant is edible or inedible.
4	Do not eat for 8 hours before starting the test.
5	During the 8 hours you abstain from eating, test for contact poisoning by placing a piece of the plant part you are testing on the inside of your elbow or wrist. Usually 15 minutes is enough time to allow for a reaction.
6	During the test period, take nothing by mouth except purified water and the plant part you are testing.
7	Select a small portion of a single part and prepare it the way you plan to eat it.
8	Before placing the prepared plant part in your mouth, touch a small portion (a pinch) to the outer surface of your lip to test for burning or itching.
9	If after 3 minutes there is no reaction on your lip, place the plant part on your tongue, holding it there for 15 minutes.
10	If there is no reaction, thoroughly chew a pinch and hold it in your mouth for 15 minutes. Do not swallow.
11	If no burning, itching, numbing, stinging, or other irritation occurs during the 15 minutes, swallow the food.
12	Wait 8 hours. If any ill effects occur during this period, induce vomiting and drink a lot of water.
13	If no ill effects occur, eat 0.25 cup of the same plant part prepared the same way. Wait another 8 hours. If no ill effects occur, the plant part as prepared is safe for eating.
CAUTION	
Test all parts of the plant for edibility, as some plants have both edible and inedible parts. Do not assume that a part that proved edible when cooked is also edible when raw. Test the part raw to ensure edibility before eating raw. The same part or plant may produce varying reactions in different individuals.	

Figure 9-5. Universal Edibility Test.

Before testing a plant for edibility, make sure there are enough plants to make the testing worth your time and effort. Each part of a plant (roots, leaves, flowers, and so on) requires more than 24 hours to test. Do not waste time testing a plant that is not relatively abundant in the area.

Remember, eating large portions of plant food on an empty stomach may cause diarrhea, nausea, or cramps. Two good examples of this are such familiar foods as green apples and wild onions. Even after testing plant food and finding it safe, eat it in moderation.

You can see from the steps and time involved in testing for edibility just how important it is to be able to identify edible plants.

To avoid potentially poisonous plants, stay away from any wild or unknown plants that have--

- Milky or discolored sap.

- Beans, bulbs, or seeds inside pods.
- Bitter or soapy taste.
- Spines, fine hairs, or thorns.
- Dill, carrot, parsnip, or parsleylike foliage.
- "Almond" scent in woody parts and leaves.
- Grain heads with pink, purplish, or black spurs.
- Three-leaved growth pattern.

Using the above [criteria](#) as eliminators when choosing plants for the Universal Edibility Test will cause you to avoid some edible plants. More important, these criteria will often help you avoid plants that are potentially toxic to eat or touch. An entire encyclopedia of edible wild plants could be written, but space limits the number of plants presented here. Learn as much as possible about the plant life of the areas where you train regularly and where you expect to be traveling or working. Listed [below](#) and later in this chapter are some of the most common edible and [medicinal plants](#). Detailed descriptions and photographs of these and other common plants are at Appendix B.

TEMPERATE ZONE FOOD PLANTS

- Amaranth (*Amaranthus retroflexus* and other species)
- Arrowroot (*Sagittaria* species)
- Asparagus (*Asparagus officinalis*)
- Beechnut (*Fagus* species)
- Blackberries (*Rubus* species)
- Blueberries (*Vaccinium* species)
- Burdock (*Arctium lappa*)

- Cattail (*Typha* species)
- Chestnut (*Castanea* species)
- Chicory (*Cichorium intybus*)
- Chufa (*Cyperus esculentus*)
- Dandelion (*Taraxacum officinale*)
- Daylily (*Hemerocallis fulva*)
- Nettle (*Urtica* species)
- Oaks (*Quercus* species)
- Persimmon (*Diospyros virginiana*)
- Plantain (*Plantago* species)
- Pokeweed (*Phytolacca americana*)
- Prickly pear cactus (*Opuntia* species)
- Purslane (*Portulaca oleracea*)
- Sassafras (*Sassafras albidum*)
- Sheep sorrel (*Rumex acetosella*)
- Strawberries (*Fragaria* species)
- Thistle (*Cirsium* species)

- Water lily and lotus (*Nuphar*, *Nelumbo*, and other species)
- Wild onion and garlic (*Allium* species)
- Wild rose (*Rosa* species)
- Wood sorrel (*Oxalis* species)

TROPICAL ZONE FOOD PLANTS

- Bamboo (*Bambusa* and other species)
- Bananas (*Musa* species)
- Breadfruit (*Artocarpus incisa*)
- Cashew nut (*Anacardium occidentale*)
- Coconut (*Cocos nucifera*)
- Mango (*Mangifera indica*)
- Palms (various species)
- Papaya (*Carica* species)
- Sugarcane (*Saccharum officinarum*)
- Taro (*Colocasia* species)

DESERT ZONE FOOD PLANTS

- Acacia (*Acacia farnesiana*)
- Agave (*Agave* species)

- Cactus (various species)
- Date palm (*Phoenix dactylifera*)
- Desert amaranth (*Amaranthus palmeri*)

Seaweeds

One plant you should never overlook is seaweed. It is a form of marine algae found on or near ocean shores. There are also some edible freshwater varieties. Seaweed is a valuable source of iodine, other minerals, and vitamin C. Large quantities of seaweed in an unaccustomed stomach can produce a severe laxative effect.

When gathering seaweeds for food, find living plants attached to rocks or floating free. Seaweed washed onshore any length of time may be spoiled or decayed. You can dry freshly harvested seaweeds for later use.

Its preparation for eating depends on the type of seaweed. You can dry thin and tender varieties in the sun or over a fire until crisp. Crush and add these to soups or broths. Boil thick, leathery seaweeds for a short time to soften them. Eat them as a vegetable or with other foods. You can eat some varieties raw after testing for edibility.

SEAWEEDS

- Dulse (*Rhodomenia palmata*)
- Green seaweed (*Ulva lactuca*)
- Irish moss (*Chondrus crispus*)
- Kelp (*Alaria esculenta*)
- Laver (*Porphyra* species)
- Mojoban (*Sargassum fulvellum*)
- Sugar wrack (*Laminaria saccharina*)

Preparation of Plant Food

Although some plants or plant parts are edible raw, you must cook others to be edible or palatable. Edible means that a plant or food will provide you with necessary nutrients, while

palatable means that it actually is pleasing to eat. Many wild plants are edible but barely palatable. It is a good idea to learn to identify, prepare, and eat wild foods.

Methods used to improve the taste of plant food include soaking, boiling, cooking, or leaching. Leaching is done by crushing the food (for example, acorns), placing it in a strainer, and pouring boiling water through it or immersing it in running water.

Boil leaves, stems, and buds until tender, changing the water, if necessary, to remove any bitterness.

Boil, bake, or roast tubers and roots. Drying helps to remove caustic oxalates from some roots like those in the *Arum* family.

Leach acorns in water, if necessary, to remove the bitterness. Some nuts, such as chestnuts, are good raw, but taste better roasted.

You can eat many grains and seeds raw until they mature. When hard or dry, you may have to boil or grind them into meal or flour.

The sap from many trees, such as maples, birches, walnuts, and sycamores, contains sugar. You may boil these saps down to a syrup for sweetening. It takes about 35 liters of maple sap to make one liter of maple syrup!

PLANTS FOR MEDICINE

In a survival situation you will have to use what is available. In using plants and other natural remedies, positive identification of the plants involved is as critical as in using them for food. Proper use of these plants is equally important.

Terms and Definitions

The following terms, and their definitions, are associated with medicinal plant use:

- *Poultice*. The name given to crushed leaves or other plant parts, possibly heated, that you apply to a wound or sore either directly or wrapped in cloth or paper.
- *Infusion or tisane or tea*. The preparation of medicinal herbs for internal or external application. You place a small quantity of a herb in a container, pour hot water over it, and let it steep (covered or uncovered) before use.
- *Decoction*. The extract of a boiled down or simmered herb leaf or root. You add herb leaf or root to water. You bring them to a sustained boil or simmer to draw their chemicals into the water. The average ratio is about 28 to 56 grams (1 to 2 ounces) of herb to 0.5 liter of water.
- *Expressed juice*. Liquids or saps squeezed from plant material and either applied to the wound or made into another medicine.

Many natural remedies work slower than the medicines you know. Therefore, start with smaller doses and allow more time for them to take effect. Naturally, some will act more rapidly than others.

Specific Remedies

The following remedies are for use only in a survival situation, not for routine use:

- *Diarrhea*. Drink tea made from the roots of blackberries and their relatives to stop diarrhea. White oak bark and other barks containing tannin are also effective. However, use them with caution when nothing else is available because of possible negative effects on the kidneys. You can also stop diarrhea by eating white clay or campfire ashes. Tea made from cowberry or cranberry or hazel leaves works too.
- *Antihemorrhagics*. Make medications to stop bleeding from a poultice of the puffball mushroom, from plantain leaves, or most effectively from the leaves of the common yarrow or woundwort (*Achillea millefolium*).
- *Antiseptics*. Use to cleanse wounds, sores, or rashes. You can make them from the expressed juice from wild onion or garlic, or expressed juice from chickweed leaves or the crushed leaves of dock. You can also make antiseptics from a decoction of burdock root, mallow leaves or roots, or white oak bark. All these medications are for external use only.
- *Fevers*. Treat a fever with a tea made from willow bark, an infusion of elder flowers or fruit, linden flower tea, or elm bark decoction.
- *Colds and sore throats*. Treat these illnesses with a decoction made from either plantain leaves or willow bark. You can also use a tea made from burdock roots, mallow or mullein flowers or roots, or mint leaves.
- *Aches, pains, and sprains*. Treat with externally applied poultices of dock, plantain, chickweed, willow bark, garlic, or sorrel. You can also use salves made by mixing the expressed juices of these plants in animal fat or vegetable oils.
- *Itching*. Relieve the itch from insect bites, sunburn, or plant poisoning rashes by applying a poultice of jewelweed (*Impatiens biflora*) or witch hazel leaves (*Hamamelis virginiana*). The jewelweed juice will help when applied to poison ivy rashes or insect stings. It works on sunburn as well as aloe vera.
- *Sedatives*. Get help in falling asleep by brewing a tea made from mint leaves or passionflower leaves.
- *Hemorrhoids*. Treat them with external washes from elm bark or oak bark tea, from the expressed juice of plantain leaves, or from a Solomon's seal root decoction.
- *Constipation*. Relieve constipation by drinking decoctions from dandelion leaves, rose hips, or walnut bark. Eating raw daylily flowers will also help.

- *Worms or intestinal parasites.* Using moderation, treat with tea made from tansy (*Tanacetum vulgare*) or from wild carrot leaves.
- *Gas and cramps.* Use a tea made from carrot seeds as an antifatulent; use tea made from mint leaves to settle the stomach.
- *Antifungal washes.* Make a decoction of walnut leaves or oak bark or acorns to treat ringworm and athlete's foot. Apply frequently to the site, alternating with exposure to direct sunlight.

MISCELLANEOUS USES OF PLANTS

Make dyes from various plants to color clothing or to camouflage your skin. Usually, you will have to boil the plants to get the best results. Onion skins produce yellow, walnut hulls produce brown, and pokeberries provide a purple dye.

Make fibers and cordage from plant fibers. Most commonly used are the stems from nettles and milkweeds, yucca plants, and the inner bark of trees like the linden.

Make fish poison by immersing walnut hulls in a small area of quiet water. This poison makes it impossible for the fish to breathe but doesn't adversely affect their edibility.

Make tinder for starting fires from cattail fluff, cedar bark, lighter knot wood from pine trees, or hardened sap from resinous wood trees.

Make insulation by fluffing up female cattail heads or milkweed down.

Make insect repellents by applying the expressed juice of wild garlic or onion to the skin, by placing sassafras leaves in your shelter, or by burning or smudging cattail seed hair fibers.

Plants can be your ally as long as you use them cautiously. *The key to the safe use of plants is positive identification* whether you use them as food or medicine or in constructing shelters or equipment.

CHAPTER 10 - POISONOUS PLANTS



Successful use of plants in a survival situation depends on positive identification. Knowing poisonous plants is as important to a survivor as knowing edible plants. Knowing the poisonous plants will help you avoid sustaining injuries from them.

HOW PLANTS POISON

Plants generally poison by--

- *Ingestion.* When a person eats a part of a poisonous plant.
- *Contact.* When a person makes contact with a poisonous plant that causes any type of skin irritation or dermatitis.
- *Absorption or inhalation.* When a person either absorbs the poison through the skin or inhales it into the respiratory system.

Plant poisoning ranges from minor irritation to death. A common question asked is, "How poisonous is this plant?" It is difficult to say how poisonous plants are because--

- Some plants require contact with a large amount of the plant before noticing any adverse reaction while others will cause death with only a small amount.
- Every plant will vary in the amount of toxins it contains due to different growing conditions and slight variations in subspecies.
- Every person has a different level of resistance to toxic substances.
- Some persons may be more sensitive to a particular plant.

Some common misconceptions about poisonous plants are--

- *Watch the animals and eat what they eat.* Most of the time this statement is true, but some animals can eat plants that are poisonous to humans.
- *Boil the plant in water and any poisons will be removed.* Boiling removes many poisons, but not all.
- *Plants with a red color are poisonous.* Some plants that are red are poisonous, but not all.

The point is there is no one rule to aid in identifying poisonous plants. You must make an effort to learn as much about them as possible.

ALL ABOUT PLANTS

It is to your benefit to learn as much about plants as possible. Many poisonous plants look like their edible relatives or like other edible plants. For example, poison hemlock appears very similar to wild carrot. Certain plants are safe to eat in certain seasons or stages of growth and poisonous in other stages. For example, the leaves of the pokeweed are edible when it first starts to grow, but it soon becomes poisonous. You can eat some plants and their fruits only when they are ripe. For example, the ripe fruit of mayapple is edible, but all other parts and the green fruit are poisonous. Some plants contain both edible and poisonous parts; potatoes and tomatoes are common plant foods, but their green parts are poisonous.

Some plants become toxic after wilting. For example, when the black cherry starts to wilt, hydrocyanic acid develops. Specific preparation methods make some plants edible that are poisonous raw. You can eat the thinly sliced and thoroughly dried corms (drying may take a year) of the jack-in-the-pulpit, but they are poisonous if not thoroughly dried.

Learn to identify and use plants before a survival situation. Some sources of information about plants are pamphlets, books, films, nature trails, botanical gardens, local markets, and local natives. Gather and cross-reference information from as many sources as possible, because many sources will not contain all the information needed.

RULES FOR AVOIDING POISONOUS PLANTS

Your best policy is to be able to look at a plant and identify it with absolute certainty and to know its uses or dangers. Many times this is not possible. If you have little or no knowledge of the local vegetation, use the rules to select plants for the "[Universal Edibility Test](#)."

Remember, avoid --

- *All mushrooms.* Mushroom identification is very difficult and must be precise, even more so than with other plants. Some mushrooms cause death very quickly. Some mushrooms have no known antidote. Two general types of mushroom poisoning are gastrointestinal and central nervous system.
- *Contact with or touching plants unnecessarily.*

CONTACT DERMATITIS

Contact dermatitis from plants will usually cause the most trouble in the field. The effects may be persistent, spread by scratching, and are particularly dangerous if there is contact in or around the eyes.

The principal toxin of these plants is usually an oil that gets on the skin upon contact with the plant. The oil can also get on equipment and then infect whoever touches the equipment. Never burn a contact poisonous plant because the smoke may be as harmful as the plant. There is a greater danger of being affected when overheated and sweating. The infection may be local or it may spread over the body.

Symptoms may take from a few hours to several days to appear. Signs and symptoms can include burning, reddening, itching, swelling, and blisters.

When you first contact the poisonous plants or the first symptoms appear, try to remove the oil by washing with soap and cold water. If water is not available, wipe your skin repeatedly with dirt or sand. Do not use dirt if blisters have developed. The dirt may break open the blisters and leave the body open to infection. After you have removed the oil, dry the area. You can wash with a tannic acid solution and crush and rub jewelweed on the affected area to treat plant-caused rashes. You can make tannic acid from oak bark.

Poisonous plants that cause contact dermatitis are--

- Cowhage.

- Poison ivy.

- Poison oak.

- Poison sumac.

- Rengas tree.

- Trumpet vine.

INGESTION POISONING

Ingestion poisoning can be very serious and could lead to death very quickly. Do not eat any plant unless you have positively identified it first. Keep a log of all plants eaten.

Signs and symptoms of ingestion poisoning can include nausea, vomiting, diarrhea, abdominal cramps, depressed heartbeat and respiration, headaches, hallucinations, dry mouth, unconsciousness, coma, and death.

If you suspect plant poisoning, try to remove the poisonous material from the victim's mouth and stomach as soon as possible. Induce vomiting by tickling the back of his throat or by giving him warm saltwater, if he is conscious. Dilute the poison by administering large quantities of water or milk, if he is conscious.

The following plants can cause ingestion poisoning if eaten:

- Castor bean.

- Chinaberry.

- Death camas.
- Lantana.
- Manchineel.
- Oleander.
- Pangi.
- Physic nut.
- Poison and water hemlocks.
- Rosary pea.
- Strychnine tree.

See Appendix C for photographs and descriptions of these plants.

CHAPTER 11 - DANGEROUS ANIMALS



Animals rarely are as threatening to the survivor as the rest of the environment. Common sense tells the survivor to avoid encounters with lions, bears, and other large or dangerous animals. You should also avoid large grazing animals with horns, hooves, and great weight. Your actions may prevent unexpected meetings. Move carefully through their environment. Do not attract large predators by leaving food lying around your camp. Carefully survey the scene before entering water or forests.

Smaller animals actually present more of a threat to the survivor than large animals. To compensate for their size, nature has given many small animals weapons such as fangs and stingers to defend themselves. Each year, a few people are bitten by sharks, mauled by alligators, and attacked by bears. Most of these incidents were in some way the victim's fault. However, each year more victims die from bites by relatively small venomous snakes than by large dangerous animals. Even more victims die from allergic reactions to bee stings. For this reason, we will pay more attention to smaller and potentially more dangerous creatures. These are the animals you are more likely to meet as you unwittingly move into their habitat, or they slip into your environment unnoticed.

Keeping a level head and an awareness of your surroundings will keep you alive if you use a few simple safety procedures. Do not let curiosity and carelessness kill or injure you.

INSECTS AND ARACHNIDS

You recognize and identify insects, except centipedes and millipedes, by their six legs while arachnids have eight. All these small creatures become pests when they bite, sting, or irritate you.

Although their venom can be quite painful, bee, wasp, and hornet stings rarely kill a survivor unless he is allergic to that particular toxin. Even the most dangerous spiders rarely kill, and the effects of tick-borne diseases are very slow-acting. However, in all cases, avoidance is the best defense. In environments known to have spiders and scorpions, check your footgear and clothing every morning. Also check your bedding and shelter for them. Use care when turning over rocks and logs. See Appendix D for examples of dangerous insects and arachnids.

Scorpions

You find scorpions (*Buthotus* species) in deserts, jungles, and forests of tropical, subtropical, and warm temperate areas of the world. They are mostly nocturnal in habit. You can find desert scorpions from below sea level in Death Valley to elevations as high as 3,600 meters in the Andes. Typically brown or black in moist areas, they may be yellow or light green in the desert. Their average size is about 2.5 centimeters. However, there are 20-centimeter giants in the jungles of Central America, New Guinea, and southern Africa. Fatalities from scorpion stings are rare, but they can occur in children, the elderly, and ill persons. Scorpions resemble small lobsters with raised, jointed tails bearing a stinger in the tip. Nature mimics the scorpions with whip scorpions or vinegar-rooms. These are harmless and have a tail like a wire or whip, rather than the jointed tail and stinger of true scorpions.

Spiders

You recognize the brown recluse or fiddleback spider of North America (*Loxosceles reclusa*) by a prominent violin-shaped light spot on the back of its body. As its name suggests, this spider likes to hide in dark places. Though rarely fatal, its bite causes excessive tissue degeneration around the wound and can even lead to amputation of the digits if left untreated.

You find members of the widow family (*Latrodectus* species) worldwide, though the black widow of North America is perhaps the most well-known. Found in warmer areas of the world, the widows are small, dark spiders with often hourglass-shaped white, red, or orange spots on their abdomens.

Funnelwebs (*Atrax* species) are large, gray or brown Australian spiders. Chunky, with short legs, they are able to move easily up and down the cone-shaped webs from which they get their name. The local populace considers them deadly. Avoid them as they move about, usually at night, in search of prey. Symptoms of their bite are similar to those of the widow's--severe pain accompanied by sweating and shivering, weakness, and disabling episodes that can last a week.

Tarantulas are large, hairy spiders (*Theraphosidae* and *Lycosa* species) best known because they are often sold in pet stores. There is one species in Europe, but most come from tropical America. Some South American species do inject a dangerous toxin, but most simply produce a painful bite. Some tarantulas can be as large as a dinner plate. They all have large fangs for capturing food such as birds, mice, and lizards. If bitten by a tarantula, pain and bleeding are certain, and infection is likely.

Centipedes and Millipedes

Centipedes and millipedes are mostly small and harmless, although some tropical and desert species may reach 25 centimeters. A few varieties of centipedes have a poisonous bite, but infection is the greatest danger, as their sharp claws dig in and puncture the skin. To prevent skin punctures, brush them off in the direction they are traveling, if you find them crawling on your skin.

Bees, Wasps, and Hornets

We are all familiar with bees, wasps, and hornets. They come in many varieties and have a wide diversity of habits and habitats. You recognize bees by their hairy and usually thick body, while the wasps, hornets, and yellow jackets have more slender, nearly hairless, bodies. Some bees, such as honeybees, live in colonies. They may be either domesticated or living wild in caves or hollow trees. You may find other bees, such as carpenter bees, in

individual nest holes in wood, or in the ground, like bumblebees. The main danger from bees is their barbed stinger located on their abdomens. When the bee stings you, it rips its stinger out of its abdomen along with the venom sac, and the bee dies. Except for killer bees, most bees tend to be more docile than wasps, hornets, and yellow jackets that have smooth stingers and are capable of repeated attacks.

Avoidance is the best tactic for self-protection. Watch out for flowers or fruit where bees may be feeding. Be careful of meat-eating yellow jackets when cleaning fish or game. The average person has a relatively minor and temporary reaction to bee stings and recovers in a couple of hours when the pain and headache go away. Those who are allergic to bee venom have severe reactions including anaphylactic shock, coma, and death. If antihistamine medicine is not available and you cannot find a substitute, an allergy sufferer in a survival situation is in grave danger.

Ticks

Ticks are common in the tropics and temperate regions. They are familiar to most of us. Ticks are small round arachnids with eight legs and can have either a soft or hard body. Ticks require a blood host to survive and reproduce. This makes them dangerous because they spread diseases like Lyme disease, Rocky Mountain spotted fever, encephalitis, and others that can ultimately be disabling or fatal. There is little you can do to treat these diseases once contracted, but time is your ally since they are slow-acting ailments. According to most authorities, it takes at least 6 hours of attachment to the host for the tick to transmit the disease organisms. Thus, you have time to thoroughly inspect your body for their presence. Beware of ticks when passing through the thick vegetation they cling to, when cleaning host animals for food, and when gathering natural materials to construct a shelter. Always use insect repellents, if possible.

LEECHES

Leeches are blood-sucking creatures with a wormlike appearance. You find them in the tropics and in temperate zones. You will certainly encounter them when swimming in infested waters or making expedient water crossings. You can find them when passing through swampy, tropical vegetation and bogs. You can also find them while cleaning food animals, such as turtles, found in fresh water. Leeches can crawl into small openings; therefore, avoid camping in their habitats when possible. Keep your trousers tucked in your boots. Check yourself frequently for leeches. Swallowed or eaten, leeches can be a great hazard. It is therefore essential to treat water from questionable sources by boiling or using chemical water treatments. Survivors have developed severe infections from wounds inside the throat or nose when sores from swallowed leeches became infected.

BATS

Despite the legends, bats (*Desmodus* species) are a relatively small hazard to the survivor. There are many bat varieties worldwide, but you find the true vampire bats only in Central and South America. They are small, agile fliers that land on their sleeping victims, mostly cows and horses, to lap a blood meal after biting their victim. Their saliva contains an anticoagulant that keeps the blood slowly flowing while they feed. Only a small percentage of these bats actually carry rabies; however, avoid any sick or injured bat. They can carry other diseases and infections and will bite readily when handled. Taking shelter in a cave occupied by bats, however, presents the much greater hazard of inhaling powdered bat dung, or guano. Bat dung carries many organisms that can cause diseases. Eating thoroughly cooked flying foxes or other bats presents no danger from rabies and other diseases, but again, the emphasis is on thorough cooking.

POISONOUS SNAKES

There are no infallible rules for expedient identification of poisonous snakes in the field, because the guidelines all require close observation or manipulation of the snake's body. The best strategy is to leave all snakes alone. Where snakes are plentiful and poisonous species are present, the risk of their bites negates their food value. Apply the following safety rules when traveling in areas where there are poisonous snakes:

- Walk carefully and watch where you step. Step onto logs rather than over them before looking and moving on.
- Look closely when picking fruit or moving around water.
- Do not tease, molest, or harass snakes. Snakes cannot close their eyes. Therefore, you cannot tell if they are asleep. Some snakes, such as mambas, cobras, and bushmasters, will attack aggressively when cornered or guarding a nest.
- Use sticks to turn logs and rocks.
- Wear proper footgear, particularly at night.
- Carefully check bedding, shelter, and clothing.
- Be calm when you encounter serpents. Snakes cannot hear and you can occasionally surprise them when they are sleeping or sunning. Normally, they will flee if given the opportunity.
- Use extreme care if you must kill snakes for food or safety. Although it is not common, warm, sleeping human bodies occasionally attract snakes.

See Appendix E for detailed descriptions of the [snakes](#) listed below.

Snake-Free Areas

The polar regions are free of snakes due to their inhospitable environments. Other areas considered to be free of poisonous snakes are New Zealand, Cuba, Haiti, Jamaica, Puerto Rico, Ireland, Polynesia, and Hawaii.

POISONOUS SNAKES OF THE AMERICAS

- American Copperhead (*Agkistrodon contortrix*)

- Bushmaster (*Lachesis mutus*)
- Coral snake (*Micrurus fulvius*)
- Cottonmouth (*Agkistrodon piscivorus*)
- Fer-de-lance (*Bothrops atrox*)
- Rattlesnake (*Crotalus species*)

POISONOUS SNAKES OF EUROPE

- Common adder (*Vipers berus*)
- Pallas' viper (*Agkistrodon halys*)

POISONOUS SNAKES OF AFRICA AND ASIA

- Boomslang (*Dispholidus typus*)
- Cobra (*Naja species*)
- Gaboon viper (*Bitis gabonica*)
- Green tree pit viper (*Trimeresurus gramineus*)
- Habu pit viper (*Trimeresurus flavoviridis*)
- Krait (*Bungarus caeruleus*)
- Malayan pit viper (*Callasasma rhodostoma*)
- Mamba (*Dendraspis species*)
- Puff adder (*Bitis arietans*)

- Rhinoceros viper (*Bitis nasicornis*)
- Russell's viper (*Vipera russellii*)
- Sand viper (*Cerastes vipera*)
- Saw-scaled viper (*Echis carinatus*)
- Wagler's pit viper (*Trimeresurus wagleri*)

POISONOUS SNAKES OF AUSTRALASIA

- Death adder (*Acanthophis antarcticus*)
- Taipan (*Oxyuranus scutellatus*)
- Tiger snake (*Notechis scutatus*)
- Yellow-bellied sea snake (*Pelamis platurus*)

DANGEROUS LIZARDS

The Gila monster and the Mexican beaded lizard are dangerous and poisonous lizards.

Gila Monster

The Gila monster (*Heloderma suspectrum*) of the American southwest, including Mexico, is a large lizard with dark, highly textured skin marked by pinkish mottling. It averages 35 to 45 centimeters in length and has a thick, stumpy tail. Unlikely to bite unless molested, it has a poisonous bite.

Mexican Beaded Lizard

The Mexican beaded lizard (*Heloderma horridum*) resembles its relative, the Gila monster. It has more uniform spots rather than bands of color (the Gila monster). It also is poisonous and has a docile nature. You find it from Mexico to Central America.

Komodo Dragon

This giant lizard (*Varanus komodoensis*) grows to more than 3 meters in length and can be dangerous if you try to capture it. This Indonesian lizard can weigh more than 135 kilograms.

DANGERS IN RIVERS

Common sense will tell you to avoid confrontations with hippopotami, alligators, crocodiles, and other large river creatures. There are, however, a few smaller river creatures with which you should be cautious.

Electric Eel

Electric eels (*Electrophorus electricus*) may reach 2 meters in length and 20 centimeters in diameter. Avoid them. They are capable of generating up to 500 volts of electricity in certain organs in their body. They use this shock to stun prey and enemies. Normally, you find these eels in the Orinoco and Amazon River systems in South America. They seem to prefer shallow waters that are more highly oxygenated and provide more food. They are bulkier than our native eels. Their upper body is dark gray or black, with a lighter-colored underbelly.

Piranha

Piranhas (*Serrasalmo* species) are another hazard of the Orinoco and Amazon River systems, as well as the Paraguay River Basin, where they are native. These fish vary greatly in size and coloration, but usually have a combination of orange undersides and dark tops. They have white, razor-sharp teeth that are clearly visible. They may be as long as 50 centimeters. Use great care when crossing waters where they live. Blood attracts them. They are most dangerous in shallow waters during the dry season.

Turtle

Be careful when handling and capturing large freshwater turtles, such as the snapping turtles and soft-shelled turtles of North America and the matamata and other turtles of South America. All of these turtles will bite in self-defense and can amputate fingers and toes.

Platypus

The platypus or duckbill (*Ornithorhynchus anatinus*) is the only member of its family and is easily recognized. It has a long body covered with grayish, short hair, a tail like a beaver, and a bill like a duck. Growing up to 60 centimeters in length, it may appear to be a good food source, but this egg-laying mammal, the only one in the world, is very dangerous. The male has a poisonous spur on each hind foot that can inflict intensely painful wounds. You find the platypus only in Australia, mainly along mud banks on waterways.

DANGERS IN BAYS AND ESTUARIES

In areas where seas and rivers come together, there are dangers associated with both fresh and salt water. In shallow salt waters, there are many creatures that can inflict pain and cause infection to develop. Stepping on sea urchins, for example, can produce pain and infection. When moving about in shallow water, wear some form of footgear and shuffle your feet along the bottom, rather than picking up your feet and stepping.

Stingrays (*Dasyatidae* species) are a real hazard in shallow waters, especially tropical waters. The type of bottom appears to be irrelevant. There is a great variance between species, but all have a sharp spike in their tail that may be venomous and can cause extremely painful wounds if stepped on. All rays have a typical shape that resembles a kite. You find them along the coasts of the Americas, Africa, and Australasia.

SALTWATER DANGERS

There are several fish that you should not handle, touch, or contact. There are others that you should not eat.

Fish Dangerous to Handle, Touch, or Contact

There are several [fish](#) you should not handle, touch, or contact that are identified below.

Shark

Sharks are the most feared animal in the sea. Usually, shark attacks cannot be avoided and are considered accidents. You, as a survivor, should take every precaution to avoid any contact with sharks. There are many shark species, but in general, dangerous sharks have wide mouths and visible teeth, while relatively harmless ones have small mouths on the underside of their heads. However, any shark can inflict painful and often fatal injuries, either through bites or through abrasions from their rough skin.

Rabbitfish

Rabbitfish or spinefoot (*Siganidae* species) occur mainly on coral reefs in the Indian and Pacific oceans. They have very sharp, possibly venomous spines in their fins. Handle them with care, if at all. This fish, like many others of the dangerous fish in this section, is considered edible by native peoples where the fish are found, but deaths occur from careless handling. Seek other nonpoisonous fish to eat if at all possible.

Tang

Tang or surgeonfish (*Acanthuridae* species) average 20 to 25 centimeters in length and often are beautifully colored. They are called surgeonfish because of the scalpel-like spines located in the tail. The wounds inflicted by these spines can bring about death through infection, envenomation, and loss of blood, which may incidentally attract sharks.

Toadfish

Toadfish (*Batrachoididae* species) occur in tropical waters off the Gulf Coast of the United States and along both coasts of Central and South America. These dull-colored fish average 18 to 25 centimeters in length. They typically bury themselves in the sand to await fish and other prey. They have sharp, very toxic spines along their backs.

Scorpion Fish

Poisonous scorpion fish or zebra fish (*Scorpaenidae* species) are mostly around reefs in the tropical Indian and Pacific oceans and occasionally in the Mediterranean and Aegean seas. They average 30 to 75 centimeters in length. Their coloration is highly variable, from reddish brown to almost purple or brownish yellow. They have long, wavy fins and spines and their sting is intensively painful. Less poisonous relatives live in the Atlantic Ocean.

Stonefish

Stonefish (*Synanceja* species) are in the Pacific and Indian oceans. They can inject a painful venom from their dorsal spines when stepped on or handled carelessly. They are almost impossible to see because of their lumpy shape and drab colors. They range in size up to 40 centimeters.

Weever Fish

Weever fish (*Trachinidae* species) average 30 centimeters long. They are hard to see as they lie buried in the sand off the coasts of Europe, Africa, and the Mediterranean. Their color is usually a dull brown. They have venomous spines on the back and gills. See Appendix F for more details on these venomous fish.

Animals and Fish Poisonous to Eat

Survival manuals often mention that the livers of polar bears are toxic due to their high concentrations of vitamin A. For this reason, we mention the chance of death after eating this organ. Another toxic meat is the flesh of the hawksbill turtle. You recognize them by

their down-turned bill and yellow polka dots on their neck and front flippers. They weigh more than 275 kilograms and are unlikely to be captured.

Many fish living in reefs near shore, or in lagoons and estuaries, are poisonous to eat, though some are only seasonally dangerous. The majority are tropical fish; however, be wary of eating any unidentifiable fish wherever you are. Some predatory fish, such as barracuda and snapper, may become toxic if the fish they feed on in shallow waters are poisonous. The most poisonous types appear to have parrotlike beaks and hard shell-like skins with spines and often can inflate their bodies like balloons. However, at certain times of the year, indigenous populations consider the puffer a delicacy.

Blowfish

Blowfish or puffer (*Tetraodontidae* species) are more tolerant of cold water. You find them along tropical and temperate coasts worldwide, even in some of the rivers of Southeast Asia and Africa. Stout-bodied and round, many of these fish have short spines and can inflate themselves into a ball when alarmed or agitated. Their blood, liver, and gonads are so toxic that as little as 28 milligrams (1 ounce) can be fatal. These fish vary in color and size, growing up to 75 centimeters in length.

Triggerfish

The triggerfish (*Balistidae* species) occur in great variety, mostly in tropical seas. They are deep-bodied and compressed, resembling a seagoing pancake up to 60 centimeters in length, with large and sharp dorsal spines. Avoid them all, as many have poisonous flesh.

Barracuda

Although most people avoid them because of their ferocity, they occasionally eat barracuda (*Sphyraena barracuda*). These predators of mostly tropical seas can reach almost 1.5 meters in length and have attacked humans without provocation. They occasionally carry the poison ciguatera in their flesh, making them deadly if consumed.

See Appendix F for more details on toxic fish and toxic mollusks.

Other Dangerous Sea Creatures

The blue-ringed octopus, jellyfish, and the cone and auger shells are other dangerous sea creatures.

Blue-Ringed Octopus

Most octopi are excellent when properly prepared. However, the blueringed octopus (*Hapalochlaena lunulata*) can inflict a deadly bite from its parrotlike beak. Fortunately, it is restricted to the Great Barrier Reef of Australia and is very small. It is easily recognized by its grayish white overall color and iridescent blue rings. Authorities warn that all tropical octopus species should be treated with caution, since many have poisonous bites, although the flesh is edible.

Jellyfish

Jellyfish-related deaths are rare, but the sting they inflict is extremely painful. The Portuguese man-of-war resembles a large pink or purple balloon floating on the sea. It has poisonous tentacles hanging up to 12 meters below its body. The huge tentacles are actually colonies of stinging cells. Most known deaths from jellyfish are attributed to the man-of-war. Other jellyfish can inflict very painful stings as well. Avoid the long tentacles of any jellyfish, even those washed up on the beach and apparently dead.

Cone Shell

The subtropical and tropical cone shells (*Conidae* species) have a venomous harpoonlike barb. All are cone-shaped and have a fine netlike pattern on the shell. A membrane may possibly obscure this coloration. There are some very poisonous cone shells, even some lethal ones in the Indian and Pacific oceans. Avoid any shell shaped like an ice cream cone.

Auger Shell

The auger shell or terebra (*Terebridae* species) are much longer and thinner than the cone shells, but can be nearly as deadly as the cone shells. They are found in temperate and

tropical seas. Those in the Indian and Pacific oceans have a more toxic venom in their stinging barb. Do not eat these snails, as their flesh may be poisonous.

CHAPTER 12 - FIELD-EXPEDIENT WEAPONS, TOOLS, AND EQUIPMENT



As a soldier you know the importance of proper care and use of your weapons, tools, and equipment. This is especially true of your knife. You must always keep it sharp and ready to use. A knife is your most valuable tool in a survival situation. Imagine being in a survival situation without any weapons, tools, or equipment except your knife. It could happen! You might even be without a knife. You would probably feel helpless, but with the proper knowledge and skills, you can easily improvise needed items.

In survival situations, you may have to fashion any number and type of field-expedient tools and equipment to survive. Examples of tools and equipment that could make your life much easier are ropes, rucksacks, clothes, nets, and so on.

Weapons serve a dual purpose. You use them to obtain and prepare food and to provide self-defense. A weapon can also give you a feeling of security and provide you with the ability to hunt on the move.

CLUBS

You hold clubs, you do not throw them. As a field-expedient weapon, the club does not protect you from enemy soldiers. It can, however, extend your area of defense beyond your fingertips. It also serves to increase the force of a blow without injuring yourself. There are three basic types of clubs. They are the simple, weighted, and sling club.

Simple Club

A simple club is a staff or branch. It must be short enough for you to swing easily, but long enough and strong enough for you to damage whatever you hit. Its diameter should fit comfortably in your palm, but it should not be so thin as to allow the club to break easily upon impact. A straight-grained hardwood is best if you can find it.

Weighted Club

A weighted club is any simple club with a weight on one end. The weight may be a natural weight, such as a knot on the wood, or something added, such as a stone lashed to the club.

To make a weighted club, first find a stone that has a shape that will allow you to lash it securely to the club. A stone with a slight hourglass shape works well. If you cannot find a suitably shaped stone, you must fashion a groove or channel into the stone by a technique known as pecking. By repeatedly rapping the club stone with a smaller hard stone, you can get the desired shape.

Next, find a piece of wood that is the right length for you. A straight-grained hardwood is best. The length of the wood should feel comfortable in relation to the weight of the stone. Finally, lash the stone to the handle.

There are three techniques for lashing the stone to the handle: split handle, forked branch, and wrapped handle. The technique you use will depend on the type of handle you choose. See [Figure 12-1](#).

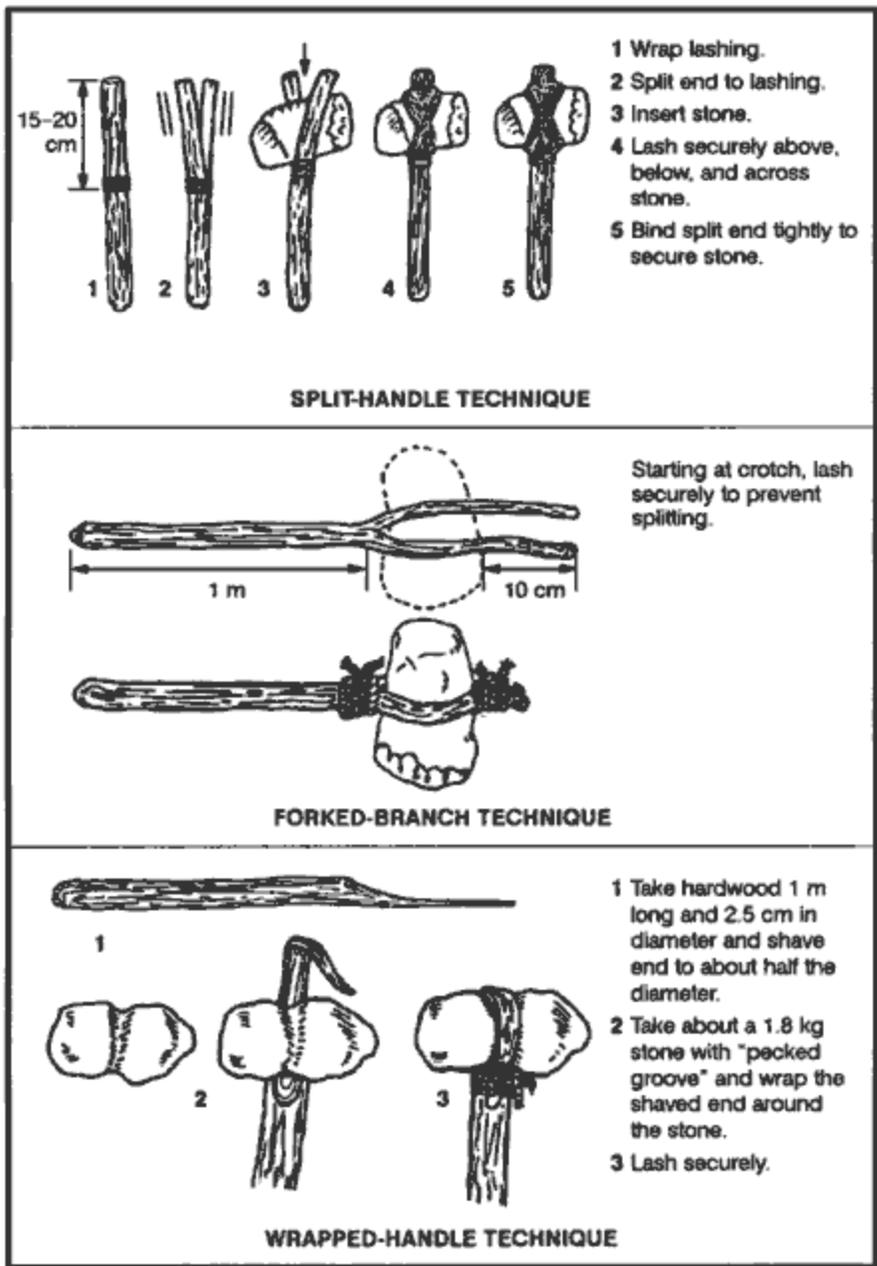


Figure 12-1. Lashing clubs.

Sling Club

A sling club is another type of weighted club. A weight hangs 8 to 10 centimeters from the handle by a strong, flexible lashing (Figure 12-2). This type of club both extends the user's reach and multiplies the force of the blow.

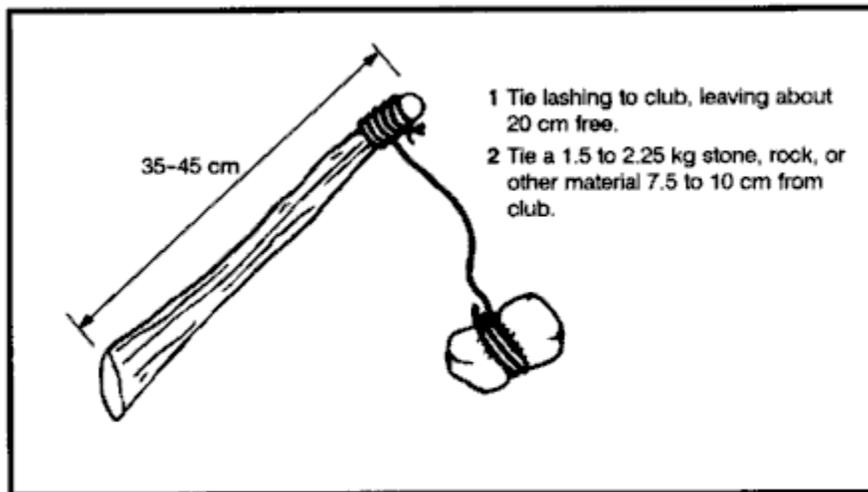


Figure 12-2. Sling club.

EDGED WEAPONS

Knives, spear blades, and arrow points fall under the category of edged weapons. The following [paragraphs](#) will discuss the making of such weapons.

Knives

A knife has three basic functions. It can puncture, slash or chop, and cut. A knife is also an invaluable tool used to construct other survival items. You may find yourself without a knife or you may need another type knife or a spear. To improvise you can use stone, bone, wood, or metal to make a knife or spear blade.

Stone

To make a stone knife, you will need a sharp-edged piece of stone, a chipping tool, and a flaking tool. A chipping tool is a light, blunt-edged tool used to break off small pieces of stone. A flaking tool is a pointed tool used to break off thin, flattened pieces of stone. You can make a chipping tool from wood, bone, or metal, and a flaking tool from bone, antler tines, or soft iron ([Figure 12-3](#)).

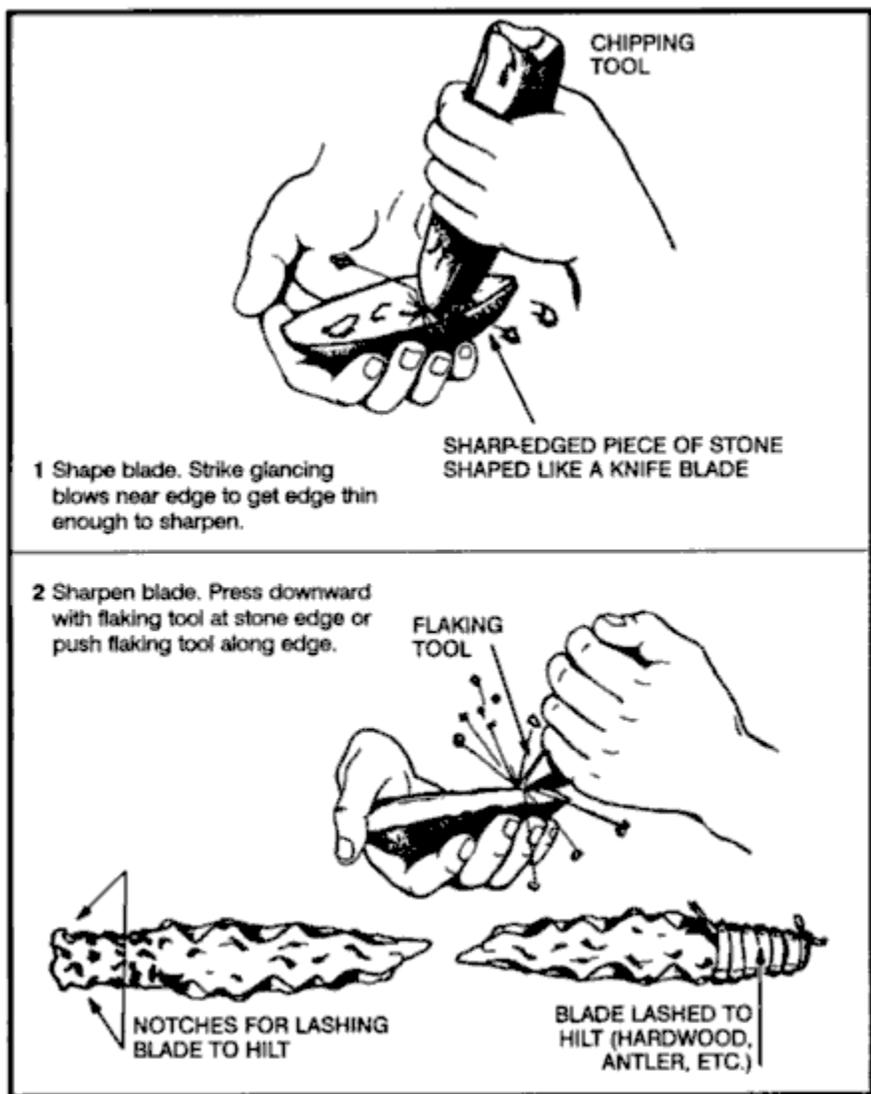


Figure 12-3. Making a stone knife.

Start making the knife by roughing out the desired shape on your sharp piece of stone, using the chipping tool. Try to make the knife fairly thin. Then, using the flaking tool, press it against the edges. This action will cause flakes to come off the opposite side of the edge, leaving a razor sharp edge. Use the flaking tool along the entire length of the edge you need to sharpen. Eventually, you will have a very sharp cutting edge that you can use as a knife.

Lash the blade to some type of hilt ([Figure 12-3](#)).

Note: Stone will make an excellent puncturing tool and a good chopping tool but will not hold a fine edge. Some stones such as chert or flint can have very fine edges.

Bone

You can also use bone as an effective field-expedient edged weapon. First, you will need to select a suitable bone. The larger bones, such as the leg bone of a deer or another medium-sized animal, are best. Lay the bone upon another hard object. Shatter the bone by hitting it with a heavy object, such as a rock. From the pieces, select a suitable pointed splinter. You can further shape and sharpen this splinter by rubbing it on a rough-surfaced rock. If

the piece is too small to handle, you can still use it by adding a handle to it. Select a suitable piece of hardwood for a handle and lash the bone splinter securely to it.

Note: Use the bone knife only to puncture. It will not hold an edge and it may flake or break if used differently.

Wood

You can make field-expedient edged weapons from wood. Use these only to puncture. Bamboo is the only wood that will hold a suitable edge. To make a knife using wood, first select a straight-grained piece of hardwood that is about 30 centimeters long and 2.5 centimeters in diameter. Fashion the blade about 15 centimeters long. Shave it down to a point. Use only the straight-grained portions of the wood. Do not use the core or pith, as it would make a weak point.

Harden the point by a process known as fire hardening. If a fire is possible, dry the blade portion over the fire slowly until lightly charred. The drier the wood, the harder the point. After lightly charring the blade portion, sharpen it on a coarse stone. If using bamboo and after fashioning the blade, remove any other wood to make the blade thinner from the inside portion of the bamboo. Removal is done this way because bamboo's hardest part is its outer layer. Keep as much of this layer as possible to ensure the hardest blade possible. When charring bamboo over a fire, char only the inside wood; do not char the outside.

Metal

Metal is the best material to make field-expedient edged weapons. Metal, when properly designed, can fulfill a knife's three uses--puncture, slice or chop, and cut. First, select a suitable piece of metal, one that most resembles the desired end product. Depending on the size and original shape, you can obtain a point and cutting edge by rubbing the metal on a rough-surfaced stone. If the metal is soft enough, you can hammer out one edge while the metal is cold. Use a suitable flat, hard surface as an anvil and a smaller, harder object of stone or metal as a hammer to hammer out the edge. Make a knife handle from wood, bone, or other material that will protect your hand.

Other Materials

You can use other materials to produce edged weapons. Glass is a good alternative to an edged weapon or tool, if no other material is available. Obtain a suitable piece in the same manner as described for bone. Glass has a natural edge but is less durable for heavy work. You can also sharpen plastic--if it is thick enough or hard enough--into a durable point for puncturing.

Spear Blades

To make spears, use the same procedures to make the blade that you used to make a knife blade. Then select a shaft (a straight sapling) 1.2 to 1.5 meters long. The length should allow you to handle the spear easily and effectively. Attach the spear blade to the shaft using lashing. The preferred method is to split the handle, insert the blade, then wrap or lash it tightly. You can use other materials without adding a blade. Select a 1.2-to 1.5-meter long straight hardwood shaft and shave one end to a point. If possible, fire harden the point. Bamboo also makes an excellent spear. Select a piece 1.2 to 1.5 meters long. Starting 8 to 10 centimeters back from the end used as the point, shave down the end at a 45-degree angle ([Figure 12-4](#)). Remember, to sharpen the edges, shave only the inner portion.

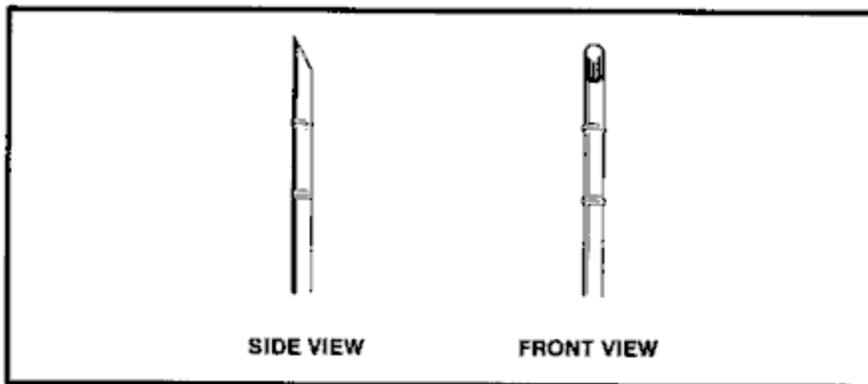


Figure 12-4. Bamboo spear.

Arrow Points

To make an arrow point, use the same procedures for making a stone knife blade. Chert, flint, and shell-type stones are best for arrow points. You can fashion bone like stone--by flaking. You can make an efficient arrow point using broken glass.

OTHER EXPEDIENT WEAPONS

You can make other field-expedient weapons such as the throwing stick, archery equipment, and the bola.

Throwing Stick

The throwing stick, commonly known as the rabbit stick, is very effective against small game (squirrels, chipmunks, and rabbits). The rabbit stick itself is a blunt stick, naturally curved at about a 45-degree angle. Select a stick with the desired angle from heavy hardwood such as oak. Shave off two opposite sides so that the stick is flat like a boomerang ([Figure 12-5](#)). You must practice the throwing technique for accuracy and speed. First, align the target by extending the nonthrowing arm in line with the mid to lower section of the target. Slowly and repeatedly raise the throwing arm up and back until the throwing stick crosses the back at about a 45-degree angle or is in line with the nonthrowing hip. Bring the throwing arm forward until it is just slightly above and parallel to the nonthrowing arm. This will be the throwing stick's release point. Practice slowly and repeatedly to attain accuracy.

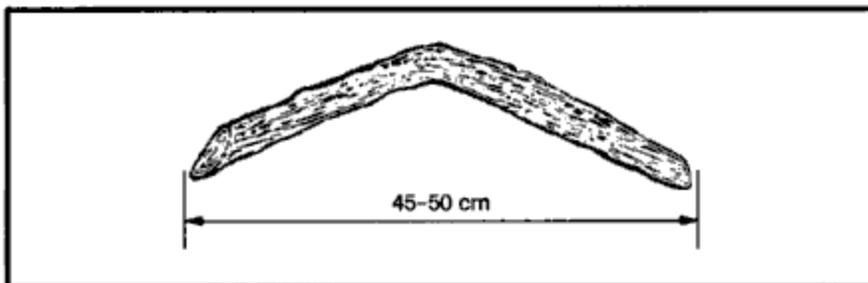


Figure 12-5. Rabbit stick.

Archery Equipment

You can make a bow and arrow ([Figure 12-6](#)) from materials available in your survival area. To make a bow, use the procedure described under Killing Devices in Chapter 8.

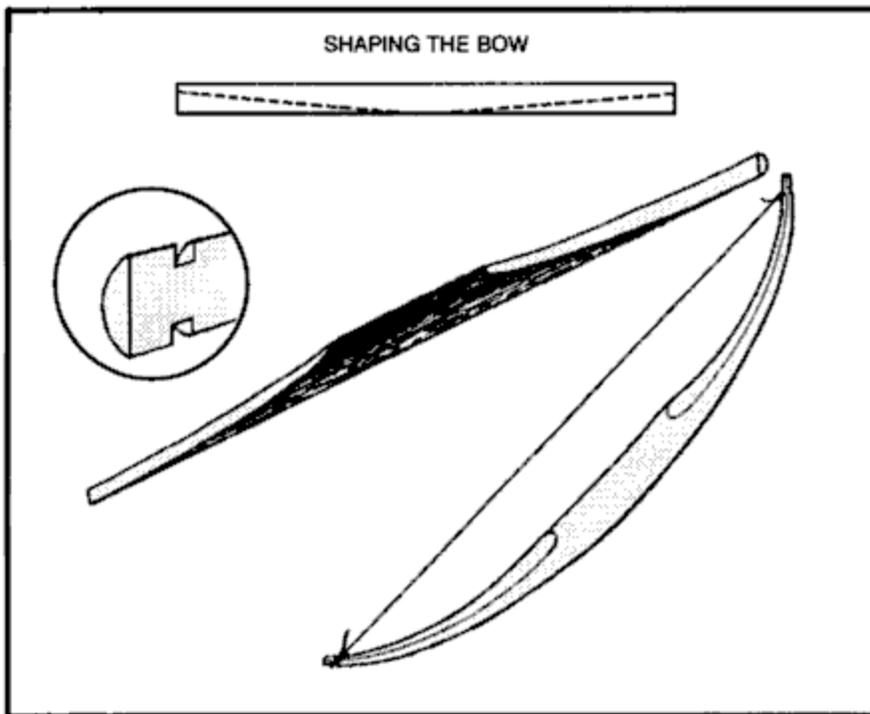


Figure 12-6. Archery equipment.

While it may be relatively simple to make a bow and arrow, it is not easy to use one. You must practice using it a long time to be reasonably sure that you will hit your target. Also, a field-expedient bow will not last very long before you have to make a new one. For the time and effort involved, you may well decide to use another type of field-expedient weapon.

Bola

The bola is another field-expedient weapon that is easy to make (Figure 12-7). It is especially effective for capturing running game or low-flying fowl in a flock. To use the bola, hold it by the center knot and twirl it above your head. Release the knot so that the bola flies toward your target. When you release the bola, the weighted cords will separate. These cords will wrap around and immobilize the fowl or animal that you hit.

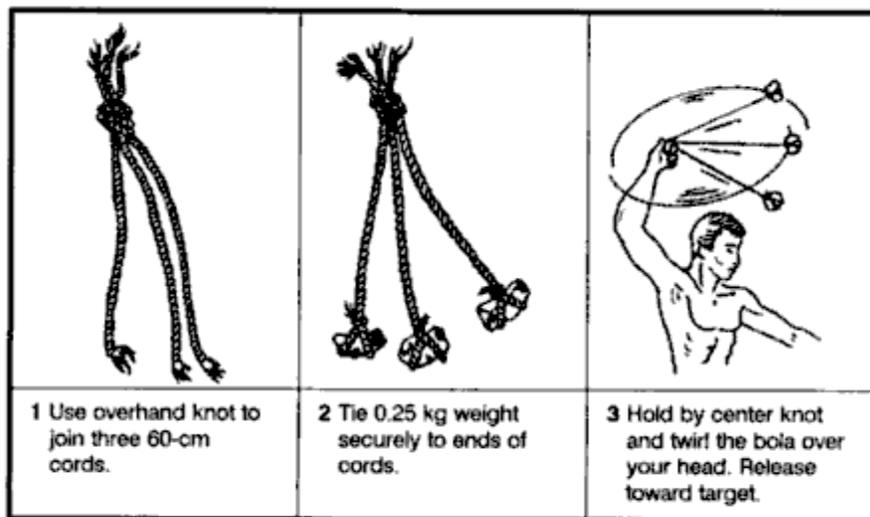


Figure 12-7. Bola.

LASHING AND CORDAGE

Many materials are strong enough for use as lashing and cordage. A number of natural and man-made materials are available in a survival situation. For example, you can make a cotton web belt much more useful by unraveling it. You can then use the string for other purposes (fishing line, thread for sewing, and lashing).

Natural Cordage Selection

Before making cordage, there are a few simple tests you can do to determine you material's suitability. First, pull on a length of the material to test for strength. Next, twist it between your fingers and roll the fibers together. If it withstands this handling and does not snap apart, tie an overhand knot with the fibers and gently tighten. If the knot does not break, the material is usable. [Figure 12-8](#) shows various methods of making cordage.

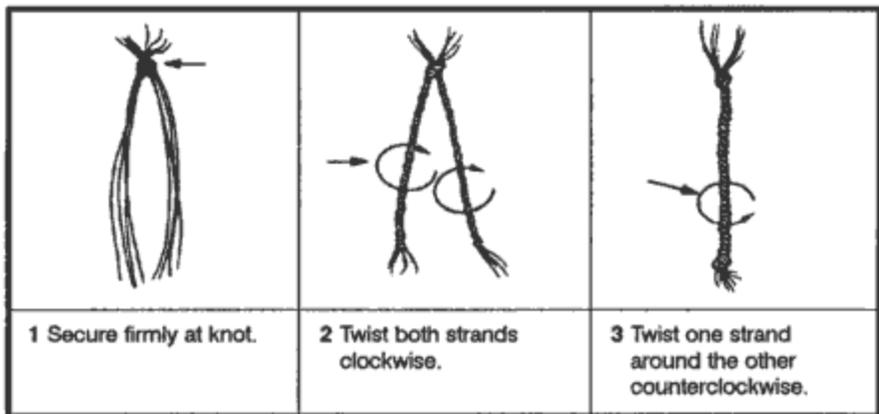


Figure 12-8. Making lines from plant fibers.

Lashing Material

The best natural material for lashing small objects is sinew. You can make sinew from the tendons of large game, such as deer. Remove the tendons from the game and dry them completely. Smash the dried tendons so that they separate into fibers. Moisten the fibers and twist them into a continuous strand. If you need stronger lashing material, you can braid the strands. When you use sinew for small lashings, you do not need knots as the moistened sinew is sticky and it hardens when dry.

You can shred and braid plant fibers from the inner bark of some trees to make cord. You can use the linden, elm, hickory, white oak, mulberry, chestnut, and red and white cedar trees. After you make the cord, test it to be sure it is strong enough for your purpose. You can make these materials stronger by braiding several strands together.

You can use rawhide for larger lashing jobs. Make rawhide from the skins of medium or large game. After skinning the animal, remove any excess fat and any pieces of meat from the skin. Dry the skin completely. You do not need to stretch it as long as there are no folds to trap moisture. You do not have to remove the hair from the skin. Cut the skin while it is dry. Make cuts about 6 millimeters wide. Start from the center of the hide and make one continuous circular cut, working clockwise to the hide's outer edge. Soak the rawhide for 2 to 4 hours or until it is soft. Use it wet, stretching it as much as possible while applying it. It will be strong and durable when it dries.

RUCKSACK CONSTRUCTION

The materials for constructing a rucksack or pack are almost limitless. You can use wood, bamboo, rope, plant fiber, clothing, animal skins, canvas, and many other materials to make a pack.

There are several construction techniques for rucksacks. Many are very elaborate, but those that are simple and easy are often the most readily made in a survival situation.

Horseshoe Pack

This pack is simple to make and use and relatively comfortable to carry over one shoulder. Lay available square-shaped material, such as poncho, blanket, or canvas, flat on the ground. Lay items on one edge of the material. Pad the hard items. Roll the material (with the items) toward the opposite edge and tie both ends securely. Add extra ties along the length of the bundle. You can drape the pack over one shoulder with a line connecting the two ends ([Figure 12-9](#)).



Figure 12-9. Horseshoe pack.

Square Pack

This pack is easy to construct if rope or cordage is available. Otherwise, you must first make cordage. To make this pack, construct a square frame from bamboo, limbs, or sticks. Size will vary for each person and the amount of equipment carried ([Figure 12-10](#)).

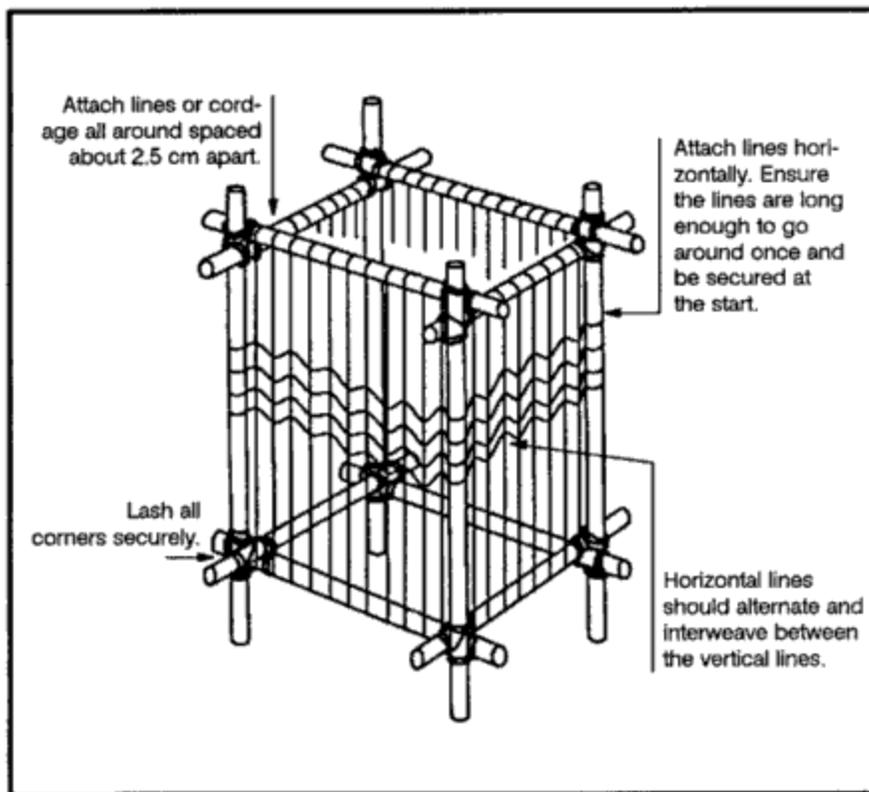


Figure 12-10. Square pack.

CLOTHING AND INSULATION

You can use many materials for clothing and insulation. Both man-made materials, such as parachutes, and natural materials, such as skins and plant materials, are available and offer significant protection.

Parachute Assembly

Consider the entire parachute assembly as a resource. Use every piece of material and hardware, to include the canopy, suspension lines, connector snaps, and parachute harness. Before disassembling the parachute, consider all of your survival requirements and plan to use different portions of the parachute accordingly. For example, consider shelter requirements, need for a rucksack, and so on, in addition to clothing or insulation needs.

Animal Skins

The selection of animal skins in a survival situation will most often be limited to what you manage to trap or hunt. However, if there is an abundance of wildlife, select the hides of larger animals with heavier coats and large fat content. Do not use the skins of infected or diseased animals if at all possible. Since they live in the wild, animals are carriers of pests such as ticks, lice, and fleas. Because of these pests, use water to thoroughly clean any skin obtained from any animal. If water is not available, at least shake out the skin thoroughly. As with rawhide, lay out the skin, and remove all fat and meat. Dry the skin completely. Use the hind quarter joint areas to make shoes and mittens or socks. Wear the hide with the fur to the inside for its insulating factor.

Plant Fibers

Several plants are sources of insulation from cold. Cattail is a marshland plant found along lakes, ponds, and the backwaters of rivers. The fuzz on the tops of the stalks forms dead air spaces and makes a good down-like insulation when placed between two stalks of material. Milkweed has pollenlike seeds that act as good insulation. The husk fibers from coconuts are very good for weaving ropes and, when dried, make excellent tinder and insulation.

COOKING AND EATING UTENSILS

Many materials may be used to make equipment for the cooking, eating, and storing of food.

Bowls

Use wood, bone, horn, bark, or other similar material to make bowls. To make wooden bowls, use a hollowed out piece of wood that will hold your food and enough water to cook it in. Hang the wooden container over the fire and add hot rocks to the water and food. Remove the rocks as they cool and add more hot rocks until your food is cooked.

CAUTION

Do not use rocks with air pockets, such as limestone and sandstone. They may explode while heating in the fire.

You can also use this method with containers made of bark or leaves. However, these containers will burn above the waterline unless you keep them moist or keep the fire low. A section of bamboo works very well, if you cut out a section between two sealed joints ([Figure 12-11](#)).

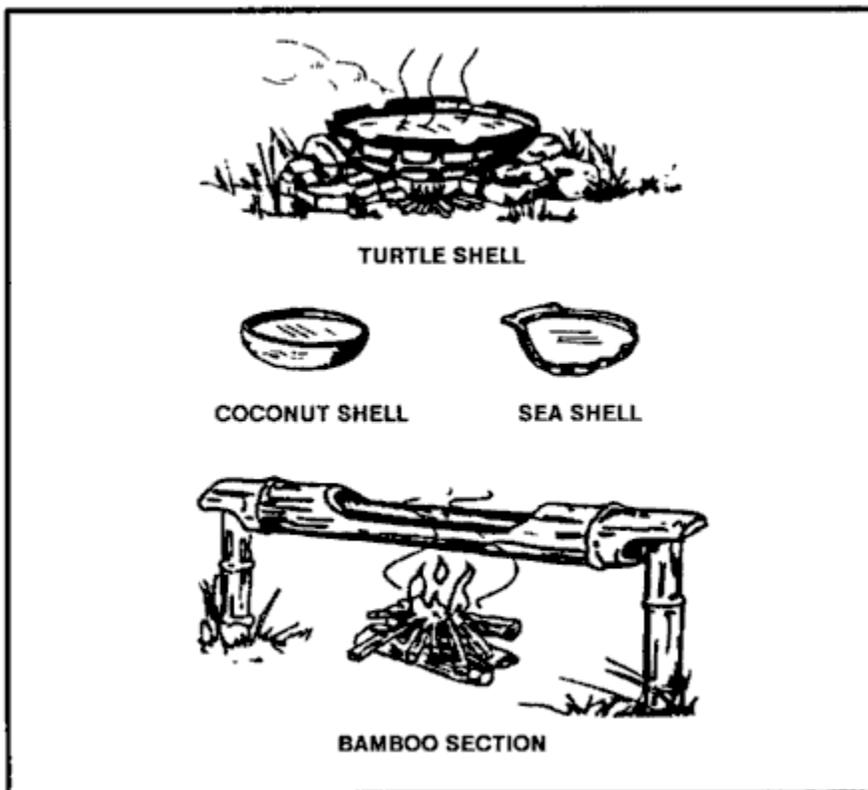


Figure 12-11. Containers for boiling food.

CAUTION

A sealed section of bamboo will explode if heated because of trapped air and water in the section.

Forks, Knives, and Spoons

Carve forks, knives, and spoons from nonresinous woods so that you do not get a wood resin aftertaste or do not taint the food. Nonresinous woods include oak, birch, and other hardwood trees.

Note: Do not use those trees that secrete a syrup or resinlike liquid on the bark or when cut.

Pots

You can make pots from turtle shells or wood. As described with bowls, using hot rocks in a hollowed out piece of wood is very effective. Bamboo is the best wood for making cooking containers.

To use turtle shells, first thoroughly boil the upper portion of the shell. Then use it to heat food and water over a flame ([Figure 12-11](#)).

Water Bottles

Make water bottles from the stomachs of larger animals. Thoroughly flush the stomach out with water, then tie off the bottom. Leave the top open, with some means of fastening it closed.

CHAPTER 13 - DESERT SURVIVAL



To survive and evade in arid or desert areas, you must understand and prepare for the environment you will face. You must determine your equipment needs, the tactics you will use, and how the environment will affect you and your tactics. Your survival will depend upon your knowledge of the terrain, basic climatic elements, your ability to cope with these elements, and your will to survive.

TERRAIN

Most arid areas have several types of terrain. The five basic desert terrain types are--

- Mountainous (High Altitude).
- Rocky plateau.
- Sand dunes.
- Salt marshes.
- Broken, dissected terrain ("gebel" or "wadi").

Desert terrain makes movement difficult and demanding. Land navigation will be extremely difficult as there may be very few landmarks. Cover and concealment may be very limited; therefore, the threat of exposure to the enemy remains constant.

Mountain Deserts

Scattered ranges or areas of barren hills or mountains separated by dry, flat basins characterize mountain deserts. High ground may rise gradually or abruptly from flat areas to several thousand meters above sea level. Most of the infrequent rainfall occurs on high ground and runs off rapidly in the form of flash floods. These floodwaters erode deep gullies and ravines and deposit sand and gravel around the edges of the basins. Water rapidly evaporates, leaving the land as barren as before, although there may be short-lived

vegetation. If enough water enters the basin to compensate for the rate of evaporation, shallow lakes may develop, such as the Great Salt Lake in Utah, or the Dead Sea. Most of these lakes have a high salt content.

Rocky Plateau Deserts

Rocky plateau deserts have relatively slight relief interspersed with extensive flat areas with quantities of solid or broken rock at or near the surface. There may be steep-walled, eroded valleys, known as wadis in the Middle East and arroyos or canyons in the United States and Mexico. Although their flat bottoms may be superficially attractive as assembly areas, the narrower valleys can be extremely dangerous to men and material due to flash flooding after rains. The Golan Heights is an example of a rocky plateau desert.

Sandy or Dune Deserts

Sandy or dune deserts are extensive flat areas covered with sand or gravel. "Flat" is a relative term, as some areas may contain sand dunes that are over 300 meters high and 16 to 24 kilometers long. Trafficability in such terrain will depend on the windward or leeward slope of the dunes and the texture of the sand. Other areas, however, may be flat for 3,000 meters and more. Plant life may vary from none to scrub over 2 meters high. Examples of this type of desert include the edges of the Sahara, the empty quarter of the Arabian Desert, areas of California and New Mexico, and the Kalahari in South Africa.

Salt Marshes

Salt marshes are flat, desolate areas, sometimes studded with clumps of grass but devoid of other vegetation. They occur in arid areas where rainwater has collected, evaporated, and left large deposits of alkali salts and water with a high salt concentration. The water is so salty it is undrinkable. A crust that may be 2.5 to 30 centimeters thick forms over the saltwater.

In arid areas there are salt marshes hundreds of kilometers square. These areas usually support many insects, most of which bite. Avoid salt marshes. This type of terrain is highly corrosive to boots, clothing, and skin. A good example is the Shat-el-Arab waterway along the Iran-Iraq border.

Broken Terrain

All arid areas contain broken or highly dissected terrain. Rainstorms that erode soft sand and carve out canyons form this terrain. A wadi may range from 3 meters wide and 2 meters deep to several hundred meters wide and deep. The direction it takes varies as much as its width and depth. It twists and turns and forms a mazelike pattern. A wadi will give you good cover and concealment, but do not try to move through it because it is very difficult terrain to negotiate.

ENVIRONMENTAL FACTORS

Surviving and evading the enemy in an arid area depends on what you know and how prepared you are for the environmental conditions you will face. Determine what equipment you will need, the tactics you will use, and the environment's impact on them and you.

In a desert area there are seven environmental factors that you must consider--

- Low rainfall.

- Intense sunlight and heat.
- Wide temperature range.
- Sparse vegetation.
- High mineral content near ground surface.
- Sandstorms.
- Mirages.

Low Rainfall

Low rainfall is the most obvious environmental factor in an arid area. Some desert areas receive less than 10 centimeters of rain annually, and this rain comes in brief torrents that quickly run off the ground surface. You cannot survive long without water in high desert temperatures. In a desert survival situation, you must first consider "How much water do I have?" and "Where are other water sources?"

Intense Sunlight and Heat

Intense sunlight and heat are present in all arid areas. Air temperature can rise as high as 60 degrees C (140 degrees F) during the day. Heat gain results from direct sunlight, hot blowing winds, reflective heat (the sun's rays bouncing off the sand), and conductive heat from direct contact with the desert sand and rock ([Figure 13-1](#)).

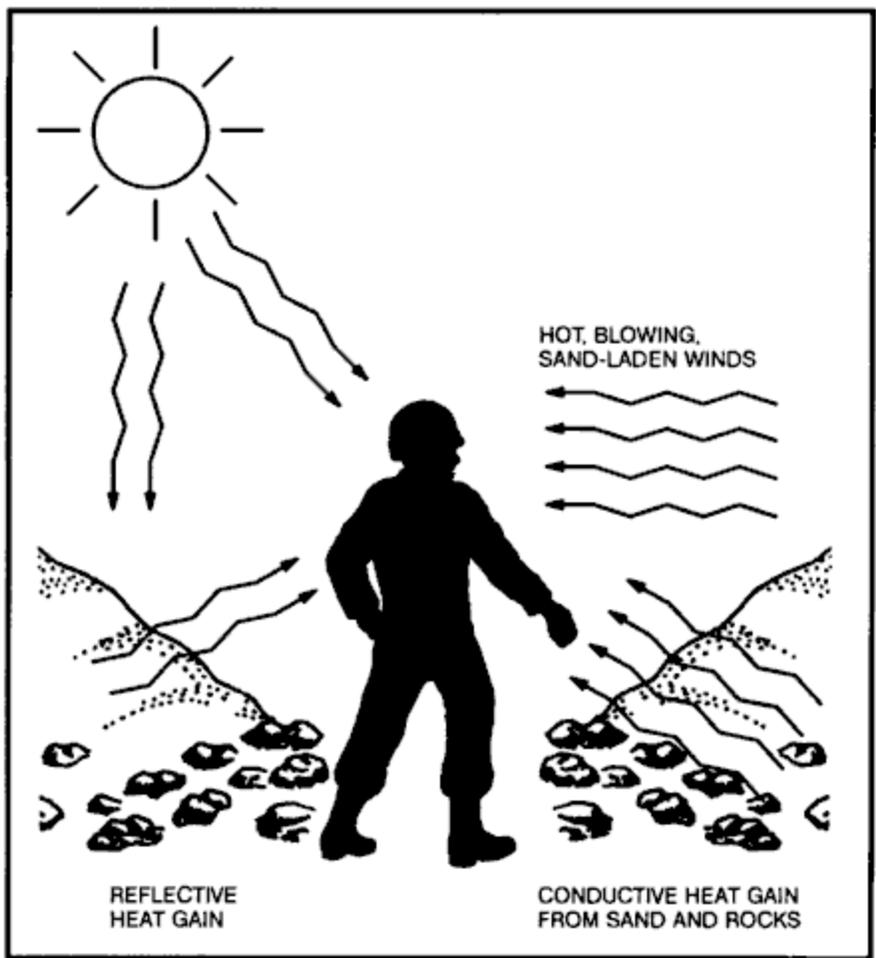


Figure 13-1. Types of heat gain.

The temperature of desert sand and rock averages 16 to 22 degrees C (30 to 40 degrees F) more than that of the air. For instance, when the air temperature is 43 degrees C (110 degrees F), the sand temperature may be 60 degrees C (140 degrees F).

Intense sunlight and heat increase the body's need for water. To conserve your body fluids and energy, you will need a shelter to reduce your exposure to the heat of the day. Travel at night to lessen your use of water.

Radios and sensitive items of equipment exposed to direct intense sunlight will malfunction.

Wide Temperature Range

Temperatures in arid areas may get as high as 55 degrees C during the day and as low as 10 degrees C during the night. The drop in temperature at night occurs rapidly and will chill a person who lacks warm clothing and is unable to move about. The cool evenings and nights are the best times to work or travel. If your plan is to rest at night, you will find a wool sweater, long underwear, and a wool stocking cap extremely helpful.

Sparse Vegetation

Vegetation is sparse in arid areas. You will therefore have trouble finding shelter and camouflaging your movements. During daylight hours large areas of terrain are visible and easily controlled by a small opposing force.

If traveling in hostile territory, follow the principles of desert camouflage--

- Hide or seek shelter in dry washes (wadis) with thicker growths of vegetation and cover from oblique observation.
- Use the shadows cast from brush, rocks, or outcropping. The temperature in shaded areas will be 11 to 17 degrees C cooler than the air temperature.
- Cover objects that will reflect the light from the sun.

Before moving, survey the area for sites that provide cover and concealment. You will have trouble estimating distance. The emptiness of desert terrain causes most people to underestimate distance by a factor of three: What appears to be 1 kilometer away is really 3 kilometers away.

High Mineral Content

All arid regions have areas where the surface soil has a high mineral content (borax, salt, alkali, and lime). Material in contact with this soil wears out quickly, and water in these areas is extremely hard and undrinkable. Wetting your uniform in such water to cool off may cause a skin rash. The Great Salt Lake area in Utah is an example of this type of mineral-laden water and soil. There is little or no plant life; therefore, shelter is hard to find. Avoid these areas if possible.

Sandstorms

Sandstorms (sand-laden winds) occur frequently in most deserts. The "Seistan" desert wind in Iran and Afghanistan blows constantly for up to 120 days. Within Saudi Arabia, winds average 3.2 to 4.8 kilometers per hour (kph) and can reach 112 to 128 kph in early afternoon. Expect major sandstorms and dust storms at least once a week.

The greatest danger is getting lost in a swirling wall of sand. Wear goggles and cover your mouth and nose with cloth. If natural shelter is unavailable, mark your direction of travel, lie down, and sit out the storm.

Dust and wind-blown sand interfere with radio transmissions. Therefore, be ready to use other means for signaling, such as pyrotechnics, signal mirrors, or marker panels, if available.

Mirages

Mirages are optical phenomena caused by the refraction of light through heated air rising from a sandy or stony surface. They occur in the interior of the desert about 10 kilometers from the coast. They make objects that are 1.5 kilometers or more away appear to move. This mirage effect makes it difficult for you to identify an object from a distance. It also blurs distant range contours so much that you feel surrounded by a sheet of water from which elevations stand out as "islands."

The mirage effect makes it hard for a person to identify targets, estimate range, and see objects clearly. However, if you can get to high ground (3 meters or more above the desert floor), you can get above the superheated air close to the ground and overcome the mirage effect. Mirages make land navigation difficult because they obscure natural features. You can survey the area at dawn, dusk, or by moonlight when there is little likelihood of mirage. Light levels in desert areas are more intense than in other geographic areas. Moonlit nights are usually crystal clear, winds die down, haze and glare disappear, and visibility is

excellent. You can see lights, red flash-lights, and blackout lights at great distances. Sound carries very far.

Conversely, during nights with little moonlight, visibility is extremely poor. Traveling is extremely hazardous. You must avoid getting lost, falling into ravines, or stumbling into enemy positions. Movement during such a night is practical only if you have a compass and have spent the day in a shelter, resting, observing and memorizing the terrain, and selecting your route.

NEED FOR WATER

The subject of man and water in the desert has generated considerable interest and confusion since the early days of World War II when the U. S. Army was preparing to fight in North Africa. At one time the U. S. Army thought it could condition men to do with less water by progressively reducing their water supplies during training. They called it water discipline. It caused hundreds of heat casualties.

A key factor in desert survival is understanding the relationship between physical activity, air temperature, and water consumption. The body requires a certain amount of water for a certain level of activity at a certain temperature. For example, a person performing hard work in the sun at 43 degrees C requires 19 liters of water daily. Lack of the required amount of water causes a rapid decline in an individual's ability to make decisions and to perform tasks efficiently.

Your body's normal temperature is 36.9 degrees C (98.6 degrees F). Your body gets rid of excess heat (cools off) by sweating. The warmer your body becomes--whether caused by work, exercise, or air temperature--the more you sweat. The more you sweat, the more moisture you lose. Sweating is the principal cause of water loss. If a person stops sweating during periods of high air temperature and heavy work or exercise, he will quickly develop heat stroke. This is an emergency that requires immediate medical attention.

[Figure 13-2](#) shows daily water requirements for various levels of work. Understanding how the air temperature and your physical activity affect your water requirements allows you to take measures to get the most from your water supply. These measures are--

- Find shade! Get out of the sun!

- Place something between you and the hot ground.

- Limit your movements!

- Conserve your sweat. Wear your complete uniform to include T-shirt. Roll the sleeves down, cover your head, and protect your neck with a scarf or similar item. These steps will protect your body from hot-blowing winds and the direct rays of the sun. Your clothing will absorb your sweat, keeping it against your skin so that you gain its full cooling effect. By staying in the shade quietly, fully clothed, not talking, keeping your mouth closed, and breathing through your nose, your water requirement for survival drops dramatically.

- If water is scarce, do not eat. Food requires water for digestion; therefore, eating food will use water that you need for cooling.

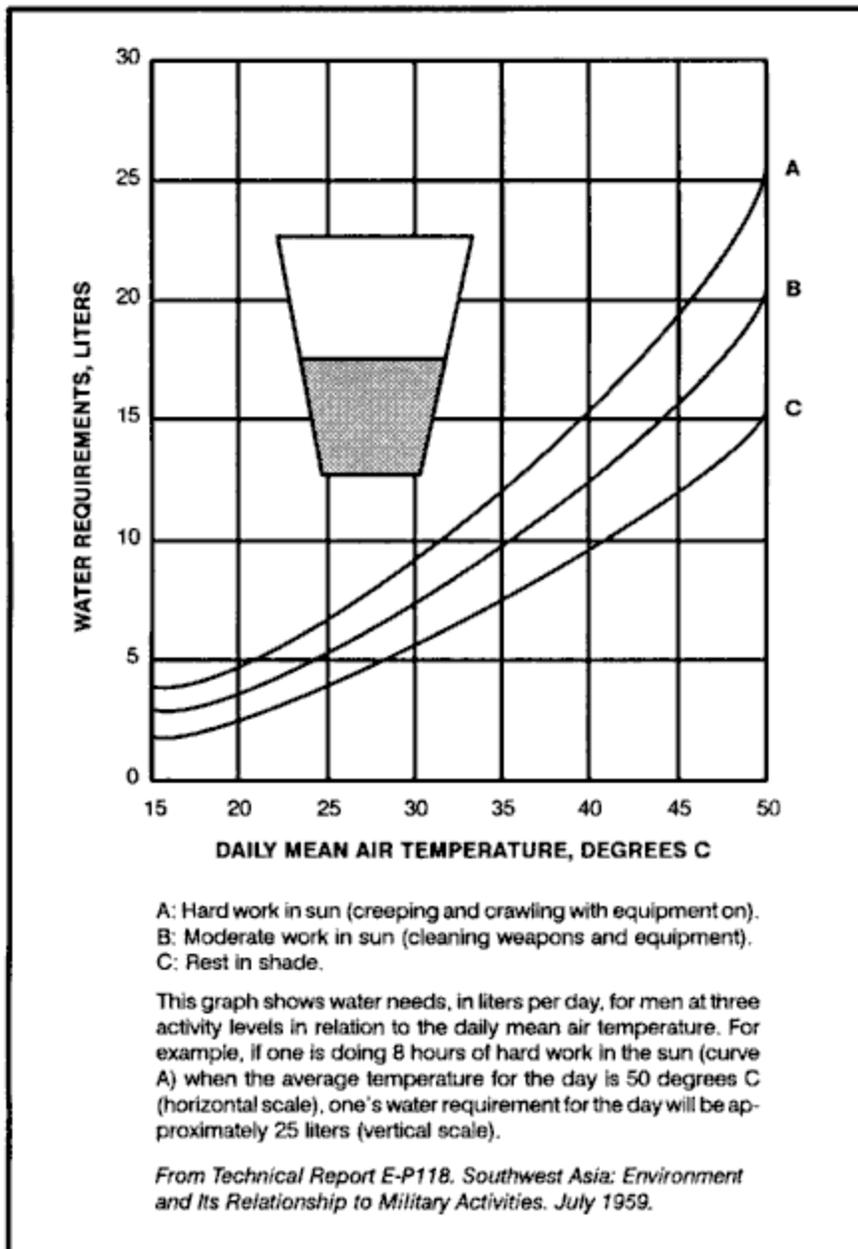


Figure 13-2. Daily water requirements for three levels of activity.

Thirst is not a reliable guide for your need for water. A person who uses thirst as a guide will drink only two-thirds of his daily water requirement. To prevent this "voluntary" dehydration, use the following guide:

- At temperatures below 38 degrees C, drink 0.5 liter of water every hour.
- At temperatures above 38 degrees C, drink 1 liter of water every hour.

Drinking water at regular intervals helps your body remain cool and decreases sweating. Even when your water supply is low, sipping water constantly will keep your body cooler and reduce water loss through sweating. Conserve your fluids by reducing activity during the heat of day. **Do not** ration your water! If you try to ration water, you stand a good chance of becoming a heat casualty.

HEAT CASUALTIES

Your chances of becoming a heat casualty as a survivor are great, due to injury, stress, and lack of critical items of equipment. Following are the major [types](#) of heat casualties and their treatment *when little water and no medical help are available*.

Heat Cramps

The loss of salt due to excessive sweating causes heat cramps. Symptoms are moderate to severe muscle cramps in legs, arms, or abdomen. These symptoms may start as a mild muscular discomfort. You should now stop all activity, get in the shade, and drink water. If you fail to recognize the early symptoms and continue your physical activity, you will have severe muscle cramps and pain. Treat as for [heat exhaustion](#), below.

Heat Exhaustion

A large loss of body water and salt causes heat exhaustion. Symptoms are headache, mental confusion, irritability, excessive sweating, weakness, dizziness, cramps, and pale, moist, cold (clammy) skin. Immediately get the patient under shade. Make him lie on a stretcher or similar item about 45 centimeters off the ground. Loosen his clothing. Sprinkle him with water and fan him. Have him drink small amounts of water every 3 minutes. Ensure he stays quiet and rests.

Heat Stroke

A severe heat injury caused by extreme loss of water and salt and the body's inability to cool itself. The patient may die if not cooled immediately. Symptoms are the lack of sweat, hot and dry skin, headache, dizziness, fast pulse, nausea and vomiting, and mental confusion leading to unconsciousness. Immediately get the person to shade. Lay him on a stretcher or similar item about 45 centimeters off the ground. Loosen his clothing. Pour water on him (it does not matter if the water is polluted or brackish) and fan him. Massage his arms, legs, and body. If he regains consciousness, let him drink small amounts of water every 3 minutes.

PRECAUTIONS

In a desert survival and evasion situation, it is unlikely that you will have a medic or medical supplies with you to treat heat injuries. Therefore, take extra care to avoid heat injuries. Rest during the day. Work during the cool evenings and nights. Use a buddy system to watch for heat injury, and observe the following guidelines:

- Make sure you tell someone where you are going and when you will return.
- Watch for signs of heat injury. If someone complains of tiredness or wanders away from the group, he may be a heat casualty.
- Drink water at least once an hour.
- Get in the shade when resting; do not lie directly on the ground.

- Do not take off your shirt and work during the day.

- Check the color of your urine. A light color means you are drinking enough water, a dark color means you need to drink more.

DESERT HAZARDS

There are several hazards unique to desert survival. These include insects, snakes, thorned plants and cacti, contaminated water, sunburn, eye irritation, and climatic stress. Insects of almost every type abound in the desert. Man, as a source of water and food, attracts lice, mites, wasps, and flies. They are extremely unpleasant and may carry diseases. Old buildings, ruins, and caves are favorite habitats of spiders, scorpions, centipedes, lice, and mites. These areas provide protection from the elements and also attract other wild-life. Therefore, take extra care when staying in these areas. Wear gloves at all times in the desert. Do not place your hands anywhere without first looking to see what is there. Visually inspect an area before sitting or lying down. When you get up, shake out and inspect your boots and clothing. All desert areas have snakes. They inhabit ruins, native villages, garbage dumps, caves, and natural rock outcropping that offer shade. Never go barefoot or walk through these areas without carefully inspecting them for snakes. Pay attention to where you place your feet and hands. Most snakebites result from stepping on or handling snakes. Avoid them. Once you see a snake, give it a wide berth.

CHAPTER 14 - TROPICAL SURVIVAL



Most people think of the tropics as a huge and forbidding tropical rain forest through which every step taken must be hacked out, and where every inch of the way is crawling with danger. Actually, over half of the land in the tropics is cultivated in some way.

A knowledge of field skills, the ability to improvise, and the application of the principles of survival will increase the prospects of survival. Do not be afraid of being alone in the jungle; fear will lead to panic. Panic will lead to exhaustion and decrease your chance of survival.

Everything in the jungle thrives, including disease germs and parasites that breed at an alarming rate. Nature will provide water, food, and plenty of materials to build shelters.

Indigenous peoples have lived for millennia by hunting and gathering. However, it will take an outsider some time to get used to the conditions and the nonstop activity of tropical survival.

TROPICAL WEATHER

High temperatures, heavy rainfall, and oppressive humidity characterize equatorial and subtropical regions, except at high altitudes. At low altitudes, temperature variation is seldom less than 10 degrees C and is often more than 35 degrees C. At altitudes over 1,500 meters, ice often forms at night. The rain has a cooling effect, but when it stops, the temperature soars.

Rainfall is heavy, often with thunder and lightning. Sudden rain beats on the tree canopy, turning trickles into raging torrents and causing rivers to rise. Just as suddenly, the rain stops. Violent storms may occur, usually toward the end of the summer months.

Hurricanes, cyclones, and typhoons develop over the sea and rush inland, causing tidal waves and devastation ashore. In choosing campsites, make sure you are above any potential flooding. Prevailing winds vary between winter and summer. The dry season has rain once a day and the monsoon has continuous rain. In Southeast Asia, winds from the Indian Ocean bring the monsoon, but it is dry when the wind blows from the landmass of China.

Tropical day and night are of equal length. Darkness falls quickly and daybreak is just as sudden.

JUNGLE TYPES

There is no standard jungle. The tropical area may be any of the following:

- Rain forests.
- Secondary jungles.
- Semievergreen seasonal and monsoon forests.
- Scrub and thorn forests.
- Savannas.
- Saltwater swamps.
- Freshwater swamps.

Tropical Rain Forests

The climate varies little in rain forests. You find these forests across the equator in the Amazon and Congo basins, parts of Indonesia, and several Pacific islands. Up to 3.5 meters of rain fall evenly throughout the year. Temperatures range from about 32 degrees C in the day to 21 degrees C at night.

There are five layers of vegetation in this jungle ([Figure 14-1](#)). Where untouched by man, jungle trees rise from buttress roots to heights of 60 meters. Below them, smaller trees produce a canopy so thick that little light reaches the jungle floor. Seedlings struggle beneath them to reach light, and masses of vines and lianas twine up to the sun. Ferns, mosses, and herbaceous plants push through a thick carpet of leaves, and a great variety of fungi grow on leaves and fallen tree trunks.

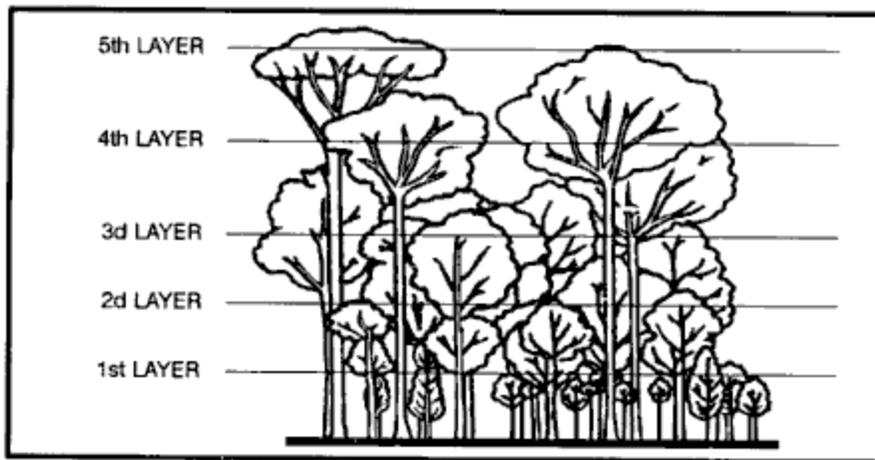


Figure 14-1. Five layers of tropical rain forest vegetation.

Because of the lack of light on the jungle floor, there is little undergrowth to hamper movement, but dense growth limits visibility to about 50 meters. You can easily lose your sense of direction in this jungle, and it is extremely hard for aircraft to see you.

Secondary Jungles

Secondary jungle is very similar to rain forest. Prolific growth, where sunlight penetrates to the jungle floor, typifies this type of forest. Such growth happens mainly along river banks, on jungle fringes, and where man has cleared rain forest. When abandoned, tangled masses of vegetation quickly reclaim these cultivated areas. You can often find cultivated food plants among this vegetation.

Semievergreen Seasonal and Monsoon Forests

The characteristics of the American and African semievergreen seasonal forests correspond with those of the Asian monsoon forests. These characteristics are--

- Their trees fall into two stories of tree strata. Those in the upper story average 18 to 24 meters; those in the lower story average 7 to 13 meters.
- The diameter of the trees averages 0.5 meter.
- Their leaves fall during a seasonal drought.

Except for the sago, nipa, and coconut palms, the same edible plants grow in these areas as in the tropical rain forests.

You find these forests in portions of Columbia and Venezuela and the Amazon basin in South America; in portions of southeast coastal Kenya, Tanzania, and Mozambique in Africa; in Northeastern India, much of Burma, Thailand, Indochina, Java, and parts of other Indonesian islands in Asia.

Tropical Scrub and Thorn Forests

The chief characteristics of tropical scrub and thorn forests are--

- There is a definite dry season.
- Trees are leafless during the dry season.
- The ground is bare except for a few tufted plants in bunches; grasses are uncommon.
- Plants with thorns predominate.
- Fires occur frequently.

You find tropical scrub and thorn forests on the west coast of Mexico, Yucatan peninsula, Venezuela, Brazil; on the northwest coast and central parts of Africa; and in Asia, in Turkestan and India.

Within the tropical scrub and thorn forest areas, you will find it hard to obtain food plants during the dry season. During the rainy season, plants are considerably more abundant.

Tropical Savannas

General characteristics of the savanna are--

- It is found within the tropical zones in South America and Africa.
- It looks like a broad, grassy meadow, with trees spaced at wide intervals.
- It frequently has red soil.
- It grows scattered trees that usually appear stunted and gnarled like apple trees. Palms also occur on savannas.

You find savannas in parts of Venezuela, Brazil, and the Guianas in South America. In Africa, you find them in the southern Sahara (north-central Cameroon and Gabon and southern Sudan), Benin, Togo, most of Nigeria, northeastern Zaire, northern Uganda, western Kenya, part of Malawi, part of Tanzania, southern Zimbabwe, Mozambique, and western Madagascar.

Saltwater Swamps

Saltwater swamps are common in coastal areas subject to tidal flooding. Mangrove trees thrive in these swamps. Mangrove trees can reach heights of 12 meters, and their tangled roots are an obstacle to movement. Visibility in this type of swamp is poor, and movement is extremely difficult. Sometimes, streams that you can raft form channels, but you usually must travel on foot through this swamp.

You find saltwater swamps in West Africa, Madagascar, Malaysia, the Pacific islands, Central and South America, and at the mouth of the Ganges River in India. The swamps at

the mouths of the Orinoco and Amazon rivers and rivers of Guyana consist of mud and trees that offer little shade. Tides in saltwater swamps can vary as much as 12 meters. Everything in a saltwater swamp may appear hostile to you, from leeches and insects to crocodiles and caimans. Avoid the dangerous animals in this swamp. Avoid this swamp altogether if you can. If there are water channels through it, you may be able to use a raft to escape.

Freshwater Swamps

You find freshwater swamps in low-lying inland areas. Their characteristics are masses of thorny undergrowth, reeds, grasses, and occasional short palms that reduce visibility and make travel difficult. There are often islands that dot these swamps, allowing you to get out of the water. Wildlife is abundant in these swamps.

TRAVEL THROUGH JUNGLE AREAS

With practice, movement through thick undergrowth and jungle can be done efficiently. Always wear long sleeves to avoid cuts and scratches.

To move easily, you must develop "jungle eye," that is, you should not concentrate on the pattern of bushes and trees to your immediate front. You must focus on the jungle further out and find natural breaks in the foliage. Look *through* the jungle, not at it. Stop and stoop down occasionally to look along the jungle floor. This action may reveal game trails that you can follow.

Stay alert and move slowly and steadily through dense forest or jungle. Stop periodically to listen and take your bearings. Use a machete to cut through dense vegetation, but do not cut unnecessarily or you will quickly wear yourself out. If using a machete, stroke upward when cutting vines to reduce noise because sound carries long distances in the jungle. Use a stick to part the vegetation. Using a stick will also help dislodge biting ants, spiders, or snakes. **Do not** grasp at brush or vines when climbing slopes; they may have irritating spines or sharp thorns.

Many jungle and forest animals follow game trails. These trails wind and cross, but frequently lead to water or clearings. Use these trails if they lead in your desired direction of travel.

In many countries, electric and telephone lines run for miles through sparsely inhabited areas. Usually, the right-of-way is clear enough to allow easy travel. When traveling along these lines, be careful as you approach transformer and relay stations. In enemy territory, they may be guarded.

TRAVEL TIPS

Pinpoint your initial location as accurately as possible to determine a general line of travel to safety. If you do not have a compass, use a field-expedient direction finding method.

Take stock of water supplies and equipment.

Move in one direction, but not necessarily in a straight line. Avoid obstacles. In enemy territory, take advantage of natural cover and concealment.

Move smoothly through the jungle. Do not blunder through it since you will get many cuts and scratches. Turn your shoulders, shift your hips, bend your body, and shorten or lengthen your stride as necessary to slide between the undergrowth.

IMMEDIATE CONSIDERATIONS

There is less likelihood of your rescue from beneath a dense jungle canopy than in other survival situations. You will probably have to travel to reach safety.

If you are the victim of an aircraft crash, the most important items to take with you from the crash site are a machete, a compass, a first aid kit, and a parachute or other material for use as mosquito netting and shelter.

Take shelter from tropical rain, sun, and insects. Malaria-carrying mosquitoes and other insects are immediate dangers, so protect yourself against bites.

Do not leave the crash area without carefully blazing or marking your route. Use your compass. Know what direction you are taking.

In the tropics, even the smallest scratch can quickly become dangerously infected. Promptly treat any wound, no matter how minor.

WATER PROCUREMENT

Even though water is abundant in most tropical environments, you may, as a survivor, have trouble finding it. If you do find water, it may not be safe to drink. Some of the many sources are vines, roots, palm trees, and condensation. You can sometimes follow animals to water. Often you can get nearly clear water from muddy streams or lakes by digging a hole in sandy soil about 1 meter from the bank. Water will seep into the hole. You must purify any water obtained in this manner.

Animals as Signs of Water

Animals can often lead you to water. Most animals require water regularly. Grazing animals such as deer, are usually never far from water and usually drink at dawn and dusk. Converging game trails often lead to water. Carnivores (meat eaters) are not reliable indicators of water. They get moisture from the animals they eat and can go without water for long periods.

Birds can sometimes also lead you to water. Grain eaters, such as finches and pigeons, are never far from water. They drink at dawn and dusk. When they fly straight and low, they are heading for water. When returning from water, they are full and will fly from tree to tree, resting frequently. Do not rely on water birds to lead you to water. They fly long distances without stopping. Hawks, eagles, and other birds of prey get liquids from their victims; you cannot use them as a water indicator.

Insects can be good indicators of water, especially bees. Bees seldom range more than 6 kilometers from their nests or hives. They usually will have a water source in this range. Ants need water. A column of ants marching up a tree is going to a small reservoir of trapped water. You find such reservoirs even in arid areas. Most flies stay within 100 meters of water, especially the European mason fly, easily recognized by its iridescent green body. Human tracks will usually lead to a well, bore hole, or soak. Scrub or rocks may cover it to reduce evaporation. Replace the cover after use.

Water From Plants

Plants such as vines, roots, and palm trees are good sources of water.

Vines

Vines with rough bark and shoots about 5 centimeters thick can be a useful source of water. You must learn by experience which are the water-bearing vines, because not all have drinkable water. Some may even have a poisonous sap. The poisonous ones yield a sticky, milky sap when cut. Nonpoisonous vines will give a clear fluid. Some vines cause a skin irritation on contact; therefore let the liquid drip into your mouth, rather than put your mouth to the vine. Preferably, use some type of container. Use the procedure described in Chapter 6 to obtain water from a vine.

Roots

In Australia, the water tree, desert oak, and bloodwood have roots near the surface. Pry these roots out of the ground and cut them into 30-centimeter lengths. Remove the bark and suck out the moisture, or shave the root to a pulp and squeeze it over your mouth.

Palm Trees

The buri, coconut, and nipa palms all contain a sugary fluid that is very good to drink. To obtain the liquid, bend a flowering stalk of one of these palms downward, and cut off its tip. If you cut a thin slice off the stalk every 12 hours, the flow will renew, making it possible to collect up to a liter per day. Nipa palm shoots grow from the base, so that you can work at ground level. On grown trees of other species, you may have to climb them to reach a flowering stalk. Milk from coconuts has a large water content, but may contain a strong laxative in ripe nuts. Drinking too much of this milk may cause you to lose more fluid than you drink.

Water From Condensation

Often it requires too much effort to dig for roots containing water. It may be easier to let a plant produce water for you in the form of condensation. Tying a clear plastic bag around a green leafy branch will cause water in the leaves to evaporate and condense in the bag. Placing cut vegetation in a plastic bag will also produce condensation. This is a solar still (see Chapter 6).

FOOD

Food is usually abundant in a tropical survival situation. To obtain animal food, use the procedures outlined in Chapter 8.

In addition to animal food, you will have to supplement your diet with edible plants. The best places to forage are the banks of streams and rivers. Wherever the sun penetrates the jungle, there will be a mass of vegetation, but river banks may be the most accessible areas.

If you are weak, do not expend energy climbing or felling a tree for food. There are more easily obtained sources of food nearer the ground. Do not pick more food than you need. Food spoils rapidly in tropical conditions. Leave food on the growing plant until you need it, and eat it fresh.

There are an almost unlimited number of edible plants from which to choose. Unless you can positively identify these plants, it may be safer at first to begin with palms, bamboos, and common fruits. The [list](#) below identifies some of the most common foods. Detailed descriptions and photographs are at Appendix B.

TROPICAL ZONE FOOD PLANTS

- Bael fruit (*Aegle marmelos*)
- Bamboo (various species)
- Banana or plantain (*Musa* species)
- Bignay (*Antidesma bunius*)
- Breadfruit (*Artocarpus incisa*)
- Coconut palm (*Cocos nucifera*)
- Fishtail palm (*Caryota urens*)
- Horseradish tree (*Moringa pterygosperma*)
- Lotus (*Nelumbo* species)
- Mango (*Mangifera indica*)
- Manioc (*Manihot utilissima*)
- Nipa palm (*Nipa fruticans*)
- Papaya (*Carica papaya*)
- Persimmon (*Diospyros virginiana*)
- Rattan palm (*Calamus* species)
- Sago palm (*Metroxylon sagu*)
- Sterculia (*Sterculia foetida*)

- Sugarcane (*Saccharum officinarum*)
- Sugar palm (*Arenga pinnata*)
- Sweetsop (*Annona squamosa*)
- Taro (*Colocasia* and *Alocasia* species)
- Water lily (*Nymphaea odorata*)
- Wild fig (*Ficus* species)
- Wild rice (*Zizania aquatica*)
- Yam (*Dioscorea* species)

POISONOUS PLANTS

The proportion of poisonous plants in tropical regions is no greater than in any other area of the world. However, it may appear that most plants in the tropics are poisonous because of the great density of plant growth in some tropical areas. See Appendix C.

CHAPTER 15 - COLD WEATHER SURVIVAL



One of the most difficult survival situations is a cold weather scenario. Remember, cold weather is an adversary that can be as dangerous as an enemy soldier. Every time you venture into the cold, you are pitting yourself against the elements. With a little knowledge of the environment, proper plans, and appropriate equipment, you can overcome the elements. As you remove one or more of these factors, survival becomes increasingly difficult. Remember, winter weather is highly variable. Prepare yourself to adapt to blizzard conditions even during sunny and clear weather.

Cold is a far greater threat to survival than it appears. It decreases your ability to think and weakens your will to do anything except to get warm. Cold is an insidious enemy; as it numbs the mind and body, it subdues the will to survive.

Cold makes it very easy to forget your ultimate goal--to survive.

COLD REGIONS AND LOCATIONS

Cold regions include arctic and subarctic areas and areas immediately adjoining them. You can classify about 48 percent of the northern hemisphere's total landmass as a cold region due to the influence and extent of air temperatures. Ocean currents affect cold weather and cause large areas normally included in the temperate zone to fall within the cold regions during winter periods. Elevation also has a marked effect on defining cold regions. Within the cold weather regions, you may face two types of cold weather environments--wet or dry. Knowing in which environment your area of operations falls will affect planning and execution of a cold weather operation.

Wet Cold Weather Environments

Wet cold weather conditions exist when the average temperature in a 24-hour period is -10 degrees C or above. Characteristics of this condition are freezing during the colder night hours and thawing during the day. Even though the temperatures are warmer during this condition, the terrain is usually very sloppy due to slush and mud. You must concentrate on protecting yourself from the wet ground and from freezing rain or wet snow.

Dry Cold Weather Environments

Dry cold weather conditions exist when the average temperature in a 24-hour period remains below -10 degrees C. Even though the temperatures in this condition are much lower than normal, you do not have to contend with the freezing and thawing. In these conditions, you need more layers of inner clothing to protect you from temperatures as low as -60 degrees C. Extremely hazardous conditions exist when wind and low temperature combine.

WINDCHILL

Windchill increases the hazards in cold regions. Windchill is the effect of moving air on exposed flesh. For instance, with a 27.8-kph (15-knot) wind and a temperature of -10 degrees C, the equivalent windchill temperature is -23 degrees C. [Figure 15-1](#) gives the windchill factors for various temperatures and wind speeds.

COOLING POWER OF WIND EXPRESSED AS "EQUIVALENT CHILL TEMPERATURE"																						
WIND SPEED		TEMPERATURE (DEGREES C)																				
CALM	CALM	4	2	-1	-4	-7	-9	-12	-15	-18	-21	-23	-26	-29	-32	-34	-37	-40	-43	-46	-48	-51
KNOTS		EQUIVALENT CHILL TEMPERATURE																				
4	8	2	-1	-4	-7	-9	-12	-15	-18	-21	-23	-26	-29	-32	-34	-37	-40	-43	-46	-48	-54	-57
9	16	-1	-7	-9	-12	-15	-18	-23	-26	-29	-32	-37	-40	-43	-46	-51	-54	-57	-59	-62	-68	-71
13	24	-4	-9	-12	-18	-21	-23	-29	-32	-34	-40	-43	-46	-51	-54	-59	-62	-65	-68	-73	-76	-79
17	32	-7	-12	-15	-18	-23	-26	-32	-34	-37	-43	-46	-51	-54	-59	-62	-65	-71	-73	-79	-82	-84
22	40	-9	-12	-18	-21	-26	-29	-34	-37	-43	-46	-51	-54	-59	-62	-68	-71	-76	-79	-84	-87	-93
26	48	-12	-15	-18	-23	-29	-32	-34	-40	-46	-48	-54	-57	-62	-65	-71	-73	-79	-82	-87	-90	-96
30	56	-12	-15	-21	-23	-29	-34	-37	-40	-46	-51	-54	-59	-62	-68	-73	-76	-82	-84	-90	-93	-98
35	64	-12	-18	-21	-26	-29	-34	-37	-43	-48	-51	-57	-59	-65	-71	-73	-79	-82	-87	-90	-96	-101
(Higher winds have little additional effects)	LITTLE DANGER (Flesh may freeze within 1 minute)											GREAT DANGER (Flesh may freeze within 30 seconds)										
	DANGER OF FREEZING EXPOSED FLESH FOR PROPERLY CLOTHED PERSONS																					

Figure 15-1. Windchill table.

Remember, even when there is no wind, you will create the equivalent wind by skiing, running, being towed on skis behind a vehicle, working around aircraft that produce wind blasts.

BASIC PRINCIPLES OF COLD WEATHER SURVIVAL

It is more difficult for you to satisfy your basic water, food, and shelter needs in a cold environment than in a warm environment. Even if you have the basic requirements, you must also have adequate protective clothing and the will to survive. The will to survive is as important as the basic needs. There have been incidents when trained and well-equipped individuals have not survived cold weather situations because they lacked the will to live. Conversely, this will has sustained individuals less well-trained and equipped.

There are many different items of cold weather equipment and clothing issued by the U.S. Army today. Specialized units may have access to newer, lightweight gear such as polypropylene underwear, GORE-TEX outerwear and boots, and other special equipment. Remember, however, the older gear will keep you warm as long as you apply a few cold weather principles. If the newer types of clothing are available, use them. If not, then your clothing should be entirely wool, with the possible exception of a windbreaker.

You must not only have enough clothing to protect you from the cold, you must also know how to maximize the warmth you get from it. For example, always keep your head covered. You can lose 40 to 45 percent of body heat from an unprotected head and even more from the unprotected neck, wrist, and ankles. These areas of the body are good radiators of heat and have very little insulating fat. The brain is very susceptible to cold and can stand the least amount of cooling. Because there is much blood circulation in the head, most of which is on the surface, you can lose heat quickly if you do not cover your head.

There are four basic principles to follow to keep warm. An easy way to remember these basic principles is to use the word COLD--

C - Keep clothing *clean*.

O - Avoid *overheating*.

L - Wear clothes *loose* and in *layers*.

D - Keep clothing *dry*.

C - *Keep clothing clean.* This principle is always important for sanitation and comfort. In winter, it is also important from the standpoint of warmth. Clothes matted with dirt and grease lose much of their insulation value. Heat can escape more easily from the body through the clothing's crushed or filled up air pockets.

O - *Avoid overheating.* When you get too hot, you sweat and your clothing absorbs the moisture. This affects your warmth in two ways: dampness decreases the insulation quality of clothing, and as sweat evaporates, your body cools. Adjust your clothing so that you do not sweat. Do this by partially opening your parka or jacket, by removing an inner layer of clothing, by removing heavy outer mittens, or by throwing back your parka hood or changing to lighter headgear. The head and hands act as efficient heat dissipaters when overheated.

L - *Wear your clothing loose and in layers.* Wearing tight clothing and footgear restricts blood circulation and invites cold injury. It also decreases the volume of air trapped between the layers, reducing its insulating value. Several layers of lightweight clothing are better than one equally thick layer of clothing, because the layers have dead-air space between them. The dead-air space provides extra insulation. Also, layers of clothing allow you to take off or add clothing layers to prevent excessive sweating or to increase warmth.

D - *Keep clothing dry.* In cold temperatures, your inner layers of clothing can become wet from sweat and your outer layer, if not water repellent, can become wet from snow and frost melted by body heat. Wear water repellent outer clothing, if available. It will shed most of the water collected from melting snow and frost. Before entering a heated shelter, brush off the snow and frost. Despite the precautions you take, there will be times when you cannot keep from getting wet. At such times, drying your clothing may become a major problem. On the march, hang your damp mittens and socks on your rucksack. Sometimes in freezing temperatures, the wind and sun will dry this clothing. You can also place damp socks or mittens, unfolded, near your body so that your body heat can dry them. In a campsite, hang damp clothing inside the shelter near the top, using drying lines or improvised racks. You may even be able to dry each item by holding it before an open fire. Dry leather items slowly. If no other means are available for drying your boots, put them between your sleeping bag shell and liner. Your body heat will help to dry the leather.

A heavy, down-lined sleeping bag is a valuable piece of survival gear in cold weather. Ensure the down remains dry. If wet, it loses a lot of its insulation value. If you do not have a sleeping bag, you can make one out of parachute cloth or similar material and natural dry material, such as leaves, pine needles, or moss. Place the dry material between two layers of the material.

Other important survival items are a knife; waterproof matches in a waterproof container, preferably one with a flint attached; a durable compass; map; watch; waterproof ground cloth and cover; flashlight; binoculars; dark glasses; fatty emergency foods; food gathering gear; and signaling items.

Remember, a cold weather environment can be very harsh. Give a good deal of thought to selecting the right equipment for survival in the cold. If unsure of an item you have never used, test it in an "overnight backyard" environment before venturing further. Once you have selected items that are essential for your survival, do not lose them after you enter a cold weather environment.

HYGIENE

Although washing yourself may be impractical and uncomfortable in a cold environment, you must do so. Washing helps prevent skin rashes that can develop into more serious problems.

In some situations, you may be able to take a snow bath. Take a handful of snow and wash your body where sweat and moisture accumulate, such as under the arms and between the legs, and then wipe yourself dry. If possible, wash your feet daily and put on clean, dry socks. Change your underwear at least twice a week. If you are unable to wash your underwear, take it off, shake it, and let it air out for an hour or two.

If you are using a previously used shelter, check your body and clothing for lice each night. If your clothing has become infested, use insecticide powder if you have any. Otherwise, hang your clothes in the cold, then beat and brush them. This will help get rid of the lice, but not the eggs.

If you shave, try to do so before going to bed. This will give your skin a chance to recover before exposing it to the elements.

MEDICAL ASPECTS

When you are healthy, your inner core temperature (torso temperature) remains almost constant at 37 degrees C (98.6 degrees F). Since your limbs and head have less protective body tissue than your torso, their temperatures vary and may not reach core temperature. Your body has a control system that lets it react to temperature extremes to maintain a temperature balance. There are three main factors that affect this temperature balance--heat production, heat loss, and evaporation. The difference between the body's core

temperature and the environment's temperature governs the heat production rate. Your body can get rid of heat better than it can produce it. Sweating helps to control the heat balance. Maximum sweating will get rid of heat about as fast as maximum exertion produces it.

Shivering causes the body to produce heat. It also causes fatigue that, in turn, leads to a drop in body temperature. Air movement around your body affects heat loss. It has been calculated that a naked man exposed to still air at or about 0 degrees C can maintain a heat balance if he shivers as hard as he can. However, he can't shiver forever.

It has also been calculated that a man at rest wearing the maximum arctic clothing in a cold environment can keep his internal heat balance during temperatures well below freezing. To withstand really cold conditions for any length of time, however, he will have to become active or shiver.

COLD INJURIES

The best way to deal with injuries and sicknesses is to take measures to prevent them from happening in the first place. Treat any injury or sickness that occurs as soon as possible to prevent it from worsening.

The knowledge of signs and symptoms and the use of the buddy system are critical in maintaining health. Following are [cold injuries](#) that can occur.

Hypothermia

Hypothermia is the lowering of the body temperature at a rate faster than the body can produce heat. Causes of hypothermia may be general exposure or the sudden wetting of the body by falling into a lake or spraying with fuel or other liquids.

The initial symptom is shivering. This shivering may progress to the point that it is uncontrollable and interferes with an individual's ability to care for himself. This begins when the body's core (rectal) temperature falls to about 35.5 degrees C (96 degrees F). When the core temperature reaches 35 to 32 degrees C (95 to 90 degrees F), sluggish thinking, irrational reasoning, and a false feeling of warmth may occur. Core temperatures of 32 to 30 degrees C (90 to 86 degrees F) and below result in muscle rigidity, unconsciousness, and barely detectable signs of life. If the victim's core temperature falls below 25 degrees C (77 degrees F), death is almost certain.

To treat hypothermia, rewarm the entire body. If there are means available, rewarm the person by first immersing the trunk area only in warm water of 37.7 to 43.3 degrees C (100 to 110 degrees F).

CAUTION

Rewarming the total body in a warm water bath should be done only in a hospital environment because of the increased risk of cardiac arrest and rewarming shock.

One of the quickest ways to get heat to the inner core is to give warm water enemas. Such an action, however, may not be possible in a survival situation. Another method is to wrap the victim in a warmed sleeping bag with another person who is already warm; both should be naked.

CAUTION

The individual placed in the sleeping bag with victim could also become a hypothermia victim if left in the bag too long.

If the person is conscious, give him hot, sweetened fluids. One of the best sources of calories is honey or dextrose; if unavailable, use sugar, cocoa, or a similar soluble sweetener.

CAUTION

Do not force an unconscious person to drink.

There are two dangers in treating hypothermia--rewarming too rapidly and "after drop." Rewarming too rapidly can cause the victim to have circulatory problems, resulting in heart failure. After drop is the sharp body core temperature drop that occurs when taking the victim from the warm water. Its probable cause is the return of previously stagnant limb blood to the core (inner torso) area as recirculation occurs. Concentrating on warming the core area and stimulating peripheral circulation will lessen the effects of after drop. Immersing the torso in a warm bath, if possible, is the best treatment.

Frostbite

This injury is the result of frozen tissues. Light frostbite involves only the skin that takes on a dull whitish pallor. Deep frostbite extends to a depth below the skin. The tissues become solid and immovable. Your feet, hands, and exposed facial areas are particularly vulnerable to frostbite.

The best frostbite prevention, when you are with others, is to use the buddy system. Check your buddy's face often and make sure that he checks yours. If you are alone, periodically cover your nose and lower part of your face with your mittened hand.

The following pointers will aid you in keeping warm and preventing frostbite when it is extremely cold or when you have less than adequate clothing:

- *Face.* Maintain circulation by twitching and wrinkling the skin on your face making faces. Warm with your hands.
- *Ears.* Wiggle and move your ears. Warm with your hands.
- *Hands.* Move your hands inside your gloves. Warm by placing your hands close to your body.
- *Feet.* Move your feet and wiggle your toes inside your boots.

A loss of feeling in your hands and feet is a sign of frostbite. If you have lost feeling for only a short time, the frostbite is probably light. Otherwise, assume the frostbite is deep. To rewarm a light frostbite, use your hands or mittens to warm your face and ears. Place your hands under your armpits. Place your feet next to your buddy's stomach. A deep frostbite injury, if thawed and refrozen, will cause more damage than a nonmedically trained person can handle. [Figure 15-2](#) lists some do's and don'ts regarding frostbite.

Do	Don't
<ul style="list-style-type: none"> • Periodically check for frostbite. • Rewarm light frostbite. • Keep injured areas from refreezing. 	<ul style="list-style-type: none"> • Rub injury with snow. • Drink alcoholic beverages. • Smoke. • Try to thaw out a deep frostbite injury if you are away from definitive medical care.

Figure 15-2. Frostbite do's and don'ts.

Trench Foot and Immersion Foot

These conditions result from many hours or days of exposure to wet or damp conditions at a temperature just above freezing. The symptoms are a sensation of pins and needles, tingling, numbness, and then pain. The skin will initially appear wet, soggy, white, and shriveled. As it progresses and damage appears, the skin will take on a red and then a bluish or black discoloration. The feet become cold, swollen, and have a waxy appearance. Walking becomes difficult and the feet feel heavy and numb. The nerves and muscles sustain the main damage, but gangrene can occur. In extreme cases, the flesh dies and it may become necessary to have the foot or leg amputated. The best prevention is to keep your feet dry. Carry extra socks with you in a waterproof packet. You can dry wet socks against your torso (back or chest). Wash your feet and put on dry socks daily.

Dehydration

When bundled up in many layers of clothing during cold weather, you may be unaware that you are losing body moisture. Your heavy clothing absorbs the moisture that evaporates in the air. You must drink water to replace this loss of fluid. Your need for water is as great in a cold environment as it is in a warm environment (Chapter 13). One way to tell if you are becoming dehydrated is to check the color of your urine on snow. If your urine makes the snow dark yellow, you are becoming dehydrated and need to replace body fluids. If it makes the snow light yellow to no color, your body fluids have a more normal balance.

Cold Diuresis

Exposure to cold increases urine output. It also decreases body fluids that you must replace.

Sunburn

Exposed skin can become sunburned even when the air temperature is below freezing. The sun's rays reflect at all angles from snow, ice, and water, hitting sensitive areas of skin-- lips, nostrils, and eyelids. Exposure to the sun results in sunburn more quickly at high altitudes than at low altitudes. Apply sunburn cream or lip salve to your face when in the sun.

Snow Blindness

The reflection of the sun's ultraviolet rays off a snow-covered area causes this condition. The symptoms of snow blindness are a sensation of grit in the eyes, pain in and over the

eyes that increases with eyeball movement, red and teary eyes, and a headache that intensifies with continued exposure to light. Prolonged exposure to these rays can result in permanent eye damage. To treat snow blindness, bandage your eyes until the symptoms disappear.

You can prevent snow blindness by wearing sunglasses. If you don't have sunglasses, improvise. Cut slits in a piece of cardboard, thin wood, tree bark, or other available material (Figure 15-3). Putting soot under your eyes will help reduce shine and glare.

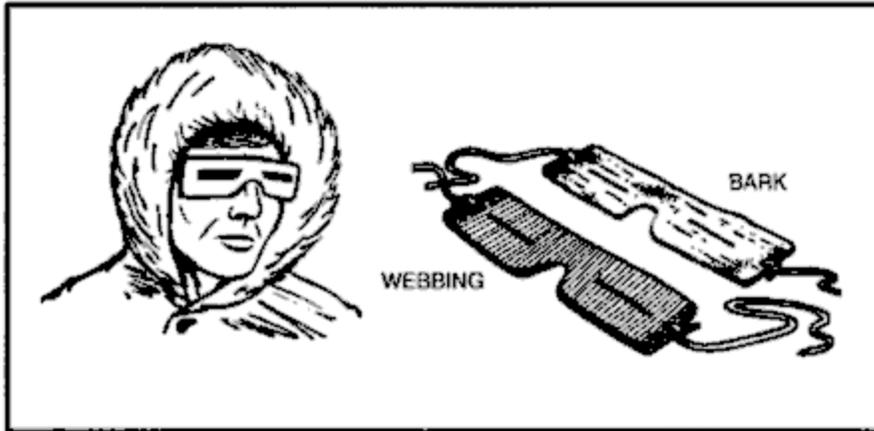


Figure 15-3. Improvised sunglasses.

Constipation

It is very important to relieve yourself when needed. Do not delay because of the cold condition. Delaying relieving yourself because of the cold, eating dehydrated foods, drinking too little liquid, and irregular eating habits can cause you to become constipated. Although not disabling, constipation can cause some discomfort. Increase your fluid intake to at least 2 liters above your normal 2 to 3 liters daily intake and, if available, eat fruit and other foods that will loosen the stool.

Insect Bites

Insect bites can become infected through constant scratching. Flies can carry various disease-producing germs. To prevent insect bites, use insect repellent, netting, and wear proper clothing. See Chapter 11 for information on insect bites and Chapter 4 for treatment.

SHELTERS

Your environment and the equipment you carry with you will determine the type of shelter you can build. You can build shelters in wooded areas, open country, and barren areas. Wooded areas usually provide the best location, while barren areas have only snow as building material. Wooded areas provide timber for shelter construction, wood for fire, concealment from observation, and protection from the wind.

Note: In extreme cold, do not use metal, such as an aircraft fuselage, for shelter. The metal will conduct away from the shelter what little heat you can generate.

Shelters made from ice or snow usually require tools such as ice axes or saws. You must also expend much time and energy to build such a shelter. Be sure to ventilate an enclosed shelter, especially if you intend to build a fire in it. Always block a shelter's entrance, if possible, to keep the heat in and the wind out. Use a rucksack or snow block. Construct a

shelter no larger than needed. This will reduce the amount of space to heat. A fatal error in cold weather shelter construction is making the shelter so large that it steals body heat rather than saving it. Keep shelter space small.

Never sleep directly on the ground. Lay down some pine boughs, grass, or other insulating material to keep the ground from absorbing your body heat.

Never fall asleep without turning out your stove or lamp. Carbon monoxide poisoning can result from a fire burning in an unventilated shelter. Carbon monoxide is a great danger. It is colorless and odorless. Any time you have an open flame, it may generate carbon monoxide. Always check your ventilation. Even in a ventilated shelter, incomplete combustion can cause carbon monoxide poisoning. Usually, there are no symptoms. Unconsciousness and death can occur without warning. Sometimes, however, pressure at the temples, burning of the eyes, headache, pounding pulse, drowsiness, or nausea may occur. The one characteristic, visible sign of carbon monoxide poisoning is a cherry red coloring in the tissues of the lips, mouth, and inside of the eyelids. Get into fresh air at once if you have any of these symptoms.

There are several types of field-expedient shelters you can quickly build or employ. Many use snow for insulation.

Snow Cave Shelter

The snow cave shelter ([Figure 15-4](#)) is a most effective shelter because of the insulating qualities of snow. Remember that it takes time and energy to build and that you will get wet while building it. First, you need to find a drift about 3 meters deep into which you can dig. While building this shelter, keep the roof arched for strength and to allow melted snow to drain down the sides. Build the sleeping platform higher than the entrance. Separate the sleeping platform from the snow cave's walls or dig a small trench between the platform and the wall. This platform will prevent the melting snow from wetting you and your equipment. This construction is especially important if you have a good source of heat in the snow cave. Ensure the roof is high enough so that you can sit up on the sleeping platform. Block the entrance with a snow block or other material and use the lower entrance area for cooking. The walls and ceiling should be at least 30 centimeters thick. Install a ventilation shaft. If you do not have a drift large enough to build a snow cave, you can make a variation of it by piling snow into a mound large enough to dig out.

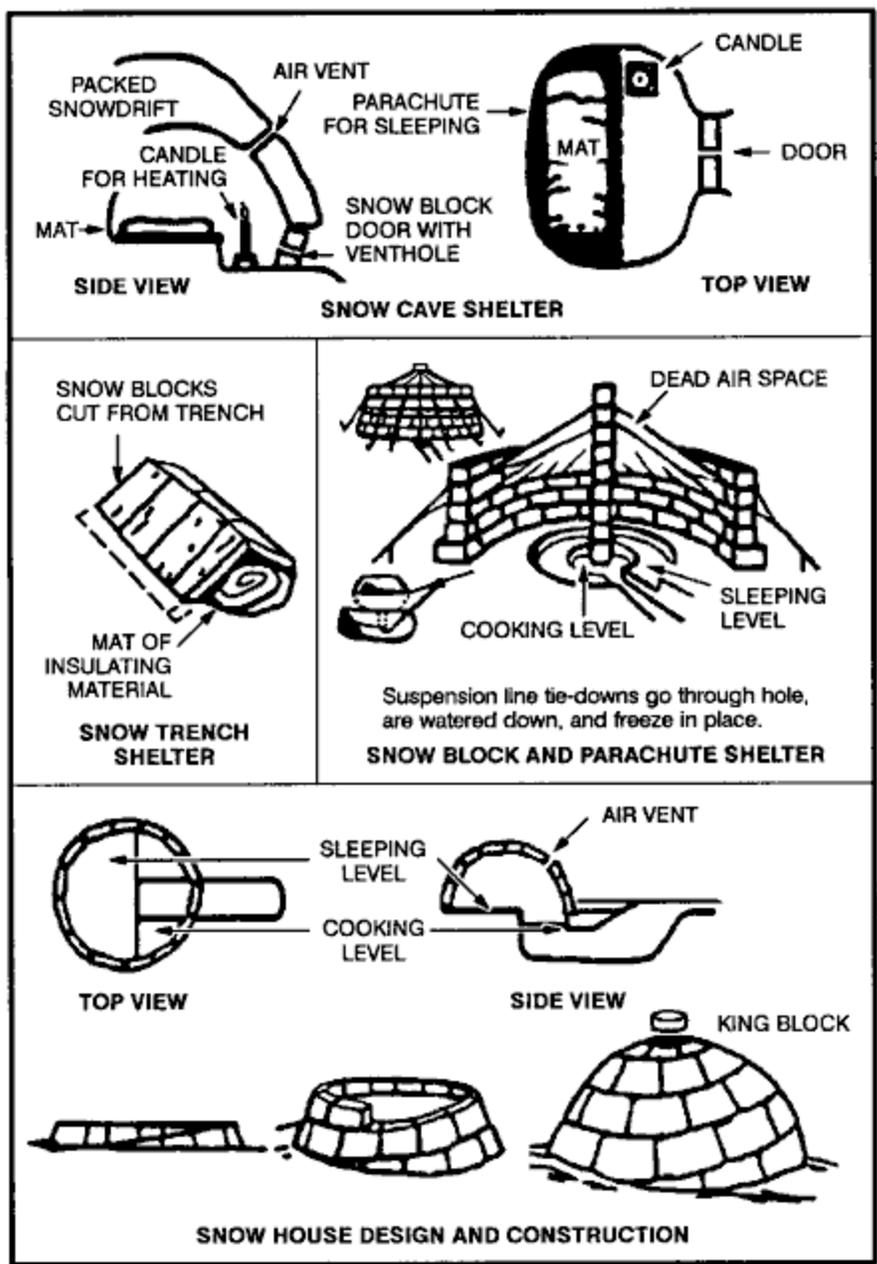


Figure 15-4. Snow houses.

Snow Trench Shelter

The idea behind this shelter ([Figure 15-4](#)) is to get you below the snow and wind level and use the snow's insulating qualities. If you are in an area of compacted snow, cut snow blocks and use them as overhead cover. If not, you can use a poncho or other material. Build only one entrance and use a snow block or rucksack as a door.

Snow Block and Parachute Shelter

Use snow blocks for the sides and parachute material for overhead cover ([Figure 15-4](#)). If snowfall is heavy, you will have to clear snow from the top at regular intervals to prevent the collapse of the parachute material.

Snow House or Igloo

In certain areas, the natives frequently use this type of shelter ([Figure 15-4](#)) as hunting and fishing shelters. They are efficient shelters but require some practice to make them properly. Also, you must be in an area that is suitable for cutting snow blocks and have the equipment to cut them (snow saw or knife).

Lean-To Shelter

Construct this shelter in the same manner as for other environments; however, pile snow around the sides for insulation ([Figure 15-5](#)).

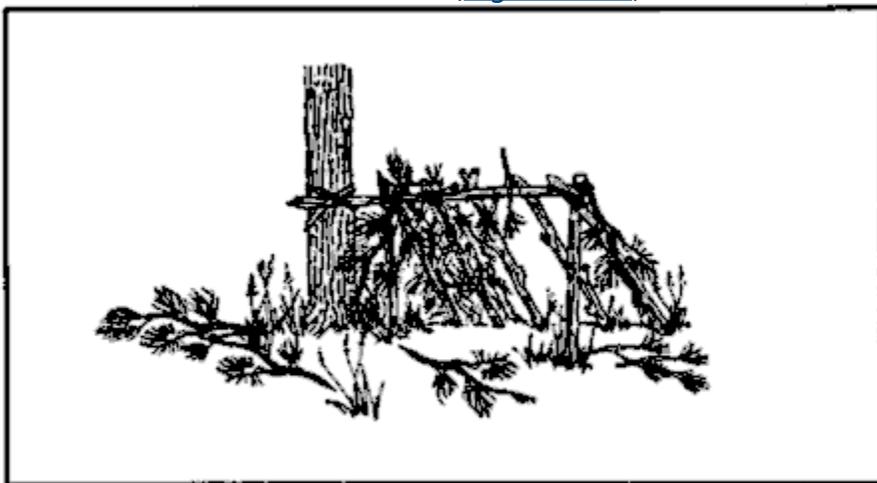


Figure 15-5. Lean-to made from natural shelter.

Fallen Tree Shelter

To build this shelter, find a fallen tree and dig out the snow underneath it ([Figure 15-6](#)). The snow will not be deep under the tree. If you must remove branches from the inside, use them to line the floor.

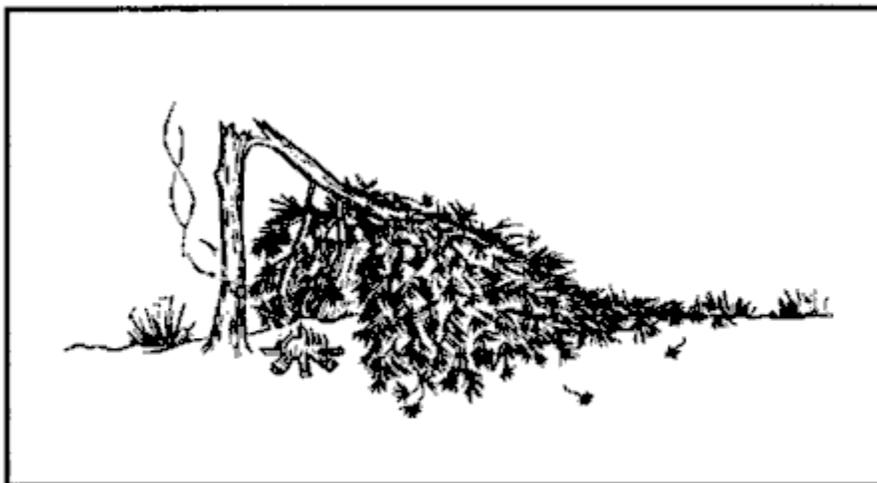


Figure 15-6. Fallen tree as shelter.

Tree-Pit Shelter

Dig snow out from under a suitable large tree. It will not be as deep near the base of the tree. Use the cut branches to line the shelter. Use a ground sheet as overhead cover to prevent snow from falling off the tree into the shelter. If built properly, you can have 360-degree visibility (Figure 5-12, Chapter 5).

20-Man Life Raft

This raft is the standard overwater raft on U.S. Air Force aircraft. You can use it as a shelter. Do not let large amounts of snow build up on the overhead protection. If placed in an open area, it also serves as a good signal to overhead aircraft.

FIRE

Fire is especially important in cold weather. It not only provides a means to prepare food, but also to get warm and to melt snow or ice for water. It also provides you with a significant psychological boost by making you feel a little more secure in your situation. Use the techniques described in Chapter 7 to build and light your fire. If you are in enemy territory, remember that the smoke, smell, and light from your fire may reveal your location. Light reflects from surrounding trees or rocks, making even indirect light a source of danger. Smoke tends to go straight up in cold, calm weather, making it a beacon during the day, but helping to conceal the smell at night. In warmer weather, especially in a wooded area, smoke tends to hug the ground, making it less visible in the day, but making its odor spread.

If you are in enemy territory, cut low tree boughs rather than the entire tree for firewood. Fallen trees are easily seen from the air.

All wood will burn, but some types of wood create more smoke than others. For instance, coniferous trees that contain resin and tar create more and darker smoke than deciduous trees.

There are few materials to use for fuel in the high mountainous regions of the arctic. You may find some grasses and moss, but very little. The lower the elevation, the more fuel available. You may find some scrub willow and small, stunted spruce trees above the tree line. On sea ice, fuels are seemingly nonexistent. Driftwood or fats may be the only fuels available to a survivor on the barren coastlines in the arctic and subarctic regions.

Abundant fuels within the tree line are--

- Spruce trees are common in the interior regions. As a conifer, spruce makes a lot of smoke when burned in the spring and summer months. However, it burns almost smoke-free in late fall and winter.
- The tamarack tree is also a conifer. It is the only tree of the pine family that loses its needles in the fall. Without its needles, it looks like a dead spruce, but it has many knobby buds and cones on its bare branches. When burning, tamarack wood makes a lot of smoke and is excellent for signaling purposes.
- Birch trees are deciduous and the wood burns hot and fast, as if soaked with oil or kerosene. Most birches grow near streams and lakes, but occasionally you will find a few on higher ground and away from water.
- Willow and alder grow in arctic regions, normally in marsh areas or near lakes and streams. These woods burn hot and fast without much smoke.

Dried moss, grass, and scrub willow are other materials you can use for fuel. These are usually plentiful near streams in tundras (open, treeless plains). By bundling or twisting grasses or other scrub vegetation to form a large, solid mass, you will have a slower burning, more productive fuel.

If fuel or oil is available from a wrecked vehicle or downed aircraft, use it for fuel. Leave the fuel in the tank for storage, drawing on the supply only as you need it. Oil congeals in extremely cold temperatures, therefore, drain it from the vehicle or aircraft while still warm if there is no danger of explosion or fire. If you have no container, let the oil drain onto the snow or ice. Scoop up the fuel as you need it.

CAUTION

Do not expose flesh to petroleum, oil, and lubricants in extremely cold temperatures. The liquid state of these products is deceptive in that it can cause frostbite.

Some plastic products, such as MRE spoons, helmet visors, visor housings, aid foam rubber will ignite quickly from a burning match. They will also burn long enough to help start a fire. For example, a plastic spoon will burn for about 10 minutes.

In cold weather regions, there are some hazards in using fires, whether to keep warm or to cook. For example--

- Fires have been known to burn underground, resurfacing nearby. Therefore, do not build a fire too close to a shelter.
- In snow shelters, excessive heat will melt the insulating layer of snow that may also be your camouflage.
- A fire inside a shelter lacking adequate ventilation can result in carbon monoxide poisoning.
- A person trying to get warm or to dry clothes may become careless and burn or scorch his clothing and equipment.
- Melting overhead snow may get you wet, bury you and your equipment, and possibly extinguish your fire.

In general, a small fire and some type of stove is the best combination for cooking purposes. A hobo stove ([Figure 15-7](#)) is particularly suitable to the arctic. It is easy to make out of a tin can, and it conserves fuel. A bed of hot coals provides the best cooking heat. Coals from a crisscross fire will settle uniformly. Make this type of fire by crisscrossing the firewood. A simple crane propped on a forked stick will hold a cooking container over a fire.

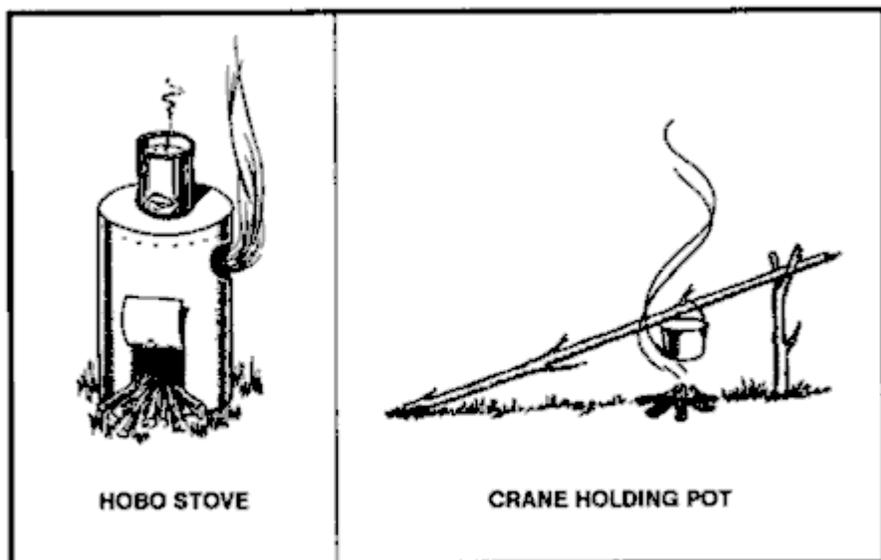


Figure 15-7. Cooking fire/stove.

For heating purposes, a single candle provides enough heat to warm an enclosed shelter. A small fire about the size of a man's hand is ideal for use in enemy territory. It requires very little fuel, yet it generates considerable warmth and is hot enough to warm liquids.

WATER

There are many sources of water in the arctic and subarctic. Your location and the season of the year will determine where and how you obtain water.

Water sources in arctic and subarctic regions are more sanitary than in other regions due to the climatic and environmental conditions. However, *always purify* the water before drinking it. During the summer months, the best natural sources of water are freshwater lakes, streams, ponds, rivers, and springs. Water from ponds or lakes may be slightly stagnant, but still usable. Running water in streams, rivers, and bubbling springs is usually fresh and suitable for drinking.

The brownish surface water found in a tundra during the summer is a good source of water. However, you may have to filter the water before purifying it.

You can melt freshwater ice and snow for water. Completely melt both before putting them in your mouth. Trying to melt ice or snow in your mouth takes away body heat and may cause internal cold injuries. If on or near pack ice in the sea, you can use old sea ice to melt for water. In time, sea ice loses its salinity. You can identify this ice by its rounded corners and bluish color.

You can use body heat to melt snow. Place the snow in a water bag and place the bag between your layers of clothing. This is a slow process, but you can use it on the move or when you have no fire.

Note: Do not waste fuel to melt ice or snow when drinkable water is available from other sources.

When ice is available, melt it, rather than snow. One cup of ice yields more water than one cup of snow. Ice also takes less time to melt. You can melt ice or snow in a water bag, MRE ration bag, tin can, or improvised container by placing the container near a fire. Begin with a small amount of ice or snow in the container and, as it turns to water, add more ice or snow.

Another way to melt ice or snow is by putting it in a bag made from porous material and suspending the bag near the fire. Place a container under the bag to catch the water.

During cold weather, avoid drinking a lot of liquid before going to bed. Crawling out of a warm sleeping bag at night to relieve yourself means less rest and more exposure to the cold.

Once you have water, keep it next to you to prevent refreezing. Also, do not fill your canteen completely. Allowing the water to slosh around will help keep it from freezing.

FOOD

There are several sources of food in the arctic and subarctic regions. The type of food--fish, animal, fowl, or plant--and the ease in obtaining it depend on the time of the year and your location.

Fish

During the summer months, you can easily get fish and other water life from coastal waters, streams, rivers, and lakes. Use the techniques described in Chapter 8 to catch fish. The North Atlantic and North Pacific coastal waters are rich in seafood. You can easily find crawfish, snails, clams, oysters, and king crab. In areas where there is a great difference between the high and low tide water levels, you can easily find shellfish at low tide. Dig in the sand on the tidal flats. Look in tidal pools and on offshore reefs. In areas where there is a small difference between the high- and low-tide water levels, storm waves often wash shellfish onto the beaches.

The eggs of the spiny sea urchin that lives in the waters around the Aleutian Islands and southern Alaska are excellent food. Look for the sea urchins in tidal pools. Break the shell by placing it between two stones. The eggs are bright yellow in color.

Most northern fish and fish eggs are edible. Exceptions are the meat of the arctic shark and the eggs of the sculpins.

The bivalves, such as clams and mussels, are usually more palatable than spiral-shelled seafood, such as snails.

WARNING

The black mussel, a common mollusk of the far north, may be poisonous in any season. Toxins sometimes found in the mussel's tissue are as dangerous as strychnine.

The sea cucumber is another edible sea animal. Inside its body are five long white muscles that taste much like clam meat.

In early summer, smelt spawn in the beach surf. Sometimes you can scoop them up with your hands.

You can often find herring eggs on the seaweed in midsummer. Kelp, the long ribbonlike seaweed, and other smaller seaweed that grow among offshore rocks are also edible.

Sea Ice Animals

You find polar bears in practically all arctic coastal regions, but rarely inland. Avoid them if possible. They are the most dangerous of all bears. They are tireless, clever hunters with good sight and an extraordinary sense of smell. If you must kill one for food, approach it cautiously. Aim for the brain; a bullet elsewhere will rarely kill one. Always cook polar bear meat before eating it.

CAUTION

Do not eat polar bear liver as it contains a toxic concentration of vitamin A.

Earless seal meat is some of the best meat available. You need considerable skill, however, to get close enough to an earless seal to kill it. In spring, seals often bask on the ice beside their breathing holes. They raise their heads about every 30 seconds, however, to look for their enemy, the polar bear.

To approach a seal, do as the Eskimos do--stay downwind from it, cautiously moving closer while it sleeps. If it moves, stop and imitate its movements by lying flat on the ice, raising your head up and down, and wriggling your body slightly. Approach the seal with your body side-ways to it and your arms close to your body so that you look as much like another seal as possible. The ice at the edge of the breathing hole is usually smooth and at an incline, so the least movement of the seal may cause it to slide into the water. Therefore, try to get within 22 to 45 meters of the seal and kill it instantly (aim for the brain). Try to reach the seal before it slips into the water. In winter, a dead seal will usually float, but it is difficult to retrieve from the water.

Keep the seal blubber and skin from coming into contact with any scratch or broken skin you may have. You could get "spekk-finger," that is, a reaction that causes the hands to become badly swollen.

Keep in mind that where there are seals, there are usually polar bears, and polar bears have stalked and killed seal hunters.

You can find porcupines in southern subarctic regions where there are trees. Porcupines feed on bark; if you find tree limbs stripped bare, you are likely to find porcupines in the area.

Ptarmigans, owls, Canadian jays, grouse, and ravens are the only birds that remain in the arctic during the winter. They are scarce north of the tree line. Ptarmigans and owls are as good for food as any game bird. Ravens are too thin to be worth the effort it takes to catch them. Ptarmigans, which change color to blend with their surroundings, are hard to spot. Rock ptarmigans travel in pairs and you can easily approach them. Willow ptarmigans live among willow clumps in bottom-lands. They gather in large flocks and you can easily snare them. During the summer months all arctic birds have a 2- to 3-week molting period during which they cannot fly and are easy to catch. Use one of the techniques described in Chapter 8 to catch them.

Skin and butcher game (see Chapter 8) while it is still warm. If you do not have time to skin the game, at least remove its entrails, musk glands, and genitals before storing. If time allows, cut the meat into usable pieces and freeze each separately so that you can use the pieces as needed. Leave the fat on all animals except seals. During the winter, game freezes quickly if left in the open. During the summer, you can store it in underground ice holes.

Plants

Although tundras support a variety of plants during the warm months, all are small, however, when compared to plants in warmer climates. For instance, the arctic willow and birch are shrubs rather than trees. The following is a [list](#) of some plant foods found in arctic and subarctic regions (see Appendix B for descriptions).

ARCTIC FOOD PLANTS

- Arctic raspberry and blueberry
- Arctic willow
- Bearberry
- Cranberry

- Crowberry
- Dandelion
- Eskimo potato
- Fireweed
- Iceland moss
- Marsh marigold
- Reindeer moss
- Rock tripe
- Spatterdock

There are some plants growing in arctic and subarctic regions that are poisonous if eaten (see Appendix C). Use the plants that you know are edible. When in doubt, follow the Universal Edibility Test in Chapter 9, Figure 9-5.

TRAVEL

As a survivor or an evader in an arctic or subarctic region, you will face many obstacles. Your location and the time of the year will determine the types of obstacles and the inherent dangers. You should--

- Avoid traveling during a blizzard.
- Take care when crossing thin ice. Distribute your weight by lying flat and crawling.
- Cross streams when the water level is lowest. Normal freezing and thawing action may cause a stream level to vary as much as 2 to 2.5 meters per day. This variance may occur any time during the day, depending on the distance from a glacier, the temperature, and the terrain. Consider this variation in water level when selecting a campsite near a stream.
- Consider the clear arctic air. It makes estimating distance difficult. You more frequently underestimate than overestimate distances.

- Do not travel in "whiteout" conditions. The lack of contrasting colors makes it impossible to judge the nature of the terrain.
- Always cross a snow bridge at right angles to the obstacle it crosses. Find the strongest part of the bridge by poking ahead of you with a pole or ice axe. Distribute your weight by crawling or by wearing snowshoes or skis.
- Make camp early so that you have plenty of time to build a shelter.
- Consider frozen or unfrozen rivers as avenues of travel. However, some rivers that appear frozen may have soft, open areas that make travel very difficult or may not allow walking, skiing, or sledding.
- Use snowshoes if you are traveling over snow-covered terrain. Snow 30 or more centimeters deep makes traveling difficult. If you do not have snowshoes, make a pair using willow, strips of cloth, leather, or other suitable material.

It is almost impossible to travel in deep snow without snowshoes or skis. Traveling by foot leaves a well-marked trail for any pursuers to follow. If you must travel in deep snow, avoid snow-covered streams. The snow, which acts as an insulator, may have prevented ice from forming over the water. In hilly terrain, avoid areas where avalanches appear possible. Travel in the early morning in areas where there is danger of avalanches. On ridges, snow gathers on the lee side in overhanging piles called cornices. These often extend far out from the ridge and may break loose if stepped on.

WEATHER SIGNS

There are several good indicators of climatic changes.

Wind

You can determine wind direction by dropping a few leaves or grass or by watching the treetops. Once you determine the wind direction, you can predict the type of weather that is imminent. Rapidly shifting winds indicate an unsettled atmosphere and a likely change in the weather.

Clouds

Clouds come in a variety of shapes and patterns. A general knowledge of clouds and the atmospheric conditions they indicate can help you predict the weather. See Appendix G for details.

Smoke

Smoke rising in a thin vertical column indicates fair weather. Low rising or "flattened out" smoke indicates stormy weather.

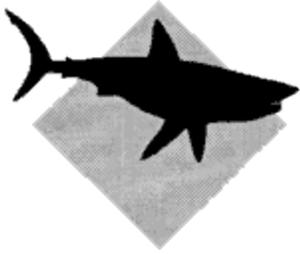
Birds and Insects

Birds and insects fly lower to the ground than normal in heavy, moisture-laden air. Such flight indicates that rain is likely. Most insect activity increases before a storm, but bee activity increases before fair weather.

Low-Pressure Front

Slow-moving or imperceptible winds and heavy, humid air often indicate a low-pressure front. Such a front promises bad weather that will probably linger for several days. You can "smell" and "hear" this front. The sluggish, humid air makes wilderness odors more pronounced than during high-pressure conditions. In addition, sounds are sharper and carry farther in low-pressure than high-pressure conditions.

CHAPTER 16 - SEA SURVIVAL



Perhaps the most difficult survival situation to be in is sea survival. Short-or long-term survival depends upon rations and equipment available and your ingenuity. You must be resourceful to survive.

Water covers about 75 percent of the earth's surface, with about 70 percent being oceans and seas. You can assume that you will sometime cross vast expanses of water. There is always the chance that the plane or ship you are on will become crippled by such hazards as storms, collision, fire, or war.

THE OPEN SEA

As a survivor on the open sea, you will face waves and wind. You may also face extreme heat or cold. To keep these environmental hazards from becoming serious problems, take precautionary measures as soon as possible. Use the available resources to protect yourself from the elements and from heat or extreme cold and humidity.

Protecting yourself from the elements meets only one of your basic needs. You must also be able to obtain water and food. Satisfying these three basic needs will help prevent serious physical and psychological problems. However, you must know how to treat health problems that may result from your situation.

Precautionary Measures

Your survival at sea depends upon--

- Your knowledge of and ability to use the available survival equipment.
- Your special skills and ability to apply them to cope with the hazards you face.
- Your will to live.

When you board a ship or aircraft, find out what survival equipment is on board, where it is stowed, and what it contains. For instance, how many life preservers and lifeboats or rafts are on board? Where are they located? What type of survival equipment do they have? How much food, water, and medicine do they contain? How many people are they designed to support?

If you are responsible for other personnel on board, make sure you know where they are and they know where you are.

Down at Sea

If you are in an aircraft that goes down at sea, take the following actions once you clear the aircraft. Whether you are in the water or in a raft --

- Get clear and upwind of the aircraft as soon as possible, but stay in the vicinity until the aircraft sinks.
- Get clear of fuel-covered water in case the fuel ignites.
- Try to find other survivors.

A search for survivors usually takes place around the entire area of and near the crash site. Missing personnel may be unconscious and floating low in the water. [Figure 16-1](#) illustrates rescue procedures.

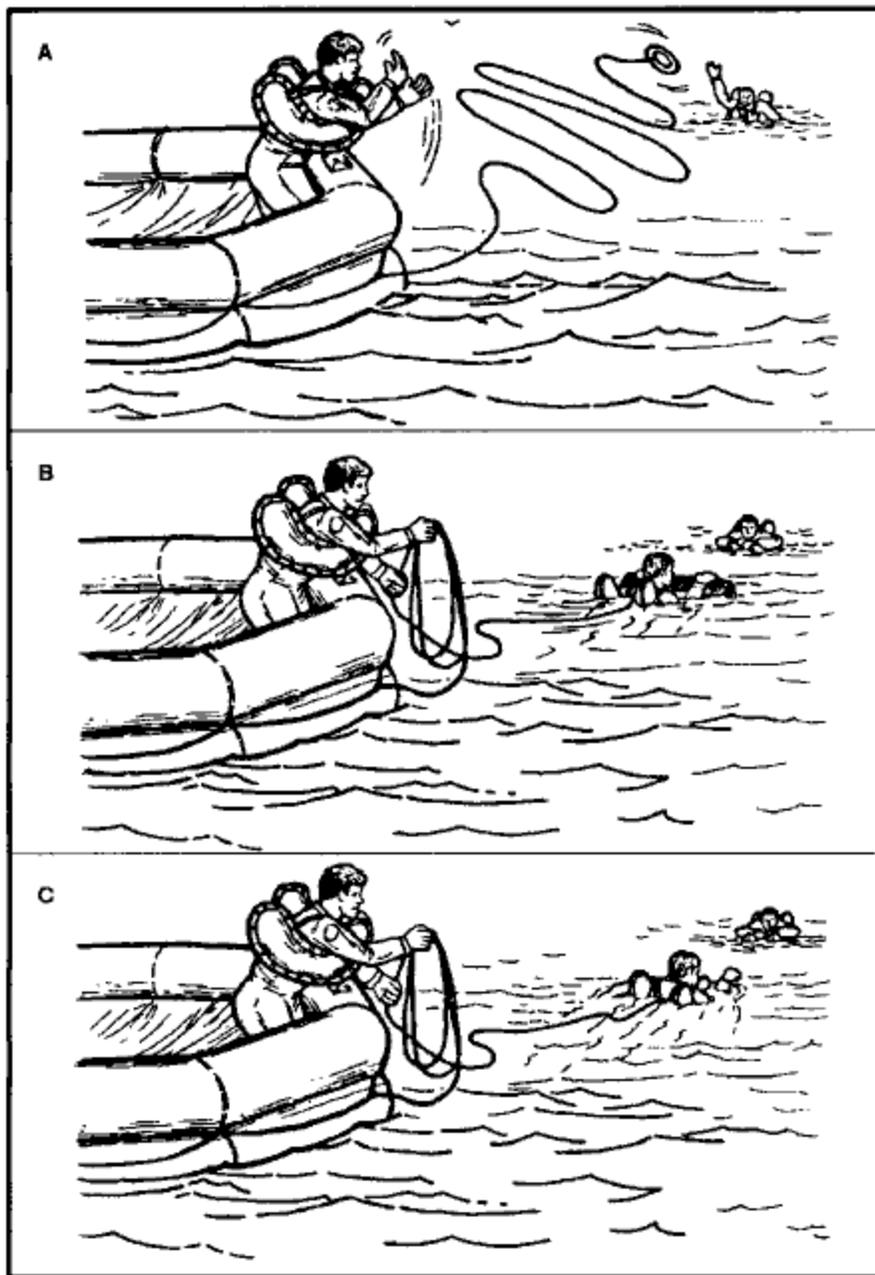


Figure 16-1. Rescue from water.

The best technique for rescuing personnel from the water is to throw them a life preserver attached to a line. Another is to send a swimmer (rescuer) from the raft with a line attached to a flotation device that will support the rescuer's weight. This device will help conserve a rescuer's energy while recovering the survivor. The least acceptable technique is to send an attached swimmer without flotation devices to retrieve a survivor. In all cases, the rescuer wears a life preserver. A rescuer should not underestimate the strength of a panic-stricken person in the water. A careful approach can prevent injury to the rescuer.

When the rescuer approaches a survivor in trouble from behind, there is little danger the survivor will kick, scratch, or grab him. The rescuer swims to a point directly behind the survivor and grasps the life preserver's backstrap. The rescuer uses the sidestroke to drag the survivor to the raft.

If you are in the water, make your way to a raft. If no rafts are available, try to find a large piece of floating debris to cling to. Relax; a person who knows how to relax in ocean water

is in very little danger of drowning. The body's natural buoyancy will keep at least the top of the head above water, but some movement is needed to keep the face above water. Floating on your back takes the least energy. Lie on your back in the water, spread your arms and legs, and arch your back. By controlling your breathing in and out, your face will always be out of the water and you may even sleep in this position for short periods. Your head will be partially submerged, but your face will be above water. If you cannot float on your back or if the sea is too rough, float facedown in the water as shown in [Figure 16-2](#).

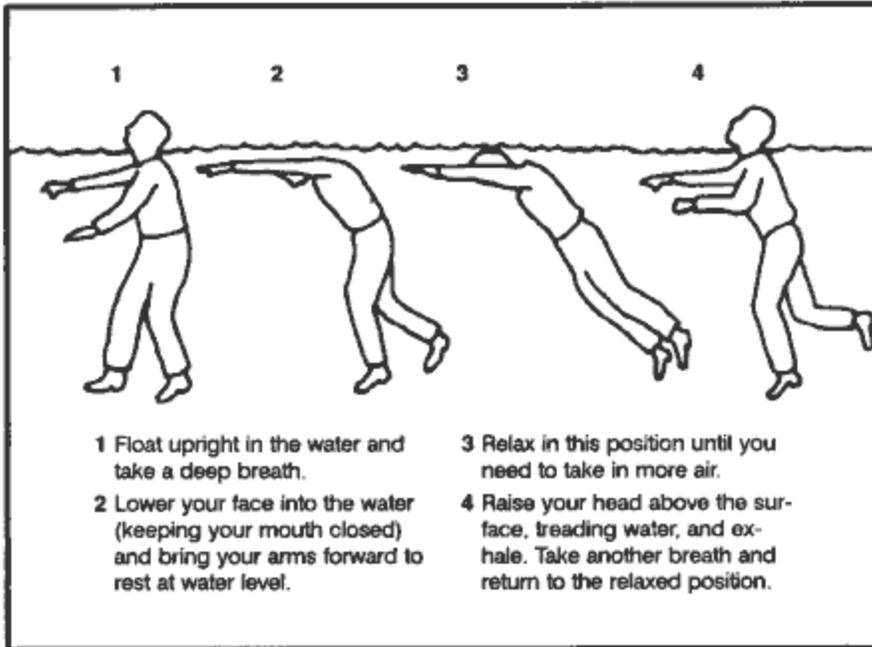


Figure 16-2. Floating position.

The following are the best swimming strokes during a survival situation:

- *Dog paddle*. This stroke is excellent when clothed or wearing a life jacket. Although slow in speed, it requires very little energy.
- *Breaststroke*. Use this stroke to swim underwater, through oil or debris, or in rough seas. It is probably the best stroke for long-range swimming: it allows you to conserve your energy and maintain a reasonable speed.
- *Sidestroke*. It is a good relief stroke because you use only one arm to maintain momentum and buoyancy.
- *Backstroke*. This stroke is also an excellent relief stroke. It relieves the muscles that you use for other strokes. Use it if an underwater explosion is likely.

If you are in an area where surface oil is burning--

- Discard your shoes and buoyant life preserver.

Note: If you have an uninflated life preserver, keep it.

- Cover your nose, mouth, and eyes and quickly go underwater.
- Swim underwater as far as possible before surfacing to breathe.
- Before surfacing to breathe and while still underwater, use your hands to push burning fluid away from the area where you wish to surface. Once an area is clear of burning liquid, you can surface and take a few breaths. Try to face downwind before inhaling.
- Submerge feet first and continue as above until clear of the flames.

If you are in oil-covered water that is free of fire, hold your head high to keep the oil out of your eyes. Attach your life preserver to your wrist and then use it as a raft.

If you have a life preserver, you can stay afloat for an indefinite period. In this case, use the "HELP" body position: Heat Escaping Lessening Posture (HELP). Remain still and assume the fetal position to help you retain body heat. You lose about 50 percent of your body heat through your head. Therefore, keep your head out of the water. Other areas of high heat loss are the neck, the sides, and the groin. [Figure 16-3](#) illustrates the HELP position.



Figure 16-3. HELP position.

If you are in a raft--

- Check the physical condition of all on board. Give first aid if necessary. Take seasickness pills if available. The best way to take these pills is to place them under the tongue and let them dissolve. There are also suppositories or injections against seasickness. Vomiting, whether from seasickness or other causes, increases the danger of dehydration.

- Try to salvage all floating equipment--rations; canteens, thermos jugs, and other containers; clothing; seat cushions; parachutes; and anything else that will be useful to you. Secure the salvaged items in or to your raft. Make sure the items have no sharp edges that can puncture the raft.
- If there are other rafts, lash the rafts together so they are about 7.5 meters apart. Be ready to draw them closer together if you see or hear an aircraft. It is easier for an aircrew to spot rafts that are close together rather than scattered.
- Remember, rescue at sea is a cooperative effort. Use all available visual or electronic signaling devices to signal and make contact with rescuers. For example, raise a flag or reflecting material on an oar as high as possible to attract attention.
- Locate the emergency radio and get it into operation. Operating instructions are on it. Use the emergency transceiver only when friendly aircraft are likely to be in the area.
- Have other signaling devices ready for instant use. If you are in enemy territory, avoid using a signaling device that will alert the enemy. However, if your situation is desperate, you may have to signal the enemy for rescue if you are to survive.

Check the raft for inflation, leaks, and points of possible chafing. Make sure the main buoyancy chambers are firm (well rounded) but not overly tight ([Figure 16-4](#)). Check inflation regularly. Air expands with heat; therefore, on hot days, release some air and add air when the weather cools.

- Decontaminate the raft of all fuel. Petroleum will weaken its surfaces and break down its glued joints.

Throw out the sea anchor, or improvise a drag from the raft's case, bailing bucket, or a roll of clothing. A sea anchor helps you stay close to your ditching site, making it easier for searchers to find you if you have relayed your location. Without a sea anchor, your raft may drift over 160 kilometers in a day, making it much harder to find you. You can adjust the sea anchor to act as a drag to slow down the rate of travel with the current, or as a means to travel with the current. You make this adjustment by opening or closing the sea anchor's apex. When open, the sea anchor ([Figure 16-5](#)) acts as a drag that keeps you in the general area. When closed, it forms a pocket for the current to strike and propels the raft in the current's direction.

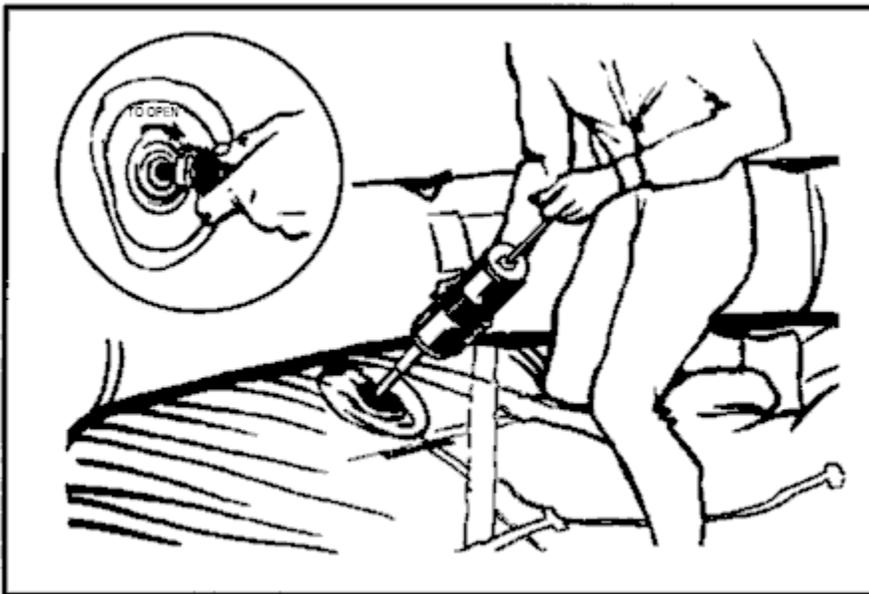


Figure 16-4. Inflating the 20-man raft.

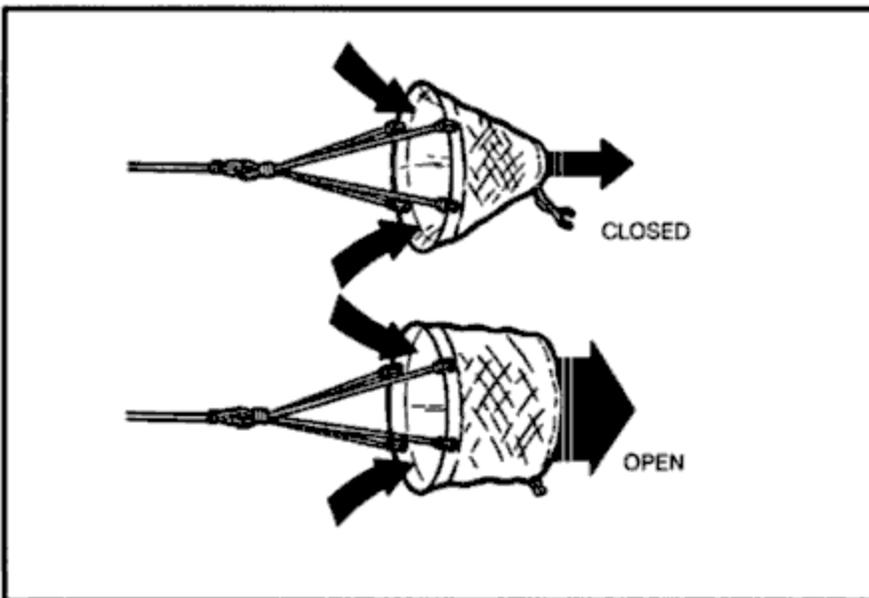


Figure 16-5. Sea anchor.

Additionally, adjust the sea anchor so that when the raft is on the wave's crest, the sea anchor is in the wave's trough ([Figure 16-6](#)).

- Wrap the sea anchor rope with cloth to prevent its chafing the raft. The anchor also helps to keep the raft headed into the wind and waves.
- In stormy water, rig the spray and windshield at once. In a 20-man raft, keep the canopy erected at all times. Keep your raft as dry as possible. Keep it properly balanced. All personnel should stay seated, the heaviest one in the center.
- Calmly consider all aspects of your situation and determine what you and your companions must do to survive. Inventory all equipment, food, and water.

Waterproof items that salt water may affect. These include compasses, watches, sextant, matches, and lighters. Ration food and water.

- Assign a duty position to each person: for example, water collector, food collector, lookout, radio operator, signaler, and water bailers.

Note: Lookout duty should not exceed 2 hours. Keep in mind and remind others that cooperation is one of the keys to survival.

- Keep a log. Record the navigator's last fix, the time of ditching, the names and physical condition of personnel, and the ration schedule. Also record the winds, weather, direction of swells, times of sunrise and sunset, and other navigational data.
- If you are down in unfriendly waters, take special security measures to avoid detection. Do not travel in the daytime. Throw out the sea anchor and wait for nightfall before paddling or hoisting sail. Keep low in the raft; stay covered with the blue side of the camouflage cloth up. Be sure a passing ship or aircraft is friendly or neutral before trying to attract its attention. If the enemy detects you and you are close to capture, destroy the log book, radio, navigation equipment, maps, signaling equipment, and firearms. Jump overboard and submerge if the enemy starts strafing.
- Decide whether to stay in position or to travel. Ask yourself, "How much information was signaled before the accident? Is your position known to rescuers? Do you know it yourself? Is the weather favorable for a search? Are other ships or aircraft likely to pass your present position? How many days supply of food and water do you have?"

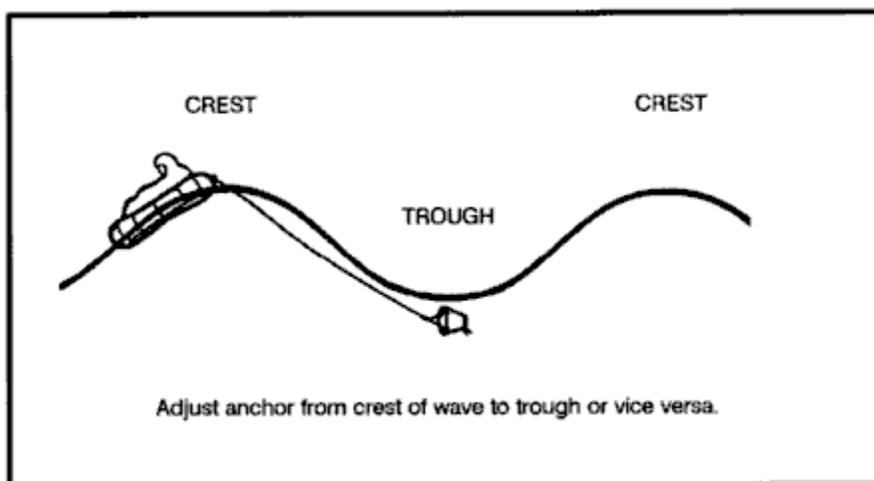


Figure 16-6. Deployment of the sea anchor.

Cold Weather Considerations

If you are in a cold climate--

- Put on an antiexposure suit. If unavailable, put on any extra clothing available. Keep clothes loose and comfortable.
- Take care not to snag the raft with shoes or sharp objects. Keep the repair kit where you can readily reach it.
- Rig a windbreak, spray shield, and canopy.
- Try to keep the floor of the raft dry. Cover it with canvas or cloth for insulation.
- Huddle with others to keep warm, moving enough to keep the blood circulating. Spread an extra tarpaulin, sail, or parachute over the group.
- Give extra rations, if available, to men suffering from exposure to cold.

The greatest problem you face when submerged in cold water is death due to hypothermia. When you are immersed in cold water, hypothermia occurs rapidly due to the decreased insulating quality of wet clothing and the result of water displacing the layer of still air that normally surrounds the body. The rate of heat exchange in water is about 25 times greater than it is in air of the same temperature. [Figure 16-7](#) lists life expectancy times for immersion in water.

Water Temperature	Time
21.0-15.5 degrees C (70-60 degrees F)	12 hours
15.5-10.0 degrees C (60-50 degrees F)	6 hours
10.0-4.5 degrees C (50-40 degrees F)	1 hour
4.5 degrees C (40 degrees F) and below	less than 1 hour
<i>Note: Wearing an antiexposure suit may increase these times up to a maximum of 24 hours.</i>	

Figure 16-7. Life expectancy times for immersion in water.

Your best protection against the effects of cold water is to get into the life raft, stay dry, and insulate your body from the cold surface of the bottom of the raft. If these actions are not possible, wearing an antiexposure suit will extend your life expectancy considerably. Remember, keep your head and neck out of the water and well insulated from the cold water's effects when the temperature is below 19 degrees C. Wearing life preservers increases the predicted survival time as body position in the water increases the chance of survival.

Hot Weather Considerations

If you are in a hot climate--

- Rig a sunshade or canopy. Leave enough space for ventilation.

- Cover your skin, where possible, to protect it from sunburn. Use sunburn cream, if available, on all exposed skin. Your eyelids, the back of your ears, and the skin under your chin sunburn easily.

Raft Procedures

Most of the rafts in the U. S. Army and Air Force inventories can satisfy the needs for personal protection, mode of travel, and evasion and camouflage.

Note: Before boarding any raft, remove and tether (attach) your life preserver to yourself or the raft. Ensure there are no other metallic or sharp objects on your clothing or equipment that could damage the raft. After boarding the raft, don your life preserver again.

One-Man Raft

The one-man raft has a main cell inflation. If the CO₂ bottle should malfunction or if the raft develops a leak, you can inflate it by mouth.

The spray shield acts as a shelter from the cold, wind, and water. In some cases, this shield serves as insulation. The raft's insulated bottom limits the conduction of cold thereby protecting you from hypothermia ([Figure 16-8](#)).

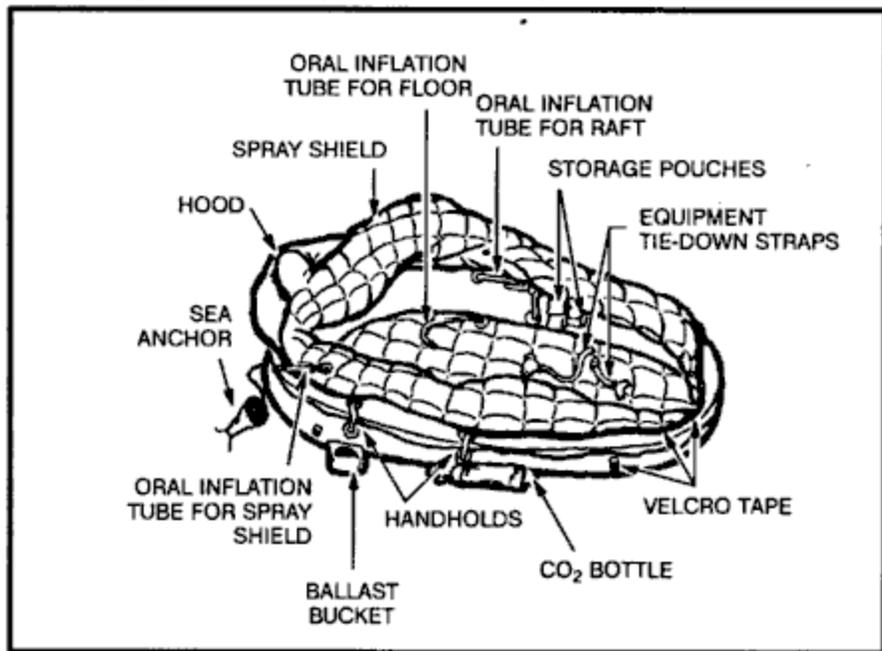


Figure 16-8. One-man raft with spray shield.

You can travel more effectively by inflating or deflating the raft to take advantage of the wind or current. You can use the spray shield as a sail while the ballast buckets serve to increase drag in the water. You may use the sea anchor to control the raft's speed and direction.

There are rafts developed for use in tactical areas that are black. These rafts blend with the sea's background. You can further modify these rafts for evasion by partially deflating them to obtain a lower profile.

A lanyard connects the one-man raft to a parachutist (survivor) landing in the water. You (the survivor) inflate it upon landing. You do not swim to the raft, but pull it to you via the lanyard. The raft may hit the water upside down, but you can right it by approaching the side to which the bottle is attached and flipping the raft over. The spray shield must be in

the raft to expose the boarding handles. Follow the steps outlined in the [note](#) under raft procedures above when boarding the raft ([Figure 16-9](#)).



Figure 16-9. Boarding the one-man raft.

If you have an arm injury, the best way to board is by turning your back to the small end of the raft, pushing the raft under your buttocks, and lying back. Another way to board the raft is to push down on its small end until one knee is inside and lie forward ([Figure 16-10](#)).

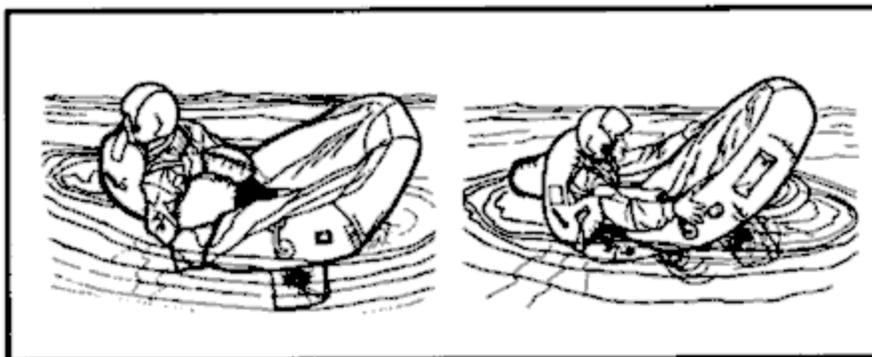


Figure 16-10. Boarding the one-man raft (other methods).

In rough seas, it may be easier for you to grasp the small end of the raft and, in a prone position, to kick and pull yourself into the raft. When you are lying face down in the raft, deploy and adjust the sea anchor. To sit upright, you may have to disconnect one side of the seat kit and roll to that side. Then you adjust the spray shield. There are two variations of the one-man raft; the improved model incorporates an inflatable spray shield and floor that provide additional insulation. The spray shield helps keep you dry and warm in cold oceans and protects you from the sun in the hot climates ([Figure 16-11](#)).



Figure 16-11. One-man raft with spray shield inflated.

Seven-Man Raft

Some multiplace aircraft carry the seven-man raft. It is a component of the survival drop kit (Figure 16-12). This raft may inflate upside down and require you to right the raft before boarding. Always work from the bottle side to prevent injury if the raft turns over. Facing into the wind, the wind provides additional help in righting the raft. Use the handles on the inside bottom of the raft for boarding (Figure 16-13).

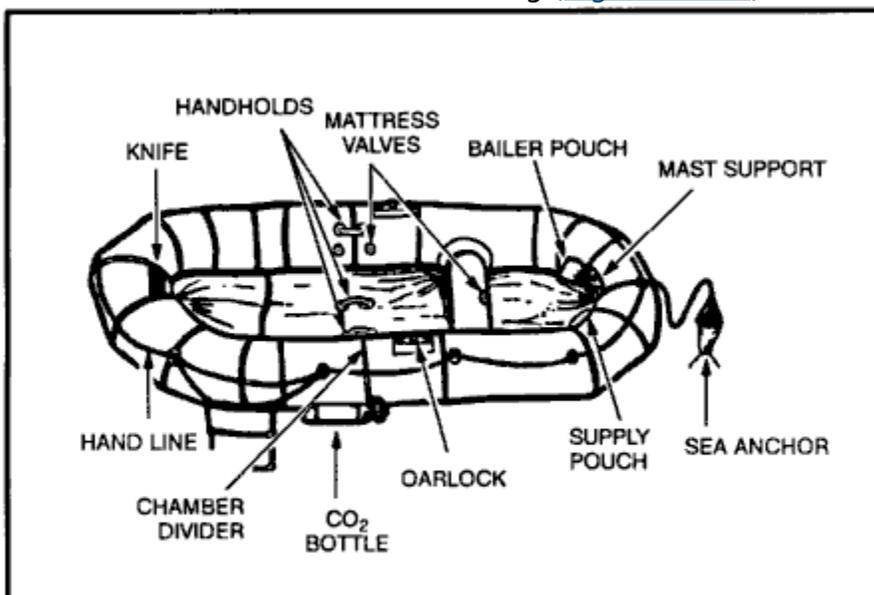


Figure 16-12. Seven-man raft.

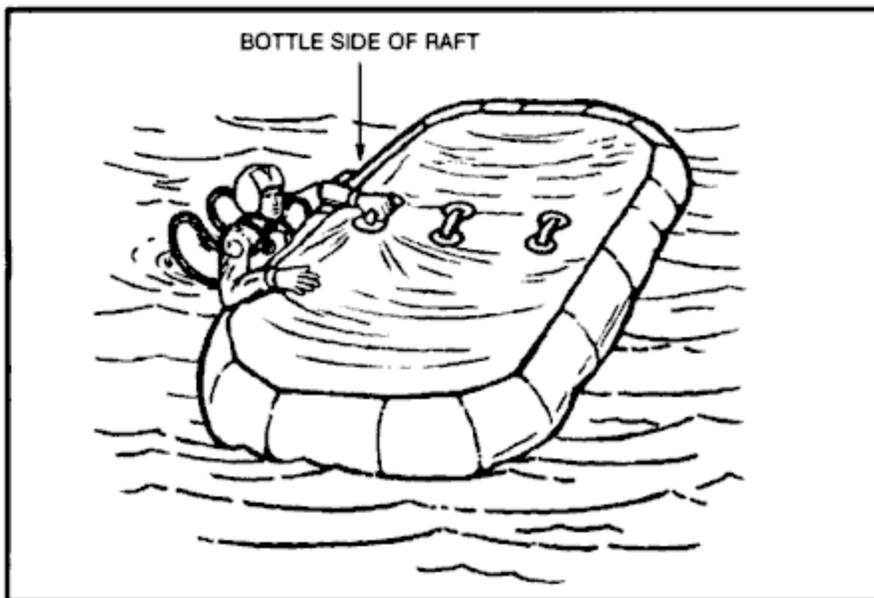


Figure 16-13. Method of righting raft.

Use the boarding ramp if someone holds down the raft's opposite side. If you don't have help, again work from the bottle side with the wind at your back to help hold down the raft. Follow the steps outlined in the [note](#) under raft procedures above. Then grasp an oarlock and boarding handle, kick your legs to get your body prone on the water, and then kick and pull yourself into the raft. If you are weak or injured, you may partially deflate the raft to make boarding easier ([Figure 16-14](#)).

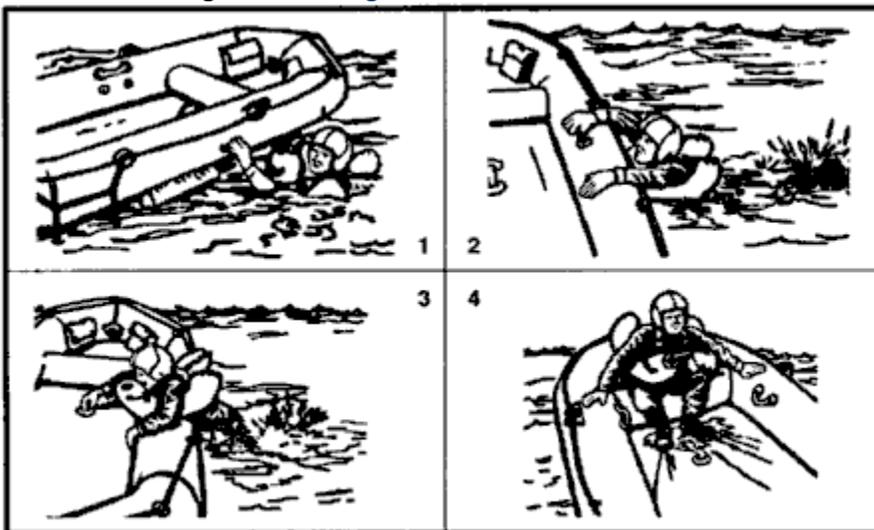


Figure 16-14. Method of boarding seven-man raft.

Use the hand pump to keep the buoyancy chambers and cross seat firm. Never overinflate the raft.

Twenty- or Twenty-Five-Man Rafts

You may find 20- or 25-man rafts in multiplace aircraft ([Figures 16-15](#) and [16-16](#)). You will find them in accessible areas of the fuselage or in raft compartments. Some may be automatically deployed from the cock-pit, while others may need manual deployment. No matter how the raft lands in the water, it is ready for boarding. A lanyard connects the accessory kit to the raft and you retrieve the kit by hand. You must manually inflate the center chamber with the hand pump. Board the 20- or 25-man raft from the aircraft, if possible. If not, board in the following manner:

- Approach the lower boarding ramp.
- Remove your life preserver and tether it to yourself so that it trails behind you.
- Grasp the boarding handles and kick your legs to get your body into a prone position on the water's surface; then kick and pull until you are inside the raft.

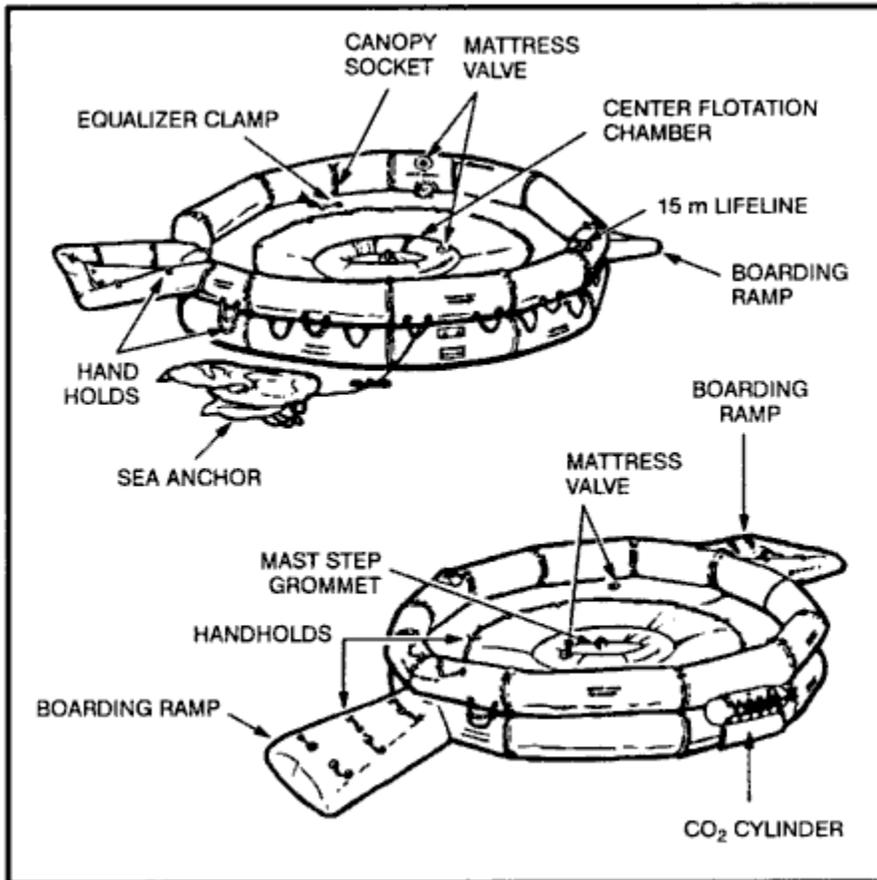


Figure 16-15. Twenty-man raft.

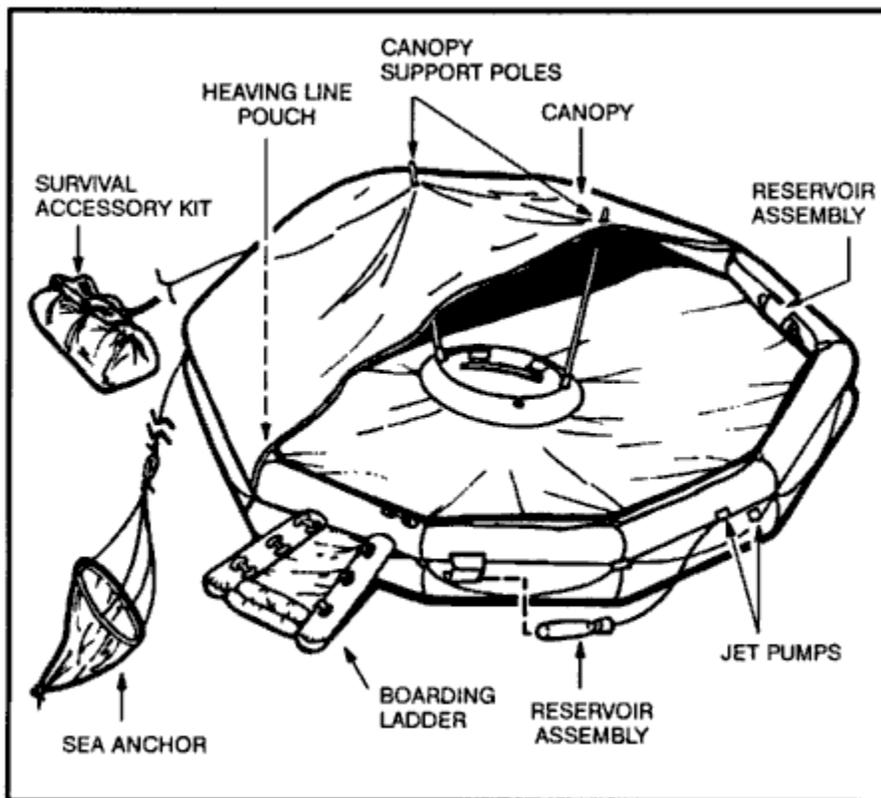


Figure 16-16. Twenty-five-man raft.

An incompletely inflated raft will make boarding easier. Approach the intersection of the raft and ramp, grasp the upper boarding handle, and swing one leg onto the center of the ramp, as in mounting a horse (Figure 16-17).

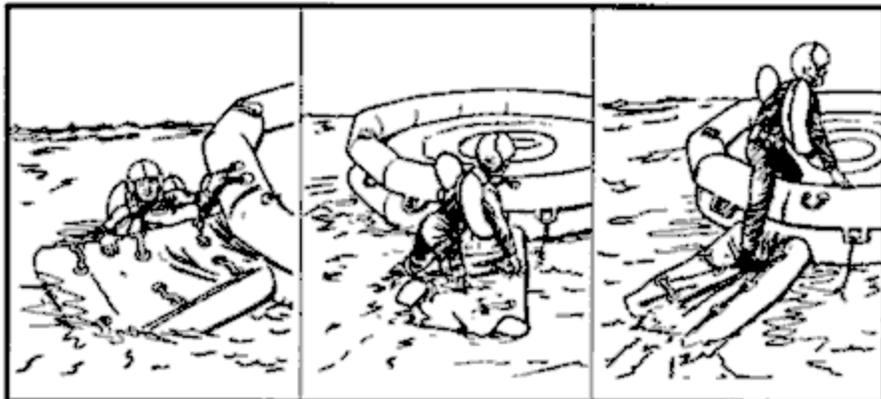


Figure 16-17. Boarding the 20-man raft.

Immediately tighten the equalizer clamp upon entering the raft to prevent deflating the entire raft in case of a puncture (Figure 16-18).

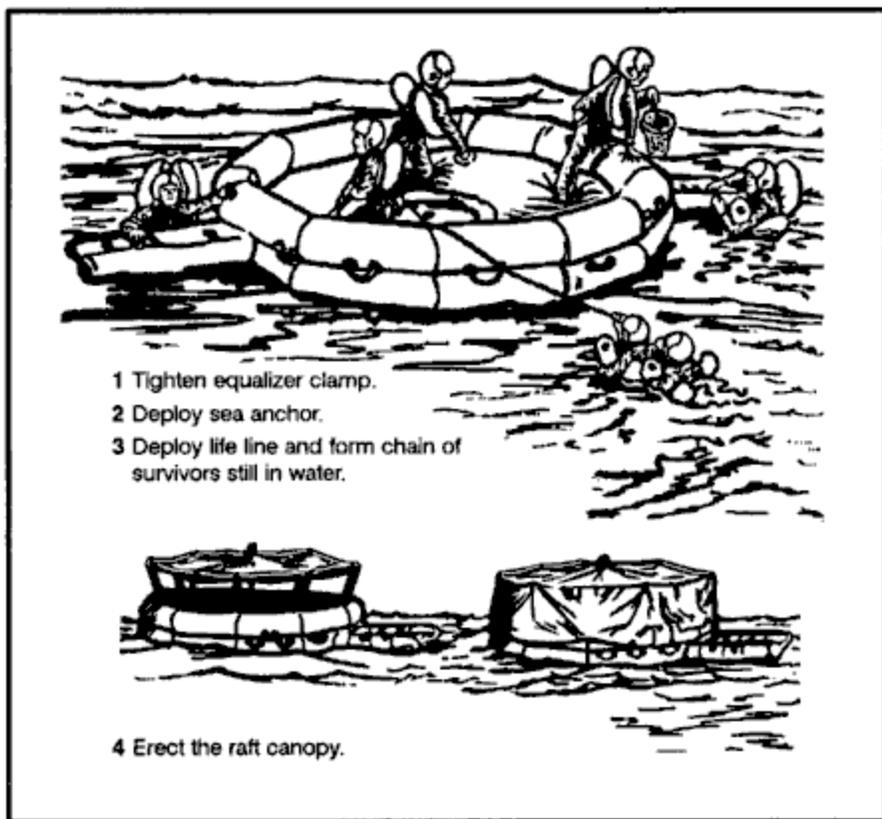


Figure 16-18. Immediate action—multiplace raft.

Use the pump to keep these rafts' chambers and center ring firm. They should be well rounded but not overly tight.

Sailing Rafts

Rafts do not have keels, therefore, you can't sail them into the wind. However, anyone can sail a raft downwind. You can successfully sail multiplace (except 20- to 25-man) rafts 10 degrees off from the direction of the wind. Do not try to sail the raft unless land is near. If you decide to sail and the wind is blowing toward a desired destination, fully inflate the raft, sit high, take in the sea anchor, rig a sail, and use an oar as a rudder.

In a multiplace (except 20- to 25-man) raft, erect a square sail in the bow using the oars and their extensions as the mast and crossbar ([Figure 16-19](#)). You may use a waterproof tarpaulin or parachute material for the sail. If the raft has no regular mast socket and step, erect the mast by tying it securely to the front cross seat using braces. Pad the bottom of the mast to prevent it from chafing or punching a hole through the floor, whether or not there is a socket. The heel of a shoe, with the toe wedged under the seat, makes a good improvised mast step. Do not secure the corners of the lower edge of the sail. Hold the lines attached to the corners with your hands so that a gust of wind will not rip the sail, break the mast, or capsize the raft.

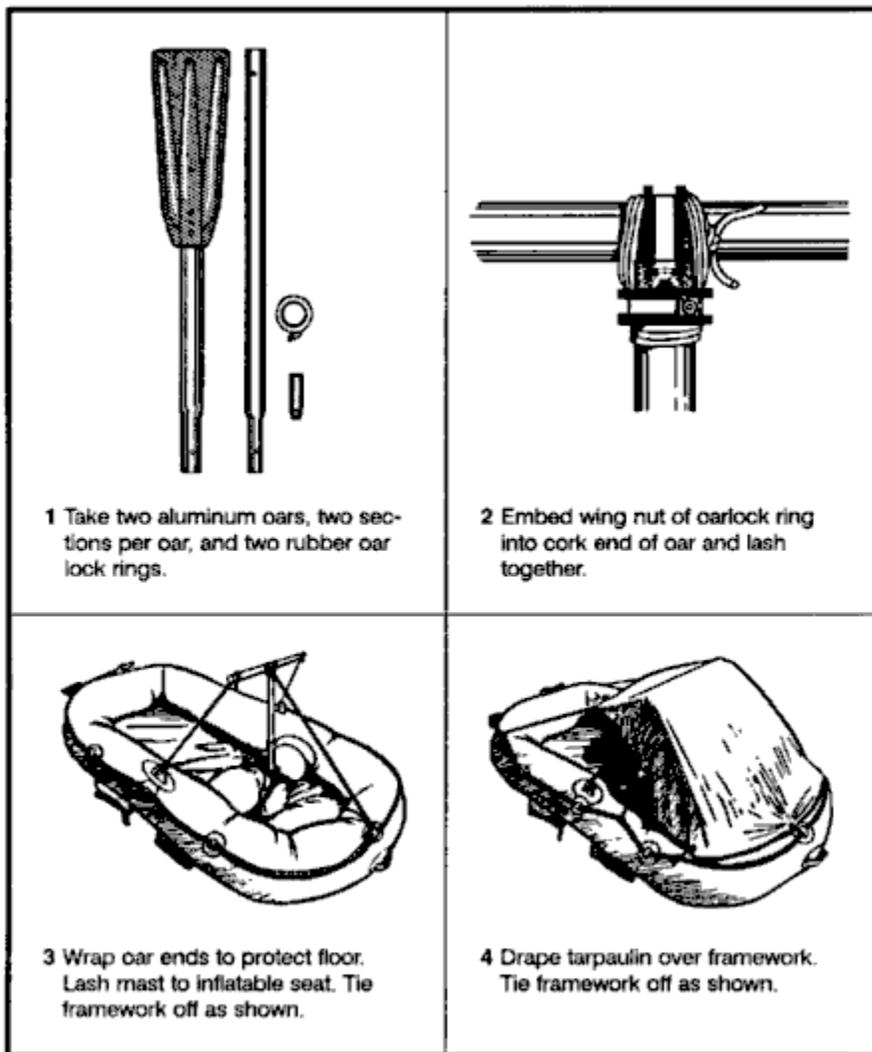


Figure 16-19. Sail construction.

Take every precaution to prevent the raft from turning over. In rough weather, keep the sea anchor away from the bow. Have the passengers sit low in the raft, with their weight distributed to hold the upwind side down. To prevent falling out, they should also avoid sitting on the sides of the raft or standing up. Avoid sudden movements without warning the other passengers. When the sea anchor is not in use, tie it to the raft and stow it in such a manner that it will hold immediately if the raft capsizes.

Water

Water is your most important need. With it alone, you can live for ten days or longer, depending on your will to live. When drinking water, moisten your lips, tongue, and throat before swallowing.

Short Water Rations

When you have a limited water supply and you can't replace it by chemical or mechanical means, use the water efficiently. Protect freshwater supplies from seawater contamination. Keep your body well shaded, both from overhead sun and from reflection off the sea surface. Allow ventilation of air; dampen your clothes during the hottest part of the day. Do not exert yourself. Relax and sleep when possible. Fix your daily water ration after considering the amount of water you have, the output of solar stills and desalting kit, and the number and physical condition of your party.

If you don't have water, don't eat. If your water ration is two liters or more per day, eat any part of your ration or any additional food that you may catch, such as birds, fish, shrimp. The life raft's motion and anxiety may cause nausea. If you eat when nauseated, you may lose your food immediately. If nauseated, rest and relax as much as you can, and take only water.

To reduce your loss of water through perspiration, soak your clothes in the sea and wring them out before putting them on again. Don't overdo this during hot days when no canopy or sun shield is available. This is a trade-off between cooling and saltwater boils and rashes that will result. Be careful not to get the bottom of the raft wet.

Watch the clouds and be ready for any chance of showers. Keep the tarpaulin handy for catching water. If it is encrusted with dried salt, wash it in seawater. Normally, a small amount of seawater mixed with rain will hardly be noticeable and will not cause any physical reaction. In rough seas you cannot get uncontaminated fresh water.

At night, secure the tarpaulin like a sunshade, and turn up its edges to collect dew. It is also possible to collect dew along the sides of the raft using a sponge or cloth. When it rains, drink as much as you can hold.

Solar Still

When solar stills are available, read the instructions and set them up immediately. Use as many stills as possible, depending on the number of men in the raft and the amount of sunlight available. Secure solar stills to the raft with care. This type of solar still only works on flat, calm seas.

Desalting Kits

When desalting kits are available in addition to solar stills, use them only for immediate water needs or during long overcast periods when you cannot use solar stills. In any event, keep desalting kits and emergency water stores for periods when you cannot use solar stills or catch rainwater.

Water From Fish

Drink the aqueous fluid found along the spine and in the eyes of large fish. Carefully cut the fish in half to get the fluid along the spine and suck the eye. If you are so short of water that you need to do this, then **do not** drink any of the other body fluids. These other fluids are rich in protein and fat and will use up more of your reserve water in digestion than they supply.

Sea Ice

In arctic waters, use old sea ice for water. This ice is bluish, has rounded corners, and splinters easily. It is nearly free of salt. New ice is gray, milky, hard, and salty. Water from icebergs is fresh, but icebergs are dangerous to approach. Use them as a source of water only in emergencies.

REMEMBER!

Do not drink seawater.

Do not drink urine.

Do not drink alcohol.

Do not smoke.

Do not eat, unless water is available.

Sleep and rest are the best ways of enduring periods of reduced water and food intake. However, make sure that you have enough shade when napping during the day. If the sea is rough, tie yourself to the raft, close any cover, and ride out the storm as best you can. *Relax* is the key word--at least try to relax.

Food Procurement

In the open sea, fish will be the main food source. There are some poisonous and dangerous ocean fish, but, in general, when out of sight of land, fish are safe to eat. Nearer

the shore there are fish that are both dangerous and poisonous to eat. There are some fish, such as the red snapper and barracuda, that are normally edible but poisonous when taken from the waters of atolls and reefs. Flying fish will even jump into your raft!

Fish

When fishing, do not handle the fishing line with bare hands and never wrap it around your hands or tie it to a life raft. The salt that adheres to it can make it a sharp cutting edge, an edge dangerous both to the raft and your hands. Wear gloves, if they are available, or use a cloth to handle fish and to avoid injury from sharp fins and gill covers.

In warm regions, gut and bleed fish immediately after catching them. Cut fish that you do not eat immediately into thin, narrow strips and hang them to dry. A well-dried fish stays edible for several days. Fish not cleaned and dried may spoil in half a day. Fish with dark meat are very prone to decomposition. If you do not eat them all immediately, do not eat any of the leftovers. Use the leftovers for bait.

Never eat fish that have pale, shiny gills, sunken eyes, flabby skin and flesh, or an unpleasant odor. Good fish show the opposite characteristics. Sea fish have a saltwater or clean fishy odor. Do not confuse eels with sea snakes that have an obviously scaly body and strongly compressed, paddle-shaped tail. Both eels and sea snakes are edible, but you must handle the latter with care because of their poisonous bites. The heart, blood, intestinal wall, and liver of most fish are edible. Cook the intestines. Also edible are the partly digested smaller fish that you may find in the stomachs of large fish. In addition, sea turtles are edible.

Shark meat is a good source of food whether raw, dried, or cooked. Shark meat spoils very rapidly due to the high concentration of urea in the blood, therefore, bleed it immediately and soak it in several changes of water. People prefer some shark species over others. Consider them all edible except the Greenland shark whose flesh contains high quantities of vitamin A. Do not eat the livers, due to high vitamin A content.

Fishing Aids

You can use different materials to make fishing aids as described in the following paragraphs:

- *Fishing line.* Use pieces of tarpaulin or canvas. Unravel the threads and tie them together in short lengths in groups of three or more threads. Shoelaces and parachute suspension line also work well.
- *Fish hooks.* No survivor at sea should be without fishing equipment but if you are, improvise hooks as shown in Chapter 8.
- *Fish lures.* You can fashion lures by attaching a double hook to any shiny piece of metal.
- *Grapple.* Use grapples to hook seaweed. You may shake crabs, shrimp, or small fish out of the seaweed. These you may eat or use for bait. You may eat seaweed itself, but only when you have plenty of drinking water. Improvise grapples from wood. Use a heavy piece of wood as the main shaft, and lash three smaller pieces to the shaft as grapples.
- *Bait.* You can use small fish as bait for larger ones. Scoop the small fish up with a net. If you don't have a net, make one from cloth of some type. Hold the net under

the water and scoop upward. Use all the guts from birds and fish for bait. When using bait, try to keep it moving in the water to give it the appearance of being alive.

Helpful Fishing Hints

Your fishing should be successful if you remember the following important hints:

- Be extremely careful with fish that have teeth and spines.
- Cut a large fish loose rather than risk capsizing the raft. Try to catch small rather than large fish.
- Do not puncture your raft with hooks or other sharp instruments.
- Do not fish when large sharks are in the area.
- Watch for schools of fish; try to move close to these schools.
- Fish at night using a light. The light attracts fish.
- In the daytime, shade attracts some fish. You may find them under your raft.
- Improvise a spear by tying a knife to an oar blade. This spear can help you catch larger fish, but you must get them into the raft quickly or they will slip off the blade. Also, tie the knife very securely or you may lose it.
- Always take care of your fishing equipment. Dry your fishing lines, clean and sharpen the hooks, and do not allow the hooks to stick into the fishing lines.

Birds

As stated in Chapter 8, all birds are edible. Eat any birds you can catch. Sometimes birds may land on your raft, but usually they are cautious. You may be able to attract some birds by towing a bright piece of metal behind the raft. This will bring the bird within shooting range, provided you have a firearm.

If a bird lands within your reach, you may be able to catch it. If the birds do not land close enough or land on the other end of the raft, you may be able to catch them with a bird noose. Bait the center of the noose and wait for the bird to land. When the bird's feet are in the center of the noose, pull it tight.

Use all parts of the bird. Use the feathers for insulation, the entrails and feet for bait, and so on. Use your imagination.

Medical Problems Associated With Sea Survival

At sea, you may become seasick, get saltwater sores, or face some of the same medical problems that occur on land, such as dehydration or sunburn. These problems can become critical if left untreated.

Seasickness

Seasickness is the nausea and vomiting caused by the motion of the raft. It can result in--

- Extreme fluid loss and exhaustion.
- Loss of the will to survive.
- Others becoming seasick.
- Attraction of sharks to the raft.
- Unclean conditions.

To treat seasickness--

- Wash both the patient and the raft to remove the sight and odor of vomit.
- Keep the patient from eating food until his nausea is gone.
- Have the patient lie down and rest.
- Give the patient seasickness pills if available. If the patient is unable to take the pills orally, insert them rectally for absorption by the body.

Note: Some survivors have said that erecting a canopy or using the horizon as a focal point helped overcome seasickness. Others have said that swimming alongside the raft for short periods helped, but extreme care must be taken if swimming.

Saltwater Sores

These sores result from a break in skin exposed to saltwater for an extended period. The sores may form scabs and pus. Do not open or drain. Flush the sores with fresh water, if available, and allow to dry. Apply an antiseptic, if available.

Immersion Rot, Frostbite, and Hypothermia

These problems are similar to those encountered in cold weather environments. Symptoms and treatment are the same as covered in Chapter 15.

Blindness/Headache

If flame, smoke, or other contaminants get in the eyes, flush them immediately with salt water, then with fresh water, if available. Apply ointment, if available. Bandage both eyes 18 to 24 hours, or longer if damage is severe. If the glare from the sky and water causes

your eyes to become bloodshot and inflamed, bandage them lightly. Try to prevent this problem by wearing sunglasses. Improvise sunglasses if necessary.

Constipation

This condition is a common problem on a raft. Do not take a laxative, as this will cause further dehydration. Exercise as much as possible and drink an adequate amount of water, if available.

Difficult Urination

This problem is not unusual and is due mainly to dehydration. It is best not to treat it, as it could cause further dehydration.

Sunburn

Sunburn is a serious problem in sea survival. Try to prevent sunburn by staying in shade and keeping your head and skin covered. Use cream or Chap Stick from your first aid kit. Remember, reflection from the water also causes sunburn.

Sharks

Whether you are in the water or in a boat or raft, you may see many types of sea life around you. Some may be more dangerous than others. Generally, sharks are the greatest danger to you. Other animals such as whales, porpoises, and stingrays may look dangerous, but really pose little threat in the open sea.

Of the many hundreds of shark species, only about 20 species are known to attack man. The most dangerous are the great white shark, the hammerhead, the mako, and the tiger shark. Other sharks known to attack man include the gray, blue, lemon, sand, nurse, bull, and oceanic white tip sharks. Consider any shark longer than 1 meter dangerous.

There are sharks in all oceans and seas of the world. While many live and feed in the depths of the sea, others hunt near the surface. The sharks living near the surface are the ones you will most likely see. Their dorsal fins frequently project above the water. Sharks in the tropical and subtropical seas are far more aggressive than those in temperate waters. All sharks are basically eating machines. Their normal diet is live animals of any type, and they will strike at injured or helpless animals. Sight, smell, or sound may guide them to their prey. Sharks have an acute sense of smell and the smell of blood in the water excites them. They are also very sensitive to any abnormal vibrations in the water. The struggles of a wounded animal or swimmer, underwater explosions, or even a fish struggling on a fishline will attract a shark.

Sharks can bite from almost any position; they do not have to turn on their side to bite. The jaws of some of the larger sharks are so far forward that they can bite floating objects easily without twisting to the side.

Sharks may hunt alone, but most reports of attacks cite more than one shark present. The smaller sharks tend to travel in schools and attack in mass. Whenever one of the sharks finds a victim, the other sharks will quickly join it. Sharks will eat a wounded shark as quickly as their prey.

Sharks feed at all hours of the day and night. Most reported shark contacts and attacks were during daylight, and many of these have been in the late afternoon. Some of the measures that you can take to protect yourself against sharks when you are in the water are--

- *Stay with other swimmers.* A group can maintain a 360-degree watch. A group can either frighten or fight off sharks better than one man.
- *Always watch for sharks.* Keep all your clothing on, to include your shoes. Historically, sharks have attacked the unclothed men in groups first, mainly in the feet. Clothing also protects against abrasions should the shark brush against you.

- *Avoid urinating.* If you must, only do so in small amounts. Let it dissipate between discharges. If you must defecate, do so in small amounts and throw it as far away from you as possible. Do the same if you must vomit.

If a shark attack is imminent while you are in the water, splash and yell just enough to keep the shark at bay. Sometimes yelling underwater or slapping the water repeatedly will scare the shark away. Conserve your strength for fighting in case the shark attacks.

If attacked, kick and strike the shark. Hit the shark on the gills or eyes if possible. If you hit the shark on the nose, you may injure your hand if it glances off and hits its teeth.

When you are in a raft and see sharks--

- Do not fish. If you have hooked a fish, let it go. Do not clean fish in the water.
- Do not throw garbage overboard.
- Do not let your arms, legs, or equipment hang in the water.
- Keep quiet and do not move around.
- Bury all dead as soon as possible. If there are many sharks in the area, conduct the burial at night.

When you are in a raft and a shark attack is imminent, hit the shark with anything you have, except your hands. You will do more damage to your hands than the shark. If you strike with an oar, be careful not to lose or break it.

Detecting Land

You should watch carefully for any signs of land. There are many indicators that land is near.

A fixed cumulus cloud in a clear sky or in a sky where all other clouds are moving often hovers over or slightly downwind from an island.

In the tropics, the reflection of sunlight from shallow lagoons or shelves of coral reefs often causes a greenish tint in the sky.

In the arctic, light-colored reflections on clouds often indicate ice fields or snow-covered land. These reflections are quite different from the dark gray ones caused by open water. Deep water is dark green or dark blue. Lighter color indicates shallow water, which may mean land is near.

At night, or in fog, mist, or rain, you may detect land by odors and sounds. The musty odor of mangrove swamps and mud flats carry a long way. You hear the roar of surf long before you see the surf. The continued cries of seabirds coming from one direction indicate their roosting place on nearby land.

There usually are more birds near land than over the open sea. The direction from which flocks fly at dawn and to which they fly at dusk may indicate the direction of land. During the day, birds are searching for food and the direction of flight has no significance.

Mirages occur at any latitude, but they are more likely in the tropics, especially during the middle of the day. Be careful not to mistake a mirage for nearby land. A mirage disappears or its appearance and elevation change when viewed from slightly different heights.

You may be able to detect land by the pattern of the waves (refracted) as they approach land (Figure 16-20). By traveling with the waves and parallel to the slightly turbulent area marked "X" on the illustration, you should reach land.

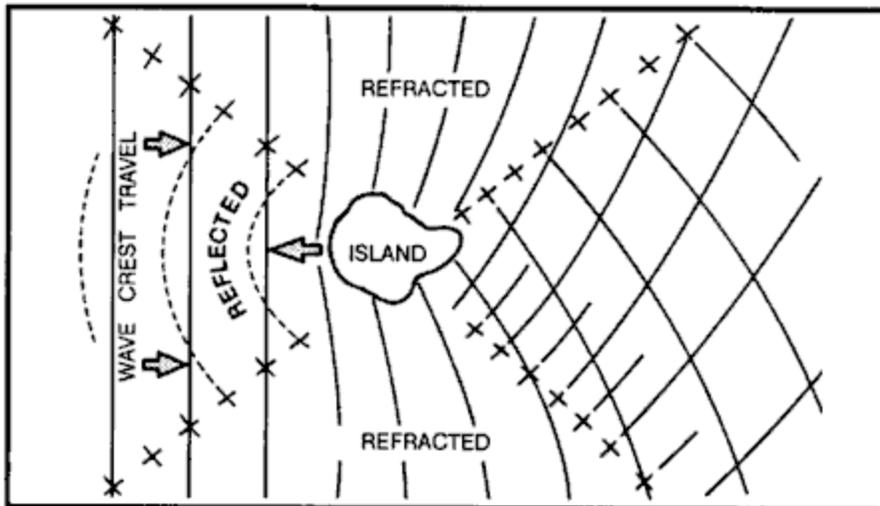


Figure 16-20. Wave patterns about an island.

Rafting or Beaching Techniques

Once you have found land, you must get ashore safely. To raft ashore, you can usually use the one-man raft without danger. However, going ashore in a strong surf is dangerous. Take your time. Select your landing point carefully. Try not to land when the sun is low and straight in front of you. Try to land on the lee side of an island or on a point of land jutting out into the water. Keep your eyes open for gaps in the surf line, and head for them. Avoid coral reefs and rocky cliffs. There are no coral reefs near the mouths of freshwater streams. Avoid rip currents or strong tidal currents that may carry you far out to sea. Either signal ashore for help or sail around and look for a sloping beach where the surf is gentle.

If you have to go through the surf to reach shore, take down the mast. Keep your clothes and shoes on to avoid severe cuts. Adjust and inflate your life vest. Trail the sea anchor over the stern using as much line as you have. Use the oars or paddles and constantly adjust the sea anchor to keep a strain on the anchor line. These actions will keep the raft pointed toward shore and prevent the sea from throwing the stern around and capsizing you. Use the oars or paddles to help ride in on the seaward side of a large wave.

The surf may be irregular and velocity may vary, so modify your procedure as conditions demand. A good method of getting through the surf is to have half the men sit on one side of the raft, half on the other, facing away from each other. When a heavy sea bears down, half should row (pull) toward the sea until the crest passes; then the other half should row (pull) toward the shore until the next heavy sea comes along.

Against a strong wind and heavy surf, the raft must have all possible speed to pass rapidly through the oncoming crest to avoid being turned broadside or thrown end over end. If possible, avoid meeting a large wave at the moment it breaks.

If in a medium surf with no wind or offshore wind, keep the raft from passing over a wave so rapidly that it drops suddenly after topping the crest. If the raft turns over in the surf, try to grab hold of it and ride it in.

As the raft nears the beach, ride in on the crest of a large wave. Paddle or row hard and ride in to the beach as far as you can. Do not jump out of the raft until it has grounded, then quickly get out and beach it.

If you have a choice, do not land at night. If you have reason to believe that people live on the shore, lay away from the beach, signal, and wait for the inhabitants to come out and bring you in.

If you encounter sea ice, land only on large, stable floes. Avoid icebergs that may capsize and small floes or those obviously disintegrating. Use oars and hands to keep the raft from rubbing on the edge of the ice. Take the raft out of the water and store it well back from the floe's edge. You may be able to use it for shelter. Keep the raft inflated and ready for use. Any floe may break up without warning.

Swimming Ashore

If rafting ashore is not possible and you have to swim, wear your shoes and at least one thickness of clothing. Use the sidestroke or breaststroke to conserve strength.

If the surf is moderate, ride in on the back of a small wave by swimming forward with it. Dive to a shallow depth to end the ride just before the wave breaks.

In high surf, swim toward shore in the trough between waves. When the seaward wave approaches, face it and submerge. After it passes, work toward shore in the next trough. If caught in the undertow of a large wave, push off the bottom or swim to the surface and proceed toward shore as above.

If you must land on a rocky shore, look for a place where the waves rush up onto the rocks. Avoid places where the waves explode with a high, white spray. Swim slowly when making your approach. You will need your strength to hold on to the rocks. You should be fully clothed and wear shoes to reduce injury.

After selecting your landing point, advance behind a large wave into the breakers. Face toward shore and take a sitting position with your feet in front, 60 to 90 centimeters (2 or 3 feet) lower than your head. This position will let your feet absorb the shock when you land or strike sub-merged boulders or reefs. If you do not reach shore behind the wave you picked, swim with your hands only. As the next wave approaches, take a sitting position with your feet forward. Repeat the procedure until you land.

Water is quieter in the lee of a heavy growth of seaweed. Take advantage of such growth. Do not swim through the seaweed; crawl over the top by grasping the vegetation with overhand movements.

Cross a rocky or coral reef as you would land on a rocky shore. Keep your feet close together and your knees slightly bent in a relaxed sitting posture to cushion the blows against the coral.

Pickup or Rescue

On sighting rescue craft approaching for pickup (boat, ship, conventional aircraft, or helicopter), quickly clear any lines (fishing lines, desalting kit lines) or other gear that could cause entanglement during rescue. Secure all loose items in the raft. Take down canopies and sails to ensure a safer pickup. After securing all items, put on your helmet, if available. Fully inflate your life preserver. Remain in the raft, unless otherwise instructed, and remove all equipment except the preservers. If possible, you will receive help from rescue personnel lowered into the water. Remember, follow all instructions given by the rescue personnel.

If the helicopter recovery is unassisted, do the following before pickup:

- Secure all the loose equipment in the raft, accessory bag, or in pockets.
- Deploy the sea anchor, stability bags, and accessory bag.
- Partially deflate the raft and fill it with water.

- Unsnap the survival kit container from the parachute harness.
- Grasp the raft handhold and roll out of the raft.
- Allow the recovery device or the cable to ground out on the water's surface.
- Maintain the handhold until the recovery device is in your other hand.
- Mount the recovery device, avoiding entanglement with the raft.
- Signal the hoist operator for pickup.

SEASHORES

Search planes or ships do not always spot a drifting raft or swimmer. You may have to land along the coast before being rescued. Surviving along the seashore is different from open sea survival. Food and water are more abundant and shelter is obviously easier to locate and construct.

If you are in friendly territory and decide to travel, it is better to move along the coast than to go inland. Do not leave the coast except to avoid obstacles (swamps and cliffs) or unless you find a trail that you know leads to human habitation.

In time of war, remember that the enemy patrols most coastlines. These patrols may cause problems for you if you land on a hostile shore. You will have extremely limited travel options in this situation. Avoid all contact with other humans, and make every effort to cover all tracks you leave on the shore.

Special Health Hazards

Coral, poisonous and aggressive fish, crocodiles, sea urchins, sea biscuits, sponges, anemones, and tides and undertow pose special health hazards.

Coral

Coral, dead or alive, can inflict painful cuts. There are hundreds of water hazards that can cause deep puncture wounds, severe bleeding, and the danger of infection. Clean all coral cuts thoroughly. Do not use iodine to disinfect any coral cuts. Some coral polyps feed on iodine and may grow inside your flesh if you use iodine.

Poisonous Fish

Many reef fish have toxic flesh. For some species, the flesh is always poisonous, for other species, only at certain times of the year. The poisons are present in all parts of the fish, but especially in the liver, intestines, and eggs.

Fish toxins are water soluble--no amount of cooking will neutralize them. They are tasteless, therefore the standard edibility tests are use-less. Birds are least susceptible to the poisons. Therefore, do not think that because a bird can eat a fish, it is a safe species for you to eat.

The toxins will produce a numbness of the lips, tongue, toes, and tips of the fingers, severe itching, and a clear reversal of temperature sensations. Cold items appear hot and hot items cold. There will probably also be nausea, vomiting, loss of speech, dizziness, and a paralysis that eventually brings death.

In addition to fish with poisonous flesh, there are those that are dangerous to touch. Many stingrays have a poisonous barb in their tail. There are also species that can deliver an electric shock. Some reef fish, such as stonefish and toadfish, have venomous spines that can cause very painful although seldom fatal injuries. The venom from these spines causes a burning sensation or even an agonizing pain that is out of proportion to the apparent severity of the wound. Jellyfish, while not usually fatal, can inflict a very painful sting if it touches you with its tentacles. See Chapter 11 and Appendix F for details on particularly dangerous fish of the sea and seashore.

Aggressive Fish

You should also avoid some ferocious fish. The bold and inquisitive barracuda has attacked men wearing shiny objects. It may charge lights or shiny objects at night. The sea bass, which can grow to 1.7 meters, is another fish to avoid. The moray eel, which has many sharp teeth and grows to 1.5 meters, can also be aggressive if disturbed.

Sea Snakes

Sea snakes are venomous and sometimes found in mid ocean. They are unlikely to bite unless provoked. **Avoid** them.

Crocodiles

Crocodiles inhabit tropical saltwater bays and mangrove-bordered estuaries and range up to 65 kilometers into the open sea. Few remain near inhabited areas. You commonly find crocodiles in the remote areas of the East Indies and Southeast Asia. Consider specimens over 1 meter long dangerous, especially females guarding their nests. Crocodile meat is an excellent source of food when available.

Sea Urchins, Sea Biscuits, Sponges, and Anemones

These animals can cause extreme, though seldom fatal, pain. Usually found in tropical shallow water near coral formations, sea urchins resemble small, round porcupines. If stepped on, they slip fine needles of lime or silica into the skin, where they break off and fester. If possible, remove the spines and treat the injury for infection. The other animals mentioned inflict injury similarly.

Tides and Undertow

These are another hazard to contend with. If caught in a large wave's undertow, push off the bottom or swim to the surface and proceed shoreward in a trough between waves. Do not fight against the pull of the undertow. Swim with it or perpendicular to it until it loses strength, then swim for shore.

Food

Obtaining food along a seashore should not present a problem. There are many types of seaweed and other plants you can easily find and eat. See Chapter 9 and Appendix B for a discussion of these plants.

There is a great variety of animal life that can supply your need for food in this type of survival situation.

Mollusks

Mussels, limpets, clams, sea snails, octopuses, squids, and sea slugs are all edible. Shellfish will usually supply most of the protein eaten by coastal survivors. Avoid the blue-ringed octopus and cone shells (described in Chapter 11 and Appendix F). Also beware of "red tides" that make mollusks poisonous. Apply the edibility test on each species before eating.

Worms

Coastal worms are generally edible, but it is better to use them for fish bait. Avoid bristle worms that look like fuzzy caterpillars. Also avoid tubeworms that have sharp-edged tubes. Arrowworms, alias amphioxus, are not true worms. You find them in the sand and are excellent either fresh or dried.

Crabs, Lobsters, and Barnacles

These animals are seldom dangerous to man and are an excellent food source. The pincers of larger crabs or lobsters can crush a man's finger. Many species have spines on their shells, making it preferable to wear gloves when catching them. Barnacles can cause scrapes or cuts and are difficult to detach from their anchor, but the larger species are an excellent food source.

Sea Urchins

These are common and can cause painful injuries when stepped on or touched. They are also a good source of food. Handle them with gloves, and remove all spines.

Sea Cucumbers

This animal is an important food source in the Indo-Pacific regions. Use them whole after evisceration or remove the five muscular strips that run the length of its body. Eat them smoked, pickled, or cooked.

CHAPTER 17 - EXPEDIENT WATER CROSSINGS



In a survival situation, you may have to cross a water obstacle. It may be in the form of a river, a stream, a lake, a bog, quicksand, quagmire, or muskeg. Even in the desert, flash floods occur, making streams an obstacle. Whatever it is, you need to know how to cross it safely.

RIVERS AND STREAMS

You can apply almost every description to rivers and streams. They may be shallow or deep, slow or fast moving, narrow or wide. Before you try to cross a river or stream, develop a good plan.

Your first step is to look for a high place from which you can get a good view of the river or stream. From this place, you can look for a place to cross. If there is no high place, climb a tree. Good crossing locations include--

- A level stretch where it breaks into several channels. Two or three narrow channels are usually easier to cross than a wide river.
- A shallow bank or sandbar. If possible, select a point upstream from the bank or sandbar so that the current will carry you to it if you lose your footing.
- A course across the river that leads downstream so that you will cross the current at about a 45-degree angle.

The following areas possess potential hazards; avoid them, if possible:

- *Obstacles on the opposite side of the river that might hinder your travel.* Try to select the spot from which travel will be the safest and easiest.
- *A ledge of rocks that crosses the river.* This often indicates dangerous rapids or canyons.
- *A deep or rapid waterfall or a deep channel.* Never try to ford a stream directly above or even close to such hazards.

- *Rocky places.* You may sustain serious injuries from slipping or falling on rocks. Usually, submerged rocks are very slick, making balance extremely difficult. An occasional rock that breaks the current, however, may help you.
- *An estuary of a river.* An estuary is normally wide, has strong currents, and is subject to tides. These tides can influence some rivers many kilometers from their mouths. Go back upstream to an easier crossing site.
- *Eddies.* An eddy can produce a powerful backward pull downstream of the obstruction causing the eddy and pull you under the surface.

The depth of a fordable river or stream is no deterrent if you can keep your footing. In fact, deep water sometimes runs more slowly and is therefore safer than fast-moving shallow water. You can always dry your clothes later, or if necessary, you can make a raft to carry your clothing and equipment across the river.

You must not try to swim or wade across a stream or river when the water is at very low temperatures. This swim could be fatal. Try to make a raft of some type. Wade across if you can get only your feet wet. Dry them vigorously as soon as you reach the other bank.

RAPIDS

If necessary, you can safely cross a deep, swift river or rapids. To swim across a deep, swift river, swim with the current, never fight it. Try to keep your body horizontal to the water. This will reduce the danger of being pulled under.

In fast, shallow rapids, lie on your back, feet pointing downstream, finning your hands alongside your hips. This action will increase buoyancy and help you steer away from obstacles. Keep your feet up to avoid getting them bruised or caught by rocks.

In deep rapids, lie on your stomach, head downstream, angling toward the shore whenever you can. Watch for obstacles and be careful of backwater eddies and converging currents, as they often contain dangerous swirls. Converging currents occur where new watercourses enter the river or where water has been diverted around large obstacles such as small islands.

To ford a swift, treacherous stream, apply the following steps:

- Remove your pants and shirt to lessen the water's pull on you. Keep your footgear on to protect your feet and ankles from rocks. It will also provide you with firmer footing.
- Tie your pants and other articles to the top of your rucksack or in a bundle, if you have no pack. This way, if you have to release your equipment, all your articles will be together. It is easier to find one large pack than to find several small items.
- Carry your pack well up on your shoulders and be sure you can easily remove it, if necessary. Not being able to get a pack off quickly enough can drag even the strongest swimmers under.

Find a strong pole about 7.5 centimeters in diameter and 2.1 to 2.4 meters long to help you ford the stream. Grasp the pole and plant it firmly on your upstream side to break the current. Plant your feet firmly with each step, and move the pole forward a little downstream from its previous position, but still upstream from you. With your next step,

place your foot below the pole. Keep the pole well slanted so that the force of the current keeps the pole against your shoulder ([Figure 17-1](#)).

- Cross the stream so that you will cross the downstream current at a 45-degree angle.

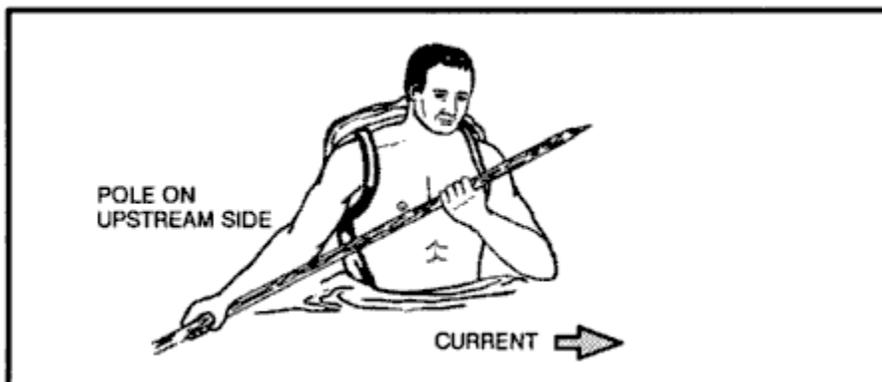


Figure 17-1. One man crossing swift stream.

Using this method, you can safely cross currents usually too strong for one person to stand against. Do not concern yourself about your pack's weight, as the weight will help rather than hinder you in fording the stream.

If there are other people with you, cross the stream together. Ensure that everyone has prepared their pack and clothing as [outlined](#) above. Position the heaviest person on the downstream end of the pole and the lightest on the upstream end. In using this method, the upstream person breaks the current, and those below can move with relative ease in the eddy formed by the upstream person. If the upstream person gets temporarily swept off his feet, the others can hold steady while he regains his footing ([Figure 17-2](#)).

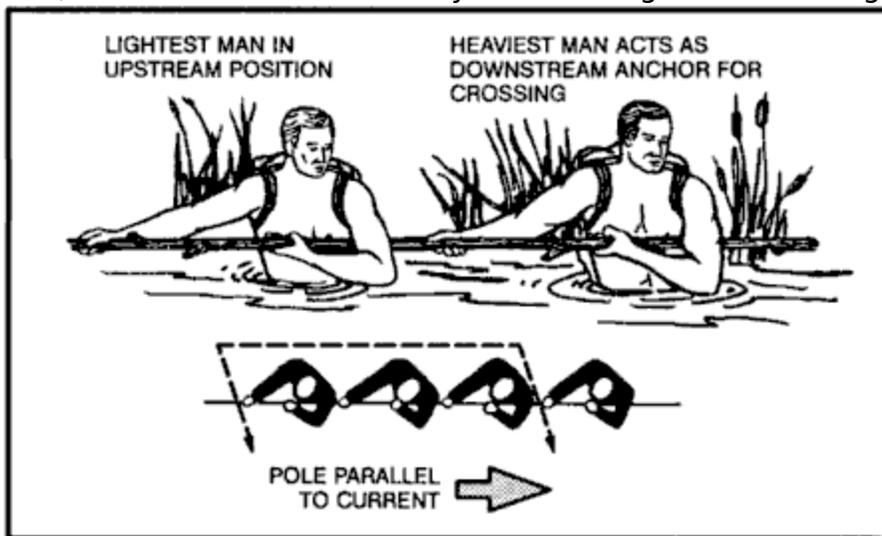


Figure 17-2. Several men crossing swift stream.

If you have three or more people and a rope available, you can use the technique shown in [Figure 17-3](#) to cross the stream. The length of the rope must be three times the width of the stream.

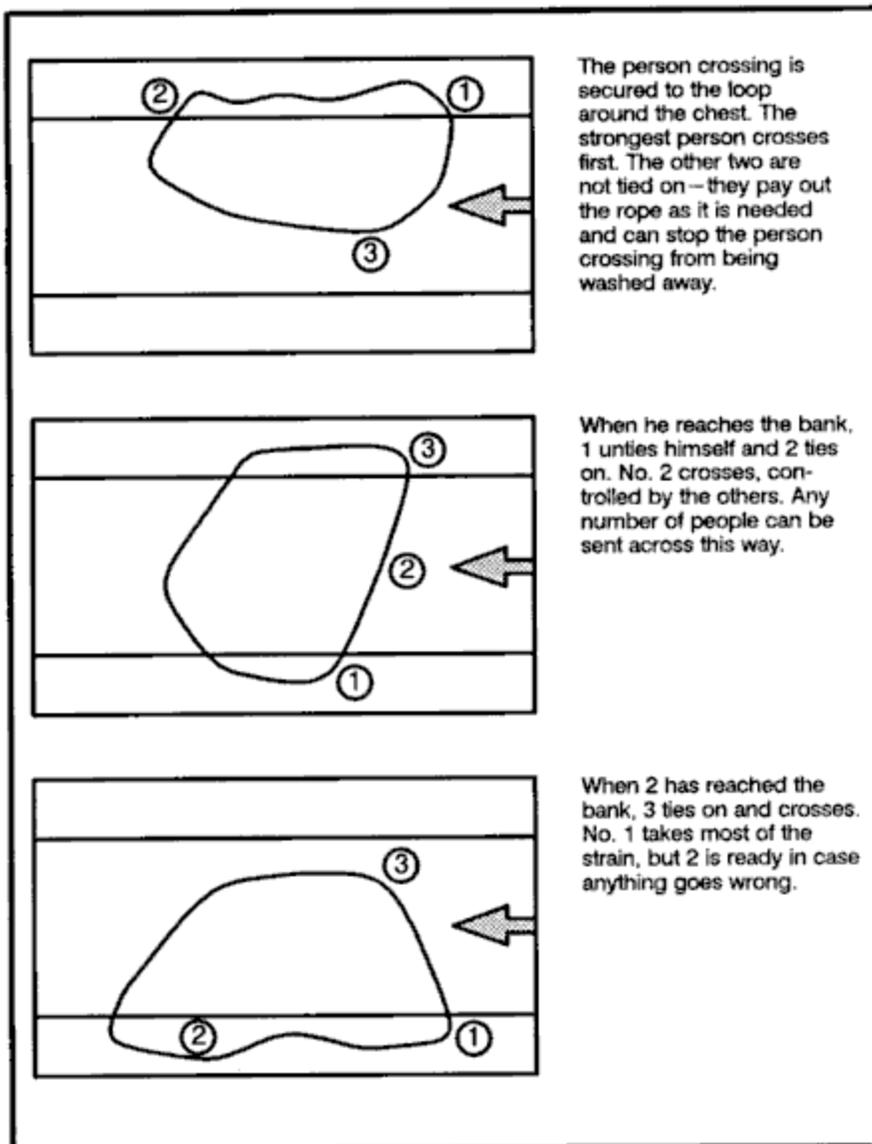


Figure 17-3. Individuals tied together to cross stream.

RAFTS

If you have two ponchos, you can construct a brush raft or an Australian poncho raft. With either of these rafts, you can safely float your equipment across a slow-moving stream or river.

Brush Raft

The brush raft, if properly constructed, will support about 115 kilograms. To construct it, use ponchos, fresh green brush, two small saplings, and rope or vine as follows ([Figure 17-4](#)):

- Push the hood of each poncho to the inner side and tightly tie off the necks using the drawstrings.

- Attach the ropes or vines at the corner and side grommets of each poncho. Make sure they are long enough to cross to and tie with the others attached at the opposite corner or side.
- Spread one poncho on the ground with the inner side up. Pile fresh, green brush (no thick branches) on the poncho until the brush stack is about 45 centimeters high. Pull the drawstring up through the center of the brush stack.
- Make an X-frame from two small saplings and place it on top of the brush stack. Tie the X-frame securely in place with the poncho drawstring.
- Pile another 45 centimeters of brush on top of the X-frame, then compress the brush slightly.
- Pull the poncho sides up around the brush and, using the ropes or vines attached to the corner or side grommets, tie them diagonally from corner to corner and from side to side.
- Spread the second poncho, inner side up, next to the brush bundle.
- Roll the brush bundle onto the second poncho so that the tied side is down. Tie the second poncho around the brush bundle in the same manner as you tied the first poncho around the brush.
- Place it in the water with the tied side of the second poncho facing up.

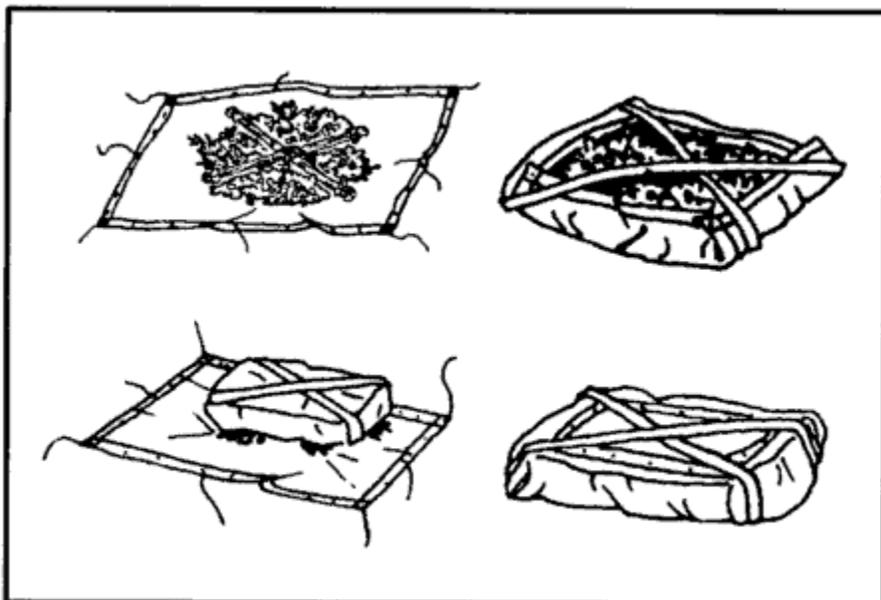


Figure 17-4. Brush raft.

Australian Poncho Raft

If you do not have time to gather brush for a brush raft, you can make an Australian poncho raft. This raft, although more waterproof than the poncho brush raft, will only float about 35 kilograms of equipment. To construct this raft, use two ponchos, two rucksacks, two 1.2-meter poles or branches, and ropes, vines, bootlaces, or comparable material as follows ([Figure 17-5](#)):

- Push the hood of each poncho to the inner side and tightly tie off the necks using the drawstrings.
- Spread one poncho on the ground with the inner side up. Place and center the two 1.2-meter poles on the poncho about 45 centimeters apart.
- Place your rucksacks or packs or other equipment between the poles. Also place other items that you want to keep dry between the poles. Snap the poncho sides together.
- Use your buddy's help to complete the raft. Hold the snapped portion of the poncho in the air and roll it tightly down to the equipment. Make sure you roll the full width of the poncho.
- Twist the ends of the roll to form pigtails in opposite directions. Fold the pigtails over the bundle and tie them securely in place using ropes, bootlaces, or vines.
- Spread the second poncho on the ground, inner side up. If you need more buoyancy, place some fresh green brush on this poncho.
- Place the equipment bundle, tied side down, on the center of the second poncho. Wrap the second poncho around the equipment bundle following the same procedure you used for wrapping the equipment in the first poncho.
- Tie ropes, bootlaces, vines, or other binding material around the raft about 30 centimeters from the end of each pigtail. Place and secure weapons on top of the raft.
- Tie one end of a rope to an empty canteen and the other end to the raft. This will help you to tow the raft.

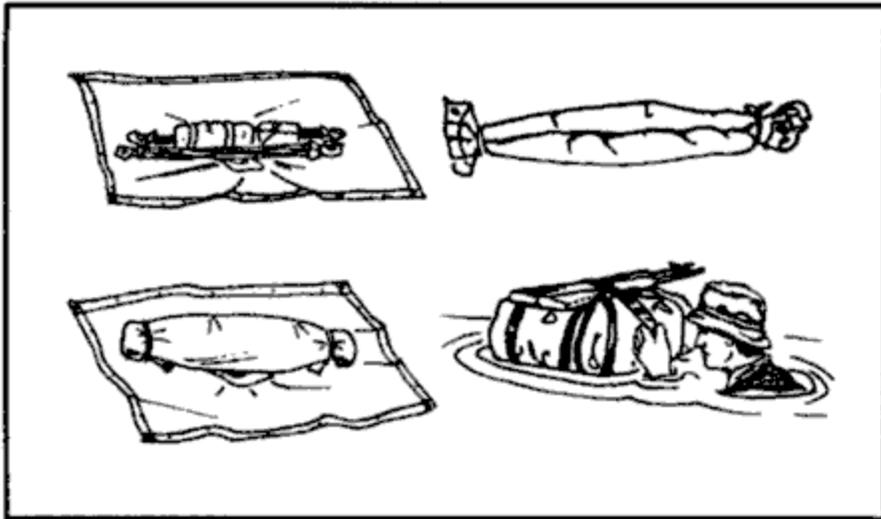


Figure 17-5. Australian poncho raft.

Poncho Donut Raft

Another type of raft is the poncho donut raft. It takes more time to construct than the brush raft or Australian poncho raft, but it is effective. To construct it, use one poncho, small saplings, willow or vines, and rope, bootlaces, or other binding material ([Figure 17-6](#)) as follows:

- Make a framework circle by placing several stakes in the ground that roughly outline an inner and outer circle.
- Using young saplings, willow, or vines, construct a donut ring within the circles of stakes.
- Wrap several pieces of cordage around the donut ring about 30 to 60 centimeters apart and tie them securely.
- Push the poncho's hood to the inner side and tightly tie off the neck using the drawstring.
- Place the poncho on the ground, inner side up. Place the donut ring on the center of the poncho. Wrap the poncho up and over the donut ring and tie off each grommet on the poncho to the ring.
- Tie one end of a rope to an empty canteen and the other end to the raft. This rope will help you to tow the raft.



Figure 17-6. Poncho donut raft.

When launching any of the above rafts, take care not to puncture or tear it by dragging it on the ground. Before you start to cross the river or stream, let the raft lay on the water a few minutes to ensure that it floats.

If the river is too deep to ford, push the raft in front of you while you are swimming. The design of the above rafts does not allow them to carry a person's full body weight. Use them as a float to get you and your equipment safely across the river or stream.

Be sure to check the water temperature before trying to cross a river or water obstacle. If the water is extremely cold and you are unable to find a shallow fording place in the river, do not try to ford it. Devise other means for crossing. For instance, you might improvise a bridge by felling a tree over the river. Or you might build a raft large enough to carry you and your equipment. For this, however, you will need an axe, a knife, a rope or vines, and time.

Log Raft

You can make a raft using any dry, dead, standing trees for logs. However, spruce trees found in polar and subpolar regions make the best rafts. A simple method for making a raft is to use pressure bars lashed securely at each end of the raft to hold the logs together (Figure 17-7).

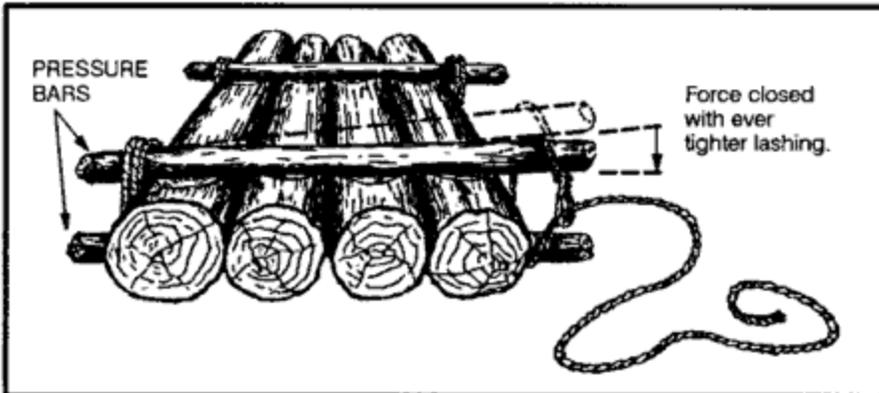


Figure 17-7. Use of pressure bars.

FLOTATION DEVICES

If the water is warm enough for swimming and you do not have the time or materials to construct one of the poncho-type rafts, you can use various flotation devices to negotiate the water obstacle. Some items you can use for flotation devices are--

- *Trousers.* Knot each trouser leg at the bottom and close the fly. With both hands, grasp the waistband at the sides and swing the trousers in the air to trap air in each leg. Quickly press the sides of the waistband together and hold it underwater so that

the air will not escape. You now have water wings to keep you afloat as you cross the body of water.

Note: Wet the trousers before inflating to trap the air better. You may have to reinflate the trousers several times when crossing a large body of water.

- *Empty containers.* Lash together her empty gas cans, water jugs, ammo cans, boxes, or other items that will trap or hold air. Use them as water wings. Use this type of flotation device only in a slow-moving river or stream.
- *Plastic bags and ponchos.* Fill two or more plastic bags with air and secure them together at the opening. Use your poncho and roll green vegetation tightly inside it so that you have a roll at least 20 centimeters in diameter. Tie the ends of the roll securely. You can wear it around your waist or across one shoulder and under the opposite arm.

Logs. Use a stranded drift log if one is available, or find a log near the water to use as a float. Be sure to test the log before starting to cross. Some tree logs, palm for example, will sink even when the wood is dead. Another method is to tie two logs about 60 centimeters apart. Sit between the logs with your back against one and your legs over the other ([Figure 17-8](#)).

- *Cattails.* Gather stalks of cattails and tie them in a bundle 25 centimeters or more in diameter. The many air cells in each stalk cause a stalk to float until it rots. Test the cattail bundle to be sure it will support your weight before trying to cross a body of water.



Figure 17-8. Log flotation.

There are many other flotation devices that you can devise by using some imagination. Just make sure to test the device before trying to use it.

OTHER WATER OBSTACLES

Other water obstacles that you may face are bogs, quagmire, muskeg, or quicksand. Do not try to walk across these. Trying to lift your feet while standing upright will make you sink deeper. Try to bypass these obstacles. If you are unable to bypass them, you may be able to bridge them using logs, branches, or foliage.

A way to cross a bog is to lie face down, with your arms and legs spread. Use a flotation device or form pockets of air in your clothing. Swim or pull your way across moving slowly and trying to keep your body horizontal.

In swamps, the areas that have vegetation are usually firm enough to support your weight. However, vegetation will usually not be present in open mud or water areas. If you are an average swimmer, however, you should have no problem swimming, crawling, or pulling your way through miles of bog or swamp.

Quicksand is a mixture of sand and water that forms a shifting mass. It yields easily to pressure and sucks down and engulfs objects resting on its surface. It varies in depth and is usually localized. Quicksand commonly occurs on flat shores, in silt-choked rivers with shifting watercourses, and near the mouths of large rivers. If you are uncertain whether a sandy area is quicksand, toss a small stone on it. The stone will sink in quicksand. Although quicksand has more suction than mud or muck, you can cross it just as you would cross a bog. Lie face down, spread your arms and legs, and move slowly across.

VEGETATION OBSTACLES

Some water areas you must cross may have underwater and floating plants that will make swimming difficult. However, you can swim through relatively dense vegetation if you remain calm and do not thrash about. Stay as near the surface as possible and use the breaststroke with shallow leg and arm motion. Remove the plants around you as you would clothing. When you get tired, float or swim on your back until you have rested enough to continue with the breaststroke.

The mangrove swamp is another type of obstacle that occurs along tropical coastlines. Mangrove trees or shrubs throw out many prop roots that form dense masses. To get through a mangrove swamp, wait for low tide. If you are on the inland side, look for a narrow grove of trees and work your way seaward through these. You can also try to find the bed of a waterway or creek through the trees and follow it to the sea. If you are on the seaward side, work inland along streams or channels. Be on the lookout for crocodiles that you find along channels and in shallow water. If there are any near you, leave the water and scramble over the mangrove roots. While crossing a mangrove swamp, it is possible to gather food from tidal pools or tree roots.

To cross a large swamp area, construct some type of raft.

CHAPTER 18 - FIELD-EXPEDIENT DIRECTION FINDING



In a survival situation, you will be extremely fortunate if you happen to have a map and compass. If you do have these two pieces of equipment, you will most likely be able to move toward help. If you are not proficient in using a map and compass, you must take the steps to gain this skill.

There are several methods by which you can determine direction by using the sun and the stars. These methods, however, will give you only a general direction. You can come up with a more nearly true direction if you know the terrain of the territory or country.

You must learn all you can about the terrain of the country or territory to which you or your unit may be sent, especially any prominent features or landmarks. This knowledge of the terrain together with using the [methods](#) explained below will let you come up with fairly true directions to help you navigate.

USING THE SUN AND SHADOWS

The earth's relationship to the sun can help you to determine direction on earth. The sun always rises in the east and sets in the west, but not exactly due east or due west. There is also some seasonal variation. In the northern hemisphere, the sun will be due south when at its highest point in the sky, or when an object casts no appreciable shadow. In the southern hemisphere, this same noonday sun will mark due north. In the northern hemisphere, shadows will move clockwise. Shadows will move counterclockwise in the southern hemisphere. With practice, you can use shadows to determine both direction and time of day. The shadow methods used for direction finding are the shadow-tip and watch methods.

Shadow-Tip Methods

In the first shadow-tip method, find a straight stick 1 meter long, and a level spot free of brush on which the stick will cast a definite shadow. This method is simple and accurate and consists of four steps:

- *Step 1.* Place the stick or branch into the ground at a level spot where it will cast a distinctive shadow. Mark the shadow's tip with a stone, twig, or other means. This first shadow mark is always west--**everywhere** on earth.

- *Step 2.* Wait 10 to 15 minutes until the shadow tip moves a few centimeters. Mark the shadow tip's new position in the same way as the first.
- *Step 3.* Draw a straight line through the two marks to obtain an approximate east-west line.
- *Step 4.* Stand with the first mark (west) to your left and the second mark to your right--you are now facing north. This fact is true **everywhere** on earth.

An alternate method is more accurate but requires more time. Set up your shadow stick and mark the first shadow in the morning. Use a piece of string to draw a clean arc through this mark and around the stick. At midday, the shadow will shrink and disappear. In the afternoon, it will lengthen again and at the point where it touches the arc, make a second mark. Draw a line through the two marks to get an accurate east-west line (see [Figure 18-1](#)).



Figure 18-1. Shadow-tip method.

The Watch Method

You can also determine direction using a common or analog watch--one that has hands. The direction will be accurate if you are using true local time, without any changes for daylight savings time. Remember, the further you are from the equator, the more accurate this method will be. If you only have a digital watch, you can overcome this obstacle. Quickly draw a watch on a circle of paper with the correct time on it and use it to determine your direction at that time.

In the northern hemisphere, hold the watch horizontal and point the hour hand at the sun. Bisect the angle between the hour hand and the 12 o'clock mark to get the north-south line ([Figure 18-2](#)). If there is any doubt as to which end of the line is north, remember that the sun rises in the east, sets in the west, and is due south at noon. The sun is in the east before noon and in the west after noon.

Note: If your watch is set on daylight savings time, use the midway point between the hour hand and 1 o'clock to determine the north-south line.

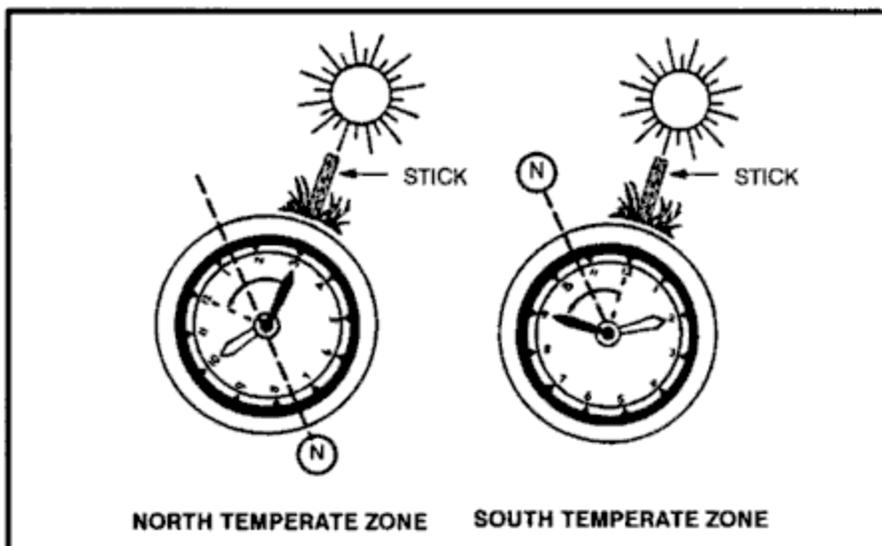


Figure 18-2. Watch method.

In the southern hemisphere, point the watch's 12 o'clock mark toward the sun and a midpoint halfway between 12 and the hour hand will give you the north-south line ([Figure 18-2](#)).

USING THE MOON

Because the moon has no light of its own, we can only see it when it reflects the sun's light. As it orbits the earth on its 28-day circuit, the shape of the reflected light varies according to its position. We say there is a new moon or no moon when it is on the opposite side of the earth from the sun. Then, as it moves away from the earth's shadow, it begins to reflect light from its right side and waxes to become a full moon before waning, or losing shape, to appear as a sliver on the left side. You can use this information to identify direction. If the moon rises before the sun has set, the illuminated side will be the west. If the moon rises after midnight, the illuminated side will be the east. This obvious discovery provides us with a rough east-west reference during the night.

USING THE STARS

Your location in the Northern or Southern Hemisphere determines which constellation you use to determine your north or south direction.

The Northern Sky

The main constellations to learn are the Ursa Major, also known as the Big Dipper or the Plow, and Cassiopeia ([Figure 18-3](#)). Neither of these constellations ever sets. They are always visible on a clear night. Use them to locate Polaris, also known as the polestar or the North Star. The North Star forms part of the Little Dipper handle and can be confused with the Big Dipper. Prevent confusion by using both the Big Dipper and Cassiopeia together. The Big Dipper and Cassiopeia are always directly opposite each other and rotate counterclockwise around Polaris, with Polaris in the center. The Big Dipper is a seven star constellation in the shape of a dipper. The two stars forming the outer lip of this dipper are the "pointer stars" because they point to the North Star. Mentally draw a line from the outer bottom star to the outer top star of the Big Dipper's bucket. Extend this line about five times the distance between the pointer stars. You will find the North Star along this line.

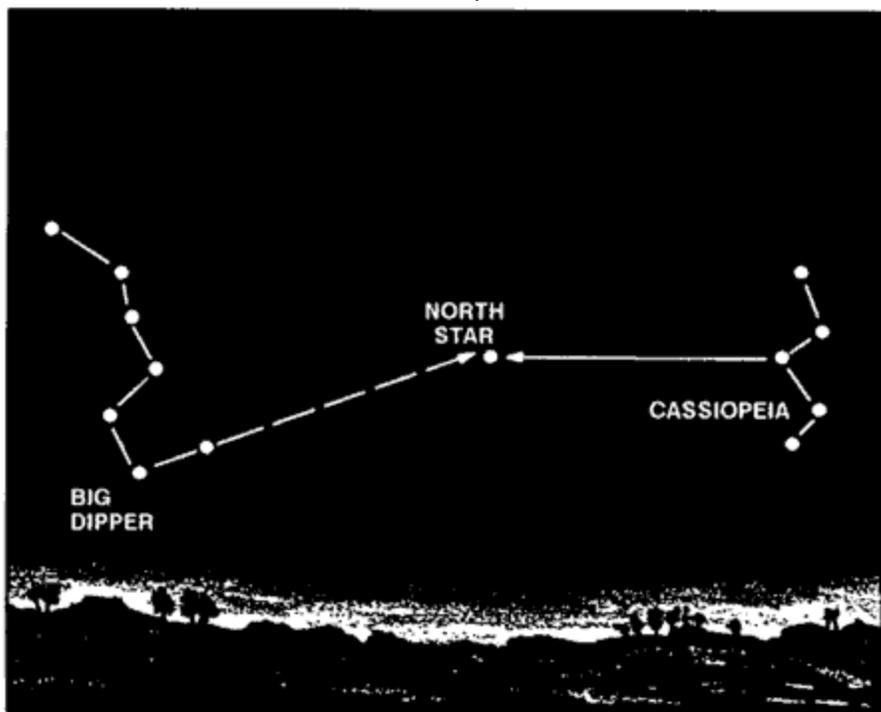


Figure 18-3. The Big Dipper and Cassiopeia.

Cassiopeia has five stars that form a shape like a "W" on its side. The North Star is straight out from Cassiopeia's center star.

After locating the North Star, locate the North Pole or true north by drawing an imaginary line directly to the earth.

The Southern Sky

Because there is no star bright enough to be easily recognized near the south celestial pole, a constellation known as the Southern Cross is used as a signpost to the South ([Figure 18-4](#)). The Southern Cross or Crux has five stars. Its four brightest stars form a cross that tilts to one side. The two stars that make up the cross's long axis are the pointer stars. To determine south, imagine a distance five times the distance between these stars and the point where this imaginary line ends is in the general direction of south. Look down to the horizon from this imaginary point and select a landmark to steer by. In a static survival situation, you can fix this location in daylight if you drive stakes in the ground at night to point the way.

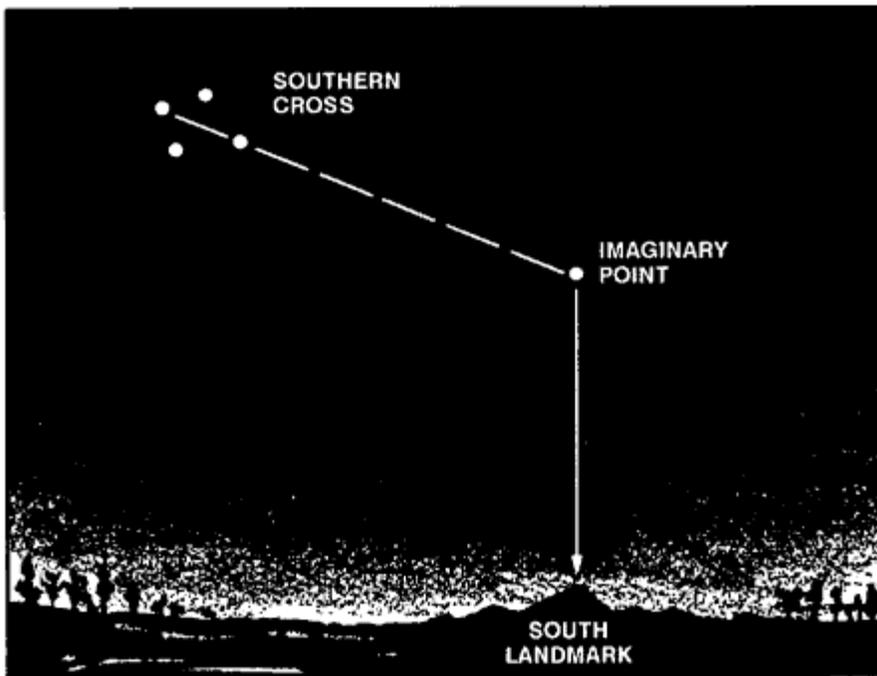


Figure 18-4. Southern Cross.

MAKING IMPROVISED COMPASSES

You can construct improvised compasses using a piece of ferrous metal that can be needle shaped or a flat double-edged razor blade and a piece of nonmetallic string or long hair from which to suspend it. You can magnetize or polarize the metal by slowly stroking it in one direction on a piece of silk or carefully through your hair using deliberate strokes. You can also polarize metal by stroking it repeatedly at one end with a magnet. Always rub in one direction only. If you have a battery and some electric wire, you can polarize the metal electrically. The wire should be insulated. If not insulated, wrap the metal object in a single, thin strip of paper to prevent contact. The battery must be a minimum of 2 volts. Form a coil with the electric wire and touch its ends to the battery's terminals. Repeatedly insert one end of the metal object in and out of the coil. The needle will become an electromagnet. When suspended from a piece of nonmetallic string, or floated on a small piece of wood in water, it will align itself with a north-south line.

You can construct a more elaborate improvised compass using a sewing needle or thin metallic object, a nonmetallic container (for example, a plastic dip container), its lid with the center cut out and waterproofed, and the silver tip from a pen. To construct this compass, take an ordinary sewing needle and break in half. One half will form your direction pointer and the other will act as the pivot point. Push the portion used as the pivot point through the bottom center of your container; this portion should be flush on the bottom and not interfere with the lid. Attach the center of the other portion (the pointer) of the needle on the pen's silver tip using glue, tree sap, or melted plastic. Magnetize one end of the pointer and rest it on the pivot point.

OTHER MEANS OF DETERMINING DIRECTION

The old saying about using moss on a tree to indicate north is not accurate because moss grows completely around some trees. Actually, growth is more lush on the side of the tree facing the south in the Northern Hemisphere and vice versa in the Southern Hemisphere. If there are several felled trees around for comparison, look at the stumps. Growth is more vigorous on the side toward the equator and the tree growth rings will be more widely spaced. On the other hand, the tree growth rings will be closer together on the side toward the poles.

Wind direction may be helpful in some instances where there are prevailing directions and you know what they are.

Recognizing the differences between vegetation and moisture patterns on north- and south-facing slopes can aid in determining direction. In the northern hemisphere, north-facing slopes receive less sun than south-facing slopes and are therefore cooler and damper. In the summer, north-facing slopes retain patches of snow. In the winter, the trees and open areas on south-facing slopes are the first to lose their snow, and ground snowpack is shallower.

CHAPTER 19 - SIGNALING TECHNIQUES



One of your first concerns when you find yourself in a survival situation is to communicate with your friends or allies. Generally, communication is the giving and receiving of information. As a survivor, you must get your rescuer's attention first, and second, send a message your rescuer understands. Some attention-getters are man-made geometric patterns such as straight lines, circles, triangles, or X's displayed in uninhabited areas; a large fire or flash of light; a large, bright object moving slowly; or contrast, whether from color or shadows. The type of signal used will depend on your environment and the enemy situation.

APPLICATION

If in a noncombat situation, you need to find the largest available clear and flat area *on the highest possible terrain*. Use as obvious a signal as you can create. On the other hand, you will have to be more discreet in combat situations. You do not want to signal and attract the enemy. Pick an area that is visible from the air, but ensure there are hiding places nearby. Try to have a hill or other object between the signal site and the enemy to mask your signal from the enemy. Perform a thorough reconnaissance of the area to ensure there are no enemy forces nearby.

Whatever signaling technique or device you plan to use, know how to use it and be ready to put it into operation on short notice. If possible, avoid using signals or signaling techniques that can physically endanger you. Keep in mind that signals to your **friends** may alert the enemy of your presence and location. Before signaling, carefully weigh your rescue chances by **friends** against the danger of capture by the enemy.

A radio is probably the surest and quickest way to let others know where you are and to let you receive their messages. Become familiar with the radios in your unit. Learn how to operate them and how to send and receive messages.

You will find descriptions of other signaling techniques, devices, and articles you can use. Learn how to use them. Think of ways in which you can adapt or change them for different environments. Practice using these signaling techniques, devices, and articles before you need them. Planned, prearranged signaling techniques may improve your chance of rescue.

MEANS FOR SIGNALING

There are two main ways to get attention or to communicate--visual and audio. The means you use will depend on your situation and the material you have available. Whatever the means, always have visual and audio signals ready for use.

Visual Signals

These signals are materials or equipment you use to make your presence known to rescuers.

Fire

During darkness, fire is the most effective visual means for signaling. Build three fires in a triangle (the international distress signal) or in a straight line with about 25 meters between the fires. Build them as soon as time and the situation permit and protect them until you need them. If you are alone, maintaining three fires may be difficult. If so, maintain one signal fire.

When constructing signal fires, consider your geographic location. If in a jungle, find a natural clearing or the edge of a stream where you can build fires that the jungle foliage will not hide. You may even have to clear an area. If in a snow-covered area, you may have to clear the ground of snow or make a platform on which to build the fire so that melting snow will not extinguish it.

A burning tree (tree torch) is another way to attract attention ([Figure 19-1](#)). You can set pitch-bearing trees afire, even when green. You can get other types of trees to burn by placing dry wood in the lower branches and igniting it so that the flames flare up and ignite the foliage. Before the primary tree is consumed, cut and add more small green trees to the fire to produce more smoke. Always select an isolated tree so that you do not start a forest fire and endanger yourself.

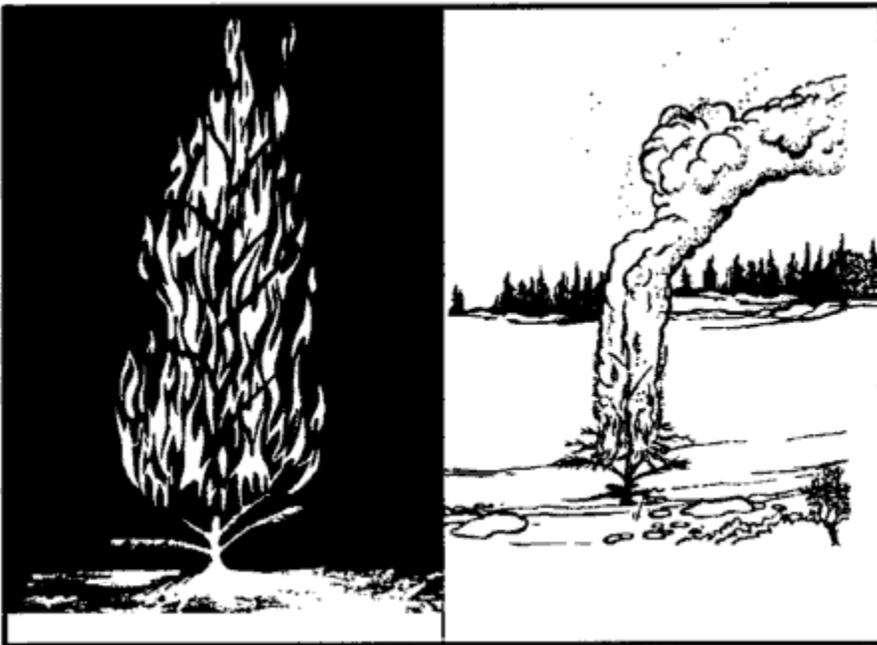


Figure 19-1. Tree torch.

Smoke

During daylight, build a smoke generator and use smoke to gain attention ([Figure 19-2](#)). The international distress signal is three columns of smoke. Try to create a color of smoke that contrasts with the background; dark smoke against a light background and vice versa. If you practically smother a large fire with green leaves, moss, or a little water, the fire will produce white smoke. If you add rubber or oil-soaked rags to a fire, you will get black smoke.

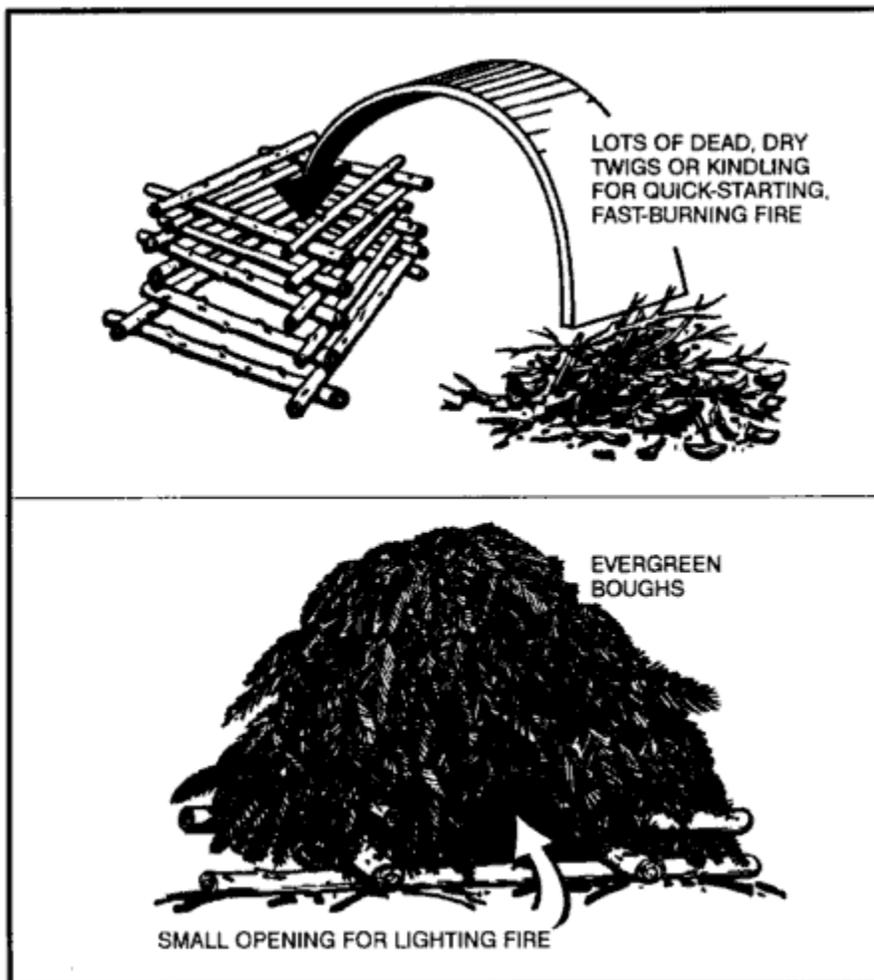


Figure 19-2. Smoke generator--ground.

In a desert environment, smoke hangs close to the ground, but a pilot can spot it in open desert terrain.

Smoke signals are effective only on comparatively calm, clear days. High winds, rain, or snow disperse smoke, lessening its chances of being seen.

Smoke Grenades

If you have smoke grenades with you, use them in the same pattern as described for fires. Keep them dry so that they will work when you need them. Take care not to ignite the vegetation in the area when you use them.

Pen Flares

These flares are part of an aviator's survival vest. The device consists of a pen-shaped gun with a flare attached by a nylon cord. When fired, the pen flare sounds like a pistol shot and fires the flare about 150 meters high. It is about 3 centimeters in diameter.

To have the pen flare ready for immediate use, take it out of its wrapper, attach the flare, leave the gun uncocked, and wear it on a cord or chain around your neck. Be ready to fire it in front of search aircraft and be ready with a secondary signal. Also, be ready to take cover in case the pilot mistakes the flare for enemy fire.

Tracer Ammunition

You may use rifle or pistol tracer ammunition to signal search aircraft. **Do not** fire the ammunition in front of the aircraft. As with pen flares, be ready to take cover if the pilot mistakes your tracers for enemy fire.

Star Clusters

Red is the international distress color; therefore, use a red star cluster whenever possible. Any color, however, will let your rescuers know where you are. Star clusters reach a height

of 200 to 215 meters, burn an average of 6 to 10 seconds, and descend at a rate of 14 meters per second.

Star Parachute Flares

These flares reach a height of 200 to 215 meters and descend at a rate of 2.1 meters per second. The M126 (red) burns about 50 seconds and the M127 (white) about 25 seconds. At night you can see these flares at 48 to 56 kilometers.

Mirrors or Shiny Objects

On a sunny day, a mirror is your best signaling device. If you don't have a mirror, polish your canteen cup, your belt buckle, or a similar object that will reflect the sun's rays. Direct the flashes in one area so that they are secure from enemy observation. Practice using a mirror or shiny object for signaling *now*; do not wait until you need it. If you have an MK-3 signal mirror, follow the instructions on its back (Figure 19-3).

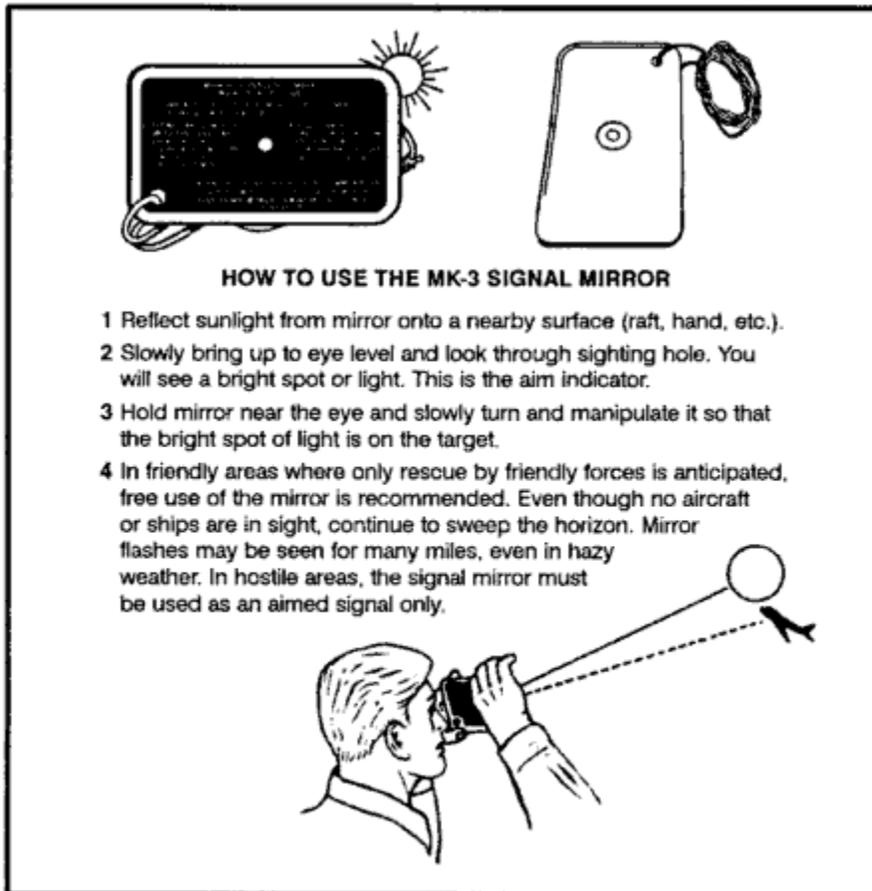


Figure 19-3. Signal mirror.

Wear the signal mirror on a cord or chain around your neck so that it is ready for immediate use. However, be sure the glass side is against your body so that it will not flash; the enemy can see the flash.

CAUTION

Do not flash a signal mirror rapidly because a pilot may mistake the flashes for enemy fire. Do not direct the beam in the aircraft's cockpit for more than a few seconds as it may blind the pilot.

Haze, ground fog, and mirages may make it hard for a pilot to spot signals from a flashing object. So, if possible, get to the highest point in your area when signaling. If you can't determine the aircraft's location, flash your signal in the direction of the aircraft noise.

Note: Pilots have reported seeing mirror flashes up to 160 kilometers away under ideal conditions.

Figures 19-4 and 19-5 show methods of aiming a signal mirror for signaling.

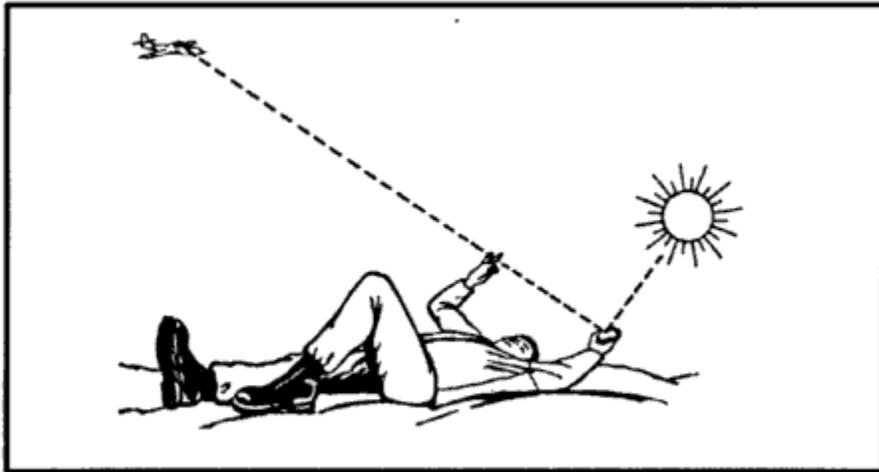


Figure 19-4. Aiming an improvised signal mirror.

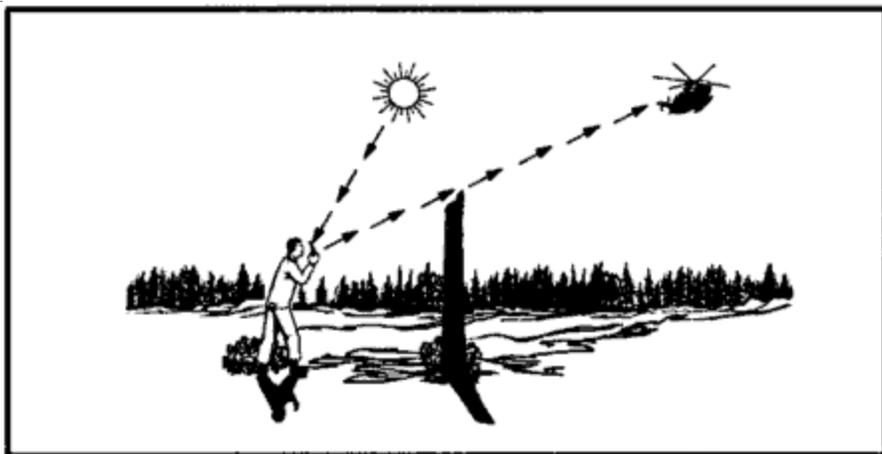


Figure 19-5. Aiming an improvised signal mirror—stationary object.

Flashlight or Strobe Light

At night you can use a flashlight or a strobe light to send an SOS to an aircraft. When using a strobe light, take care to prevent the pilot from mistaking it for incoming ground fire. The strobe light flashes 60 times per minute. Some strobe lights have infrared covers and lenses. Blue flash collimators are also available for strobe lights.

VS-17 Panel

During daylight you can use a VS-17 panel to signal. Place the orange side up as it is easier to see from the air than the violet side. Flashing the panel will make it easier for the aircrew to spot. You can use any bright orange or violet cloth as a substitute for the VS-17.

Clothing

Spreading clothing on the ground or in the top of a tree is another way to signal. Select articles whose color will contrast with the natural surroundings. Arrange them in a large geometric pattern to make them more likely to attract attention.

Natural Material

If you lack other means, you can use natural materials to form a symbol or message that can be seen from the air. Build mounds that cast shadows; you can use brush, foliage of any type, rocks, or snow blocks.

In snow-covered areas, tramp the snow to form letters or symbols and fill the depression with contrasting material (twigs or branches). In sand, use boulders, vegetation, or seaweed to form a symbol or message. In brush-covered areas, cut out patterns in the vegetation or sear the ground. In tundra, dig trenches or turn the sod upside down. In any terrain, use contrasting materials that will make the symbols visible to the aircrews.

Sea Dye Markers

All Army aircraft involved in operations near or over water will normally carry a water survival kit that contains sea dye markers. If you are in a water survival situation, use sea dye markers during daylight to indicate your location. These spots of dye stay conspicuous for about 3 hours, except in very rough seas. Use them only if you are in a friendly area. Keep the markers wrapped until you are ready to use them. Use them only when you hear or sight an aircraft. Sea dye markers are also very effective on snow-covered ground; use them to write distress code letters.

Audio Signals

Radios, whistles, and gunshots are some of the methods you can use to signal your presence to rescuers.

Radio Equipment

The AN/PRC-90 survival radio is a part of the Army aviator's survival vest. The AN/PRC-112 will eventually replace the AN/PRC-90. Both radios can transmit either tone or voice. Any other type of Army radio can do the same. The ranges of the different radios vary depending on the altitude of the receiving aircraft, terrain, vegetation density, weather, battery strength, type of radio, and interference. To obtain maximum performance from radios, use the following procedures:

- Try to transmit only in clear, unobstructed terrain. Since radios are line-of-sight communications devices, any terrain between the radio and the receiver will block the signal.
- Keep the antenna at right angles to the rescuing aircraft. There is no signal from the tip of the antenna.
- If the radio has tone capability, place it upright on a flat, elevated surface so that you can perform other survival tasks.
- Never let the antenna touch your clothing, body, foliage, or the ground. Such contact greatly reduces the range of the signal.
- Conserve battery power. Turn the radio off when you are not using it. Do not transmit or receive constantly. In hostile territory, keep transmissions short to avoid enemy radio direction finding.
- In cold weather, keep the battery inside your clothing when not using the radio. Cold quickly drains the battery's power. Do not expose the battery to extreme heat such as desert sun. High heat may cause the battery to explode. Try to keep the radio and battery as dry as possible, as water may destroy the circuitry.

Whistles

Whistles provide an excellent way for close up signaling. In some documented cases, they have been heard up to 1.6 kilometers away. Manufactured whistles have more range than a human whistle.

Gunshots

In some situations you can use firearms for signaling. Three shots fired at distinct intervals usually indicate a distress signal. Do not use this technique in enemy territory. The enemy will surely come to investigate shots.

CODES AND SIGNALS

Now that you know how to let people know where you are, you need to know how to give them more information. It is easier to form one symbol than to spell out an entire message. Therefore, learn the codes and symbols that all aircraft pilots understand.

SOS

You can use lights or flags to send an SOS--three dots, three dashes, three dots. The SOS is the internationally recognized distress signal in radio Morse code. A dot is a short, sharp pulse; a dash is a longer pulse. Keep repeating the signal. When using flags, hold flags on the left side for dashes and on the right side for dots.

Ground-to-Air Emergency Code

This code ([Figure 19-6](#)) is actually five definite, meaningful symbols. Make these symbols a minimum of 1 meter wide and 6 meters long. If you make them larger, keep the same 1: 6 ratio. Ensure the signal contrasts greatly with the ground it is on. Place it in an open area easily spotted from the air.

Number	Message	Code symbol
1	Require assistance.	V
2	Require medical assistance.	X
3	No or negative.	N
4	Yes or affirmative.	Y
5	Proceed in this direction.	↑

Figure 19-6. Ground-to-air emergency code (pattern signals).

Body Signals

When an aircraft is close enough for the pilot to see you clearly, use body movements or positions ([Figure 19-7](#)) to convey a message.

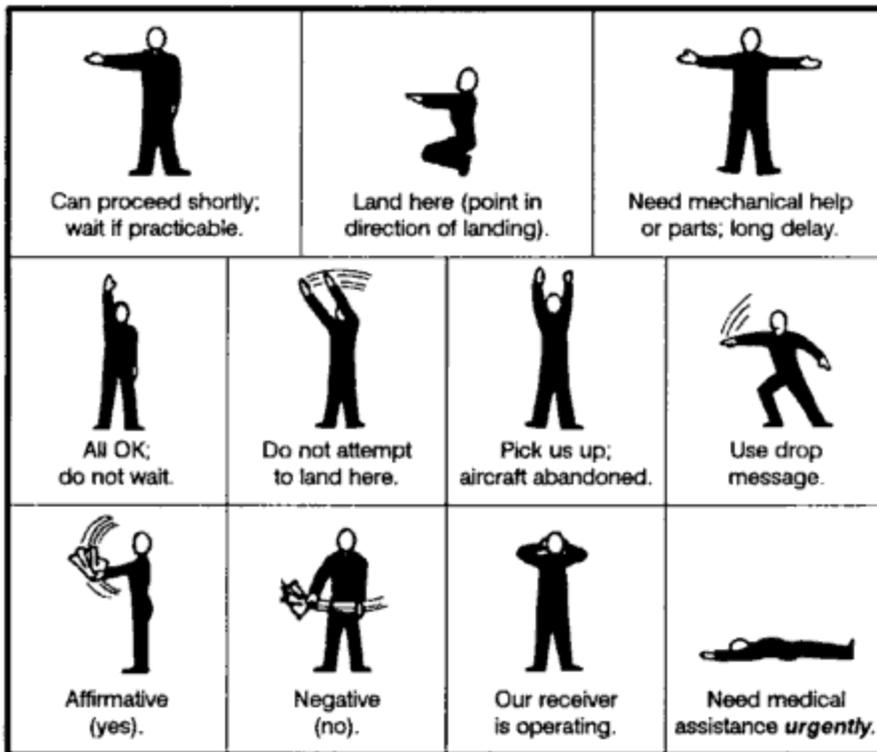


Figure 19-7. Body signals.

Panel Signals

If you have a life raft cover or sail, or a suitable substitute, use the symbols shown in [Figure 19-8](#) to convey a message.

 <p>On land and at sea: O.K. to land. Arrow shows landing direction.</p>	 <p>On land and at sea: Need medical attention.</p>	 <p>On land and at sea: Do not attempt landing.</p>
 <p>On land and at sea: Need first aid supplies.</p>	 <p>On land and at sea: Plane is flyable; need tools.</p>	 <p>On land: Need gas and oil; plane is flyable.</p>
 <p>On land: Need warm clothing. At sea: Need exposure suit or clothing indicated.</p>	 <p>On land: Indicate direction of nearest civilization. At sea: Indicate direction of rescue craft.</p>	 <p>Have abandoned plane. On land: Walking in this direction. At sea: Drifting.</p>
 <p>On land and at sea: Need food and water.</p>	 <p>On land: Should we wait for rescue plane? At sea: Notify rescue agency of my position.</p>	 <p>At sea: Need equipment as indicated. Signals follow.</p>
 <p>On land: Need quinine or Atabrine. At sea: Need sun cover.</p>	<p>Survivors use life raft sails to convey signals.</p> <p>Blue  Yellow </p>	

Figure 19-8. Panel signals.

Aircraft Acknowledgments

Once the pilot of a fixed-wing aircraft has sighted you, he will normally indicate he has seen you by flying low, moving the plane, and flashing lights as shown in [Figure 19-9](#). Be ready to relay other messages to the pilot once he acknowledges that he received and understood your first message. Use a radio, if possible, to relay further messages. If no radio is available, use the [codes](#) covered in the previous paragraphs.

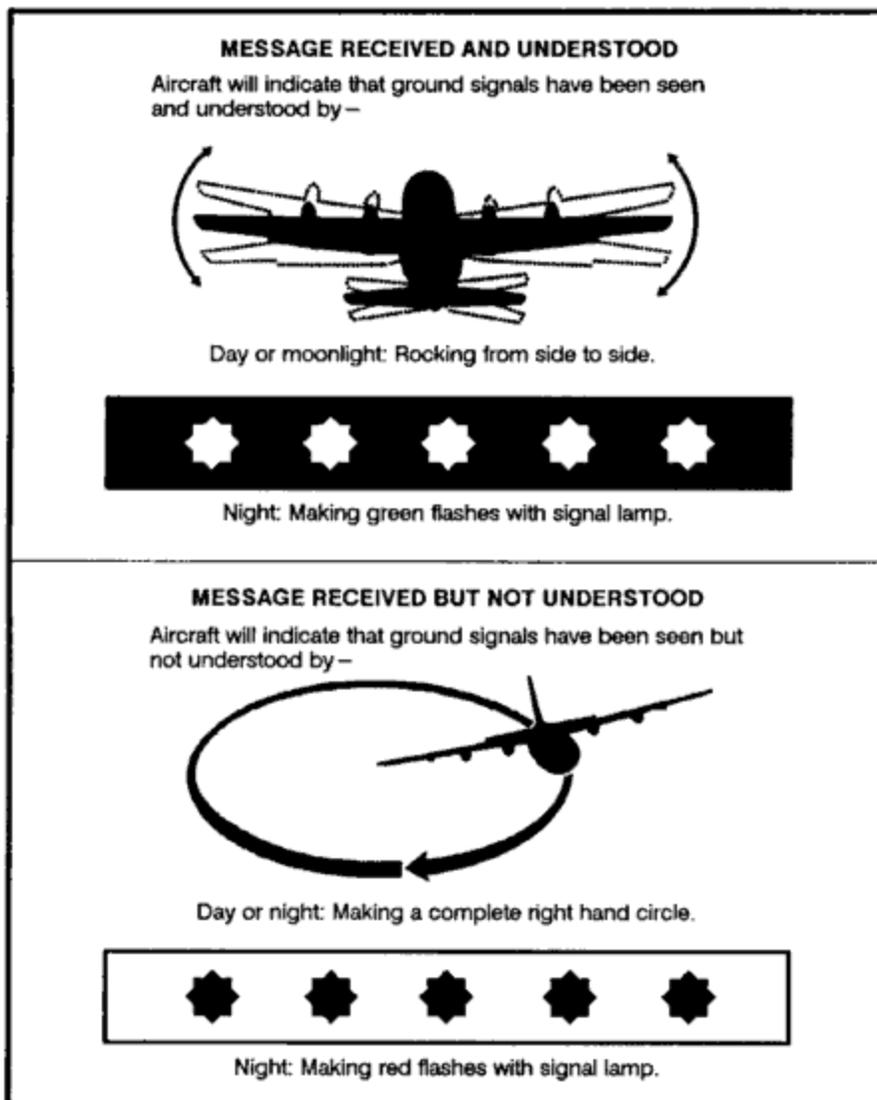


Figure 19-9. Aircraft acknowledgments.

AIRCRAFT VECTORING PROCEDURES

If you can contact a friendly aircraft with a radio, guide the pilot to your location. Use the following general format to guide the pilot:

- Mayday, Mayday.
- Call sign (if any).
- Name.
- Location.
- Number of survivors.

- Available landing sites.

- Any remarks such as medical aid or other specific types of help needed immediately.

Simply because you have made contact with rescuers does not mean you are safe. Follow instructions and continue to use sound survival and evasion techniques until you are actually rescued.

CHAPTER 20 - SURVIVAL MOVEMENT IN HOSTILE AREAS



The "rescue at any cost" philosophy of previous conflicts is not likely to be possible in future conflicts. Our potential adversaries have made great progress in air defense measures and radio direction finding (RDF) techniques. We must assume that U.S. military forces trapped behind enemy lines in future conflicts may not experience quick recovery by friendly elements. Soldiers may have to move for extended times and distances to places less threatening to the recovery forces. The soldier will not likely know the type of recovery to expect. Each situation and the available resources determine the type of recovery possible. Since no one can be absolutely sure until the recovery effort begins, soldiers facing a potential cutoff from friendly forces should be familiar with all the possible types of recovery, their related problems, and their responsibilities to the recovery effort. Preparation and training can improve the chances of success.

PHASES OF PLANNING

Preparation is a requirement for all missions. When planning, you must consider how to avoid capture and return to your unit. Contingency plans must be prepared in conjunction with unit standing operating procedures (SOPs). Courses of action you or your unit will take must also be considered.

Contingency Plan of Action (CPA)

Intelligence sections can help prepare personnel for contingency actions through information supplied in area studies, SERE (survival, evasion, resistance, and escape) contingency guides, threat briefings, current intelligence reports, and current contact and authentication procedures. Pre-mission preparation includes the completion of a CPA. The study and research needed to develop the CPA will make you aware of the current situation in your mission area. Your CPA will let recovery forces know your probable actions should you have to move to avoid capture.

Start preparing even before pre-mission planning. Many parts of the CPA are SOP for your unit. Include the CPA in your training. Planning starts in your daily training.

The CPA is your entire plan for your return to friendly control. It consists of five paragraphs written in the operation order format. You can take most of paragraph 1, Situation, with you on the mission. [Appendix H](#) contains the CPA format. It also indicates what portion of the CPA you can take with you.

A comprehensive CPA is a valuable asset to the soldier trapped behind enemy lines who must try to avoid capture. To complete paragraph 1, know your unit's assigned area or concentrate on potential mission areas of the world. Many open or closed sources contain

the information you need to complete a CPA. Open sources may include newspapers, magazines, country or area handbooks, area studies, television, radio, persons familiar with the area, and libraries. Closed sources may include area studies, area assessments, SERE contingency guides, various classified field manuals, and intelligence reports.

Prepare your CPA in three phases. During your normal training, prepare paragraph 1, Situation. Prepare paragraphs 2, 3, 4, and 5 during your pre-mission planning. After deployment into an area, continually update your CPA based on mission changes and intelligence updates.

The CPA is a guide. You may add or delete certain portions based on the mission. The CPA may be a recovery force's only means of determining your location and intentions after you start to move. It is an essential tool for your survival and return to friendly control.

Standing Operating Procedures

Unit SOPs are valuable tools your unit has that will help your planning. When faced with a dangerous situation requiring immediate action, it is not the time to discuss options; it is the time to act. Many of the techniques used during small unit movement can be carried over to fit requirements for moving and returning to friendly control. Items from the SOP should include, but are not limited to--

- Movement team size (three to four persons per team).
- Team communications (technical and nontechnical).
- Essential equipment.
- Actions at danger areas.
- Signaling techniques.
- Immediate action drills.
- Linkup procedures.
- Helicopter recovery devices and procedures.
- Security procedures during movement and at hide sites.
- Rally points.

Rehearsals work effectively for reinforcing these SOP skills and also provide opportunities for evaluation and improvement.

Notification to Move and Avoid Capture

An isolated unit has several general courses of action it can take to avoid the capture of the group or individuals. These courses of action are not courses the commander can choose instead of his original mission. He cannot arbitrarily abandon the assigned mission. Rather, he may adopt these courses of action after completing his mission when his unit cannot complete its assigned mission (because of combat power losses) or when he receives orders to extract his unit from its current position. If such actions are not possible, the commander may decide to have the unit try to move to avoid capture and return to friendly control. In either case, as long as there is communication with higher headquarters, that headquarters will make the decision.

If the unit commander loses contact with higher headquarters, he must make the decision to move or wait. He bases his decision on many factors, including the mission, rations and ammunition on hand, casualties, the chance of relief by friendly forces, and the tactical situation. The commander of an isolated unit faces other questions. What course of action will inflict maximum damage on the enemy? What course of action will assist in completing the higher headquarters' overall mission?

Movement teams conduct the execution portion of the plan when notified by higher headquarters or, if there is no contact with higher headquarters, when the highest ranking survivor decides that the situation requires the unit to try to escape capture or destruction. Movement team leaders receive their notification through prebriefed signals. Once the signal to try to avoid capture is given, it must be passed rapidly to all personnel. Notify higher headquarters, if possible. If unable to communicate with higher headquarters, leaders must recognize that organized resistance has ended, and that organizational control has ceased. Command and control is now at the movement team or individual level and is returned to higher organizational control only after reaching friendly lines.

EXECUTION

Upon notification to avoid capture, all movement team members will try to link up at the initial movement point. This point is where team members rally and actually begin their movement. Tentatively select the initial movement point during your planning phase through a map recon. Once on the ground, the team verifies this location or selects a better one. All team members must know its location. The initial movement point should be easy to locate and occupy for a minimum amount of time.

Once the team has rallied at the initial movement point, it must--

- Give first aid.

- Inventory its equipment (decide what to abandon, destroy, or take along).

- Apply camouflage.

- Make sure everyone knows the tentative hide locations.

- Ensure everyone knows the primary and alternate routes and rally points en route to the hide locations.

- Always maintain security.
- Split the team into smaller elements. The ideal element should have two to three members; however, it could include more depending on team equipment and experience.

The movement portion of returning to friendly control is the most dangerous as you are now most vulnerable. It is usually better to move at night because of the concealment darkness offers. Exceptions to such movement would be when moving through hazardous terrain or dense vegetation (for example, jungle or mountainous terrain). When moving, avoid the following even if it takes more time and energy to bypass:

- Obstacles and barriers.
- Roads and trails.
- Inhabited areas.
- Waterways and bridges.
- Natural lines of drift.
- Man-made structures.
- All civilian and military personnel.

Movement in enemy-held territory is a very slow and deliberate process. The slower you move and the more careful you are, the better. Your best security will be using your senses. Use your eyes and ears to detect people before they detect you. Make frequent listening halts. In daylight, observe a section of your route before you move along it. The distance you travel before you hide will depend on the enemy situation, your health, the terrain, the availability of cover and concealment for hiding, and the amount of darkness left.

Once you have moved into the area in which you want to hide (hide area), select a hide site. Keep the following formula in mind when selecting a hide site: BLISS.

B - Blends in with the surroundings.

L - Low in silhouette.

I - Irregular in shape.

S - Small in size.

S - Secluded.

Avoid the use of existing buildings or shelters. Usually, your best option will be to crawl into the thickest vegetation you can find. Construct any type of shelter within the hide area only in cold weather and desert environments. If you build a shelter, follow the BLISS formula.

Hide Site Activities

After you have located your hide site, do not move straight into it. Use a button hook or other deceptive technique to move to a position outside of the hide site. Conduct a listening halt before moving individually into the hide site. Be careful not to disturb or cut any vegetation. Once you have occupied the hide site, limit your activities to maintaining security, resting, camouflaging, and planning your next moves.

Maintain your security through visual scanning and listening. Upon detection of the enemy, the security personnel alert all personnel, even if the team's plan is to stay hidden and not move upon sighting the enemy. Take this action so that everyone is aware of the danger and ready to react.

If any team member leaves the team, give him a five-point contingency plan. Take such steps especially when a recon team or a work party is out of the hole-up or hide site.

It is extremely important to stay healthy and alert when trying to avoid capture. Take every opportunity to rest, but do not sacrifice security. Rotate security so that all members of your movement team can rest. Treat all injuries, no matter how minor. Loss of your health will mean loss of your ability to continue to avoid capture.

Camouflage is an important aspect of both moving and securing a hide site. Always use a buddy system to ensure that camouflage is complete. Ensure that team members blend with the hide site. Use natural or man-made materials. If you add any additional camouflage material to the hide site, do not cut vegetation in the immediate area.

Plan your next actions while at the hide site. Start your planning process immediately upon occupying the hide site. Inform all team members of their current location and designate an alternate hide site location. Once this is done, start planning for the team's next movement.

Planning the team's movement begins with a map recon. Choose the next hide area first. Then choose a primary and an alternate route to the hide area. In choosing the routes, do not use straight lines. Use one or two radical changes in direction. Pick the routes that offer the best cover and concealment, the fewest obstacles, and the least likelihood of contact with humans. There should be locations along the route where the team can get water. To aid team navigation, use azimuths, distances, checkpoints or steering marks, and corridors. Plan rally points and rendezvous points at intervals along the route.

Other planning considerations may fall under what the team already has in the team SOP. Examples are immediate action drills, actions on sighting the enemy, and hand-and-arm signals.

Once planning is complete, ensure everyone knows and memorizes the entire plan. The team members should know the distances and azimuths for the entire route to the next hide area. They should study the map and know the various terrain they will be moving across so that they can move without using the map.

Do not occupy a hide site for more than 24 hours. In most situations, hide during the day and move at night. Limit your actions in the hide site to those [discussed](#) above. Once in the hide site, restrict all movement to less than 45 centimeters above the ground. Do not build fires or prepare food. Smoke and food odors will reveal your location. Before leaving the hide site, sterilize it to prevent tracking.

Hole-Up Areas

After moving and hiding for several days, usually three or four, you or the movement team will have to move into a hole-up area. This is an area where you can rest, recuperate, and get and prepare food. Choose an area near a water source. You then have a place to get water, to place fishing devices, and to trap game. Since waterways are a line of communication, locate your hide site well away from the water.

The hole-up area should offer plenty of cover and concealment for movement in and around the area. Always maintain security while in the hole-up area. Always man the hole-up area. Actions in the hole-up area are the same as in hide site, except that you can move away from the hole-up area to get and prepare food. Actions in the hole-up area include--

- Selecting and occupying the next hide site (remember you are still in a dangerous situation; this is not a friendly area).
- Reconnoitering the area for resources and potential concealed movement routes to the alternate hide site.
- Gathering food (nuts, berries, vegetables). When moving around the area for food, maintain security and avoid leaving tracks or other signs. When setting traps and snares, keep them well-camouflaged and in areas where people are not likely to discover them. Remember, the local population sometimes heavily travels trails near water sources.
- Getting water from sources within the hide area. Be careful not to leave tracks of signs along the banks of water sources when getting water. Moving on hard rocks or logs along the banks to get water will reduce the signs you leave.
- Setting clandestine fishing devices, such as stakeouts, below the surface of the water to avoid detection.
- Locating a fire site well away from the hide site. Use this site to prepare food or boil water. Camouflage and sterilize the fire site after each use. Be careful that smoke and light from the fire does not compromise the hole-up area.

While in the hole-up area, security is still your primary concern. Designate team members to perform specific tasks. To limit movement around the area, you may have a two-man team perform more than one task. For example, the team getting water could also set the fishing devices. Do not occupy the hole-up area longer than 72 hours.

RETURN TO FRIENDLY CONTROL

Establishing contact with friendly lines or patrols is the most crucial part of movement and return to friendly control. All your patience, planning, and hardships will be in vain if you do not exercise caution when contacting friendly frontline forces. Friendly patrols have killed personnel operating behind enemy lines because they did not make contact properly. Most of the casualties could have been avoided if caution had been exercised and a few simple procedures followed. The normal tendency is to throw caution to the winds when in sight of friendly forces. You must overcome this tendency and understand that linkup is a very sensitive situation.

Border Crossings

If you have made your way to a friendly or neutral country, use the following procedures to cross the border and link up with friendly forces on the other side:

- Occupy a hide site on the near side of the border and send a team out to reconnoiter the potential crossing site.

- Surveil the crossing site for at least 24 hours, depending on the enemy situation.
- Make a sketch of the site, taking note of terrain, obstacles, guard routines and rotations, and any sensor devices or trip wires. Once the recon is complete, the team moves to the hide site, briefs the rest of the team, and plans to cross the border at night.
- After crossing the border, set up a hide site on the far side of the border and try to locate friendly positions. Do not reveal your presence.
- Depending on the size of your movement team, have two men surveil the potential linkup site with friendly forces until satisfied that the personnel are indeed friendly.
- Make contact with the friendly forces during daylight. Personnel chosen to make contact should be unarmed, have no equipment, and have positive identification readily available. The person who actually makes the linkup should be someone who looks least like the enemy.
- During the actual contact, have only one person make the contact. The other person provides the security and observes the linkup area from a safe distance. The observer should be far enough away so that he can warn the rest of the movement team if something goes wrong.
- Wait until the party he is contacting looks in his direction so that he does not surprise the contact. He stands up from behind cover, with hands overhead and states that he is an American. After this, he follows any instructions given him. He avoids answering any tactical questions and does not give any indication that there are other team members.
- Reveal that there are other personnel with him only after verifying his identity and satisfying himself he has made contact with friendly forces.

Language problems or difficulties confirming identities may arise. The movement team should maintain security, be patient, and have a contingency plan.

Note: If you are moving to a neutral country, you are surrendering to that power and become a detained person.

Linkup at the FEBA/FLOT

If caught between friendly and enemy forces and there is heavy fighting in the area, you may choose to hide and let the friendly lines pass over you. If overrun by friendly forces, you may try to link up from their rear during daylight hours. If overrun by enemy forces,

you may move further to the enemy rear, try to move to the forward edge of the battle area (FEBA)/forward line of own troops (FLOT) during a lull in the fighting, or move to another area along the front.

The actual linkup will be done as for linkup during a border crossing. The only difference is that you must be more careful on the initial contact. Frontline personnel are more likely to shoot first and ask questions later, especially in areas of heavy fighting. You should be near or behind cover before trying to make contact.

Linkup With Friendly Patrols

If friendly lines are a circular perimeter or an isolated camp, for example, any direction you approach from will be considered enemy territory. You do not have the option of moving behind the lines and trying to link up. This move makes the linkup extremely dangerous. One option you have is to place the perimeter under observation and wait for a friendly patrol to move out in your direction, providing a chance for a linkup. You may also occupy a position outside of the perimeter and call out to get the attention of the friendly forces. Ideally, display anything that is white while making contact. If nothing else is available, use any article of clothing. The idea is to draw attention while staying behind cover. Once you have drawn attention to your signal and called out, follow instructions given to you. Be constantly on the alert for friendly patrols because these provide a means for return to friendly control. Find a concealed position that allows you maximum visual coverage of the area. Try to memorize every terrain feature so that, if necessary, you can infiltrate to friendly positions under the cover of darkness. Remember, trying to infiltrate in darkness is extremely dangerous.

Because of the missions of combat and recon patrols and where they are operating, making contact can be dangerous. If you decide not to make contact, you can observe their route and approach friendly lines at about the same location. Such observation will enable you to avoid mines and booby traps.

Once you have spotted a patrol, remain in position and, if possible, allow the patrol to move toward you. When the patrol is 25 to 50 meters from your position, signal them and call out a greeting that is clearly and unmistakably of American origin.

If you have nothing white, an article of clothing will suffice to draw attention. If the distance is greater than 50 meters, a recon patrol may avoid contact and bypass your position. If the distance is less than 25 meters, a patrol member may react instantly by firing a fatal shot. It is crucial, at the time of contact, that there is enough light for the patrol to identify you as an American.

Whatever linkup technique you decide to use, use extreme caution. From the perspective of the friendly patrol or friendly personnel occupying a perimeter, you are hostile until they make positive identification.

CHAPTER 21 - CAMOUFLAGE



In a survival situation, especially in a hostile environment, you may find it necessary to camouflage yourself, your equipment, and your movement. It may mean the difference between survival and capture by the enemy. Camouflage and movement techniques, such as stalking, will also help you get animals or game for food using primitive weapons and skills.

PERSONAL CAMOUFLAGE

When camouflaging yourself, consider that certain shapes are particular to humans. The enemy will look for these shapes. The shape of a hat, helmet, or black boots can give you away. Even animals know and run from the shape of a human silhouette. Break up your outline by placing small amounts of vegetation from the surrounding area in your uniform, equipment, and headgear. Try to reduce any shine from skin or equipment. Blend in with the surrounding colors and simulate the texture of your surroundings.

Shape and Outline

Change the outline of weapons and equipment by tying vegetation or strips of cloth onto them. Make sure the added camouflage does not hinder the equipment's operation. When hiding, cover yourself and your equipment with leaves, grass, or other local debris. Conceal any signaling devices you have prepared, but keep them ready for use.

Color and Texture

Each area of the world and each climatic condition (arctic/winter, temperate/jungle, or swamp/desert) has color patterns and textures that are natural for that area. While color is self-explanatory, texture defines the surface characteristics of something when looking at it. For example, surface textures may be smooth, rough, rocky, leafy, or many other possible combinations. Use color and texture together to camouflage yourself effectively. It makes little sense to cover yourself with dead, brown vegetation in the middle of a large grassy field. Similarly, it would be useless to camouflage yourself with green grass in the middle of a desert or rocky area.

To hide and camouflage movement in any specific area of the world, you must take on the color and texture of the immediate surroundings. Use natural or man-made materials to camouflage yourself. Camouflage paint, charcoal from burned paper or wood, mud, grass,

leaves, strips of cloth or burlap, pine boughs, and camouflaged uniforms are a few examples.

Cover all areas of exposed skin, including face, hands, neck, and ears. Use camouflage paint, charcoal, or mud to camouflage yourself. Cover with a darker color areas that stick out more and catch more light (forehead, nose, cheekbones, chin, and ears). Cover other areas, particularly recessed or shaded areas (around the eyes and under the chin), with lighter colors. Be sure to use an irregular pattern. Attach vegetation from the area or strips of cloth of the proper color to clothing and equipment. If you use vegetation, replace it as it wilts. As you move through an area, be alert to the color changes and modify your camouflage colors as necessary.

[Figure 21-1](#) gives a general idea of how to apply camouflage for various areas and climates. Use appropriate colors for your surroundings. The blotches or slashes will help to simulate texture.

Area	Method
Temperate deciduous forest	Blotches
Coniferous forest	Broad slash
Jungle	Broad slash
Desert	Slash
Arctic	Blotches
Grass or open area	Slash

Figure 21-1. Camouflage methods for specific areas.

Shine

As skin gets oily, it becomes shiny. Equipment with worn off paint is also shiny. Even painted objects, if smooth, may shine. Glass objects such as mirrors, glasses, binoculars, and telescopes shine. You must cover these glass objects when not in use. Anything that shines automatically attracts attention and will give away your location.

Whenever possible, wash oily skin and reapply camouflage. Skin oil will wash off camouflage, so reapply it frequently. If you must wear glasses, camouflage them by applying a thin layer of dust to the outside of the lenses. This layer of dust will reduce the reflection of light. Cover shiny spots on equipment by painting, covering with mud, or wrapping with cloth or tape. Pay particular attention to covering boot eyelets, buckles on equipment, watches and jewelry, zippers, and uniform insignia. Carry a signal mirror in its designed pouch or in a pocket with the mirror portion facing your body.

Shadow

When hiding or traveling, stay in the deepest part of the shadows. The outer edges of the shadows are lighter and the deeper parts are darker. Remember, if you are in an area where there is plenty of vegetation, keep as much vegetation between you and a potential enemy as possible. This action will make it very hard for the enemy to see you as the vegetation will partially mask you from his view. Forcing an enemy to look through many layers of masking vegetation will fatigue his eyes very quickly.

When traveling, especially in built-up areas at night, be aware of where you cast your shadow. It may extend out around the corner of a building and give away your position. Also, if you are in a dark shadow and there is a light source to one side, an enemy on the other side can see your silhouette against the light.

Movement

Movement, especially fast movement, attracts attention. If at all possible, avoid movement in the presence of an enemy. If capture appears imminent in your present location and you must move, move away slowly, making as little noise as possible. By moving slowly in a survival situation, you decrease the chance of detection and conserve energy that you may need for long-term survival or long-distance evasion.

When moving past obstacles, avoid going over them. If you must climb over an obstacle, keep your body level with its top to avoid silhouetting yourself. Do not silhouette yourself against the skyline when crossing hills or ridges. When you are moving, you will have difficulty detecting the movement of others. Stop frequently, listen, and look around slowly to detect signs of hostile movement.

Noise

Noise attracts attention, especially if there is a sequence of loud noises such as several snapping twigs. If possible, avoid making any noise at all. Slow down your pace as much as necessary to avoid making noise when moving around or away from possible threats. Use background noises to cover the noise of your movement. Sounds of aircraft, trucks, generators, strong winds, and people talking will cover some or all the sounds produced by your movement. Rain will mask a lot of movement noise, but it also reduces your ability to detect potential enemy noise.

Scent

Whether hunting animals or avoiding the enemy, it is always wise to camouflage the scent associated with humans. Start by washing yourself and your clothes without using soap. This washing method removes soap and body odors. Avoiding strong smelling foods, such as garlic, helps reduce body odors. Do not use tobacco products, candy, gum, or cosmetics. You can use aromatic herbs or plants to wash yourself and your clothing, to rub on your body and clothing, or to chew on to camouflage your breath. Pine needles, mint, or any similar aromatic plant will help camouflage your scent from both animals and humans. Standing in smoke from a fire can help mask your scent from animals. While animals are afraid of fresh smoke from a fire, older smoke scents are normal smells after forest fires and do not scare them.

While traveling, use your sense of smell to help you find or avoid humans. Pay attention to smells associated with humans, such as fire, cigarettes, gasoline, oil, soap, and food. Such smells may alert you to their presence long before you can see or hear them, depending on wind speed and direction. Note the wind's direction and, when possible, approach from or skirt around on the downwind side when nearing humans or animals.

METHODS OF STALKING

Sometimes you need to move, undetected, to or from a location. You need more than just camouflage to make these moves successfully. The ability to stalk or move without making any sudden quick movement or loud noise is essential to avoiding detection.

You must practice stalking if it is to be effective. Use the following [techniques](#) when practicing.

Upright Stalking

Take steps about half your normal stride when stalking in the upright position. Such strides help you to maintain your balance. You should be able to stop at any point in that

movement and hold that position as long as necessary. Curl the toes up out of the way when stepping down so the outside edge of the ball of the foot touches the ground. Feel for sticks and twigs that may snap when you place your weight on them. If you start to step on one, lift your foot and move it. After making contact with the outside edge of the ball of your foot, roll to the inside ball of your foot, place your heel down, followed by your toes. Then gradually shift your weight forward to the front foot. Lift the back foot to about knee height and start the process over again.

Keep your hands and arms close to your body and avoid waving them about or hitting vegetation. When moving in a crouch, you gain extra support by placing your hands on your knees. One step usually takes 1 minute to complete, but the time it takes will depend on the situation.

Crawling

Crawl on your hands and knees when the vegetation is too low to allow you to walk upright without being seen. Move one limb at a time and be sure to set it down softly, feeling for anything that may snap and make noise. Be careful that your toes and heels do not catch on vegetation.

Prone Stalking

To stalk in the prone position, you do a low, modified push-up on your hands and toes, moving yourself forward slightly, and then lowering yourself again slowly. Avoid dragging and scraping along the ground as this makes excessive noise and leaves large trails for trackers to follow.

Animal Stalking

Before stalking an animal, select the best route. If the animal is moving, you will need an intercepting route. Pick a route that puts objects between you and the animal to conceal your movement from it. By positioning yourself in this way, you will be able to move faster, until you pass that object. Some objects, such as large rocks and trees, may totally conceal you, and others, such as small bushes and grass, may only partially conceal you. Pick the route that offers the best concealment and requires the least amount of effort. Keep your eyes on the animal and stop when it looks your way or turns its ears your way, especially if it suspects your presence. As you get close, squint your eyes slightly to conceal both the light-dark contrast of the whites of the eyes and any shine from your eyes. Keep your mouth closed so that the animal does not see the whiteness or shine of your teeth.

CHAPTER 22 - CONTACT WITH PEOPLE



Some of the best and most frequently given advice, when dealing with local peoples, is for the survivor to accept, respect, and adapt to their ways. Thus, "when in Rome, do as the Romans do." This is excellent advice, but there are several considerations involved in putting this advice into practice.

CONTACT WITH LOCAL PEOPLE

You must give serious consideration to dealing with the local people. Do they have a primitive culture? Are they farmers, fishermen, friendly people, or enemy? As a survivor, "cross-cultural communication" can vary radically from area to area and from people to people. It may mean interaction with people of an extremely primitive culture or contact with people who have a relatively modern culture. A culture is identified by standards of behavior that its members consider proper and acceptable but may or may not conform to your idea of what is proper. No matter who these people are, you can expect they will have laws, social and economic values, and political and religious beliefs that may be radically different from yours. Before deploying into your area of operations, study these different cultural aspects. Prior study and preparation will help you make or avoid contact if you have to deal with the local population.

People will be friendly, unfriendly, or they will choose to ignore you. Their attitude may be unknown. If the people are known to be friendly, try to keep them friendly through your courtesy and respect for their religion, politics, social customs, habits, and all other aspects of their culture. If the people are known to be enemies or are unknowns, make every effort to avoid any contact and leave no sign of your presence. A basic knowledge of the daily habits of the local people will be essential in this attempt. If after careful observation you determine that an unknown people are friendly, you may contact them if you absolutely need their help.

Usually, you have little to fear and much to gain from cautious and respectful contact with local people of friendly or neutral countries. If you become familiar with the local customs, display common decency, and most important, show respect for their customs, you should be able to avoid trouble and possibly gain needed help. To make contact, wait until only one person is near and, if possible, let that person make the initial approach. Most people will be willing to help a survivor who appears to be in need. However, local political attitudes, instruction, or propaganda efforts may change the attitudes of otherwise friendly people. Conversely, in unfriendly countries, many people, especially in remote areas, may feel animosity toward their politicians and may be more friendly toward a survivor.

The key to successful contact with local peoples is to be friendly, courteous, and patient. Displaying fear, showing weapons, and making sudden or threatening movements can cause a local person to fear you. Such actions can prompt a hostile response. When attempting a contact, smile as often as you can. Many local peoples are shy and seem

unapproachable, or they may ignore you. Approach them slowly and do not rush your contact.

THE SURVIVOR'S BEHAVIOR

Use salt, tobacco, silver money, and similar items discreetly when trading with local people. Paper money is well-known worldwide. Do not overpay; it may lead to embarrassment and even danger. Always treat people with respect. Do not bully them or laugh at them. Using sign language or acting out needs or questions can be very effective. Many people are used to such language and communicate using nonverbal sign language. Try to learn a few words and phrases of the local language in and around your potential area of operations. Trying to speak someone's language is one of the best ways to show respect for his culture. Since English is widely used, some of the local people may understand a few words of English.

Some areas may be taboo. They range from religious or sacred places to diseased or danger areas. In some areas, certain animals must not be killed. Learn the rules and follow them. Watch and learn as much as possible. Such actions will help to strengthen relations and provide new knowledge and skills that may be very important later. Seek advice on local hazards and find out from friendly people where the hostile people are. Always remember that people frequently insist that other peoples are hostile, simply because they do not understand different cultures and distant peoples. The people they can usually trust are their immediate neighbors--much the same as in our own neighborhood.

Frequently, local people, like ourselves, will suffer from contagious diseases. Build a separate shelter, if possible, and avoid physical contact without giving the impression of doing so. Personally prepare your food and drink, if you can do so without giving offense. Frequently, the local people will accept the use of "personal or religious custom" as an explanation for isolationist behavior.

Barter, or trading, is common in more primitive societies. Hard coin is usually good, whether for its exchange value or as jewelry or trinkets. In isolated areas, matches, tobacco, salt, razor blades, empty containers, or cloth may be worth more than any form of money.

Be very cautious when touching people. Many people consider "touching" taboo and such actions may be dangerous. Avoid sexual contact.

Hospitality among some people is such a strong cultural trait that they may seriously reduce their own supplies to feed a stranger. Accept what they offer and share it equally with all present. Eat in the same way they eat and, most important, try to eat all they offer. If you make any promises, keep them. Respect personal property and local customs and manners, even if they seem odd. Make some kind of payment for food, supplies, and so forth. Respect privacy. Do not enter a house unless invited.

CHANGES TO POLITICAL ALLEGIANCE

In today's world of fast-paced international politics, political attitudes and commitments within nations are subject to rapid change. The population of many countries, especially politically hostile countries, must not be considered friendly just because they do not demonstrate open hostility. Unless briefed to the contrary; avoid all contact with such people.

CHAPTER 23 - SURVIVAL IN MAN-MADE HAZARDS



Nuclear, chemical, and biological weapons have become potential realities on any modern battlefield. Recent experience in Afghanistan, Cambodia, and other areas of conflict has proved the use of chemical and biological weapons (such as mycotoxins). The warfighting doctrine of the NATO and Warsaw Pact nations addresses the use of both nuclear and chemical weapons. The potential use of these weapons intensifies the problems of survival because of the serious dangers posed by either radioactive fallout or contamination produced by persistent biological or chemical agents.

You must use special precautions if you expect to survive in these man-made hazards. If you are subjected to any of the effects of nuclear, chemical, or biological warfare, the survival procedures recommended in this chapter may save your life. This chapter presents some background information on each type of hazard so that you may better understand the true nature of the hazard. Awareness of the hazards, knowledge of this chapter, and application of common sense should keep you alive.

THE NUCLEAR ENVIRONMENT

Prepare yourself to survive in a nuclear environment. Know how to react to a nuclear hazard.

Effects of Nuclear Weapons

The effects of nuclear weapons are classified as either initial or residual. Initial effects occur in the immediate area of the explosion and are hazardous in the first minute after the explosion. Residual effects can last for days or years and cause death. The principal initial effects are blast and radiation.

Blast

Defined as the brief and rapid movement of air away from the explosion's center and the pressure accompanying this movement. Strong winds accompany the blast. Blast hurls debris and personnel, collapses lungs, ruptures eardrums, collapses structures and positions, and causes immediate death or injury with its crushing effect.

Thermal Radiation

The heat and light radiation a nuclear explosion's fireball emits. Light radiation consists of both visible light and ultraviolet and infrared light. Thermal radiation produces extensive fires, skin burns, and flash blindness.

Nuclear Radiation

Nuclear radiation breaks down into two categories—initial radiation and residual radiation. Initial nuclear radiation consists of intense gamma rays and neutrons produced during the first minute after the explosion. This radiation causes extensive damage to cells throughout the body. Radiation damage may cause headaches, nausea, vomiting, diarrhea, and even death, depending on the radiation dose received. The major problem in protecting yourself against the initial radiation's effects is that you may have received a lethal or incapacitating dose before taking any protective action. Personnel exposed to lethal amounts of initial radiation may well have been killed or fatally injured by blast or thermal radiation.

Residual radiation consists of all radiation produced after one minute from the explosion. It has more effect on you than initial radiation. A discussion of [residual radiation](#) takes place in a subsequent paragraph.

Types of Nuclear Bursts

There are three types of nuclear bursts—airburst, surface burst, and subsurface burst. The type of burst directly affects your chances of survival. A subsurface burst occurs completely underground or underwater. Its effects remain beneath the surface or in the immediate area where the surface collapses into a crater over the burst's location. Subsurface bursts cause you little or no radioactive hazard unless you enter the immediate area of the crater. No further discussion of this type of burst will take place.

An airburst occurs in the air above its intended target. The airburst provides the maximum radiation effect on the target and is, therefore, most dangerous to you in terms of *immediate* nuclear effects.

A surface burst occurs on the ground or water surface. Large amounts of fallout result, with serious long-term effects for you. This type of burst is your *greatest* nuclear hazard.

Nuclear Injuries

Most injuries in the nuclear environment result from the initial nuclear effects of the detonation. These injuries are classed as blast, thermal, or radiation injuries. Further radiation injuries may occur if you do not take proper precautions against fallout. Individuals in the area near a nuclear explosion will probably suffer a combination of all three types of injuries.

Blast Injuries

Blast injuries produced by nuclear weapons are similar to those caused by conventional high-explosive weapons. Blast overpressure can produce collapsed lungs and ruptured internal organs. Projectile wounds occur as the explosion's force hurls debris at you. Large pieces of debris striking you will cause fractured limbs or massive internal injuries. Blast over-pressure may throw you long distances, and you will suffer severe injury upon impact with the ground or other objects. Substantial cover and distance from the explosion are the best protection against blast injury. Cover blast injury wounds as soon as possible to prevent the entry of radioactive dust particles.

Thermal Injuries

The heat and light the nuclear fireball emits causes thermal injuries. First-, second-, or third-degree burns may result. Flash blindness also occurs. This blindness may be permanent or temporary depending on the degree of exposure of the eyes. Substantial cover and distance from the explosion can prevent thermal injuries. Clothing will provide significant protection against thermal injuries. Cover as much exposed skin as possible

before a nuclear explosion. First aid for thermal injuries is the same as first aid for burns. Cover open burns (second-or third-degree) to prevent the entry of radioactive particles. Wash all burns before covering.

Radiation Injuries

Neutrons, gamma radiation, alpha radiation, and beta radiation cause radiation injuries. Neutrons are high-speed, extremely penetrating particles that actually smash cells within your body. Gamma radiation is similar to X rays and is also a highly penetrating radiation. During the initial fireball stage of a nuclear detonation, initial gamma radiation and neutrons are the most serious threat. Beta and alpha radiation are radioactive particles normally associated with radioactive dust from fallout. They are short-range particles and you can easily protect yourself against them if you take precautions. See [Bodily Reactions to Radiation](#), below, for the symptoms of radiation injuries.

Residual Radiation

Residual radiation is all radiation emitted after 1 minute from the instant of the nuclear explosion. Residual radiation consists of induced radiation and fallout.

Induced Radiation

It describes a relatively small, intensely radioactive area directly underneath the nuclear weapon's fireball. The irradiated earth in this area will remain highly radioactive for an extremely long time. You should not travel into an area of induced radiation.

Fallout

Fallout consists of radioactive soil and water particles, as well as weapon fragments. During a surface detonation, or if an airburst's nuclear fireball touches the ground, large amounts of soil and water are vaporized along with the bomb's fragments, and forced upward to altitudes of 25,000 meters or more. When these vaporized contents cool, they can form more than 200 different radioactive products. The vaporized bomb contents condense into tiny radioactive particles that the wind carries and they fall back to earth as radioactive dust. Fallout particles emit alpha, beta, and gamma radiation. Alpha and beta radiation are relatively easy to counteract, and residual gamma radiation is much less intense than the gamma radiation emitted during the first minute after the explosion. Fallout is your most significant radiation hazard, provided you have not received a lethal radiation dose from the initial radiation.

Bodily Reactions to Radiation

The effects of radiation on the human body can be broadly classed as either chronic or acute. Chronic effects are those that occur some years after exposure to radiation. Examples are cancer and genetic defects. Chronic effects are of minor concern insofar as they affect your immediate survival in a radioactive environment. On the other hand, acute effects are of primary importance to your survival. Some acute effects occur within hours after exposure to radiation. These effects result from the radiation's direct physical damage to tissue. Radiation sickness and beta burns are examples of acute effects. Radiation sickness symptoms include nausea, diarrhea, vomiting, fatigue, weakness, and loss of hair. Penetrating beta rays cause radiation burns; the wounds are similar to fire burns.

Recovery Capability

The extent of body damage depends mainly on the part of the body exposed to radiation and how long it was exposed, as well as its ability to recover. The brain and kidneys have little recovery capability. Other parts (skin and bone marrow) have a great ability to recover from damage. Usually, a dose of 600 centigrams (cgys) to the entire body will result in almost certain death. If only your hands received this same dose, your overall health would not suffer much, although your hands would suffer severe damage.

External and Internal Hazards

An external or an internal hazard can cause body damage. Highly penetrating gamma radiation or the less penetrating beta radiation that causes burns can cause external damage. The entry of alpha or beta radiation-emitting particles into the body can cause internal damage. The external hazard produces overall irradiation and beta burns. The internal hazard results in irradiation of critical organs such as the gastrointestinal tract, thyroid gland, and bone. A very small amount of radioactive material can cause extreme damage to these and other internal organs. The internal hazard can enter the body either through consumption of contaminated water or food or by absorption through cuts or abrasions. Material that enters the body through breathing presents only a minor hazard. You can greatly reduce the internal radiation hazard by using good personal hygiene and carefully decontaminating your food and water.

Symptoms

The symptoms of radiation injuries include nausea, diarrhea, and vomiting. The severity of these symptoms is due to the extreme sensitivity of the gastrointestinal tract to radiation. The severity of the symptoms and the speed of onset after exposure are good indicators of the degree of radiation damage. The gastrointestinal damage can come from either the external or the internal radiation hazard.

Countermeasures Against Penetrating External Radiation

Knowledge of the radiation hazards discussed earlier is extremely important in surviving in a fallout area. It is also critical to know how to protect yourself from the most dangerous form of residual radiation--penetrating external radiation.

The means you can use to protect yourself from penetrating external radiation are time, distance, and shielding. You can reduce the level of radiation and help increase your chance of survival by controlling the duration of exposure. You can also get as far away from the radiation source as possible. Finally you can place some radiation-absorbing or shielding material between you and the radiation.

Time

Time is important to you, as the survivor, in two ways. First, radiation dosages are cumulative. The longer you are exposed to a radioactive source, the greater the dose you will receive. Obviously, spend as little time in a radioactive area as possible. Second, radioactivity decreases or decays over time. This concept is known as radioactive *half-life*. Thus, a radioactive element decays or loses half of its radioactivity within a certain time. The rule of thumb for radioactivity decay is that it decreases in intensity by a factor of ten for every sevenfold increase in time following the peak radiation level. For example, if a nuclear fallout area had a maximum radiation rate of 200 cgys per hour when fallout is complete, this rate would fall to 20 cgys per hour after 7 hours; it would fall still further to 2 cgys per hour after 49 hours. Even an untrained observer can see that the greatest hazard from fallout occurs immediately after detonation, and that the hazard decreases quickly over a relatively short time. As a survivor, try to avoid fallout areas until the radioactivity decays to safe levels. If you can avoid fallout areas long enough for most of the radioactivity to decay, you enhance your chance of survival.

Distance

Distance provides very effective protection against penetrating gamma radiation because radiation intensity decreases by the square of the distance from the source. For example, if exposed to 1,000 cgys of radiation standing 30 centimeters from the source, at 60 centimeters, you would only receive 250 cgys. Thus, when you double the distance, radiation decreases to $(0.5)^2$ or 0.25 the amount. While this formula is valid for concentrated sources of radiation in small areas, it becomes more complicated for large areas of radiation such as fallout areas.

Shielding

Shielding is the most important method of protection from penetrating radiation. Of the three countermeasures against penetrating radiation, shielding provides the greatest protection and is the easiest to use under survival conditions. Therefore, it is the most desirable method.

If shielding is not possible, use the other two methods to the maximum extent practical. Shielding actually works by absorbing or weakening the penetrating radiation, thereby reducing the amount of radiation reaching your body. The denser the material, the better the shielding effect. Lead, iron, concrete, and water are good examples of shielding materials.

Special Medical Aspects

The presence of fallout material in your area requires slight changes in first aid procedures. You must cover all wounds to prevent contamination and the entry of radioactive particles. You must first wash burns of beta radiation, then treat them as ordinary burns. Take extra measures to prevent infection. Your body will be extremely sensitive to infections due to changes in your blood chemistry. Pay close attention to the prevention of colds or respiratory infections. Rigorously practice personal hygiene to prevent infections. Cover your eyes with improvised goggles to prevent the entry of particles.

Shelter

As stated earlier, the shielding material's effectiveness depends on its thickness and density. An ample thickness of shielding material will reduce the level of radiation to negligible amounts.

The primary reason for finding and building a shelter is to get protection against the high-intensity radiation levels of early gamma fallout as fast as possible. Five minutes to locate the shelter is a good guide. Speed in finding shelter is absolutely essential. Without shelter, the dosage received in the first few hours will exceed that received during the rest of a week in a contaminated area. The dosage received in this first week will exceed the dosage accumulated during the rest of a lifetime spent in the same contaminated area.

Shielding Materials

The thickness required to weaken gamma radiation from fallout is far less than that needed to shield against initial gamma radiation. Fallout radiation has less energy than a nuclear detonation's initial radiation. For fallout radiation, a relatively small amount of shielding material can provide adequate protection. [Figure 23-1](#) gives an idea of the thickness of various materials needed to reduce residual gamma radiation transmission by 50 percent.

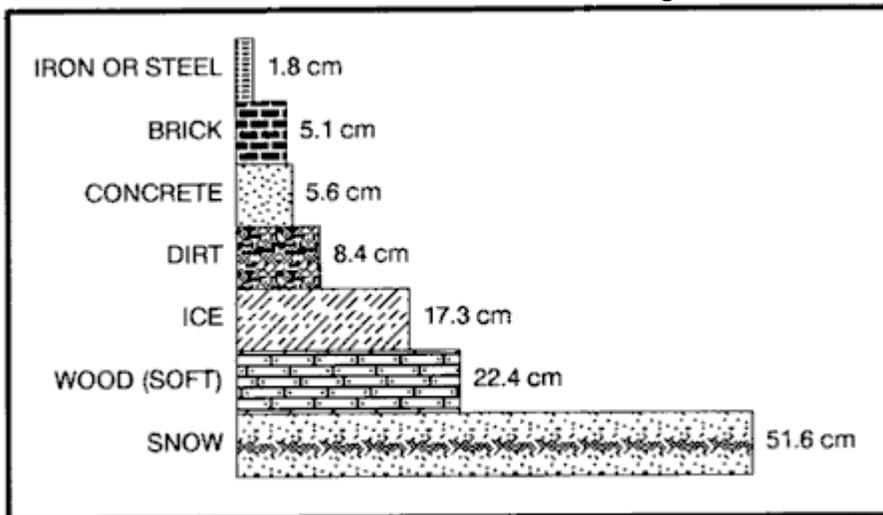


Figure 23-1. Thickness of materials to reduce gamma radiation.

The principle of *half-value layer thickness* is useful in understanding the absorption of gamma radiation by various materials. According to this principle, if 5 centimeters of brick

reduce the gamma radiation level by one-half, adding another 5 centimeters of brick (another half-value layer) will reduce the intensity by another half, namely, to one-fourth the original amount. Fifteen centimeters will reduce gamma radiation fallout levels to one-eighth its original amount, 20 centimeters to one-sixteenth, and so on. Thus, a shelter protected by 1 meter of dirt would reduce a radiation intensity of 1,000 cgys per hour on the outside to about 0.5 cgy per hour inside the shelter.

Natural Shelters

Terrain that provides natural shielding and easy shelter construction is the ideal location for an emergency shelter. Good examples are ditches, ravines, rocky outcropping, hills, and river banks. In level areas without natural protection, dig a fighting position or slit trench.

Trenches

When digging a trench, work from inside the trench as soon as it is large enough to cover part of your body thereby not exposing all your body to radiation. In open country, try to dig the trench from a prone position, stacking the dirt carefully and evenly around the trench. On level ground, pile the dirt around your body for additional shielding. Depending upon soil conditions, shelter construction time will vary from a few minutes to a few hours. If you dig as quickly as possible, you will reduce the dosage you receive.

Other Shelters

While an underground shelter covered by 1 meter or more of earth provides the best protection against fallout radiation, the following unoccupied structures (in order listed) offer the next best protection:

- Caves and tunnels covered by more than 1 meter of earth.
- Storm or storage cellars.
- Culverts.
- Basements or cellars of abandoned buildings.
- Abandoned buildings made of stone or mud.

Roofs

It is not mandatory that you build a roof on your shelter. Build one only if the materials are readily available with only a brief exposure to outside contamination. If building a roof would require extended exposure to penetrating radiation, it would be wiser to leave the shelter roofless. A roof's sole function is to reduce radiation from the fallout source to your body. Unless you use a thick roof, a roof provides very little shielding.

You can construct a simple roof from a poncho anchored down with dirt, rocks, or other refuse from your shelter. You can remove large particles of dirt and debris from the top of the poncho by beating it off from the inside at frequent intervals. This cover will not offer shielding from the radioactive particles deposited on the surface, but it will increase the distance from the fallout source and keep the shelter area from further contamination.

Shelter Site Selection and Preparation

To reduce your exposure time and thereby reduce the dosage received, remember the following factors when selecting and setting up a shelter:

- Where possible, seek a crude, existing shelter that you can improve. If none is available, dig a trench.
- Dig the shelter deep enough to get good protection, then enlarge it as required for comfort.
- Cover the top of the fighting position or trench with any readily available material and a thick layer of earth, if you can do so without leaving the shelter. While a roof and camouflage are both desirable, it is probably safer to do without them than to expose yourself to radiation outside your fighting position.
- While building your shelter, keep all parts of your body covered with clothing to protect it against beta burns.
- Clean the shelter site of any surface deposit using a branch or other object that you can discard. Do this cleaning to remove contaminated materials from the area you will occupy. The cleaned area should extend at least 1.5 meters beyond your shelter's area.
- Decontaminate any materials you bring into the shelter. These materials include grass or foliage that you use as insulation or bedding, and your outer clothing (especially footgear). If the weather permits and you have heavily contaminated outer clothing, you may want to remove it and bury it under a foot of earth at the end of your shelter. You may retrieve it later (after the radioactivity decays) when leaving the shelter. If the clothing is dry, you may decontaminate it by beating or shaking it outside the shelter's entrance to remove the radioactive dust. You may use any body of water, even though contaminated, to rid materials of excess fallout particles. Simply dip the material into the water and shake it to get rid of the excess water. Do not wring it out, this action will trap the particles.
- If at all possible and without leaving the shelter, wash your body thoroughly with soap and water, even if the water on hand may be contaminated. This washing will remove most of the harmful radioactive particles that are likely to cause beta burns or other damage. If water is not available, wipe your face and any other exposed skin surface to remove contaminated dust and dirt. You may wipe your face with a clean piece of cloth or a handful of uncontaminated dirt. You get this uncontaminated dirt by scraping off the top few inches of soil and using the "clean" dirt.
- Upon completing the shelter, lie down, keep warm, and sleep and rest as much as possible while in the shelter.
- When not resting, keep busy by planning future actions, studying your maps, or making the shelter more comfortable and effective.

- Don't panic if you experience nausea and symptoms of radiation sickness. Your main danger from radiation sickness is infection. There is no first aid for this sickness. Resting, drinking fluids, taking any medicine that prevents vomiting, maintaining your food intake, and preventing additional exposure will help avoid infection and aid recovery. Even small doses of radiation can cause these symptoms which may disappear in a short time.

Exposure Timetable

The following timetable provides you with the information needed to avoid receiving serious dosage and still let you cope with survival problems:

- Complete isolation from 4 to 6 days following delivery of the last weapon.
- A very brief exposure to procure water on the third day is permissible, but exposure should not exceed 30 minutes.
- One exposure of not more than 30 minutes on the seventh day.
- One exposure of not more than 1 hour on the eighth day.
- Exposure of 2 to 4 hours from the ninth day through the twelfth day.
- Normal operation, followed by rest in a protected shelter, from the thirteenth day on.
- In all instances, make your exposures as brief as possible. Consider only mandatory requirements as valid reasons for exposure. Decontaminate at every stop.

The [times](#) given above are conservative. If forced to move after the first or second day, you may do so, Make sure that the exposure is no longer than absolutely necessary.

Water Procurement

In a fallout-contaminated area, available water sources may be contaminated. If you wait at least 48 hours before drinking any water to allow for radioactive decay to take place and select the safest possible water source, you will greatly reduce the danger of ingesting harmful amounts of radioactivity.

Although many factors (wind direction, rainfall, sediment) will influence your choice in selecting water sources, consider the following [guidelines](#).

Safest Water Sources

Water from springs, wells, or other underground sources that undergo natural filtration will be your safest source. Any water found in the pipes or containers of abandoned houses or stores will also be free from radioactive particles. This water will be safe to drink, although you will have to take precautions against bacteria in the water.

Snow taken from 15 or more centimeters below the surface during the fallout is also a safe source of water.

Streams and Rivers

Water from streams and rivers will be relatively free from fallout within several days after the last nuclear explosion because of dilution. If at all possible, filter such water before drinking to get rid of radioactive particles. The best filtration method is to dig sediment holes or seepage basins along the side of a water source. The water will seep laterally into the hole through the intervening soil that acts as a filtering agent and removes the contaminated fallout particles that settled on the original body of water. This method can remove up to 99 percent of the radioactivity in water. You must cover the hole in some way in order to prevent further contamination. See [Figure 6-9](#) for an example of a water filter.

Standing Water

Water from lakes, pools, ponds, and other standing sources is likely to be heavily contaminated, though most of the heavier, long-lived radioactive isotopes will settle to the bottom. Use the settling technique to purify this water. First, fill a bucket or other deep container three-fourths full with contaminated water. Then take dirt from a depth of 10 or more centimeters below the ground surface and stir it into the water. Use about 2.5 centimeters of dirt for every 10 centimeters of water. Stir the water until you see most dirt particles suspended in the water. Let the mixture settle for at least 6 hours. The settling dirt particles will carry most of the suspended fallout particles to the bottom and cover them. You can then dip out the clear water. Purify this water using a filtration device.

Additional Precautions

As an additional precaution against disease, treat all water with water purification tablets from your survival kit or boil it.

Food Procurement

Although it is a serious problem to obtain edible food in a radiation-contaminated area, it is not impossible to solve. You need to follow a few special procedures in selecting and preparing rations and local foods for use. Since secure packaging protects your combat rations, they will be perfectly safe for use. Supplement your rations with any food you can find on trips outside your shelter. Most processed foods you may find in abandoned buildings are safe for use after decontaminating them. These include canned and packaged foods after removing the containers or wrappers or washing them free of fallout particles. These processed foods also include food stored in any closed container and food stored in protected areas (such as cellars), if you wash them before eating. Wash all food containers or wrappers before handling them to prevent further contamination.

If little or no processed food is available in your area, you may have to supplement your diet with local food sources. Local food sources are animals and plants.

Animals as a Food Source

Assume that all animals, regardless of their habitat or living conditions, were exposed to radiation. The effects of radiation on animals are similar to those on humans. Thus, most of the wild animals living in a fallout area are likely to become sick or die from radiation during the first month after the nuclear explosion. Even though animals may not be free from harmful radioactive materials, you can and must use them in survival conditions as a food source if other foods are not available. With careful preparation and by following several important principles, animals can be safe food sources.

First, do not eat an animal that appears to be sick. It may have developed a bacterial infection as a result of radiation poisoning. Contaminated meat, even if thoroughly cooked, could cause severe illness or death if eaten.

Carefully skin all animals to prevent any radioactive particles on the skin or fur from entering the body. Do not eat meat close to the bones and joints as an animal's skeleton contains over 90 percent of the radioactivity. The remaining animal muscle tissue, however, will be safe to eat. Before cooking it, cut the meat away from the bone, leaving at

least a 3-millimeter thickness of meat on the bone. Discard all internal organs (heart, liver, and kidneys) since they tend to concentrate beta and gamma radioactivity. Cook all meat until it is very well done. To be sure the meat is well done, cut it into less than 13-millimeter-thick pieces before cooking. Such cuts will also reduce cooking time and save fuel.

The extent of contamination in fish and aquatic animals will be much greater than that of land animals. This is also true for water plants, especially in coastal areas. Use aquatic food sources only in conditions of extreme emergency.

All eggs, even if laid during the period of fallout, will be safe to eat. Completely avoid milk from any animals in a fallout area because animals absorb large amounts of radioactivity from the plants they eat.

Plants as a Food Source

Plant contamination occurs by the accumulation of fallout on their outer surfaces or by absorption of radioactive elements through their roots. Your first choice of plant food should be vegetables such as potatoes, turnips, carrots, and other plants whose edible portion grows underground. These are the safest to eat once you scrub them and remove their skins.

Second in order of preference are those plants with edible parts that you can decontaminate by washing and peeling their outer surfaces. Examples are bananas, apples, tomatoes, prickly pears, and other such fruits and vegetables.

Any smooth-skinned vegetable, fruit, or plant that you cannot easily peel or effectively decontaminate by washing will be your third choice of emergency food.

The effectiveness of decontamination by scrubbing is inversely proportional to the roughness of the fruit's surface. Smooth-surfaced fruits have lost 90 percent of their contamination after washing, while washing rough-surfaced plants removes only about 50 percent of the contamination.

You eat rough-surfaced plants (such as lettuce) only as a last resort because you cannot effectively decontaminate them by peeling or washing. Other difficult foods to decontaminate by washing with water include dried fruits (figs, prunes, peaches, apricots, pears) and soya beans.

In general, you can use any plant food that is ready for harvest if you can effectively decontaminate it. Growing plants, however, can absorb some radioactive materials through their leaves as well as from the soil, especially if rains have occurred during or after the fallout period. Avoid using these plants for food except in an emergency.

BIOLOGICAL ENVIRONMENTS

The use of biological agents is real. Prepare yourself for survival by being proficient in the tasks identified in your Soldier's Manuals of Common Tasks (SMCTs). Know what to do to protect yourself against these agents.

Biological Agents and Effects

Biological agents are microorganisms that can cause disease among personnel, animals, or plants. They can also cause the deterioration of material. These agents fall into two broad categories—pathogens (usually called germs) and toxins. Pathogens are living microorganisms that cause lethal or incapacitating diseases. Bacteria, rickettsiae, fungi, and viruses are included in the pathogens. Toxins are poisons that plants, animals, or microorganisms produce naturally. Possible biological war-fare toxins include a variety of neurotoxic (affecting the central nervous system) and cytotoxic (causing cell death) compounds.

Germs

Germs are living organisms. Some nations have used them in the past as weapons. Only a few germs can start an infection, especially if inhaled into the lungs. Because germs are so

small and weigh so little, the wind can spread them over great distances; they can also enter unfiltered or nonairtight places. Buildings and bunkers can trap them thus causing a higher concentration. Germs do not affect the body immediately. They must multiply inside the body and overcome the body's defenses--a process called the incubation period. Incubation periods vary from several hours to several months, depending on the germ. Most germs must live within another living organism (host), such as your body, to survive and grow. Weather conditions such as wind, rain, cold, and sunlight rapidly kill germs. Some germs can form protective shells, or spores, to allow survival outside the host. Spore-producing agents are a long-term hazard you must neutralize by decontaminating infected areas or personnel. Fortunately, most live agents are not spore-producing. These agents must find a host within roughly a day of their delivery or they die. Germs have three basic routes of entry into your body: through the respiratory tract, through a break in the skin, and through the digestive tract. Symptoms of infection vary according to the disease.

Toxins

Toxins are substances that plants, animals, or germs produce naturally. These toxins are what actually harm man, not bacteria. Botulin, which produces botulism, is an example. Modern science has allowed large-scale production of these toxins without the use of the germ that produces the toxin. Toxins may produce effects similar to those of chemical agents. Toxic victims may not, however, respond to first aid measures used against chemical agents. Toxins enter the body in the same manner as germs. However, some toxins, unlike germs, can penetrate unbroken skin. Symptoms appear almost immediately, since there is no incubation period. Many toxins are extremely lethal, even in very small doses. Symptoms may include any of the following:

- Dizziness.

- Mental confusion.

- Blurred or double vision.

- Numbness or tingling of skin.

- Paralysis.

- Convulsions.

- Rashes or blisters.

- Coughing.

- Fever.

- Aching muscles.
- Tiredness.
- Nausea, vomiting, and/or diarrhea.
- Bleeding from body openings.
- Blood in urine, stool, or saliva.
- Shock.
- Death.

Detection of Biological Agents

Biological agents are, by nature, difficult to detect. You cannot detect them by any of the five physical senses. Often, the first sign of a biological agent will be symptoms of the victims exposed to the agent. Your best chance of detecting biological agents before they can affect you is to recognize their means of delivery. The three main means of delivery are--

- *Bursting-type munitions.* These may be bombs or projectiles whose burst causes very little damage. The burst will produce a small cloud of liquid or powder in the immediate impact area. This cloud will disperse eventually; the rate of dispersion depends on terrain and weather conditions.
- *Spray tanks or generators.* Aircraft or vehicle spray tanks or ground-level aerosol generators produce an aerosol cloud of biological agents.
- *Vectors.* Insects such as mosquitoes, fleas, lice, and ticks deliver pathogens. Large infestations of these insects may indicate the use of biological agents.

Another sign of a possible biological attack is the presence of unusual substances on the ground or on vegetation, or sick-looking plants, crops, or animals.

Influence of Weather and Terrain

Your knowledge of how weather and terrain affect the agents can help you avoid contamination by biological agents. Major weather factors that affect biological agents are sunlight, wind, and precipitation. Aerosol sprays will tend to concentrate in low areas of terrain, similar to early morning mist.

Sunlight contains visible and ultraviolet solar radiation that rapidly kills most germs used as biological agents. However, natural or man-made cover may protect some agents from sunlight. Other man-made mutant strains of germs may be resistant to sunlight.

High wind speeds increase the dispersion of biological agents, dilute their concentration, and dehydrate them. The further downwind the agent travels, the less effective it becomes due to dilution and death of the pathogens. However, the downwind hazard area of the biological agent is significant and you cannot ignore it.

Precipitation in the form of moderate to heavy rain tends to wash biological agents out of the air, reducing downwind hazard areas. However, the agents may still be very effective where they were deposited on the ground.

Protection Against Biological Agents

While you must maintain a healthy respect for biological agents, there is no reason for you to panic. You can reduce your susceptibility to biological agents by maintaining current immunizations, avoiding contaminated areas, and controlling rodents and pests. You must also use proper first aid measures in the treatment of wounds and only safe or properly decontaminated sources of food and water. You must ensure that you get enough sleep to prevent a run-down condition. You must always use proper field sanitation procedures.

Assuming you do not have a protective mask, always try to keep your face covered with some type of cloth to protect yourself against biological agent aerosols. Dust may contain biological agents; wear some type of mask when dust is in the air.

Your uniform and gloves will protect you against bites from vectors (mosquitoes and ticks) that carry diseases. Completely button your clothing and tuck your trousers tightly into your boots. Wear a chemical protective overgarment, if available, as it provides better protection than normal clothing. Covering your skin will also reduce the chance of the agent entering your body through cuts or scratches. Always practice high standards of personal hygiene and sanitation to help prevent the spread of vectors.

Bathe with soap and water whenever possible. Use germicidal soap, if available. Wash your hair and body thoroughly, and clean under your fingernails. Clean teeth, gums, tongue, and the roof of your mouth frequently. Wash your clothing in hot, soapy water if you can. If you cannot wash your clothing, lay it out in an area of bright sunlight and allow the light to kill the microorganisms. After a toxin attack, decontaminate yourself as if for a chemical attack using the M258A2 kit (if available) or by washing with soap and water.

Shelter

You can build expedient shelters under biological contamination conditions using the same techniques described in Chapter 5. However, you must make slight changes to reduce the chance of biological contamination. Do not build your shelter in depressions in the ground. Aerosol sprays tend to concentrate in these depressions. Avoid building your shelter in areas of vegetation, as vegetation provides shade and some degree of protection to biological agents. Avoid using vegetation in constructing your shelter. Place your shelter's entrance at a 90-degree angle to the prevailing winds. Such placement will limit the entry of airborne agents and prevent air stagnation in your shelter. Always keep your shelter clean.

Water Procurement

Water procurement under biological conditions is difficult but not impossible. Whenever possible, try to use water that has been in a sealed container. You can assume that the

water inside the sealed container is not contaminated. Wash the water container thoroughly with soap and water or boil it for at least 10 minutes before breaking the seal. If water in sealed containers is not available, your next choice, *only under emergency conditions*, is water from springs. Again, boil the water for at least 10 minutes before drinking. Keep the water covered while boiling to prevent contamination by airborne pathogens. Your *last choice, only in an extreme emergency*, is to use standing water. Vectors and germs can survive easily in stagnant water. Boil this water as long as practical to kill all organisms. Filter this water through a cloth to remove the dead vectors. Use water purification tablets in all cases.

Food Procurement

Food procurement, like water procurement, is not impossible, but you must take special precautions. Your combat rations are sealed, and you can assume they are not contaminated. You can also assume that sealed containers or packages of processed food are safe. To ensure safety, decontaminate all food containers by washing with soap and water or by boiling the container in water for 10 minutes.

You consider supplementing your rations with local plants or animals only in extreme emergencies. No matter what you do to prepare the food, there is no guarantee that cooking will kill all the biological agents. Use local food only in life or death situations. Remember, you can survive for a long time without food, especially if the food you eat may kill you!

If you must use local food, select only healthy-looking plants and animals. Do not select known carriers of vectors such as rats or other vermin. Select and prepare plants as you would in radioactive areas. Prepare animals as you do plants. Always use gloves and protective clothing when handling animals or plants. Cook all plant and animal food by boiling only. Boil all food for at least 10 minutes to kill all pathogens. Do not try to fry, bake, or roast local food. There is no guarantee that all infected portions have reached the required temperature to kill all pathogens. Do not eat raw food.

CHEMICAL ENVIRONMENTS

Chemical agent warfare is real. It can create extreme problems in a survival situation, but you can overcome the problems with the proper equipment, knowledge, and training. As a survivor, your first line of defense against chemical agents is your proficiency in individual nuclear, biological, and chemical (NBC) training, to include donning and wearing the protective mask and overgarment, personal decontamination, recognition of chemical agent symptoms, and individual first aid for chemical agent contamination. The SMCTs cover these subjects. If you are not proficient in these skills, you will have little chance of surviving a chemical environment.

The [subject matter](#) covered below is not a substitute for any of the individual tasks in which you must be proficient. The SMCTs address the various chemical agents, their effects, and first aid for these agents. The following information is provided under the assumption that you are proficient in the use of chemical protective equipment and know the symptoms of various chemical agents.

Detection of Chemical Agents

The best method for detecting chemical agents is the use of a chemical agent detector. If you have one, use it. However, in a survival situation, you will most likely have to rely solely on the use of all of your physical senses. You must be alert and able to detect any clues indicating the use of chemical warfare. General indicators of the presence of chemical agents are tears, difficult breathing, choking, itching, coughing, and dizziness. With agents

that are very hard to detect, you must watch for symptoms in fellow survivors. Your surroundings will provide valuable clues to the presence of chemical agents; for example, dead animals, sick people, or people and animals displaying abnormal behavior.

Your sense of smell may alert you to some chemical agents, but most will be odorless. The odor of newly cut grass or hay may indicate the presence of choking agents. A smell of almonds may indicate blood agents.

Sight will help you detect chemical agents. Most chemical agents in the solid or liquid state have some color. In the vapor state, you can see some chemical agents as a mist or thin fog immediately after the bomb or shell bursts. By observing for symptoms in others and by observing delivery means, you may be able to have some warning of chemical agents.

Mustard gas in the liquid state will appear as oily patches on leaves or on buildings.

The sound of enemy munitions will give some clue to the presence of chemical weapons.

Muffled shell or bomb detonations are a good indicator.

Irritation in the nose or eyes or on the skin is an urgent warning to protect your body from chemical agents. Additionally, a strange taste in food, water, or cigarettes may serve as a warning that they have been contaminated.

Protection Against Chemical Agents

As a survivor, always use the following general steps, in the order listed, to protect yourself from a chemical attack:

- Use protective equipment.
- Give quick and correct self-aid when contaminated.
- Avoid areas where chemical agents exist.
- Decontaminate your equipment and body as soon as possible.

Your protective mask and overgarment are the key to your survival. Without these, you stand very little chance of survival. You must take care of these items and protect them from damage. You must practice and know correct self-aid procedures before exposure to chemical agents. The detection of chemical agents and the avoidance of contaminated areas is extremely important to your survival. Use whatever detection kits may be available to help in detection. Since you are in a survival situation, avoid contaminated areas at all costs. You can expect no help should you become contaminated. If you do become contaminated, decontaminate yourself as soon as possible using proper procedures.

Shelter

If you find yourself in a contaminated area, try to move out of the area as fast as possible. Travel crosswind or upwind to reduce the time spent in the downwind hazard area. If you cannot leave the area immediately and have to build a shelter, use normal shelter construction techniques, with a few changes. Build the shelter in a clearing, away from all vegetation. Remove all topsoil in the area of the shelter to decontaminate the area. Keep the shelter's entrance closed and oriented at a 90-degree angle to the prevailing wind. Do not build a fire using contaminated wood--the smoke will be toxic. Use extreme caution when entering your shelter so that you will not bring contamination inside.

Water Procurement

As with biological and nuclear environments, getting water in a chemical environment is difficult. Obviously, water in sealed containers is your best and safest source. You must protect this water as much as possible. Be sure to decontaminate the containers before opening.

If you cannot get water in sealed containers, try to get it from a closed source such as underground water pipes. You may use rainwater or snow if there is no evidence of contamination. Use water from slow-moving streams, if necessary, but always check first for signs of contamination, and always filter the water as described under nuclear conditions. Signs of water source contamination are foreign odors such as garlic, mustard, geranium, or bitter almonds; oily spots on the surface of the water or nearby; and the presence of dead fish or animals. If these signs are present, do not use the water. Always boil or purify the water to prevent bacteriological infection.

Food Procurement

It is extremely difficult to eat while in a contaminated area. You will have to break the seal on your protective mask to eat. If you eat, find an area in which you can safely unmask. The safest source of food is your sealed combat rations. Food in sealed cans or bottles will also be safe. Decontaminate all sealed food containers before opening, otherwise you will contaminate the food.

If you must supplement your combat rations with local plants or animals, *do not* use plants from contaminated areas or animals that appear to be sick. When handling plants or animals, always use protective gloves and clothing.

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FIRST AID

**HEADQUARTERS, DEPARTMENTS OF
THE ARMY, THE NAVY, AND THE AIR FORCE**

DECEMBER 2002

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**HEADQUARTERS
 DEPARTMENT OF THE ARMY,
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FIRST AID

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PREFACE

This manual meets the first aid training needs of individual service members. Because medical personnel will not always be readily available, the nonmedical service members must rely heavily on their own skills and knowledge of life-sustaining methods to survive on the integrated battlefield. This publication outlines both self-aid and aid to other service members (buddy aid). More importantly, it emphasizes prompt and effective action in sustaining life and preventing or minimizing further suffering and disability. First aid is the emergency care given to the sick, injured, or wounded before being treated by medical personnel. The term *first aid* can be defined as “urgent and immediate lifesaving and other measures, which can be performed for casualties by nonmedical personnel when medical personnel are not immediately available.” Nonmedical service members have received basic first aid training and should remain skilled in the correct procedures for giving first aid. This manual is directed to *all* service members. The procedures discussed apply to all types of casualties and the measures described are for use by both male and female service members.

This publication is in consonance with the following North Atlantic Treaty Organization (NATO) International Standardization Agreements (STANAGs) and American, British, Canadian, and Australian Quadripartite Standardization Agreements (QSTAGs).

TITLE	STANAG	QSTAG
Medical Training in First Aid, Basic Hygiene and Emergency Care	2122	535
First Aid Kits and Emergency Medical Care Kits	2126	
Medical First Aid and Hygiene Training in NBC Operations	2358	
First Aid Material for Chemical Injuries	2871	

These agreements are available on request, using Department of Defense (DD) Form 1425 from the Standardization Documents Order Desk, 700 Robins Avenue, Building 4, Section D, Philadelphia, Pennsylvania 19111-5094.

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

Use of trade or brand names in this publication is for illustrative purposes only and does not imply endorsement by the Department of Defense (DOD).

The proponent for this publication is the US Army Medical Department Center and School. Submit comments and recommendations for the improvement of this publication directly to the **Commander, US Army Medical Department Center and School, ATTN: MCCS-FCD-L, 1400 East Grayson Street, Fort Sam Houston, Texas 78234-5052.**

CHAPTER 1

FUNDAMENTAL CRITERIA FOR FIRST AID

**“The fate of the wounded rests in the hands
of the ones who apply the first dressing.”**

*Nicholas Senn (1898) (49th President of the
American Medical Association)*

1-1. General

When a nonmedical service member comes upon an unconscious or injured service member, he must accurately evaluate the casualty to determine the first aid measures needed to prevent further injury or death. He should seek medical assistance as soon as possible, but he should not interrupt the performance of first aid measures. To interrupt the first aid measures may cause more harm than good to the casualty. Remember that in a chemical environment, the service member should not evaluate the casualty until the casualty has been masked. After performing first aid, the service member must proceed with the evaluation and continue to monitor the casualty for development of conditions which may require the performance of necessary basic lifesaving measures, such as clearing the airway, rescue breathing, preventing shock, and controlling bleeding. He should continue to monitor the casualty until relieved by medical personnel.

Service members may have to depend upon their first aid knowledge and skills to save themselves (self-aid) or other service members (buddy aid/combat lifesaver). They may be able to save a life, prevent permanent disability, or reduce long periods of hospitalization by knowing **WHAT** to do, **WHAT NOT** to do, and **WHEN** to seek medical assistance.

NOTE

The prevalence of various body armor systems currently fielded to US service members, and those in development for future fielding, may present a temporary obstacle to effective evaluation of an injured service member. You may have to *carefully remove* the body armor from the injured service member to complete the evaluation or administer first aid. Begin by removing the outermost hard or soft body armor components (open, unfasten or cut the closures, fasteners, or straps), then remove any successive layers in the same manner. Be sure to follow other notes, cautions and warnings regarding procedures in contaminated situations and when a broken back or neck is suspected. Continue to evaluate.

1-2. Terminology

To enhance the understanding of the material contained in this publication, the following terms are used—

- *Combat lifesaver.* This is a US Army program governed by Army Regulation (AR) 350-41. The combat lifesaver is a member of a nonmedical unit selected by the unit commander for additional training beyond basic first aid procedures (referred to as *enhanced first aid*). A minimum of one individual per squad, crew, team, or equivalent-sized unit should be trained. The primary duty of this individual does not change. The additional duty of combat lifesaver is to provide enhanced first aid for injuries based on his training before the trauma specialist (military occupational specialty [MOS] 91W) arrives. The combat lifesaver's training is normally provided by medical personnel assigned, attached, or in direct support (DS) of the unit. The senior medical person designated by the commander manages the training program.

- *Trauma Specialist (US Army) or Hospital Corpsman (HM).* A medical specialist trained in emergency medical treatment (EMT) procedures and assigned or attached in support of a combat or combat support unit or marine forces.

- *Casualty evacuation.* Casualty evacuation (CASEVAC) is a term used by nonmedical units to refer to the movement of casualties aboard nonmedical vehicles or aircraft. See also the term *transported* below. Refer to FM 8-10-6 for additional information.

CAUTION

Casualties transported in this manner do not receive en route medical care.

- *Enhanced first aid (US Army).* Enhanced first aid is administered by the combat lifesaver. It includes measures, which require an additional level of training above self-aid and buddy aid, such as the initiation of intravenous (IV) fluids.

- *Medical evacuation.* Medical evacuation is the timely, efficient movement of the wounded, injured, or ill service members from the battlefield and other locations to medical treatment facilities (MTFs). Medical personnel provide en route medical care during the evacuation. Once the casualty has entered the medical stream (trauma specialist, hospital corpsman, evacuation

crew, or MTF), the role of first aid in the care of the casualty ceases and the casualty becomes the responsibility of the health service support (HSS) chain. Once he has entered the HSS chain he is referred to as a *patient*.

- *First aid measures.* Urgent and immediate lifesaving and other measures, which can be performed for casualties (or performed by the casualty himself) by nonmedical personnel when medical personnel are not immediately available.

- *Medical treatment.* Medical treatment is the care and management of wounded, injured, or ill service members by medically trained (MOS-trained) HM, and area of concentration (AOC) personnel. It may include EMT, advanced trauma management (ATM), and resuscitative and surgical intervention.

- *Medical treatment facility.* Any facility established for the purpose of providing medical treatment. This includes battalion aid stations, Level II facilities, dispensaries, clinics, and hospitals.

- *Self-aid/buddy aid.* Each individual service member is trained to be proficient in a variety of specific first aid procedures. This training enables the service member or a buddy to apply immediate first aid measures to alleviate a life-threatening situation.

- *Transported.* A casualty is moved to an MTF in a nonmedical vehicle without en route care provided by a medically-trained service member (such as a Trauma Specialist or HM). First aid measures should be continually performed while the casualty is being transported. If the casualty is acquired by a dedicated medical vehicle with a medically-trained crew, the role of first aid ceases and the casualty becomes the responsibility of the HSS chain, and is then referred to as a *patient*. This method of transporting a casualty is also referred to as *CASEVAC*.

1-3. Understanding Vital Body Functions for First Aid

In order for the service member to learn to perform first aid procedures, he must have a basic understanding of what the vital body functions are and what the result will be if they are damaged or not functioning.

- a. *Breathing Process.* All humans must have oxygen to live. Through the breathing process, the lungs draw oxygen from the air and put it into the blood. The heart pumps the blood through the body to be used by the cells that require a constant supply of oxygen. Some cells are more dependent on a constant supply of oxygen than others. For example, cells of

the brain may die within 4 to 6 minutes without oxygen. Once these cells die, they are lost forever since they do not regenerate. This could result in permanent brain damage, paralysis, or death.

b. Respiration. Respiration occurs when a person inhales (oxygen is taken into the body) and then exhales (carbon dioxide [CO₂] is expelled from the body). Respiration involves the—

- *Airway.* The airway consists of the nose, mouth, throat, voice box, and windpipe. It is the canal through which air passes to and from the lungs.

- *Lungs.* The lungs are two elastic organs made up of thousands of tiny air spaces and covered by an airtight membrane. The *bronchial tree* is a part of the lungs.

- *Rib cage.* The rib cage is formed by the muscle-connected ribs, which join the spine in back, and the breastbone in front. The top part of the rib cage is closed by the structure of the neck, and the bottom part is separated from the abdominal cavity by a large dome-shaped muscle called the *diaphragm* (Figure 1-1). The diaphragm and rib muscles, which are under the control of the respiratory center in the brain, automatically *contract* and *relax*. *Contraction* increases and *relaxation* decreases the size of the rib cage. When the rib cage increases and then decreases, the air pressure in the lungs is first less and then more than the atmospheric pressure, thus causing the air to rush into and out of the lungs to equalize the pressure. This cycle of inhaling and exhaling is repeated about 12 to 18 times per minute.

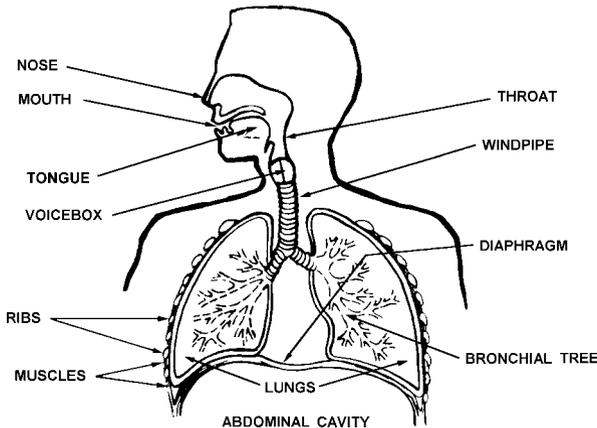


Figure 1-1. Airway, lungs, and rib cage.

c. **Blood Circulation.** The heart and the blood vessels (arteries, veins, and capillaries) circulate blood through the body tissues. The heart is divided into two separate halves, each acting as a pump. The left side pumps oxygenated blood (bright red) through the arteries into the capillaries; nutrients and oxygen pass from the blood through the walls of the capillaries into the cells. At the same time waste products and CO₂ enter the capillaries. From the capillaries the oxygen poor blood is carried through the veins to the right side of the heart and then into the lungs where it expels the CO₂ and picks up oxygen. Blood in the veins is dark red because of its low oxygen content. Blood does not flow through the veins in spurts as it does through the arteries. The entire system of the heart, blood vessels, and lymphatics is called the *circulatory system*.

(1) **Heartbeat.** The heart functions as a pump to circulate the blood continuously through the blood vessels to all parts of the body. It contracts, forcing the blood from its chambers; then it relaxes, permitting its chambers to refill with blood. The rhythmical cycle of contraction and relaxation is called the *heartbeat*. The normal heartbeat is from 60 to 80 beats per minute.

(2) **Pulse.** The heartbeat causes a rhythmical expansion and contraction of the arteries as it forces blood through them. This cycle of expansion and contraction can be felt (monitored) at various points in the body and is called the *pulse*. The common points for checking the pulse are at the—

- Side of the neck (*carotid*).
- Groin (*femoral*).
- Wrist (*radial*).
- Ankle (*posterior tibial*).

(a) **Carotid pulse.** To check the carotid pulse, feel for a pulse on the side of the casualty's neck closest to you. This is done by placing the tips of your first two fingers beside his Adam's apple (Figure 1-2).



Figure 1-2. Carotid pulse.

(b) *Femoral pulse.* To check the femoral pulse, press the tips of your first two fingers into the middle of the groin (Figure 1-3).

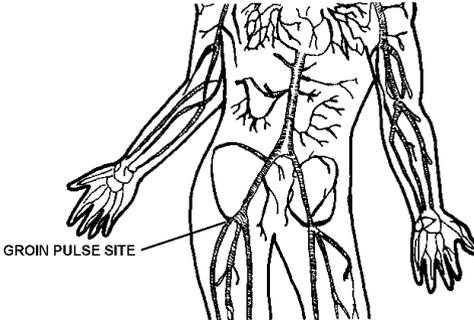


Figure 1-3. Femoral pulse.

(c) *Radial pulse.* To check the radial pulse, place your first two fingers on the thumb side of the casualty's wrist (Figure 1-4).

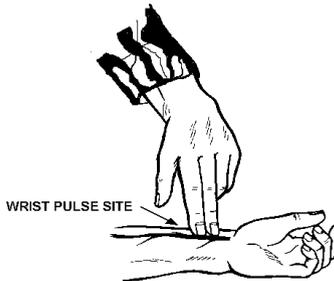


Figure 1-4. Radial pulse.

(d) *Posterior tibial pulse.* To check the posterior tibial pulse, place your first two fingers on the inside of the ankle (Figure 1-5).

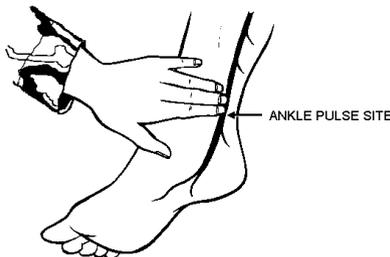


Figure 1-5. Posterior tibial pulse.

NOTE

DO NOT use your thumb to check a casualty's pulse because you may confuse the beat of your pulse with that of the casualty.

1-4. Adverse Conditions

a. Lack of Oxygen. Human life cannot exist without a continuous intake of oxygen. Lack of oxygen rapidly leads to death. First aid involves knowing how to open the airway and restore breathing.

b. Bleeding. Human life cannot continue without an adequate volume of blood circulating through the body to carry oxygen to the tissues. An important first aid measure is to stop the bleeding to prevent the loss of blood.

c. Shock. Shock means there is an inadequate blood flow to the vital tissues and organs. Shock that remains uncorrected may result in death even though the injury or condition causing the shock would not otherwise be fatal. Shock can result from many causes, such as loss of blood, loss of fluid from deep burns, pain, and reaction to the sight of a wound or blood. First aid includes preventing shock, since the casualty's chances of survival are much greater if he does not develop shock. Refer to paragraphs 2-21 through 2-24 for a further discussion of shock.

d. Infection. Recovery from a severe injury or a wound depends largely upon how well the injury or wound was initially protected. Infections result from the multiplication and growth (spread) of harmful microscopic organisms (sometimes referred to as germs). These harmful microscopic organisms are in the air, water, and soil, and on the skin and clothing. Some of these organisms will immediately invade (contaminate) a break in the skin or an open wound. The objective is to keep wounds clean and free of these organisms. A good working knowledge of basic first aid measures also includes knowing how to dress a wound to avoid infection or additional contamination.

1-5. Basics of First Aid

Most injured or ill service members are able to return to their units to fight or support primarily because they are given appropriate and timely first aid followed by the best medical care possible. Therefore, all service members must remember the basics.

- Check for **BREATHING**: Lack of oxygen intake (through a compromised airway or inadequate breathing) can lead to brain damage or death in very few minutes.

- Check for **BLEEDING**: Life cannot continue without an adequate volume of blood to carry oxygen to tissues.
- Check for **SHOCK**: Unless shock is prevented, first aid performed, and medical treatment provided, death may result even though the injury would not otherwise be fatal.

1-6. Evaluating a Casualty

a. The time may come when you must instantly apply your knowledge of first aid measures. This could occur during combat operations, in training situations, or while in a nonduty status. Any service member observing an unconscious and/or ill, injured, or wounded person must carefully and skillfully evaluate him to determine the first aid measures required to prevent further injury or death. He should seek help from medical personnel as soon as possible, but must not interrupt his evaluation of the casualty or fail to administer first aid measures. A second service member may be sent to find medical help. One of the cardinal principles for assisting a casualty is that you (the initial rescuer) must continue the evaluation and first aid measures, as the tactical situation permits, until another individual relieves you. If, during any part of the evaluation, the casualty exhibits the conditions (such as shock) for which the service member is checking, the service member must stop the evaluation and immediately administer first aid. In a chemical environment, the service member should not evaluate the casualty until both the individual and the casualty have been masked. If it is suspected that a nerve agent was used, administer the casualty's own nerve agent antidote autoinjector. After providing first aid, the service member must proceed with the evaluation and continue to monitor the casualty for further complications until relieved by medical personnel.

WARNING

Do not use your own nerve agent antidote autoinjector on the casualty.

NOTE

Remember, when evaluating and/or administering first aid to a casualty, you should seek medical aid as soon as possible. **DO NOT** stop first aid measures, but if the situation allows, send another service member to find medical aid.

b. To evaluate a casualty, perform the following steps:

(1) *Check the casualty for responsiveness.* This is done by gently shaking or tapping him while calmly asking, "Are you OK?" Watch for a response. If the casualty does not respond, go to step (2). If the casualty responds, continue with the evaluation.

(a) If the casualty is conscious, ask him where he feels different than usual or where it hurts. Ask him to identify the location of pain if he can, or to identify the area in which there is no feeling.

(b) If the casualty is conscious but is choking and cannot talk, stop the evaluation and begin first aid measures. Refer to paragraphs 2-10 and 2-11 for specific information on opening the airway.

WARNING

If a broken back or neck is suspected, do not move the casualty unless his life is in immediate danger (such as close to a burning vehicle). Movement may cause permanent paralysis or death.

(2) *Check for breathing.* (Refer to paragraph 2-6 for this procedure.)

(a) If the casualty is breathing, proceed to step (3).

(b) If the casualty is not breathing, stop the evaluation and begin first aid measures to attempt to ventilate the casualty. Attempt to open the airway, if an airway obstruction is apparent, clear the airway obstruction, then ventilate (see paragraphs 2-10 and 2-11).

(c) After successfully ventilating the casualty, proceed to step (3).

(3) *Check for pulse.* (Refer to paragraph 1-3c(2) for specific methods.) If a pulse is present and the casualty is breathing, proceed to step (4).

(a) If a pulse is present, but the casualty is still not breathing, start rescue breathing.

(b) If a pulse is not present, seek medical personnel for help.

(4) *Check for bleeding.* Look for spurts of blood or blood-soaked clothes. Also check for *both* entry and exit wounds. If the casualty is bleeding from an open wound, stop the evaluation and begin first aid procedures as follows for a—

(a) Wound of the arm or leg (refer to paragraphs 2-16 through 2-18 for information on putting on a field or pressure dressing).

(b) Partial or complete amputation, apply dressing (refer to paragraph 2-16 to 2-18) and then apply tourniquet if bleeding is not stopped (refer to paragraph 2-20 for information on putting on a tourniquet).

(c) Open head wound (refer to paragraph 3-10 for information on applying a dressing to an open head wound).

(d) Open chest wound (refer to paragraph 3-5 for information on applying a dressing to an open chest wound).

(e) Open abdominal wound (refer to paragraph 3-7 for information on applying a dressing to an open abdominal wound).

WARNING

In a chemically contaminated area, do not expose the wounds. Apply field dressing and then pressure dressing over wound area as needed.

(5) *Check for shock.* (Refer to paragraph 2-24 for first aid measures for shock.) If the signs and symptoms of shock are present, stop the evaluation, and begin first aid measures immediately. The following are the nine signs and symptoms of shock.

(a) Sweaty but cool skin (clammy skin).

(b) Paleness of skin. (In dark-skinned service members look for a grayish cast to the skin.)

(c) Restlessness or nervousness.

(d) Thirst.

(e) Loss of blood (bleeding).

- (f) Confusion (does not seem aware of surroundings).
- (g) Faster than normal breathing rate.
- (h) Blotchy or bluish skin, especially around the mouth.
- (i) Nausea or vomiting.

WARNING

Leg fractures must be splinted before elevating the legs as a first aid measure for shock.

(6) *Check for fractures.*

(a) Check for the following signs and symptoms of a back or neck injury and perform first aid procedures as necessary.

- Pain or tenderness of the back or neck area.
- Cuts or bruises on the back or neck area.
- Inability of a casualty to move or decreased sensation to extremities (paralysis or numbness).
 - Ask about ability to move (paralysis).
 - Touch the casualty's arms and legs and ask whether he can feel your hand (numbness).
- Unusual body or limb position.

(b) Immobilize any casualty suspected of having a back or neck injury by doing the following:

- Tell the casualty not to move.
- If a back injury is suspected, place padding (rolled or folded to conform to the shape of the arch) under the natural arch of the casualty's back. (For example, a blanket/poncho may be used as padding.)

WARNING

Do not move casualty to place padding.

- If a neck injury is suspected, immediately immobilize (manually) the head and neck. Place a roll of cloth under the casualty's neck, and put weighted boots (filled with dirt or sand) or rocks on both sides of his head.

(c) Check the casualty's arms and legs for open or closed fractures.

- Check for *open* fractures by looking for—
 - Bleeding.
 - Bones sticking through the skin.
 - Check for pulse.
- Check for *closed* fractures by looking for—
 - Swelling.
 - Discoloration.
 - Deformity.
 - Unusual body position.
 - Check for pulse.

(d) Stop the evaluation and begin first aid measures if a fracture to an arm or leg is suspected. Refer to Chapter 4 for information on splinting a suspected fracture.

(e) Check for signs/symptoms of fractures of other body areas (for example, shoulder or hip) and provide first aid as necessary.

(7) *Check for burns.* Look carefully for reddened, blistered, or charred skin; also check for singed clothing. If burns are found, stop the evaluation and begin first aid procedures. Refer to paragraph 3-9 for information on giving first aid for burns.

NOTE

Burns to the upper torso and face may cause respiratory complications. When evaluating the casualty, look for singed nose hair, soot around the nostrils, and listen for abnormal breath sounds or difficulty breathing.

(8) *Check for possible head injury.*

(a) Look for the following signs and symptoms:

- Unequal pupils.
- Fluid from the ear(s), nose, mouth, or injury site.
- Slurred speech.
- Confusion.
- Sleepiness.
- Loss of memory or consciousness.
- Staggering in walking.
- Headache.
- Dizziness.
- Nausea or vomiting.
- Paralysis.
- Convulsions or twitches.
- Bruising around the eyes and behind the ears.

(b) If a head injury is suspected, continue to watch for signs which would require performance of rescue breathing, first aid measures for shock, or control of bleeding; seek medical aid. Refer to paragraph 3-10 for information on first aid measures for head injuries.

CHAPTER 2

BASIC MEASURES FOR FIRST AID

2-1. General

Several conditions that require immediate attention are an inadequate airway, lack of breathing, and excessive loss of blood (circulation). A casualty without a clear airway or who is not breathing may die from lack of oxygen. Excessive loss of blood may lead to shock, and shock can lead to death; therefore, you must act immediately to control the loss of blood. All wounds are considered to be contaminated, since infection-producing organisms (germs) are always present on the skin and clothing, and in the soil, water, and air. Any missile or instrument (such as a bullet, shrapnel, knife, or bayonet) causing a wound pushes or carries the germs into that wound. Infection results as these organisms multiply. That a wound is contaminated does not lessen the importance of protecting it from further contamination. You must dress and bandage a wound as soon as possible to prevent further contamination.

NOTE

It is also important that you attend to any airway, breathing, or bleeding problems **IMMEDIATELY** because these problems, if left unattended, may become life threatening.

**Section I. OPEN THE AIRWAY
AND RESTORE BREATHING****2-2. Breathing Process**

All humans must have oxygen to live. Through the breathing process, the lungs draw oxygen from the air and put it into the blood. The heart pumps the blood through the body to be used by the cells that require a constant supply of oxygen. Some cells are more dependent on a constant supply of oxygen than others. For example, cells of the brain may die within 4 to 6 minutes without oxygen. Once these cells die, they are lost forever since they do not regenerate. This could result in permanent brain damage, paralysis, or death.

2-3. Assessment of and Positioning the Casualty

a. **CHECK** for responsiveness (Figure 2-1A)—establish whether the casualty is conscious by gently shaking him and asking, “Are you OK?”

b. **CALL** for help (Figure 2-1B).

c. **POSITION** the unconscious casualty so that he is lying on his back and on a firm surface (Figure 2-1C).

WARNING

If the casualty is lying on his chest (prone position), cautiously roll the casualty as a unit so that his body does not twist (which may further complicate a back, neck, or spinal injury).

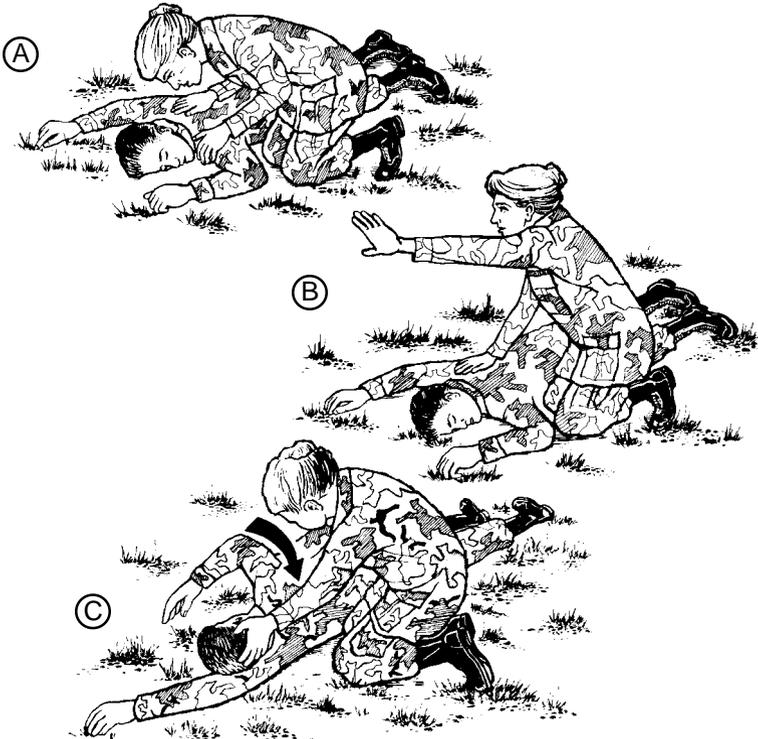


Figure 2-1. Assessment (Illustrated A—C).

(1) Straighten the casualty's legs. Take the casualty's arm that is nearest to you and move it so that it is straight and above his head. Repeat the procedure for the other arm.

(2) Kneel beside the casualty with your knees near his shoulders (leave space to roll his body) (Figure 2-1B). Place one hand behind his head and neck for support. With your other hand, grasp the casualty under his far arm (Figure 2-1C).

(3) Roll the casualty towards you using a steady, even pull. His head and neck should stay in line with his back.

(4) Return the casualty's arms to his side. Straighten his legs. Reposition yourself so that you are now kneeling at the level of the casualty's shoulders. However, if a neck injury is suspected and the jaw-thrust technique will be used, kneel at the casualty's head, looking towards his feet.

2-4. Opening the Airway of an Unconscious or Not Breathing Casualty

The tongue is the single most common cause of an airway obstruction (Figure 2-2). In most cases, simply using the head-tilt/chin-lift technique can clear the airway. This action pulls the tongue away from the air passage in the throat (Figure 2-3).

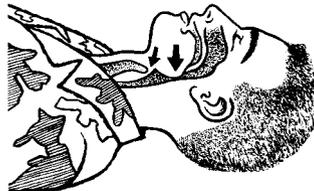


Figure 2-2. Airway blocked by tongue.

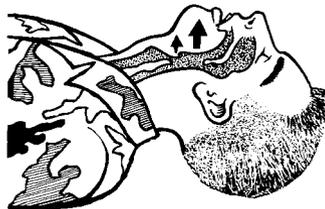


Figure 2-3. Airway opened by extending neck.

a. Call for help and then position the casualty. Move (roll) the casualty onto his back (Figure 2-1C). (Refer to paragraph 2-3c for information on positioning the casualty.)

NOTE

Perform finger sweep. If foreign material or vomitus is visible in the mouth, it should be removed, but do not spend an excessive amount of time doing so.

b. Open the airway using the jaw-thrust or head-tilt/chin-lift technique.

CAUTION

The head-tilt/chin-lift technique is an important procedure in opening the airway; however, use extreme care because excess force in performing this maneuver may cause further spinal injury. In a casualty with a suspected neck injury or severe head trauma, the safest approach to opening the airway is the jaw-thrust technique because in most cases it can be accomplished without extending the neck.

(1) *Perform the jaw-thrust technique.* The jaw-thrust may be accomplished by the rescuer grasping the angles of the casualty's lower jaw and lifting with both hands, one on each side, displacing the jaw forward and up (Figure 2-4). The rescuer's elbows should rest on the surface on which the casualty is lying. If the lips close, the lower lip can be retracted with the thumb. If mouth-to-mouth breathing is necessary, close the nostrils by placing your cheek tightly against them. The head should be carefully supported without tilting it backwards or turning it from side to side. If this is unsuccessful, the head should be tilted back very slightly. The jaw-thrust is the safest first approach to opening the airway of a casualty who has a suspected neck injury because in most cases it can be accomplished without extending the neck.

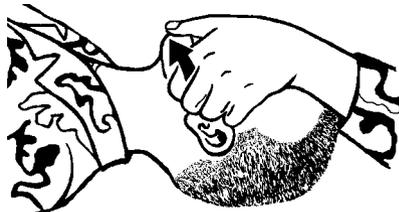


Figure 2-4. Jaw-thrust technique of opening airway.

(2) *Perform the head-tilt/chin-lift technique.* Place one hand on the casualty's forehead and apply firm, backward pressure with the palm to tilt the head back. Place the fingertips of the other hand under the bony part of the lower jaw and lift, bringing the chin forward. The thumb should not be used to lift the chin (Figure 2-5).

NOTE

The fingers should not press deeply into the soft tissue under the chin because the airway may be obstructed.



Figure 2-5. Head-tilt/chin-lift technique of opening airway.

(3) *Check for breathing (while maintaining an airway).* After establishing an open airway, it is important to maintain that airway in an open position. Often the act of just opening and maintaining the airway will allow the casualty to breathe properly. Once the rescuer uses one of the techniques to open the airway (jaw-thrust or head-tilt/chin-lift), he should maintain that head position to keep the airway open. Failure to maintain the open airway will prevent the casualty from receiving an adequate supply of oxygen. Therefore, while maintaining an open airway the rescuer should check for breathing by observing the casualty's chest and performing the following actions within 3 to 5 seconds:

- (a) **LOOK** for the chest to rise and fall.
- (b) **LISTEN** for air escaping during exhalation by placing your ear near the casualty's mouth.
- (c) **FEEL** for the flow of air on your cheek (see Figure 2-6).
- (d) **PERFORM** rescue breathing if the casualty does not resume breathing spontaneously.

NOTE

If the casualty resumes breathing, monitor and maintain the open airway. He should be transported to an MTF, as soon as practical.

2-5. Rescue Breathing (Artificial Respiration)

a. If the casualty does not promptly resume adequate spontaneous breathing after the airway is open, rescue breathing (artificial respiration) must be started. Be calm! Think and act quickly! The sooner you begin rescue breathing, the more likely you are to restore the casualty's breathing. If you are in doubt whether the casualty is breathing, give artificial respiration, since it can do no harm to a person who is breathing. If the casualty is breathing, you can feel and see his chest move. If the casualty is breathing, you can feel and hear air being expelled by putting your hand or ear close to his mouth and nose.

b. There are several methods of administering rescue breathing. The mouth-to-mouth method is preferred; however, it cannot be used in all situations. If the casualty has a severe jaw fracture or mouth wound or his jaws are tightly closed by spasms, use the mouth-to-nose method.

2-6. Preliminary Steps—All Rescue Breathing Methods

a. Establish unresponsiveness. Call for help. Turn or position the casualty.

b. Open the airway.

c. Check for breathing by placing your ear over the casualty's mouth and nose, and looking toward his chest.

(1) **LOOK** for rise and fall of the casualty's chest (Figure 2-6).

(2) **LISTEN** for sounds of breathing.

(3) **FEEL** for breath on the side of your face. If the chest does not rise and fall and no air is exhaled, then the casualty is not breathing.

(4) **PERFORM** rescue breathing if the casualty is not breathing.

NOTE

Although the rescuer may notice that the casualty is making respiratory efforts, the airway may still be obstructed and opening the airway may be all that is needed. If the casualty resumes breathing, the rescuer should continue to maintain an open airway.

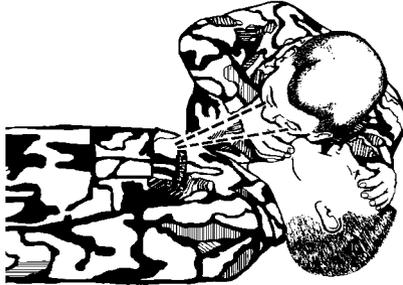


Figure 2-6. Check for breathing.

2-7. Mouth-to-Mouth Method

In this method of rescue breathing, you inflate the casualty's lungs with air from your lungs. This can be accomplished by blowing air into the person's mouth. The mouth-to-mouth rescue breathing method is performed as follows:

a. If the casualty is not breathing, place your hand on his forehead, and pinch his nostrils together with the thumb and index finger of this hand. Let this same hand exert pressure on his forehead to maintain the backward head tilt and maintain an open airway. With your other hand, keep your fingertips on the bony part of the lower jaw near the chin and lift (Figure 2-7).



Figure 2-7. Head tilt/chin lift.

NOTE

If you suspect the casualty has a neck injury and you are using the jaw-thrust technique, close the nostrils by placing your cheek tightly against them.

b. Take a deep breath and place your mouth (in an airtight seal) around the casualty's mouth (Figure 2-8). (If the injured person is small, cover both his nose and mouth with your mouth, sealing your lips against the skin of his face.)



Figure 2-8. Rescue breathing.

c. Blow two full breaths into the casualty's mouth (1 to 1 1/2 seconds per breath), taking a breath of fresh air each time before you blow. Watch out of the corner of your eye for the casualty's chest to rise. If the chest rises, sufficient air is getting into the casualty's lungs. Therefore, proceed as described in step (1). If the chest does not rise, do the following (*a*, *b*, and *c* below) and then attempt to ventilate again.

(1) Take corrective action immediately by reestablishing the airway. Make sure that air is not leaking from around your mouth or out of the casualty's pinched nose.

(2) Reattempt to ventilate.

(3) If the chest still does not rise, take the necessary action to open an obstructed airway (paragraph 2-10).

NOTE

If the initial attempt to ventilate the casualty is unsuccessful, reposition the casualty's head and repeat rescue breathing. Improper chin and head positioning is the most common cause of difficulty with ventilation. If the casualty cannot be ventilated after repositioning the head, proceed with foreign-body airway obstruction maneuvers (see paragraph 2-10).

(4) After giving two slow breaths, which cause the chest to rise, attempt to locate a pulse on the casualty. Feel for a pulse on the side of the casualty's neck closest to you by placing the first two fingers (index and middle fingers) of your hand on the groove beside the casualty's Adam's apple (carotid pulse) (Figure 2-9). (Your thumb should not be used for pulse taking because you may confuse your pulse beat with that of the casualty.) Maintain the airway by keeping your other hand on the casualty's forehead. Allow 5 to 10 seconds to determine if there is a pulse.



Figure 2-9. Placement of fingers to detect pulse.

(a) If signs of circulation are present and a pulse is found and the casualty is breathing—**STOP**; allow the casualty to breathe on his own. If possible, keep him warm and comfortable.

(b) If a pulse is found and the casualty is not breathing, continue rescue breathing.

(c) If a pulse is not found, seek medically trained personnel for help as soon as possible.

2-8. Mouth-to-Nose Method

Use this method if you cannot perform mouth-to-mouth rescue breathing because the casualty has a severe jaw fracture or mouth wound or his jaws are tightly closed by spasms. The mouth-to-nose method is performed in the same way as the mouth-to-mouth method except that you blow into the nose while you hold the lips closed with one hand at the chin. You then remove your mouth to allow the casualty to exhale passively. It may be necessary to separate the casualty's lips to allow the air to escape during exhalation.

2-9. Heartbeat

If a casualty's heart stops beating, you must immediately seek medical help. **SECONDS COUNT!** Stoppage of the heart is soon followed by cessation of

respiration unless it has occurred first. Be calm! Think and act! When a casualty's heart has stopped, there is no pulse at all; the person is unconscious and limp, and the pupils of his eyes are open wide. When evaluating a casualty or when performing the preliminary steps of rescue breathing, feel for a pulse. If you DO NOT detect a pulse, seek medical help.

2-10. Airway Obstructions

In order for oxygen from the air to flow to and from the lungs, the upper airway must be unobstructed.

a. Upper airway obstructions often occur because—

(1) The casualty's tongue falls back into his throat while he is unconscious. The tongue *falls back* and *obstructs* the airway, it is not swallowed by the casualty.

NOTE

Ensure the correct positioning and maintenance of the open airway for an injured or unconscious casualty.

(2) Foreign bodies become lodged in the throat. These obstructions usually occur while eating. Choking on food (usually meat) is associated with—

- Attempting to swallow large pieces of poorly chewed food.

- Drinking alcohol.

- Slipping dentures.

(3) The contents of the stomach are regurgitated and may block the airway.

(4) Blood clots may form as a result of head and facial injuries.

b. Upper airway obstruction may cause either partial or complete airway blockage.

(1) *Partial airway obstruction.* The casualty may still have an air exchange. A good air exchange means that the casualty can cough

forcefully, though he may be wheezing between coughs. You, the rescuer, should not interfere, and should encourage the casualty to cough up the object obstructing his airway on his own. A poor air exchange may be indicated by weak coughing with a high pitched noise between coughs. Further, the casualty may show signs of shock (paragraph 1-6b[5]) indicating a need for oxygen. You should assist the casualty and treat him as though he had a complete obstruction.

(2) *Complete airway obstruction.* A complete obstruction (no air exchange) is indicated if the casualty cannot speak, breathe, or cough at all. He may be clutching his neck and moving erratically. In an unconscious casualty, a complete obstruction is also indicated if after opening his airway you cannot ventilate him.

2-11. Opening the Obstructed Airway—Conscious Casualty

Clearing a conscious casualty's airway obstruction can be performed with the casualty either standing or sitting and by following a relatively simple procedure.

WARNING

Once an obstructed airway occurs, the brain will develop an oxygen deficiency resulting in unconsciousness. Death will follow rapidly if breathing is not promptly restored.

a. Ask the casualty if he can speak or if he is choking. Check for the universal choking sign (Figure 2-10).



Figure 2-10. Universal sign of choking.

b. If the casualty can speak, encourage him to attempt to cough; the casualty still has a good air exchange. If he is able to speak or cough effectively, DO NOT interfere with his attempts to expel the obstruction.

c. Listen for high pitched sounds when the casualty breathes or coughs (poor air exchange). If there is poor air exchange or no breathing, CALL FOR HELP and immediately deliver manual thrusts (either an abdominal or chest thrust).

NOTE

The manual thrust with the hands centered between the waist and the rib cage is called an abdominal thrust (or Heimlich maneuver). The chest thrust (the hands are centered in the middle of the breastbone) is used only for an individual in the advanced stages of pregnancy, in the markedly obese casualty, or if there is a significant abdominal wound.

(1) Apply abdominal thrusts. This can be accomplished by using the following procedures:

(a) Stand behind the casualty and wrap your arms around his waist.

(b) Make a fist with one hand and grasp it with the other. The thumb side of your fist should be against the casualty's abdomen, in the midline and slightly above the casualty's navel, but well below the tip of the breastbone (Figure 2-11).

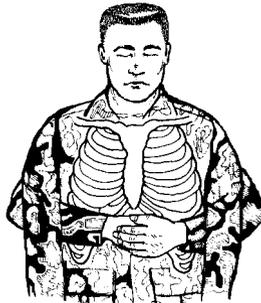


Figure 2-11. Anatomical view of abdominal thrust procedure.

(c) Press the fists into the abdomen with a quick backward and upward thrust (Figure 2-12).



Figure 2-12. Profile view of abdominal thrust.

(d) Each thrust should be a separate and distinct movement.

NOTE

Continue performing abdominal thrusts until the obstruction is expelled or the casualty becomes unresponsive.

(e) If the casualty becomes unresponsive, call for help as you proceed with steps to open the airway, and perform rescue breathing. (Refer to paragraph 2-7 for information on how to perform mouth-to-mouth resuscitation.)

(2) Apply chest thrusts. An alternate technique to the abdominal thrust is the chest thrust. This technique is useful when the casualty has an abdominal wound, when the casualty is pregnant, or when the casualty is so large that you cannot wrap your arms around the abdomen. To apply chest thrusts with casualty sitting or standing:

(a) Stand behind the casualty and wrap your arms around his chest with your arms under his armpits.

(b) Make a fist with one hand and place the thumb side of the fist in the middle of the breastbone (take care to avoid the tip of the breastbone and the margins of the ribs).

(c) Grasp the fist with the other hand and exert thrusts (Figure 2-13).



Figure 2-13. Profile view of chest thrust.

(d) Each thrust should be delivered slowly, distinctly, and with the intent of relieving the obstruction.

(e) Perform chest thrusts until the obstruction is expelled or the casualty becomes unresponsive.

(f) If the casualty becomes unresponsive, call for help as you proceed with steps to open the airway and perform rescue breathing.

2-12. Opening the Obstructed Airway—Casualty Lying Down or Unresponsive

The following procedures are used to expel an airway obstruction in a casualty who is lying down, who becomes unconscious, or who is found unconscious (the cause unknown):

- If a conscious casualty who is choking becomes unresponsive, call for help, open the airway, perform a finger sweep, and attempt rescue breathing (paragraphs 2-4 through 2-8). If you still cannot administer rescue breathing due to an airway blockage, then remove the airway obstruction using the procedures as in *b* below.

- If a casualty is unresponsive when you find him (the cause unknown), assess or evaluate the situation, call for help, position the casualty on his back, open the airway, establish breathlessness, and attempt to perform rescue breathing (paragraphs 2-4 through 2-8).

- a.* Open the airway and attempt rescue breathing (refer to paragraph 2-7 for information on how to perform mouth-to-mouth resuscitation).

b. If still unable to ventilate the casualty, perform 6 to 10 manual (abdominal or chest) thrusts.

(1) To perform the abdominal thrusts:

(a) Kneel astride the casualty's thighs (Figure 2-14).



Figure 2-14. Abdominal thrust on unresponsive casualty.

(b) Place the heel of one hand against the casualty's abdomen (in the midline slightly above the navel but well below the tip of the breastbone). Place your other hand on top of the first one. Point your fingers toward the casualty's head.

(c) Press into the casualty's abdomen with a quick, forward and upward thrust. You can use your body weight to perform the maneuver. Deliver each thrust quickly and distinctly.

(d) Repeat the sequence of abdominal thrusts, finger sweep, and rescue breathing (attempt to ventilate) as long as necessary to remove the object from the obstructed airway.

(e) If the casualty's chest rises, proceed to feeling for pulse.

(2) To perform chest thrusts:

(a) Place the unresponsive casualty on his back, face up, and open his mouth. Kneel close to the side of the casualty's body.

1. Locate the lower edge of the casualty's ribs with your fingers. Run the fingers up along the rib cage to the notch (Figure 2-15A).

2. Place the middle finger on the notch and the index finger next to the middle finger on the lower edge of the breastbone. Place the heel of the other hand on the lower half of the breastbone next to the two fingers (Figure 2-15B).

3. Remove the fingers from the notch and place that hand on top of the positioned hand on the breastbone, extending or interlocking the fingers (Figure 2-15C).

4. Straighten and lock your elbows with your shoulders directly above your hands without bending the elbows, rocking, or allowing the shoulders to sag. Apply enough pressure to depress the breastbone 1 1/2 to 2 inches, then release the pressure completely (Figure 2-15D). Do this 6 to 10 times. Each thrust should be delivered quickly and distinctly. See Figure 2-16 for another view of the breastbone being depressed.

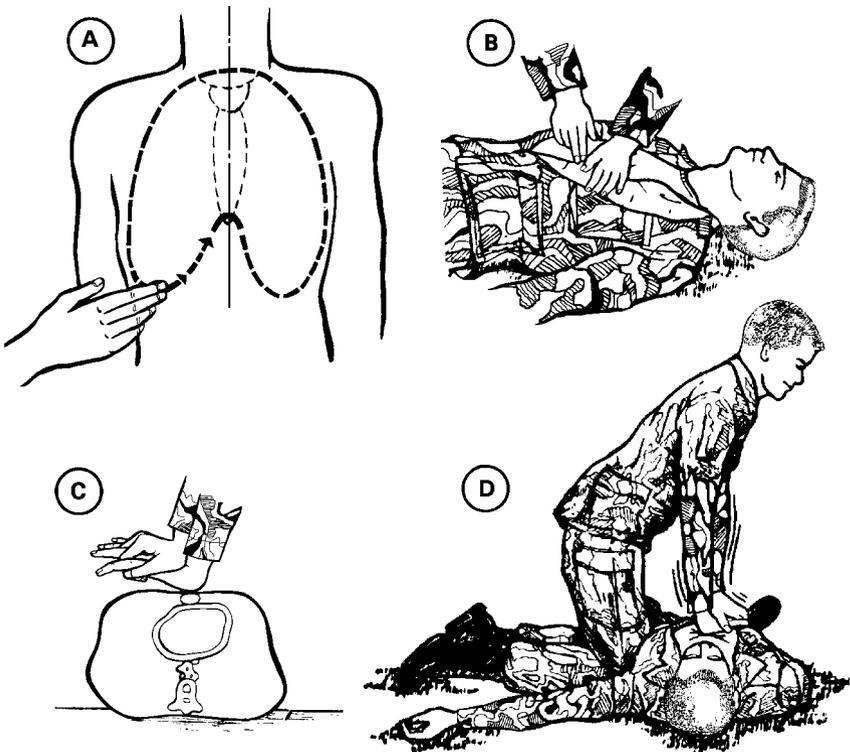


Figure 2-15. Hand placement for chest thrust (Illustrated A-D).

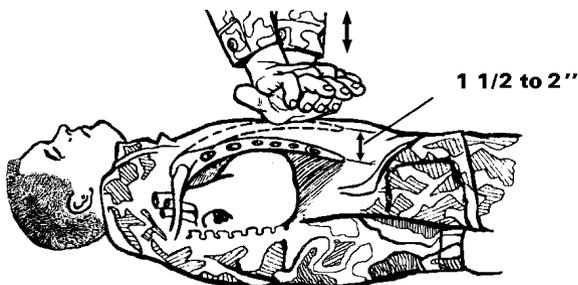


Figure 2-16. Breastbone depressed 1 1/2 to 2 inches.

(b) Repeat the sequence of chest thrust, finger sweep, and rescue breathing as long as necessary to clear the object from the obstructed airway. See paragraph (3) below.

(c) If the casualty's chest rises, proceed to feeling for his pulse.

(3) If you still cannot administer rescue breathing due to an airway obstruction, then remove the airway obstruction using the procedures in steps (a) and (b) below.

(a) Place the casualty on his back, face up, turn the unresponsive casualty as a unit, and call out for help.

(b) Perform finger sweep, keep casualty face up, use tongue-jaw lift to open mouth.

1. Open the casualty's mouth by grasping both his tongue and lower jaw between your thumb and fingers and lifting (tongue-jaw lift) (Figure 2-17). If you are unable to open his mouth, cross your fingers and thumb (crossed-finger method) and push his teeth apart (Figure 2-18) by pressing your thumb against his upper teeth and pressing your finger against his lower teeth.



Figure 2-17. Opening casualty's mouth (tongue-jaw lift).



Figure 2-18. Opening casualty's mouth (crossed-finger method).

2. Insert the index finger of the other hand down along the inside of his cheek to the base of the tongue. Use a hooking motion from the side of the mouth toward the center to dislodge the foreign body (Figure 2-19).



Figure 2-19. Using finger to dislodge a foreign body.

WARNING

Take care not to force the object deeper into the airway by pushing it with the finger.

Section II. STOP THE BLEEDING AND PROTECT THE WOUND

2-13. General

The longer a service member bleeds from a major wound, the less likely he will be able to survive his injuries. It is, therefore, important that the first aid provider promptly stop the external bleeding.

2-14. Clothing

In evaluating the casualty for location, type, and size of the wound or injury, cut or tear his clothing and carefully expose the entire area of the wound. This procedure is necessary to properly visualize injury and avoid further contamination. Clothing stuck to the wound should be left in place to avoid further injury. **DO NOT** touch the wound; keep it as clean as possible.

WARNING

DO NOT REMOVE protective clothing in a chemical environment. Apply dressings over the protective clothing.

2-15. Entrance and Exit Wounds

Before applying the dressing, carefully examine the casualty to determine if there is more than one wound. A missile may have entered at one point and exited at another point. The *EXIT* wound is usually *LARGER* than the entrance wound.

WARNING

The casualty should be continually monitored for development of conditions which may require the performance of necessary basic lifesaving measures, such as clearing the airway and mouth-to-mouth resuscitation. All open (or penetrating) wounds should be checked for a point of entry and exit and first aid measures applied accordingly.

WARNING

If the missile lodges in the body (fails to exit), **DO NOT** attempt to remove it or probe the wound. Apply a dressing. If there is an object extending from (impaled in) the wound, **DO NOT** remove the object. Apply a dressing around the object and use additional improvised bulky materials/dressings (use the cleanest material available) to build up the area around the object to stabilize the object and prevent further injury. Apply a supporting bandage over the bulky materials to hold them in place.

2-16. Field Dressing

a. Use the casualty's field dressing; remove it from the wrapper and grasp the tails of the dressing with both hands (Figure 2-20).

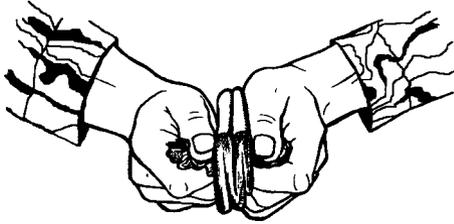


Figure 2-20. Grasping tails of dressing with both hands.

WARNING

DO NOT touch the white (sterile) side of the dressing, and DO NOT allow it to come in contact with any surface other than the wound.

b. Hold the dressing directly over the wound with the white side down. Pull the dressing open (Figure 2-21) and place it directly over the wound (Figure 2-22).

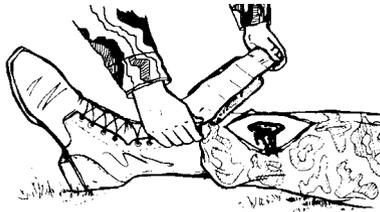


Figure 2-21. Pulling dressing open.



Figure 2-22. Placing dressing directly on wound.

c. Hold the dressing in place with one hand. Use the other hand to wrap one of the tails around the injured part, covering about one-half of the dressing (Figure 2-23). Leave enough of the tail for a knot. If the casualty is able, he may assist by holding the dressing in place.

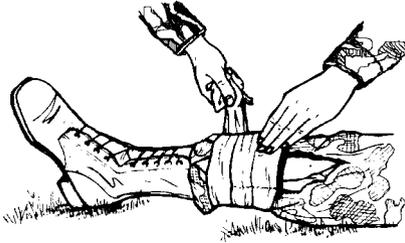


Figure 2-23. Wrapping tail of dressing around injured part.

d. Wrap the other tail in the opposite direction until the remainder of the dressing is covered. The tails should seal the sides of the dressing to keep foreign material from getting under it.

e. Tie the tails into a nonslip knot over the outer edge of the dressing (Figure 2-24). **DO NOT TIE THE KNOT OVER THE WOUND.** In order to allow blood to flow to the rest of an injured limb, tie the dressing firmly enough to prevent it from slipping but without causing a tourniquet-like effect; that is, the skin beyond the injury should not become cool, blue, or numb.

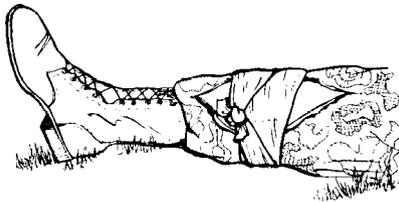


Figure 2-24. Tails tied into nonslip knot.

2-17. Manual Pressure

a. If bleeding continues after applying the sterile field dressing, direct manual pressure may be used to help control bleeding. Apply such pressure by placing a hand on the dressing and exerting firm pressure for 5 to 10 minutes (Figure 2-25). The casualty may be asked to do this himself if he is conscious and can follow instructions.

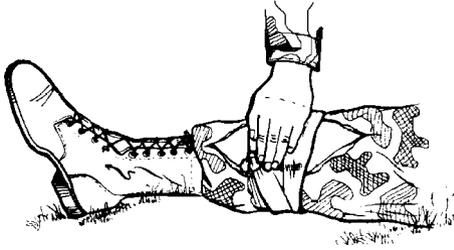


Figure 2-25. Direct manual pressure applied.

b. Elevate an injured limb slightly above the level of the heart to reduce the bleeding (Figure 2-26).

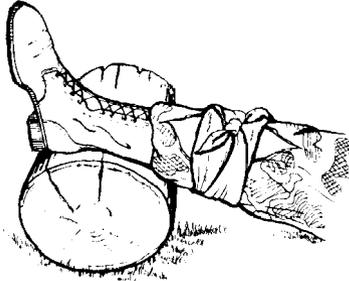


Figure 2-26. Injured limb elevated.

WARNING

DO NOT elevate a suspected fractured limb unless it has been properly splinted.

c. If the bleeding stops, check shock; administer first aid for shock as necessary. If the bleeding continues, apply a pressure dressing.

2-18. Pressure Dressing

Pressure dressings aid in blood clotting and compress the open blood vessel. If bleeding continues after the application of a field dressing, manual pressure, and elevation, then a pressure dressing must be applied as follows:

a. Place a wad of padding on top of the field dressing, directly over the wound (Figure 2-27). Keep the injured extremity elevated.

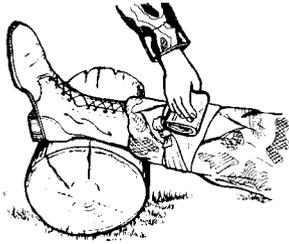


Figure 2-27. Wad of padding on top of field dressing.

NOTE

Improvised bandages may be made from strips of cloth. These strips may be made from T-shirts, socks, or other garments.

b. Place an improvised dressing (or cravat, if available) over the wad of padding (Figure 2-28). Wrap the ends tightly around the injured limb, covering the previously placed field dressing (Figure 2-29).

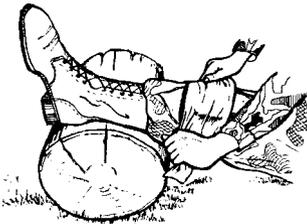


Figure 2-28. Improvised dressing over wad of padding

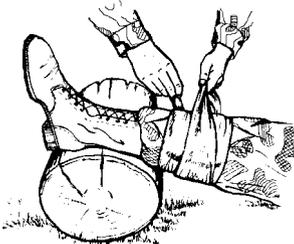


Figure 2-29. Ends of improvised dressing wrapped tightly around limb.

c. Tie the ends together in a nonslip knot, directly over the wound site (Figure 2-30). **DO NOT** tie so tightly that it has a tourniquet-like effect. If bleeding continues and all other measures have failed, or if the limb is severed, then apply a tourniquet. Use the tourniquet as a **LAST RESORT**. When the bleeding stops, check for shock; administer first aid for shock as necessary.

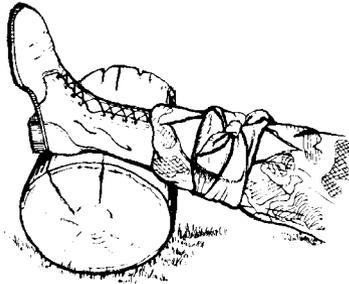


Figure 2-30. Ends of improvised dressing tied together in nonslip knot.

NOTE

Distal end of wounded extremities (fingers and toes) should be checked periodically for adequate circulation. The dressing must be loosened if the extremity becomes cool, blue, or numb.

NOTE

If bleeding continues and all other measures have failed (dressings and covering wound, applying direct manual pressure, elevating the limb above the heart level, and applying a pressure dressing while maintaining limb elevation) *then apply digital pressure* (see paragraph 2-19).

2-19. Digital Pressure

Digital pressure (often called “pressure points”) is an alternative method to control bleeding. This method uses pressure from the fingers, thumbs, or hands to press at the site or point where a main artery supplying the wounded area lies near the skin surface or over bone (Figure 2-31). This pressure may help shut off or slow down the flow of blood from the heart to the wound and is used in combination with direct pressure and elevation. It may help in instances where bleeding is not easily controlled, where a pressure dressing has not yet been applied, or where pressure dressings are not readily available.

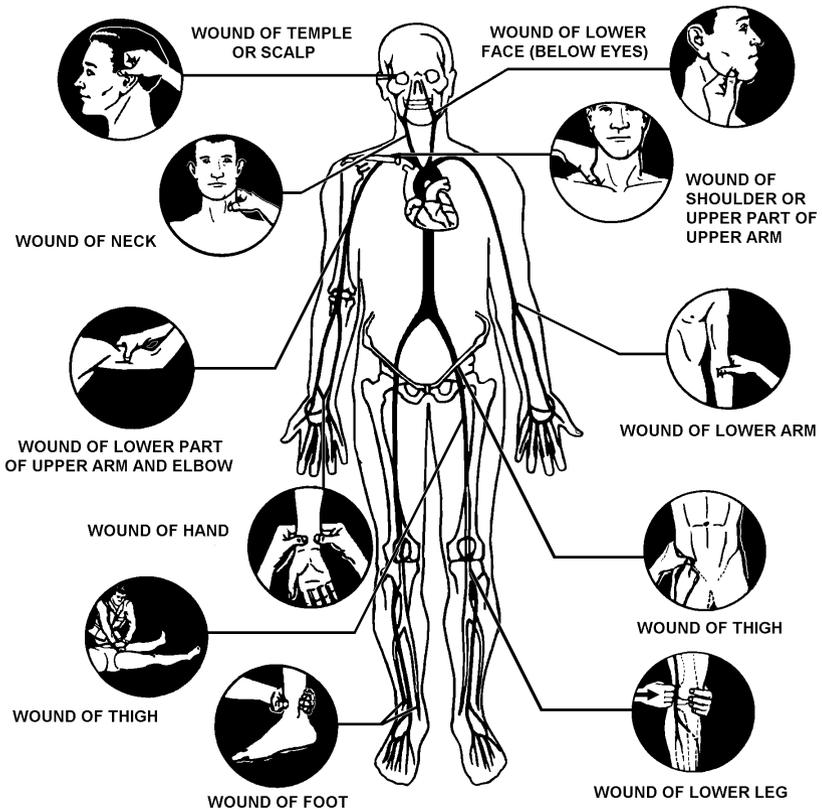


Figure 2-31. Digital pressure (pressure with fingers, thumbs or hands).

2-20. Tourniquet

DANGER

A tourniquet is only used on an arm or leg where there is a danger of the casualty losing his life (bleeding to death).

A tourniquet is a constricting band placed around an arm or leg to control bleeding. A service member whose arm or leg has been completely amputated may not be bleeding when first discovered, but a tourniquet should be applied anyway. This absence of bleeding is due to the body's normal defenses (contraction or clotting of blood vessels) as a result of the amputation, but

after a period of time bleeding will start as the blood vessels relax or the clot may be knocked loose by moving the casualty. Bleeding from a major artery of the thigh, lower leg, or arm and bleeding from multiple arteries (which occurs in a traumatic amputation) may prove to be beyond control by manual pressure. If the pressure dressing (see paragraph 2-18, above) under firm hand pressure becomes soaked with blood and the wound continues to bleed, apply a tourniquet.

WARNING

Casualty should be continually monitored for development of conditions which may require the performance of necessary basic lifesaving measures, such as: clearing the airway, performing mouth-to-mouth resuscitation, preventing shock, and/or bleeding control. All open (or penetrating) wounds should be checked for a point of entry or exit and treated accordingly.

The tourniquet should not be used unless a pressure dressing has failed to stop the bleeding or an arm or leg has been cut off. On occasion, tourniquets have injured blood vessels and nerves. If left in place too long, a tourniquet can cause loss of an arm or leg. Once applied, it must stay in place, and the casualty must be taken to the nearest MTF as soon as possible. DO NOT loosen or release a tourniquet after it has been applied as release could precipitate bleeding and potentially lead to shock.

a. *Improvising a Tourniquet.* In the absence of a specially designed tourniquet, a tourniquet may be made from a strong, pliable material, such as gauze or muslin bandages, clothing, or cravats. An improvised tourniquet is used with a rigid stick-like object. To minimize skin damage, ensure that the improvised tourniquet is at least 2 inches wide.

WARNING

The tourniquet must be easily identified or easily seen.

WARNING

DO NOT use wire or shoestrings for a tourniquet band.

b. Placing the Improvised Tourniquet.

(1) Place the tourniquet around the limb, between the wound and the body trunk (or between the wound and the heart). Never place it directly over a wound, a fracture, or joint. Tourniquets, for maximum effectiveness, should be placed on the upper arm or above the knee on the thigh (Figure 2-32).

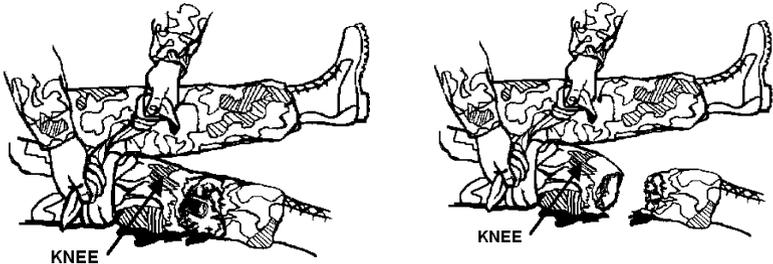


Figure 2-32. Tourniquet above knee.

(2) The tourniquet should be well-padded. If possible, place the tourniquet over the smoothed sleeve or trouser leg to prevent the skin from being pinched or twisted. If the tourniquet is long enough, wrap it around the limb several times, keeping the material as flat as possible. Damaging the skin may deprive the surgeon of skin required to cover an amputation. Protection of the skin also reduces pain.

c. Applying the Tourniquet.

(1) Tie a half-knot. (A half-knot is the same as the first part of tying a shoe lace.)

(2) Place a stick (or similar rigid object) on top of the half-knot (Figure 2-33).

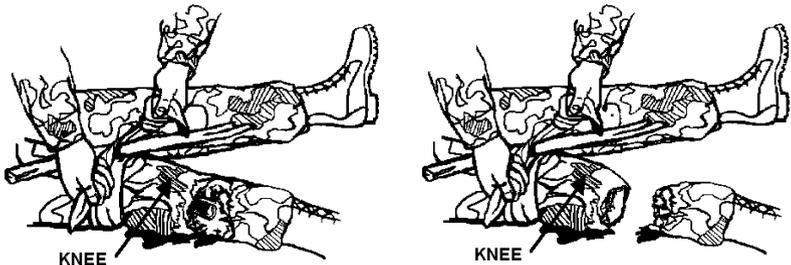


Figure 2-33. Rigid object on top of half-knot.

(3) Tie a full knot over the stick (Figure 2-34).

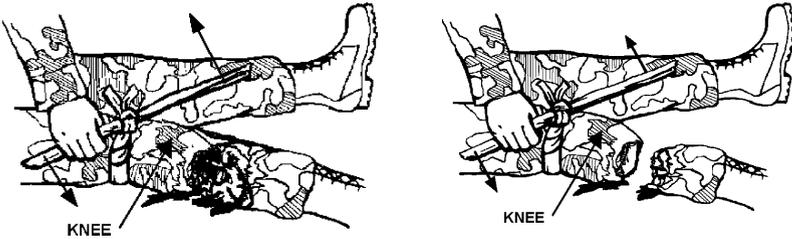


Figure 2-34. Full knot over rigid object.

(4) Twist the stick (Figure 2-35) until the tourniquet is tight around the limb and/or the bright red bleeding has stopped. In the case of amputation, dark oozing blood may continue for a short time. This is the blood trapped in the area between the wound and tourniquet.

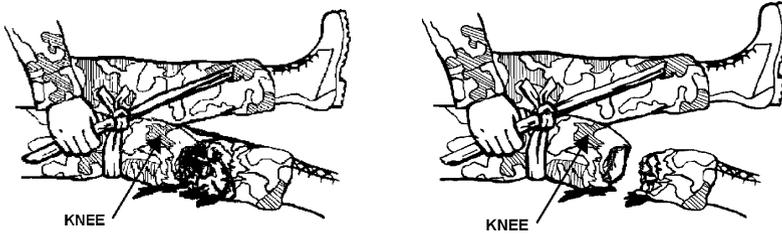


Figure 2-35. Stick twisted.

(5) Fasten the tourniquet to the limb by looping the free ends of the tourniquet over the ends of the stick. Then bring the ends around the limb to prevent the stick from loosening. Tie them together on the side of the limb (Figure 2-36).

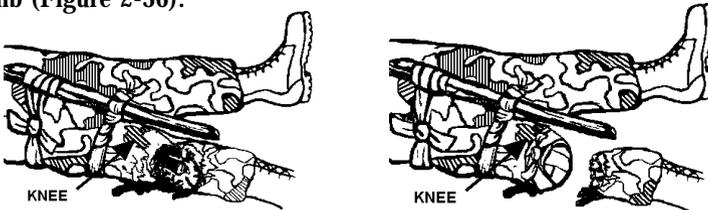


Figure 2-36. Tie free ends on side of limb.

NOTE

Other methods of securing the stick may be used as long as the stick does not unwind and no further injury results.

NOTE

If possible, save and transport any severed (amputated) limbs or body parts with (but out of sight of) the casualty.

(6) DO NOT cover the tourniquet—you should leave it in full view. If the limb is missing (total amputation), apply a dressing to the stump. All wounds should have a dressing to protect the wound from contamination.

(7) Mark the casualty's forehead with a "T" and the time to indicate a tourniquet has been applied. If necessary, use the casualty's blood to make this mark.

(8) Check and treat for shock.

(9) Seek medical aid.

CAUTION

Only appropriately skilled medical personnel may adjust or otherwise remove/release the tourniquet in the appropriate setting.

Section III. CHECK FOR SHOCK AND ADMINISTER FIRST AID MEASURES

2-21. General

The term *shock* has a variety of meanings. In medicine, it refers to a collapse of the body's cardiovascular system which includes an inadequate supply of blood to the body's tissues. Shock stuns and weakens the body. When the normal blood flow in the body is upset, death can result. Early recognition and proper first aid may save the casualty's life.

2-22. Causes and Effects

a. There are three basic mechanisms associated with shock. These are—

- The heart is damaged and fails to work as a pump.
- Blood loss (heavy bleeding) causes the volume of fluid within the vascular system to be insufficient.
- The blood vessels dilate (open wider) so that the blood within the system (even though it is a normal volume [the casualty is not bleeding or dehydrated]) is insufficient to provide adequate circulation within the body.

b. Shock may be the result of a number of conditions. These include—

- Dehydration.
- Allergic reaction to foods, drugs, insect stings, and snakebites.
- Significant loss of blood.
- Reaction to the sight of a wound, blood, or other traumatic scene.
- Traumatic injuries, such as—
 - Burns.
 - Gunshot or shrapnel wounds.
 - Crush injuries.
 - Blows to the body (which can cause broken bones or damage to internal organs).
 - Head injuries.
 - Penetrating wounds (such as from a knife, bayonet, or missile).

2-23. Signs and Symptoms of Shock

Examine the casualty to see if he has any of the following signs and symptoms:

- Sweaty but cool skin (clammy skin).

- Weak and rapid pulse.
- Paleness of skin (in dark-skinned individuals they may have a grayish look to their skin).
- Restlessness, nervousness.
- Thirst.
- Loss of blood (bleeding).
- Confusion (or loss of awareness).
- Faster-than-normal breathing rate.
- Blotchy or bluish skin (especially around the mouth and lips).
- Nausea and/or vomiting.

2-24. First Aid Measures for Shock

In the field, the first aid procedures administered for shock are identical to procedures that would be performed *to prevent shock*. When treating a casualty, assume that shock is present or will occur shortly. By waiting until actual signs and symptoms of shock are noticeable, the rescuer may jeopardize the casualty's life.

a. Position the Casualty. (DO NOT move the casualty or his limbs if suspected fractures have not been splinted. See Chapter 4 for details.)

- (1) Move the casualty to cover, if cover is available and the situation permits.
- (2) Lay the casualty on his back.

NOTE

A casualty in shock from a chest wound or one who is experiencing breathing difficulty, may breathe easier in a sitting position. If this is the case, allow him to sit upright, but monitor carefully in case his condition worsens.

- (3) Elevate the casualty's feet higher than the level of his heart. Use a stable object (field pack or rolled up clothing) so that his feet will not slip off (Figure 2-37).

WARNING

DO NOT elevate legs if the casualty has an unsplinted broken leg, head injury, or abdominal injury.



Figure 2-37. Clothing loosened and feet elevated.

WARNING

Check casualty for leg fracture(s) and splint, if necessary, before elevating his feet. For a casualty with an abdominal wound, place his knees in an upright (flexed) position.

(4) Loosen clothing at the neck, waist, or wherever it may be binding.

CAUTION

DO NOT loosen or remove protective clothing in a chemical environment.

(5) Prevent chilling or overheating. The key is to maintain body temperature. In cold weather, place a blanket or other like item over him to keep him warm and under him to prevent chilling (Figure 2-38). However, if a tourniquet has been applied, leave it exposed (if possible). In hot weather, place the casualty in the shade and protect him from becoming chilled; however, avoid the excessive use of blankets or other coverings.

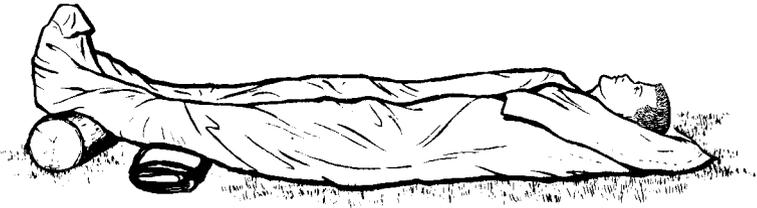


Figure 2-38. Body temperature maintained.

(6) Calm the casualty. Throughout the entire procedure of providing first aid for a casualty, the rescuer should reassure the casualty and keep him calm. This can be done by being authoritative (taking charge) and by showing self-confidence. Assure the casualty that you are there to help him.

(7) Seek medical aid.

b. Food and/or Drink. When providing first aid for shock, DO NOT give the casualty any food or drink. If you must leave the casualty or if he is unconscious, turn his head to the side to prevent him from choking if he vomits (Figure 2-39).



Figure 2-39. Casualty's head turned to side.

c. Evaluate Casualty. Continue to evaluate the casualty until medical personnel arrives or the casualty is transported to an MTF.

CHAPTER 3

FIRST AID FOR SPECIFIC INJURIES

3-1. General

Basic lifesaving steps are discussed in Chapters 1 and 2; they apply to first aid measures for all injuries. Some wounds and burns will require special precautions and procedures when applying these measures. This chapter discusses specific first aid procedures for wounds of the head, face, and neck; chest and stomach wounds; and burns. It also discusses the techniques for applying dressings and bandages to specific parts of the body.

3-2. Head, Neck, and Facial Injuries*a. Head Injuries.*

(1) Head injuries range from minor abrasions or cuts on the scalp to severe brain injuries that may result in unconsciousness and sometimes death. Head injuries are classified as open or closed wounds. An open wound is one that is visible, has a break in the skin, and usually has evidence of bleeding. A closed wound may be visible (such as a depression in the skull) or the first aid provider may not be able to see any apparent injury (such as internal bleeding). Some head injuries result in unconsciousness; however, a service member may have a serious head wound and still be conscious. Casualties with head and neck injuries should be treated as though they also have a spinal injury. The casualty should not be moved until the head and neck is stabilized unless he is in immediate danger (such as close to a burning vehicle).

(2) Prompt first aid measures should be initiated for casualties with suspected head and neck injuries. The conscious casualty may be able to provide information on the extent of his injuries. However, as a result of the head injury, he may be confused and unable to provide accurate information. The signs and symptoms a first aid provider might observe are—

- Nausea and vomiting.
- Convulsions or twitches.
- Slurred speech.
- Confusion and loss of memory. (Does he know who he is? Does he know where he is? Does he know what day it is?)
- Recent unconsciousness.

- Dizziness.
- Drowsiness.
- Blurred vision, unequal pupils, or bruising (black eyes).
- Paralysis (partial or full).
- Complaint of headache.
- Bleeding or other fluid discharge from the scalp, nose, or ears.
- Deformity of the head (depression or swelling).
- Staggering while walking.

b. Neck Injuries. Neck injuries may result in heavy bleeding. Apply pressure above and below the injury, *but do not interfere with the breathing process*, and attempt to control the bleeding. Apply a dressing. Always evaluate the casualty for a possible neck fracture/spinal cord injury; if suspected, seek medical treatment immediately.

NOTE

Establish and maintain the airway in cases of facial or neck injuries. If a neck fracture or spinal cord injury is suspected, immobilize the injury and, if necessary, perform basic life support measures.

c. Facial Injuries. Soft tissue injuries of the face and scalp are common. Abrasions (scrapes) of the skin cause no serious problems. Contusions (injury without a break in the skin) usually cause swelling. A contusion of the scalp looks and feels like a lump. Laceration (cut) and avulsion (torn away tissue) injuries are also common. Avulsions are frequently caused when a sharp blow separates the scalp from the skull beneath it. Because the face and scalp are richly supplied with blood vessels (arteries and veins), wounds of these areas usually bleed heavily.

3-3. General First Aid Measures

a. General Considerations. The casualty with a head injury (or suspected head injury) should be continually monitored for the development of conditions that *may require* basic lifesaving measures. After initiating first

aid measures, request medical assistance and evacuation. If dedicated medical evacuation assets are not available, transport the casualty to an MTF as soon as the situation permits. The first aid provider should not attempt to remove a protruding object from the head or give the casualty anything to eat or drink. Further, the first aid provider should be prepared to—

- Clear the airway.
- Control bleeding (external).
- Administer first aid measures for shock.
- Keep the casualty warm.
- Protect the wound.

b. Unconscious Casualty. An unconscious casualty does not have control of all of his body's functions and may choke on his tongue, blood, vomitus, or other substances. (Refer to Figure 2-39.)

(1) *Breathing.* The brain requires a constant supply of oxygen. A bluish (or in an individual with dark skin—grayish) color of skin around the lips and nail beds indicates that the casualty is not receiving enough oxygen. Immediate action must be taken to clear the airway, to position the casualty on his side, or to initiate rescue breathing.

(2) *Bleeding.* Bleeding from a head injury usually comes from blood vessels within the scalp. Bleeding can also develop inside the skull or within the brain. In most instances visible bleeding from the head can be controlled by application of the field first aid dressing.

CAUTION

DO NOT attempt to put unnecessary pressure on the wound or attempt to push any brain matter back into the head (skull). **DO NOT** apply a pressure dressing.

c. Concussion. If an individual receives a heavy blow to the head or face, he may suffer a brain concussion (an injury to the brain that involves a temporary loss of some or all of the brain's ability to function). For example, the casualty may not breathe properly for a short period of time, or he may become confused and stagger when he attempts to walk. Symptoms of a concussion may only last for a short period of time. However,

if a casualty is suspected of having suffered a concussion, he should be transported to an MTF as soon as conditions permit.

d. Convulsions. Convulsions (seizures/involuntary jerking) may occur even after a mild head injury. When a casualty is convulsing, protect him from hurting himself. Take the following measures:

- (1) Ease him to the ground if he is standing or sitting.
- (2) Support his head and neck.
- (3) Maintain his airway.
- (4) Protect him from further injury (such as hitting close-by objects).

NOTE

DO NOT forcefully hold the arms and legs if they are jerking because this can lead to broken bones. **DO NOT** force anything between the casualty's teeth—especially if they are tightly clenched because this may obstruct the casualty's airway. Maintain the casualty's airway if necessary.

e. Brain Damage. In severe head injuries where brain tissue is protruding, *leave the wound alone*; carefully place a loose moistened dressing (moistened with sterile normal saline if available) and also a first aid dressing over the tissue to protect it from further contamination. **DO NOT remove or disturb any foreign matter that may be in the wound.** Position the casualty so that his head is higher than his body. Keep him warm and *seek medical assistance immediately.*

NOTE

If there is an object extending from the wound, **DO NOT** remove the object. Improvise bulky dressings from the cleanest material available and place this material around the protruding object for support, then apply the field dressing.

3-4. Chest Wounds

Blunt trauma, bullet or missile wounds, stab wounds, or falls may cause chest injuries. These injuries can be serious and may cause death quickly if first aid is not administered in a timely manner. A casualty with a chest injury may

complain of pain in the chest or shoulder area; he may have difficulty breathing. His chest may not rise normally when he breathes. The injury may cause the casualty to cough up blood and to have a rapid or a weak heartbeat. A casualty with an open chest wound has a punctured chest wall. The sucking sound heard when he breathes is caused by air leaking into his chest cavity. This particular type of wound is dangerous and will collapse the injured lung (Figure 3-1). Breathing becomes difficult for the casualty because the wound is open. The service members life may depend upon how quickly you apply an occlusive dressing over the wound (refer to paragraph 3-5).

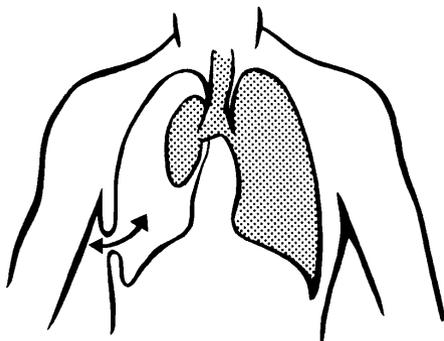


Figure 3-1. Collapsed lung.

3-5. First Aid for Chest Wounds

a. *Evaluate the Casualty.* Be prepared to perform first aid measures. These measures may include clearing the airway, rescue breathing, treatment for shock, and/or bleeding control.

b. *Expose the Wound.* If appropriate, cut or remove the casualty's clothing to expose the wound. Remember, **DO NOT** remove clothing that is stuck to the wound because additional injury may result. **DO NOT** attempt to clean the wound.

NOTE

Examine the casualty to see if there is an entry and exit wound. If there are two wounds (entry, exit), perform the same procedure for both wounds. Treat the more serious (heavier bleeding, larger) wound first. It may be necessary to improvise a dressing for the second wound by using strips of cloth, such as a torn T-shirt, or whatever material is available. Also, listen for sucking sounds to determine if the chest wall is punctured.

CAUTION

If there is an object impaled in the wound, **DO NOT** remove it. Apply a dressing around the object and use additional improvised bulky materials/dressings (use the cleanest materials available) to build up the area around the object. Apply a supporting bandage over the bulky materials to hold them in place.

CAUTION

DO NOT REMOVE protective clothing in a chemical environment. Apply dressings *over* the protective clothing.

c. *Open the Casualty's Field Dressing Plastic Wrapper.* In cases where there is a sucking chest wound, the plastic wrapper is used with the field dressing to create an occlusive dressing. If a plastic wrapper is not available, or if an additional wound needs to be treated; cellophane, foil, the casualty's poncho, or similar material may be used. The covering should be wide enough to extend 2 inches or more beyond the edges of the wound in all directions.

(1) Tear open one end of the casualty's plastic wrapper covering the field dressing. Be careful not to destroy the wrapper and **DO NOT** touch the inside of the wrapper.

(2) Remove the inner packet (field dressing).

(3) Complete tearing open the empty plastic wrapper using as much of the wrapper as possible to create a flat surface.

d. *Place the Wrapper Over the Wound.* Place the inside surface of the plastic wrapper directly over the wound *when the casualty exhales* and hold it in place (Figure 3-2). The casualty may hold the plastic wrapper in place if he is able.



Figure 3-2. Open chest wound sealed with an occlusive dressing.

e. *Apply the Dressing to the Wound.*

- (1) Use your free hand and shake open the field dressing (Figure 3-3).

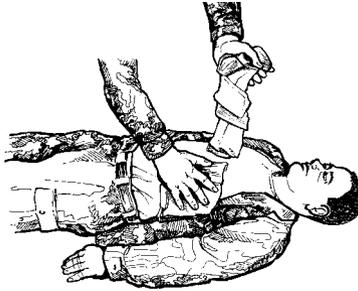


Figure 3-3. Shaking open the field dressing.

- (2) Place the white side of the dressing on the plastic wrapper covering the wound (Figure 3-4).

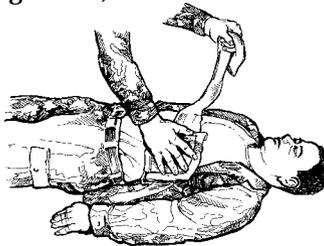


Figure 3-4. Field dressing placed on plastic wrapper.

NOTE

Use the casualty's field dressing, not your own.

- (3) Have the casualty breathe normally.
- (4) While maintaining pressure on the dressing, grasp one tail of the field dressing with the other hand and wrap it around the casualty's back. If tape is available, tape three sides of the plastic wrapper to the chest wall to provide occlusive type dressing. Leave one side untaped to provide emergency escape for air that may build up in the chest. If tape is not available, secure wrapper on three sides with field dressing leaving the fourth side as a flap.
- (5) Wrap the other tail in the opposite direction, bringing both tails over the dressing (Figure 3-5).

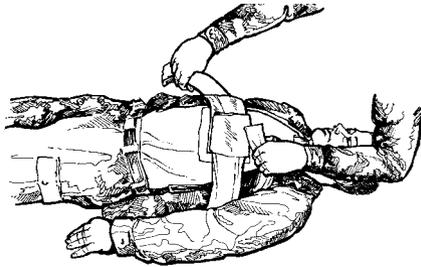


Figure 3-5. Tails of field dressing wrapped around casualty in opposite direction.

(6) Tie the tails into a square knot in the center of the dressing *after* the casualty exhales and *before* he inhales. This will aid in maintaining pressure on the bandage after it has been tied (Figure 3-6). Tie the dressing firmly enough to secure the dressing without interfering with the casualty's breathing.

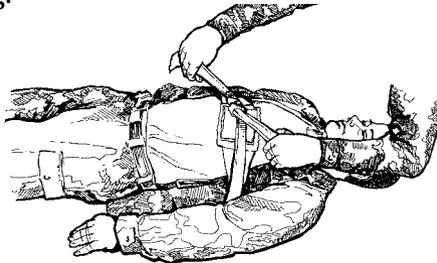


Figure 3-6. Tails of dressing tied into square knot over center of dressing.

NOTE

When practical, apply direct manual pressure over the dressing for 5 to 10 minutes to help control the bleeding.

f. Position the Casualty. Position the casualty on his injured side or in a sitting position, whichever makes breathing easier (Figure 3-7).

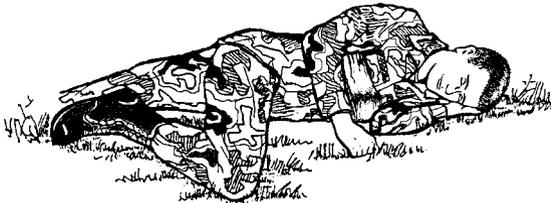


Figure 3-7. Casualty positioned (lying) on injured side.

g. Seek Medical Assistance. Contact medical personnel.

WARNING

If an occlusive dressing has been improperly placed, air may enter the chest cavity with no means of escape. This causes a life-threatening condition called *tension pneumothorax*. If the casualty's condition (for example, difficulty breathing, shortness of breath, restlessness, or blueness/grayness of the skin) worsens after placing the dressing, quickly lift or remove, and then replace the occlusive dressing.

3-6. Abdominal Wounds

The most serious abdominal wound is one in which an object penetrates the abdominal wall and pierces internal organs or large blood vessels. In these instances, bleeding may be severe and death can occur rapidly.

3-7. First Aid for Abdominal Wounds

a. Evaluate the Casualty. Be prepared to perform basic first aid measures. Always check for both entry and exit wounds. If there are two wounds (entry and exit), treat the wound that appears more serious first (for example, the heavier bleeding, protruding organs, larger wound, and so forth). It may be necessary to improvise dressings for the second wound by using strips of cloth, a T-shirt, or the cleanest material available.

b. Position the Casualty. Place and maintain the casualty on his back with his knees in an upright (flexed) position (Figure 3-8). The knees-up position helps relieve pain, assists in the treatment of shock, prevents further exposure of the bowel (intestines) or abdominal organs, and helps relieve abdominal pressure by allowing the abdominal muscles to relax.

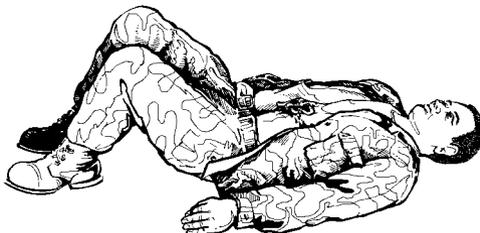


Figure 3-8. Casualty positioned (lying) on back with knees (flexed) up.

c. *Expose the Wound.*

(1) Remove the casualty's loose clothing to expose the wound. However, **DO NOT** attempt to remove clothing that is stuck to the wound; removing it may cause further injury.

CAUTION

DO NOT REMOVE protective clothing in a chemical environment. Apply dressings over the protective clothing.

(2) Gently pick up any organs that may be on the ground. Do this with a clean, dry dressing or with the cleanest available material. Place the organs on top of the casualty's abdomen (Figure 3-9).



Figure 3-9. Protruding organs placed near wound.

NOTE

DO NOT probe, clean, or try to remove any foreign object from the abdomen. **DO NOT** touch with bare hands any exposed organs. **DO NOT** push organs back inside the body.

d. *Apply the Field Dressing.* Use the casualty's field dressing, not your own. If the field dressing is not large enough to cover the entire wound, the plastic wrapper from the dressing may be used to cover the wound first (placing the field dressing on top). Open the plastic wrapper carefully without touching the inner surface. If necessary, other improvised dressings may be made from clothing, blankets, or the cleanest materials available.

WARNING

If there is an object extending from the wound, **DO NOT** remove it. Place as much of the wrapper over the wound as possible without dislodging or moving the object. **DO NOT** place the wrapper over the object.

- (1) Grasp the tails in both hands.
- (2) Hold the dressing with the white side down directly over the wound. **DO NOT** touch the white (sterile) side of the dressing or allow anything except the wound to come in contact with it.
- (3) Pull the dressing open and place it directly over the wound (Figure 3-10). If the casualty is able, he may hold the dressing in place.

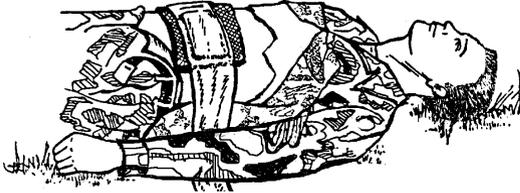


Figure 3-10. Dressing placed directly over the wound.

- (4) Hold the dressing in place with one hand and use the other hand to wrap one of the tails around the body.
- (5) Wrap the other tail in the opposite direction until the dressing is completely covered. Leave enough of the tail for a knot.
- (6) Loosely tie the tails with a square knot at the casualty's side (Figure 3-11).

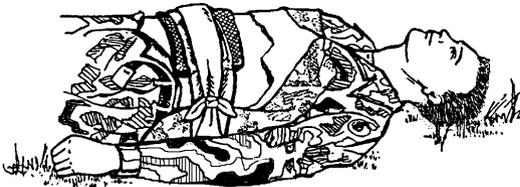


Figure 3-11. Dressing applied and tails tied with a square knot.

WARNING

When the dressing is applied, **DO NOT** put pressure on the wound or exposed internal parts, because pressure could cause further injury (vomiting, ruptured intestines, and so forth). Therefore, tie the dressing ties (tails) loosely at casualty's side, not directly over the dressing.

(7) Tie the dressing firmly enough to prevent slipping without applying pressure to the wound site (Figure 3-12).

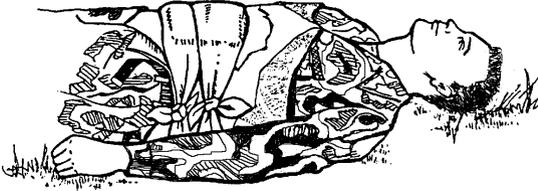


Figure 3-12. Field dressing covered with improvised material and loosely tied.

Field dressings can be covered with improvised reinforcement material (cravats, strips of torn T-shirt, or other cloth) for additional support and protection. Tie improvised bandage on the opposite side of the dressing ties firmly enough to prevent slipping but without applying additional pressure to the wound.

CAUTION

DO NOT give casualties with abdominal wounds food or water (moistening the lips is allowed).

e. Seek Medical Assistance. Notify medical personnel.

3-8. Burn Injuries

Burns often cause extreme pain, scarring, or even death. Before administering first aid, you must be able to recognize the type of burn. There are four types of burns:

- Thermal burns caused by fire, hot objects, hot liquids, and gases; or by nuclear blast or fireball.
- Electrical burns caused by electrical wires, current, or lightning.
- Chemical burns caused by contact with wet or dry chemicals or white phosphorus (WP)—from marking rounds and grenades.
- Laser burns (eye [ocular] injury).

3-9. First Aid for Burns

a. *Eliminate the Source of the Burn.* The source of the burn must be eliminated before any evaluation of the casualty can occur and first aid administered.

(1) Quickly remove the casualty from danger and cover the *thermal burn* with any large nonsynthetic material, such as a field jacket. If the casualty's clothing is still on fire, roll the casualty on the ground to smother (put out) the flames (Figure 3-13).

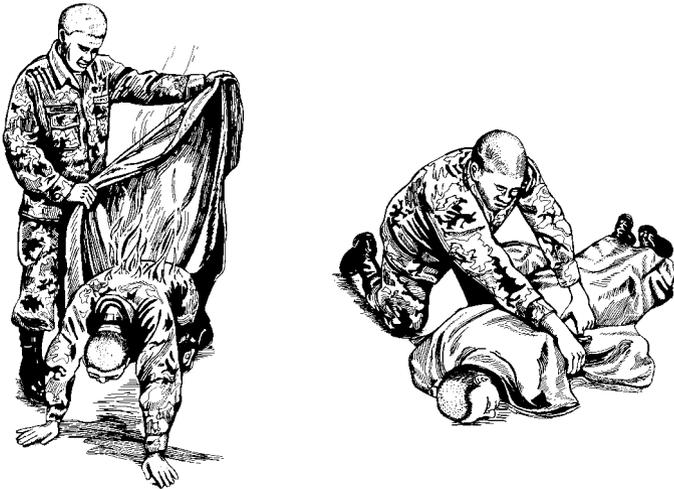


Figure 3-13. Casualty covered and rolled on ground.

CAUTION

Synthetic materials, such as nylon, may melt and cause further injury.

(2) Remove the *electrical burn* casualty from the electrical source by turning off the electrical current. **DO NOT** attempt to turn off the electricity if the source is not close by. Speed is critical, so **DO NOT** waste unnecessary time. If the electricity cannot be turned off, wrap any *nonconductive* material (*dry* rope, clothing, wood, and so forth) around the casualty's back and shoulders and drag the casualty away from the electrical source (Figure 3-14). **DO NOT** make body-to-body contact with the casualty or touch any wires because you could also become an electrical burn casualty.



Figure 3-14. Casualty removed from electrical source (using nonconductive material).

WARNING

High voltage electrical burns may cause temporary unconsciousness, difficulties in breathing, or difficulties with the heart (heartbeat).

(3) Remove the *chemical* from the *burned casualty*. Remove *liquid* chemicals by flushing with as much water as possible. Remove *dry* chemicals by brushing off loose particles (**DO NOT** use the bare surface of your hand because you could become a chemical burn casualty) and then flush with large amounts of water, if available. If large amounts of water are not available, then **NO** water should be applied because small amounts of water applied to a dry chemical burn may cause a chemical reaction. When WP strikes the skin, smother with a wet cloth or mud. Keep WP covered with a wet material to exclude air; this should help prevent the particles from burning.

(4) Remove the *laser burn* casualty from the source. When removing the casualty from the laser beam source, be careful not to enter the

beam or you may become a casualty. Never look directly at the beam source and if possible, wear appropriate eye protection.

NOTE

After the casualty is removed from the source of the burn, he should be evaluated for conditions requiring basic first aid measures.

b. Expose the Burn. Cut and gently lift away any clothing covering the burned area, without pulling clothing over the burns. Leave in place any clothing that is stuck to the burn. If the casualty's hands or wrists have been burned, remove jewelry if possible without causing further injury (rings, watches, and so forth) and place in his pockets. This prevents the necessity to cut off jewelry since swelling usually occurs as a result of a burn.

CAUTION

DO NOT lift or cut away clothing if in a chemical environment. Apply the dressing directly over the casualty's protective clothing. **DO NOT** attempt to decontaminate skin where blisters have formed.

c. Apply a Field Dressing to the Burn.

- (1) Grasp the tails of the casualty's dressing in both hands.
- (2) Hold the dressing directly over the wound with the white side down, pull the dressing open, and place it directly over the wound. **DO NOT** touch the white (sterile) side of the dressing or allow anything except the wound to come in contact with it. If the casualty is able, he may hold the dressing in place.
- (3) Hold the dressing in place with one hand and use the other hand to wrap one of the tails around the limbs or the body.
- (4) Wrap the other tail in the opposite direction until the dressing is completely covered.
- (5) Tie the tails into a square knot over the outer edge of the dressing. The dressing should be applied lightly over the burn. Ensure that dressing is applied firmly enough to prevent it from slipping.

NOTE

Use the cleanest improvised dressing material available if a field dressing is not available or if it is not large enough for the entire wound.

d. Take the Following Precautions:

- **DO NOT** place the dressing over the face or genital area.
- **DO NOT** break the blisters.
- **DO NOT** apply grease or ointments to the burns.
- For electrical burns, check for both an entry and exit burn from the passage of electricity through the body. Exit burns may appear on any area of the body despite location of entry burn.
- For burns caused by wet or dry chemicals, flush the burns with large amounts of water and cover with a dry dressing.
- For burns caused by WP, flush the area with water, then cover with a wet material, dressing, or mud to exclude the air and keep the WP particles from burning.
- For laser burns, apply a field dressing.
- If the casualty is conscious and not nauseated, give him small amounts of water.

e. Seek Medical Assistance. Notify medical personnel.

3-10. Dressings and Bandages

a. Head Wounds.

(1) *Position the casualty.*

WARNING

DO NOT move the casualty if you suspect he has sustained a neck, spine, or head injury (which produces any signs or symptoms other than minor bleeding).

- If the casualty has a minor (superficial) scalp wound and is conscious:
 - Have the casualty sit up (unless other injuries prohibit or he is unable to).
 - If the casualty is lying down and is not accumulating fluids or drainage in his throat, elevate his head slightly.
 - If the casualty is bleeding from or into his mouth or throat, turn his head to the side or position him on his side so that the airway will be clear. Avoid putting pressure on the wound and place him on his uninjured side (Figure 3-15).

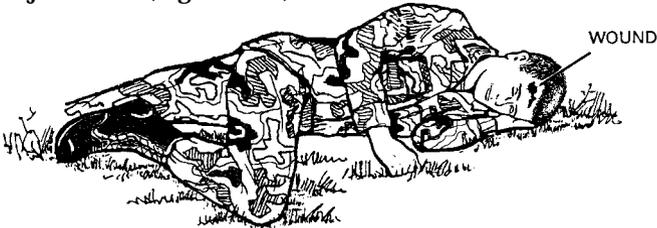


Figure 3-15. Casualty lying on side opposite injury.

- If the casualty is unconscious or has a severe head injury, then suspect and treat him as having a potential neck or spinal injury, *immobilize and DO NOT move the casualty.*

NOTE

If the casualty is choking or vomiting or is bleeding from or into his mouth (thus compromising his airway), position him on his uninjured side to allow for drainage and to help keep his airway clear.

WARNING

If it is necessary to turn a casualty with a suspected neck/spine injury; roll the casualty gently onto his side, keeping the head, neck, and body aligned while providing support for the head and neck. **DO NOT** roll the casualty by yourself but seek assistance. *Move him only if absolutely necessary, otherwise keep the casualty immobilized to prevent further damage to the neck/spine.*

(2) *Expose the wound.* Remove the casualty's helmet (if necessary). In a nuclear, biological, and chemical (NBC) environment, the first aid provider must leave the casualty as much protection (such as protective mask, mission-oriented protective posture [MOPP] overgarments) as possible. What items of protective equipment can be removed is dependent upon the casualty's injuries (where on the body and what type), the MOPP level, integrity of protective equipment (such as tears in the garment or mask seal), availability of chemical protective shelters, and the tactical situation.

WARNING

DO NOT attempt to clean the wound or remove a protruding object.

NOTE

Always use the casualty's field dressing, not your own.

(3) *Apply a dressing to a wound of the forehead or back of head.* To apply a dressing to a wound of the forehead or back of the head—

- (a) Remove the dressing from the wrapper.
- (b) Grasp the tails of the dressing in both hands.
- (c) Hold the dressing (white side down) directly over the wound. **DO NOT** touch the white (sterile) side of the dressing or allow anything except the wound to come in contact with it.
- (d) Place it directly over the wound.
- (e) Hold it in place with one hand. If the casualty is able, he may assist.
- (f) Wrap the first tail horizontally around the head; ensure the tail covers the dressing (Figure 3-16).

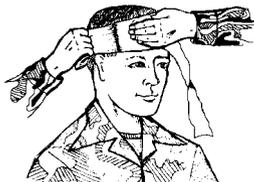


Figure 3-16. First tail of dressing wrapped horizontally around head.

(g) Hold the first tail in place and wrap the second tail in the opposite direction, covering the dressing (Figure 3-17).



Figure 3-17. Second tail wrapped in opposite direction.

(h) Tie a square knot and secure the tails at the side of the head, making sure they **DO NOT** cover the eyes or ears (Figure 3-18).



Figure 3-18. Tails tied in square knot at side of head.

(4) *Apply a dressing to a wound on top of the head.* To apply a dressing to a wound on top of the head—

- (a) Remove the dressing from the wrapper.
- (b) Grasp the tails of the dressing in both hands.
- (c) Hold it (white side down) directly over the wound. **DO NOT** touch the white (sterile) side of the dressing or allow anything except the wound to come in contact with it.
- (d) Place it over the wound (Figure 3-19).



Figure 3-19. Dressing placed over wound.

(e) Hold it in place with one hand. If the casualty is able, he may assist.

(f) Wrap one tail down under the chin (Figure 3-20), up in front of the ear, over the dressing, and in front of the other ear.



Figure 3-20. One tail of dressing wrapped under chin.

WARNING

Ensure the tails remain wide and close to the front of the chin to avoid choking the casualty.

(g) Wrap the remaining tail under the chin in the opposite direction and up the side of the face to meet the first tail (Figure 3-21).

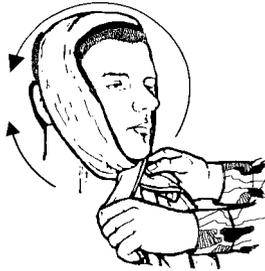


Figure 3-21. Remaining tail wrapped under chin in opposite direction.

(h) Cross the tails (Figure 3-22), bringing one around the forehead (above the eyebrows) and the other around the back of the head (at the base of the skull) to a point just above and in front of the opposite ear, and tie them using a square knot (Figure 3-23).



Figure 3-22. Tails of dressing crossed with one around forehead.



Figure 3-23. Tails tied in square knot (in front of and above ear).

(5) *Apply a triangular bandage to the head.* To apply a triangular bandage to the head—

(a) Turn the base (longest side) of the bandage up and center its base on the center of the forehead, letting the point (apex) fall on the back of the neck (Figure 3-24A).

(b) Take the ends behind the head and cross the ends over the apex.

(c) Take them over the forehead and tie them (Figure 3-24B).

(d) Tuck the apex behind the crossed part of the bandage or secure it with a safety pin, if available (Figure 3-24C).

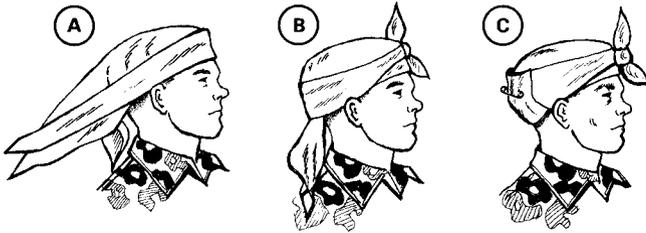


Figure 3-24. Triangular bandage applied to head (Illustrated A—C)

(6) *Apply a cravat bandage to the head.* To apply a cravat bandage to the head—

(a) Place the middle of the bandage over the dressing (Figure 3-25A).

(b) Cross the two ends of the bandage in opposite directions completely around the head (Figure 3-25B).

(c) Tie the ends over the dressing (Figure 3-25C).

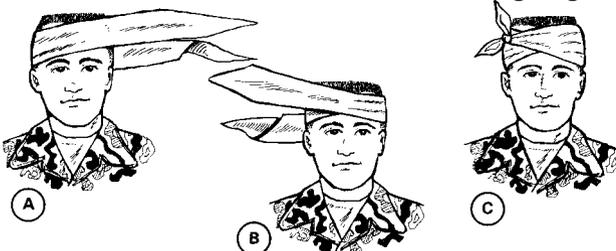


Figure 3-25. Cravat bandage applied to head (Illustrated A—C).

b. Eye Injuries. The eye is a vital sensory organ, and blindness is a severe physical handicap. Timely first aid of the eye may relieve pain and may also help to prevent shock, permanent eye injury, and possible loss of vision. Because the eye is very sensitive, any injury can be easily aggravated if it is improperly handled. Injuries of the eye may be quite severe. Cuts of the eyelids can appear to be very serious, but if the eyeball is not involved, a person's vision usually will not be damaged. However, lacerations (cuts) of the eyeball can cause permanent damage or loss of sight.

(1) *Lacerated/torn eyelids.* Lacerated eyelids may bleed heavily, but bleeding usually stops quickly. Cover the injured eye with a sterile dressing. **DO NOT** put pressure on the wound because you may injure the eyeball. Handle torn eyelids very carefully to prevent further injury. Place any detached pieces of the eyelid on a clean bandage or dressing and immediately send them with the casualty to the medical facility.

(2) *Lacerated eyeball (injury to the globe).* Lacerations or cuts to the eyeball may cause serious and permanent eye damage. Cover the injury with a loose sterile dressing. **DO NOT** put pressure on the eyeball because additional damage may occur. An important point to remember is that when one eyeball is injured, you should immobilize both eyes. This is done by applying a bandage to both eyes. Because the eyes move together, covering both will lessen the chances of further damage to the injured eye. (However, in hazardous surroundings, leave uninjured eye uncovered to enable casualty to see.)

CAUTION

DO NOT apply pressure when there is a possible laceration of the eyeball. The eyeball contains fluid. Pressure applied over the eye will force the fluid out, resulting in permanent injury. **APPLY PROTECTIVE DRESSING WITHOUT ADDED PRESSURE.**

(3) *Extruded eyeballs.* Service members may encounter casualties with severe eye injuries that include an extruded eyeball (eyeball out-of-socket). In such instances you should gently cover the extruded eye with a loose moistened dressing and also cover the unaffected eye. **DO NOT** bind or exert pressure on the injured eye while applying the dressing. Keep the casualty quiet, place him on his back, treat for shock, and evacuate him immediately.

(4) *Burns of the eyes.* Chemical burns, thermal (heat) burns, and light burns can affect the eyes.

(a) *Chemical burns.* Injuries from chemical burns require immediate first aid. Mainly acids or alkalis cause chemical burns. The first aid measures consist of flushing the eyes immediately with large amounts of water for at least 5 to 20 minutes, or as long as necessary to flush out the chemical and, once flushed, bandaging the eyes. If the burn is an acid burn, you should flush the eye for at least 5 to 10 minutes. If the burn is an alkali burn, you should flush the eye for at least 20 minutes. After the eye has been flushed evacuate the casualty immediately.

(b) *Thermal burns.* When an individual suffers burns of the face from a fire, the eyes will close quickly due to extreme heat. This reaction is a natural reflex to protect the eyeballs; however, the eyelids remain exposed and are frequently burned. If a casualty receives burns of the eyelids or face—

- **DO NOT** apply a dressing.
- **DO NOT** touch.
- **SEEK** medical assistance immediately.

(c) *Light burns.* Exposure to intense light can burn an individual. Infrared rays, eclipse light (if the casualty has looked directly at the sun), or laser burns cause injuries of the exposed eyeball. Ultraviolet rays from arc welding can cause a superficial burn to the surface of the eye. These injuries are generally not painful but may cause permanent damage to the eyes. Immediate first aid is usually not required. Loosely bandaging the eyes may make the casualty more comfortable and protect his eyes from further injury caused by exposure to other bright lights or sunlight.

CAUTION

With impaled objects or significant sized foreign bodies, both eyes are usually bandaged to help secure the foreign body in the injured eye. In a battlefield environment, leave the uninjured eye uncovered so that the casualty can see.

c. *Side-of-Head or Cheek Wound.* Facial injuries to the side of the head or the cheek may bleed profusely (Figure 3-26). Prompt action is necessary to ensure that the airway remains open and also to control the bleeding. It may be necessary to apply a dressing. To apply a dressing—

- (1) Remove the dressing from its wrapper.

(2) Grasp the tails in both hands.

(3) Hold the dressing directly over the wound with the white side down and place it directly on the wound (Figure 3-27A). **DO NOT** touch the white (sterile) side of the dressing or allow anything except the wound to come in contact with it.

(4) Hold the dressing in place with one hand (the casualty may assist if able). Wrap the top tail over the top of the head and bring it down in front of the ear (on the side opposite the wound), under the chin (Figure 3-27B) and up over the dressing to a point just above the ear (on the wound side).



Figure 3-26. Side of head or cheek wound.

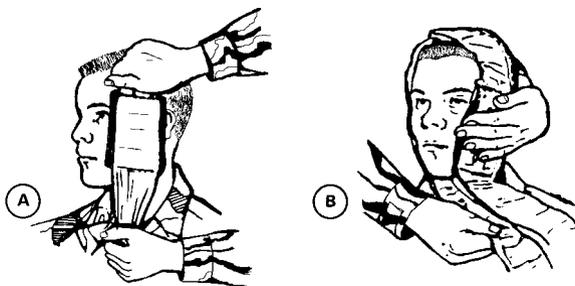


Figure 3-27. Dressing placed directly on wound. Top tail wrapped over top of head, down in front of ear, and under chin (Illustrated A—B).

NOTE

When possible, avoid covering the casualty's ear with the dressing, as this will decrease his ability to hear.

(5) Bring the second tail under the chin, up in front of the ear (on the side opposite the wound), and over the head to meet the other tail (on the wounded side) (Figure 3-28).

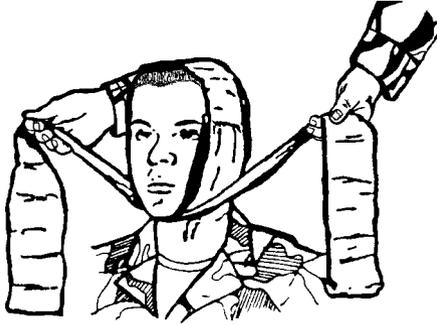


Figure 3-28. Bringing second tail under the chin.

(6) Cross the two tails (on the wound side) (Figure 3-29) and bring one end across the forehead (above the eyebrows) to a point just in front of the opposite ear (on the uninjured side).



Figure 3-29. Crossing the tails on the side of the wound.

(7) Wrap the other tail around the back of the head (at the base of the skull), and tie the two ends just in front of the ear on the uninjured side with a square knot (Figure 3-30).



Figure 3-30. Tying the tails of the dressing in a square knot.

d. Ear Injuries. Lacerated (cut) or avulsed (torn) ear tissue may not, in itself, be a serious injury. Bleeding, or the drainage of fluids from the ear canal, however, may be a sign of a head injury, such as a skull fracture. **DO NOT** attempt to stop the flow from the inner ear canal nor put anything into the ear canal to block it. Instead, you should cover the ear lightly with a dressing. For minor cuts or wounds to the external ear, apply a cravat bandage as follows:

(1) Place the middle of the bandage over the ear (Figure 3-31A).

(2) Cross the ends, wrap them in opposite directions around the head, and tie them (Figures 3-31B and 3-31C).

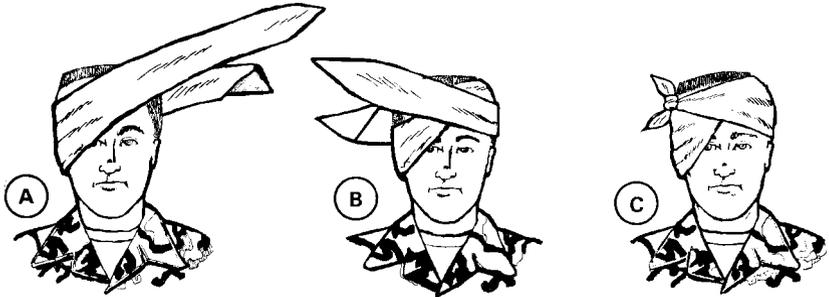


Figure 3-31. Applying cravat bandage to ear (Illustrated A—C).

(3) If possible, place some dressing material between the back of the ear and the side of the head to avoid crushing the ear against the head with the bandage.

e. Nose Injuries. Nose injuries generally produce bleeding. The bleeding may be controlled by placing an ice pack (if available) over the nose, or pinching the nostrils together. The bleeding may also be controlled by placing torn gauze (rolled) between the upper teeth and the lip.

CAUTION

DO NOT attempt to remove objects inhaled into the nose. An untrained person who removes such an object could worsen the casualty's condition and cause permanent injury.

f. Jaw Injuries. Before applying a bandage to a casualty's jaw, remove all loose or free-floating foreign material from the casualty's mouth.

If the casualty is unconscious, check for obstructions in the airway and remove if possible. If there is profuse bleeding in the oral cavity, the cavity may require loose packing with soft bandaging material (for example: Kerlix™ gauze) prior to applying a bandage. Care should be taken to avoid occluding the airway. When applying the bandage, allow the jaw enough freedom to permit passage of air and drainage from the mouth.

(1) *Apply bandages attached to field first aid dressing to the jaw.* After dressing the wound, apply the bandages using the same technique illustrated in Figure 3-32A—C.

NOTE

The dressing and bandaging procedure outlined for the jaw serves a twofold purpose. In addition to stopping the bleeding and protecting the wound, it also immobilizes a fractured jaw.

(2) *Apply a cravat bandage to the jaw.*

(a) Place the bandage under the chin and pull its ends upward. Adjust the bandage to make one end longer than the other (Figure 3-32A).

(b) Take the longer end over the top of the head to meet the short end at the temple and cross the ends over (Figure 3-32B).

(c) Take the ends in opposite directions to the other side of the head and tie them over the part of the bandage that was applied first (Figure 3-32C).

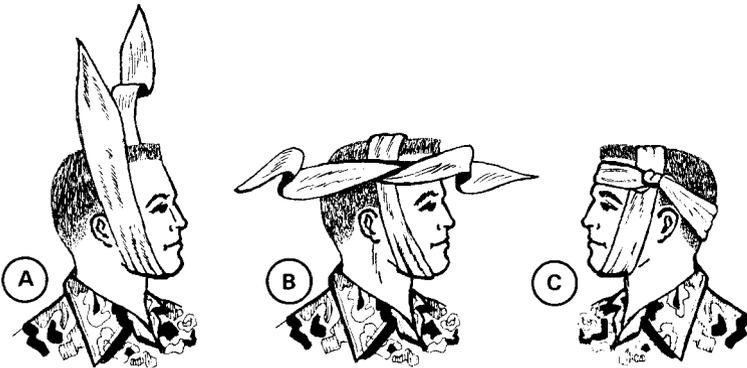


Figure 3-32. Applying a cravat bandage to jaw (Illustrated A—C).

NOTE

The cravat bandage technique is used to immobilize a fractured jaw or to maintain a sterile dressing that does not have tail bandages attached.

3-11. Shoulder Bandage

a. To apply bandages attached to the field first aid dressing—

- (1) Take one bandage across the chest and the other across the back and under the arm opposite the injured shoulder.
- (2) Tie the ends with a square knot (Figure 3-33).

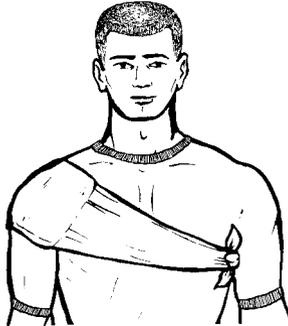


Figure 3-33. Shoulder bandage.

b. To apply a cravat bandage to the shoulder or armpit—

- (1) Make an extended cravat bandage by using two triangular bandages (Figure 3-34A); place the end of the first triangular bandage along the base of the second one (Figure 3-34B).
- (2) Fold the two bandages into a single extended bandage (Figure 3-34C).
- (3) Fold the extended bandage into a single cravat bandage (Figure 3-34D). After folding, secure the thicker part (overlap) with two or more safety pins (Figure 3-34E).
- (4) Place the middle of the cravat bandage under the armpit so that the front end is longer than the back end and safety pins are on the outside (Figure 3-34F).

(5) Cross the ends on top of the shoulder (Figure 3-34G).

(6) Take one of the bandage ends across the back and under the arm on the opposite side and the other end across the chest. Tie the ends (Figure 3-34H).

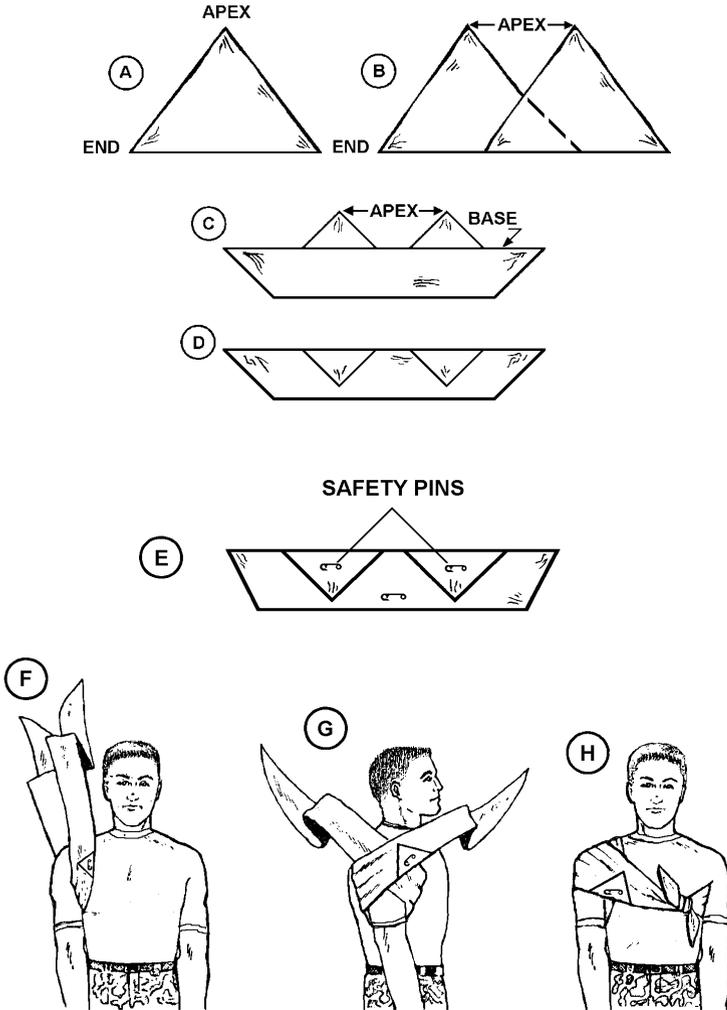


Figure 3-34. Extended cravat bandage applied to shoulder or armpit (Illustrated A—H).

Be sure to place sufficient wadding in the armpit. **DO NOT** tie the cravat bandage too tightly. Avoid compressing the major blood vessels in the armpit.

3-12. Elbow Bandage

To apply a cravat bandage to the elbow—

- a. Bend the arm at the elbow and place the middle of the cravat at the point of the elbow bringing the ends upward (Figure 3-35A).
- b. Bring the ends across, extending both downward (Figure 3-35B).
- c. Take both ends around the arm and tie them with a square knot at the front of the elbow (Figure 3-35C).

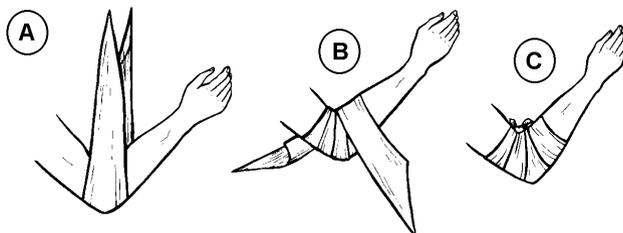


Figure 3-35. Elbow bandage (Illustrated A—C).

CAUTION

If an elbow fracture is suspected, **DO NOT** bend the elbow; bandage it in the position found.

3-13. Hand Bandage

- a. To apply a triangular bandage to the hand—

- (1) Place the hand in the middle of the triangular bandage with the wrist at the base of the bandage (Figure 3-36A). Ensure that the fingers are separated with absorbent material to prevent chafing and irritation of the skin.

(2) Place the apex over the fingers and tuck any excess material into the pleats on each side of the hand (Figure 3-36B).

(3) Cross the ends on top of the hand, take them around the wrist, and tie them (Figures 3-36C—E) with a square knot.

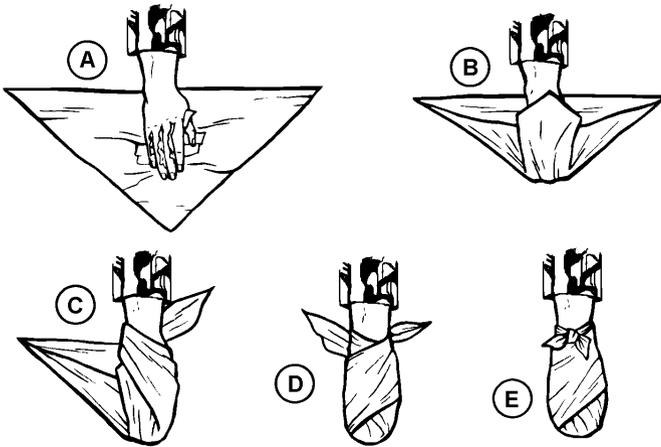


Figure 3-36. Triangular bandage applied to hand (Illustrated A—E).

b. To apply a cravat bandage to the palm of the hand—

(1) Lay the middle of the cravat over the palm of the hand with the ends hanging down on each side (Figure 3-37A).

(2) Take the end of the cravat at the little finger across the back of the hand, extending it upward over the base of the thumb; then bring it downward across the palm (Figure 3-37B).

(3) Take the thumb end across the back of the hand, over the palm, and through the hollow between the thumb and palm (Figure 3-37C).

(4) Take the ends to the back of the hand and cross them; then bring them up over the wrist and cross them again (Figure 3-37D).

(5) Bring both ends down and tie them with a square knot on top of the wrist (Figure 3-37E—F).

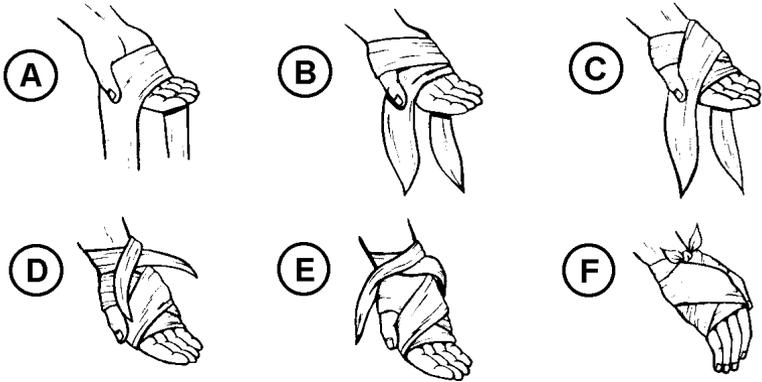


Figure 3-37. Cravat bandage applied to palm of hand (Illustrated A—F).

3-14. Leg (Upper and Lower) Bandage

To apply a cravat bandage to the leg—

- a. Place the center of the cravat over the dressing (Figure 3-38A).
- b. Take one end around and up the leg in a spiral motion and the other end around and down the leg in a spiral motion, overlapping part of each preceding turn (Figure 3-38B).
- c. Bring both ends together and tie them (Figure 3-38C) with a square knot.

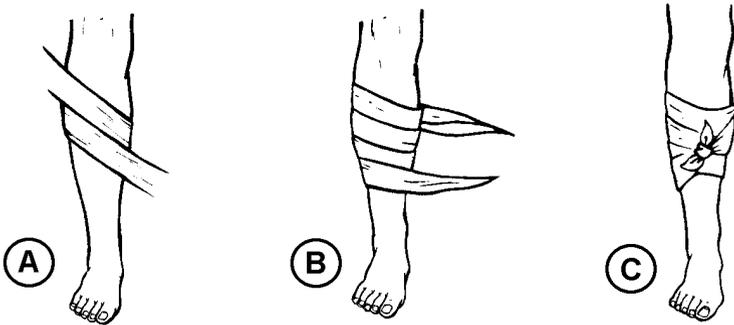


Figure 3-38. Cravat bandage applied to leg (Illustrated A—C).

3-15. Knee Bandage

To apply a cravat bandage to the knee as illustrated in Figure 3-39, use the same technique applied in bandaging the elbow.

CAUTION

If a fracture of the kneecap is suspected, **DO NOT** bend the knee; bandage it in the position found.

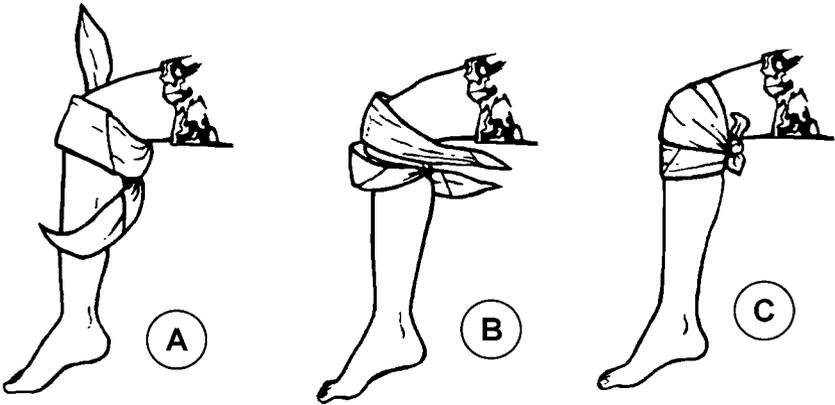


Figure 3-39. Cravat bandage applied to knee (Illustrated A—C).

3-16. Foot Bandage

To apply a triangular bandage to the foot—

- a. Place the foot in the middle of the triangular bandage with the heel well forward of the base (Figure 3-40A). Ensure that the toes are separated by absorbent material to prevent chafing and irritation of the skin.
- b. Place the apex over the top of the foot and tuck any excess material into the pleats on each side of the foot (Figure 3-40B).
- c. Cross the ends on top of the foot, take them around the ankle, and tie them at the front of the ankle (Figure 3-40C—E).

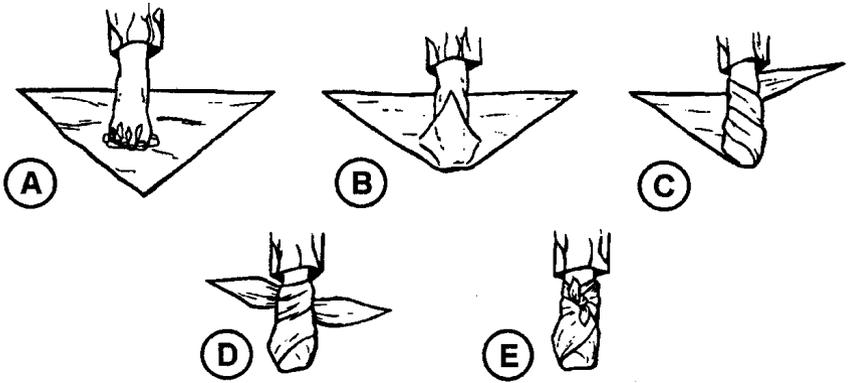


Figure 3-40. Triangular bandage applied to foot (Illustrated A—E).

CHAPTER 4

FIRST AID FOR FRACTURES

4-1. General

A fracture is any break in the continuity of a bone. Fractures can cause total disability or in some cases death by severing vital organs and/or arteries. On the other hand, they can most often be treated so there is a complete recovery. The potential for recovery depends greatly upon the first aid the individual receives before he is moved. First aid includes immobilizing the fractured part in addition to applying lifesaving measures when necessary. The basic splinting principle is to immobilize the joints above and below the fracture.

4-2. Kinds of Fractures

Figure 4-1 depicts types of fractures.

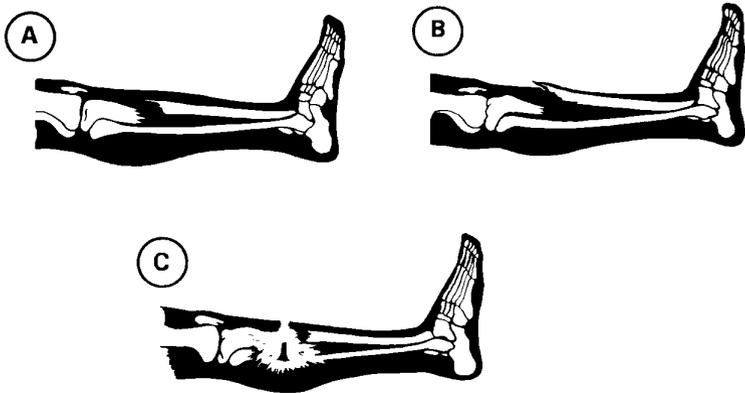


Figure 4-1. Types of fractures (Illustrated A—C).

a. **Closed Fracture** (Figure 4-1A). A closed fracture is a broken bone that does not break the overlying skin. The tissue beneath the skin may be damaged. A *dislocation* is when a joint, such as a knee, ankle, or shoulder, is not in the proper position. A *sprain* is when the connecting tissues of the joints have been torn. Dislocations and sprains (swelling, possible deformity, and discoloration) should be treated as closed fractures.

b. **Open Fracture** (Figure 4-1B and 4-1C). An open fracture is a broken bone that breaks (pierces) the overlying skin. The broken bone may

come through the skin or a missile such as a bullet or shell fragment may go through the flesh and break the bone.

NOTE

An open fracture is contaminated and subject to infection.

4-3. Signs and Symptoms of Fractures

Indications of a fracture are deformity, tenderness, swelling, pain, inability to move the injured part, protruding bone, bleeding, or discolored skin at the injury site. A sharp pain when the service member attempts to move the part is also a sign of a fracture.

WARNING

DO NOT encourage the casualty to move the injured part in order to identify a fracture since such movement could cause further damage to surrounding tissues and promote shock. If you are not sure whether a bone is fractured, care for the injury as a fracture. At the site of the fracture, the bone ends are sharp and could cause vessel (artery and/or vein) damage.

4-4. Purposes of Immobilizing Fractures

A fracture is immobilized to prevent the sharp edges of the bone from moving and cutting tissue, muscle, blood vessels, and nerves. This reduces pain and helps prevent or control shock. In a closed fracture, immobilization keeps bone fragments from causing an open wound, which can become contaminated and subject to infection.

4-5. Splints, Padding, Bandages, Slings, and Swathes

a. Splints. Splints may be improvised from such items as boards, poles, sticks, tree limbs, or cardboard. If nothing is available for a splint, the chest wall can be used to immobilize a fractured arm and the uninjured leg can be used to immobilize (to some extent) the fractured leg.

b. Padding. Padding may be improvised from such items as a jacket, blanket, poncho, shelter half, or leafy vegetation.

c. Bandages. Bandages may be improvised from belts, rifle slings, kerchiefs, or strips torn from clothing or blankets. Narrow materials such as wire or cord should not be used to secure a splint in place. The application of wire and/or narrow material to an extremity could cause tissue damage and a tourniquet effect.

d. Slings. A sling is a bandage suspended from the neck to support an upper extremity. If a bandage is not available, a sling can be improvised by using the tail of a coat or shirt or pieces of cloth torn from such items as clothing and blankets. The triangular bandage is ideal for this purpose. Remember that the casualty's hand should be higher than his elbow, and the fingers should be showing at all times. The sling should be applied so that the supporting pressure is on the uninjured side.

e. Swathes. Swathes are any bands (pieces of cloth or load bearing equipment [LBE]) that are used to further immobilize a splinted fracture. Triangular and cravat bandages are often used and are called *swathe bandages*. The purpose of the swathe is to immobilize; therefore, the swathe bandage is placed above and/or below the fracture—not over it.

4-6. Procedures for Splinting Suspected Fractures

Before beginning first aid procedures for a fracture, gather whatever splinting materials are available. Ensure that splints are long enough to immobilize the joint above and below the suspected fracture. If possible, use at least four ties (two above and two below the fracture) to secure the splints. The ties should be square knots and should be tied away from the body on the splint. Distal pulses of the affected extremity should be checked before and after the application of the splint.

a. Evaluate the Casualty. Be prepared to perform any necessary lifesaving measures. Monitor the casualty for development of conditions that may require you to perform necessary lifesaving measures.

WARNING

Unless there is immediate life-threatening danger, such as a fire or an explosion, DO NOT move the casualty with a suspected back or neck injury. Improper movement may cause permanent paralysis or death.

WARNING

In a chemical environment, **DO NOT** remove any protective clothing. Apply the dressings and splints over the garments.

b. Locate the Site of the Suspected Fracture.

- (1) Ask the casualty for the location of the injury.
 - Does he have any pain?
 - Where is it tender?
 - Can he move the extremity?

NOTE

With the presence of an obvious deformity, do not make the casualty move extremity.

- (2) Look for an unnatural position of the extremity.
- (3) Look for a bone sticking out (protruding).

c. Prepare the Casualty for Splinting the Suspected Fracture.

- (1) Reassure the casualty. Tell him that you will be providing first aid for him and that medical help is on the way.
- (2) Loosen any tight or binding clothing.
- (3) Remove all jewelry from the injured part and place it in the casualty's pocket. Tell the casualty you are doing this because if the jewelry is not removed and swelling occurs later, he may not be able to get it off and further bodily injury could result.
- (4) Boots should not be removed from the casualty unless they are needed to stabilize a neck injury or there is actual bleeding from the foot.

d. Gather Splinting Materials. If standard splinting materials (splints, padding, and cravats) are not available, gather improvised materials. If splinting material is not available and the suspected fracture **CANNOT** be

splinted, then swathes, or a combination of swathes and slings can be used to immobilize the extremity.

e. Pad the Splints. Pad the splints where they touch any bony part of the body, such as the elbow, wrist, knee, ankle, crotch, or armpit areas. Padding prevents excessive pressure on the area, which could lead to circulation problems.

f. Check the Circulation Below the Site of the Injury.

(1) Note any pale, white, or bluish-gray color of the skin, which may indicate impaired circulation. Circulation can also be checked by depressing the toe or fingernail beds and observing how quickly the color returns. A slower return of color to the injured side when compared with the uninjured side indicates a problem with circulation. The fingernail bed is the method to use to check the circulation in a dark-skinned casualty.

(2) Check the temperature of the injured extremity. Use your hand to compare the temperature of the injured side with the uninjured side. The body area below the injury may be colder to the touch indicating poor circulation.

(3) Question the casualty about the presence of numbness, tightness, cold, or tingling sensations.

WARNING

Casualties with fractures of the extremities may show impaired circulation, such as numbness, tingling, cold or pale to bluish skin tone. These casualties should be evacuated by medical personnel and treated as soon as possible. Prompt medical treatment may prevent possible loss of the limb.

WARNING

If it is an open fracture and the bone is protruding from the skin, **DO NOT ATTEMPT TO PUSH THE BONE BACK UNDER THE SKIN.** Apply a field dressing over the wound to protect the area.

g. Apply the Splint in Place.

(1) Splint the fracture in the position found. **DO NOT** attempt to reposition or straighten the injury. If it is an open fracture, stop the bleeding and protect the wound. Cover all wounds with field dressings before applying a splint. Remember to use the casualty's field dressing, not your own.

(2) Place one splint on each side of the fracture. Make sure that the splints reach, if possible, beyond the joints above and below the fracture.

(3) Tie the splints. Secure each splint in place above and below the fracture site with improvised (or actual) cravats. Improvised cravats, such as strips of cloth, belts, or whatever else you have, may be used. With minimal motion to the injured areas, place and tie the splints with the bandages. Push cravats through and under the natural body curvatures, and then gently position improvised cravats and tie in place. Use square knots. Tie all knots on the splint away from the casualty (Figure 4-2). **DO NOT** tie cravats directly over the suspected fracture site.

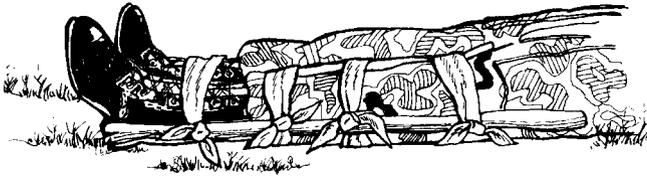


Figure 4-2. Square knots tied away from casualty.

h. Check the Splint for Tightness.

(1) **CHECK** to be sure that bandages are tight enough to securely hold splinting materials in place, but not so tight that circulation is impaired.

(2) **RECHECK** the circulation after application of the splint. Check the skin color and temperature. This is to ensure that the bandages holding the splint in place have not been tied too tightly. A fingertip check can be made by inserting the tip of the finger between the bandaged knot and the skin.

(3) **MAKE** any necessary adjustment without allowing the splint to become ineffective.

i. Apply a Sling. An improvised sling may be made from any available nonstretching piece of cloth, such as a battle dress uniform (BDU) shirt or trousers, poncho, or shelter half. Slings may also be improvised using the tail of a coat, belt, or a piece of cloth. Figure 4-3 depicts a shirttail used for support. A trousers belt or LBE may also be used for support (Figure 4-4). A sling should place the supporting pressure on the casualty's uninjured side. The supported arm should have the hand positioned slightly higher than the elbow showing the fingers.



Figure 4-3. Shirttail used for support.



Figure 4-4. Belt used for support.

- (1) Insert the splinted arm in the center of the sling (Figure 4-5).



Figure 4-5. Arm inserted in center of improvised sling.

(2) Bring the ends of the sling up and tie them at the side (or hollow) of the neck on the uninjured side (Figure 4-6).



Figure 4-6. Ends of improvised sling tied to side of neck.

(3) Twist and tuck the corner of the sling at the elbow (Figure 4-7).



Figure 4-7. Corner of sling twisted and tucked at elbow.

j. Apply a Swathe. You may use any large piece of cloth, service member's belt, or pistol belt, to improvise a swathe.

WARNING

The swathe should not be placed directly on top of the injury, but positioned either above or below the fracture site.

(1) Apply swathes to the injured arm by wrapping the swathe over the injured arm, around the casualty's back, and under the arm on the uninjured side. Tie the ends on the uninjured side (Figure 4-8).



Figure 4-8. Arm immobilized with strip of clothing.

(2) A swathe is applied to an injured leg by wrapping the swathe around both legs and securing it on the uninjured side.

k. Seek Medical Assistance. Notify medical personnel, watch closely for development of life-threatening conditions and/or impaired circulation to the injured extremity. (Refer to Chapter 1 for additional information on life-threatening conditions.)

4-7. Upper Extremity Fractures

Figures 4-9 through 4-17 show how to apply slings, splints, and cravats (swathes) to immobilize and support fractures of the upper extremities. *Although the padding is not visible in some of the illustrations, it is always preferable to apply padding along the injured part for the length of the splint and especially where it touches any bony parts of the body.*

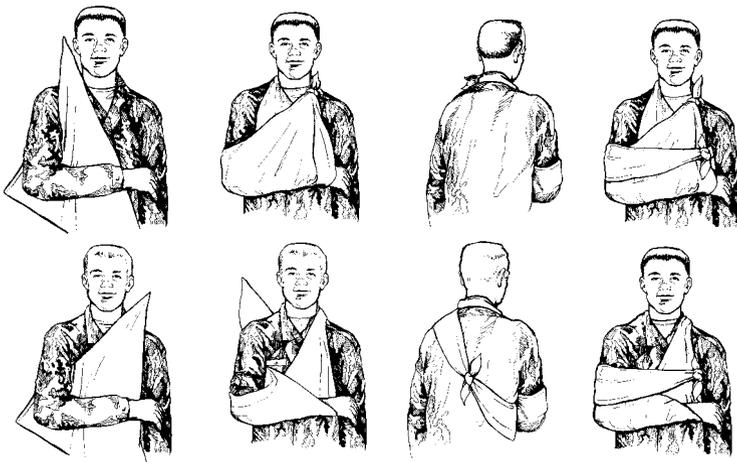


Figure 4-9. Application of triangular bandage to form sling (two methods).

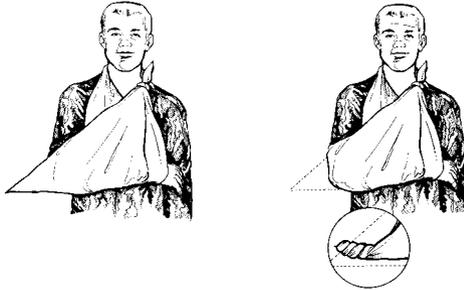


Figure 4-10. Completing sling sequence by twisting and tucking the corner of the sling at the elbow.

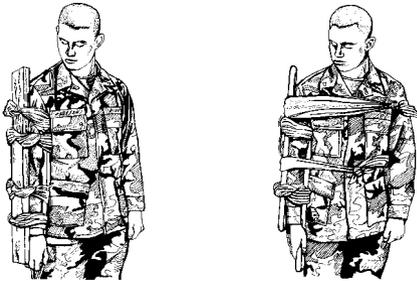


Figure 4-11. Board splints applied to fractured elbow when elbow is not bent (two methods).

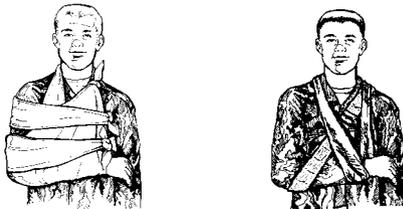


Figure 4-12. Chest wall used as splint for upper arm fracture when no splint is available.



Figure 4-13. Chest wall, sling, and cravat used to immobilize fractured elbow when elbow is bent.

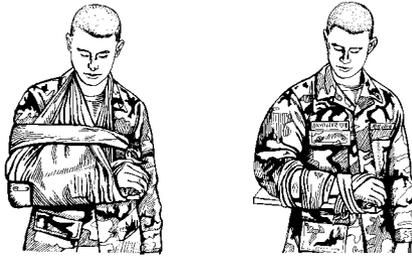


Figure 4-14. Board splint applied to fractured forearm.



Figure 4-15. Fractured forearm or wrist splinted with sticks and supported with tail of shirt and strips of material.

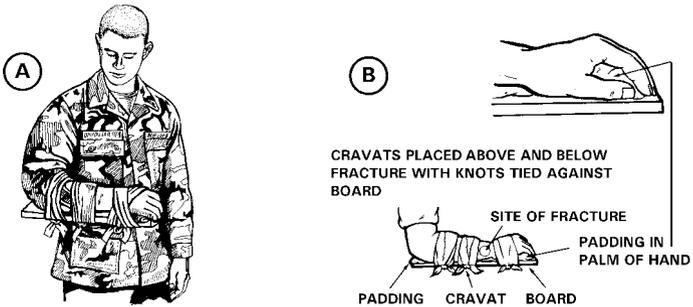


Figure 4-16. Board splint applied to fractured wrist and hand (Illustrated A—B).

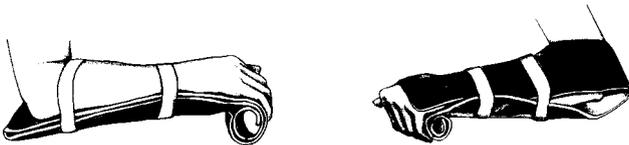


Figure 4-17. SAM® splint applied to fractured wrist or forearm.

4.8. Lower Extremity Fractures

Figures 4-18 through 4-24 show how to apply splints to immobilize fractures of the lower extremities. *Although padding is not visible in some of the illustrations, it is always preferable to apply padding along the length of the splint and especially where it touches any bony parts of the body.*

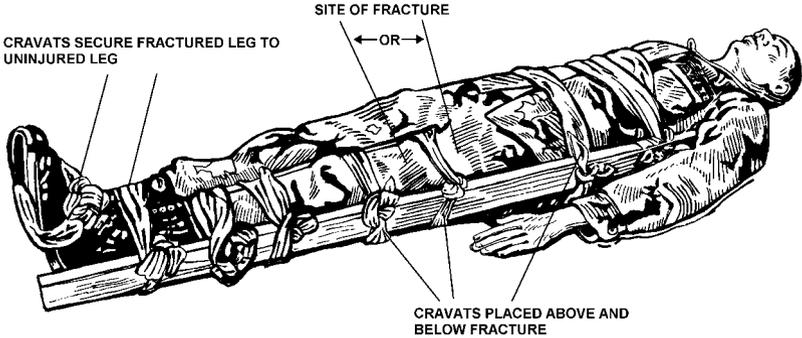
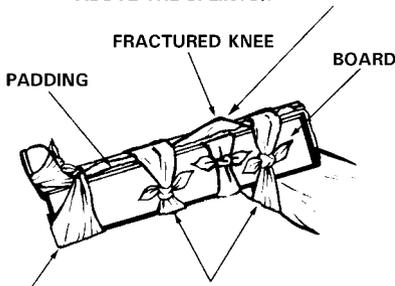


Figure 4-18. Board splints applied to fractured hip or thigh.

CRAVAT CRADLES KNEE: CRAVAT IS PLACED AROUND THE SPLINT, BETWEEN THE BOARDS, UNDER THE KNEE, THUS CRADLING THE KNEE (THE KNEE PROTRUDES ABOVE THE SPLINTS).



CRAVAT TO SECURE ANKLE (CUPPED UNDER HEEL, CROSSED ON TOP OF BOOT, CROSSED ON SOLE OF BOOT, TIED ON TOP OF BOOT).

CRAVATS PLACED ABOVE AND BELOW FRACTURE. KNOTS TIED AGAINST BOARD.

Figure 4-19. Board splint applied to fractured or dislocated knee.

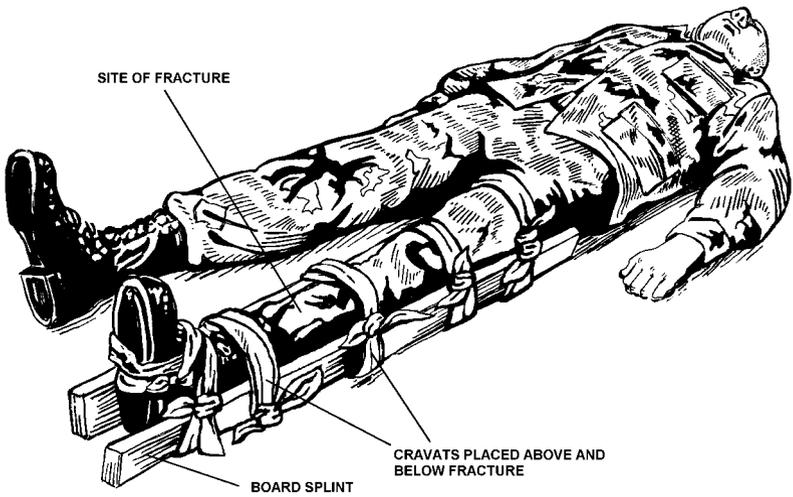


Figure 4-20. Board splints applied to fractured lower leg or ankle.

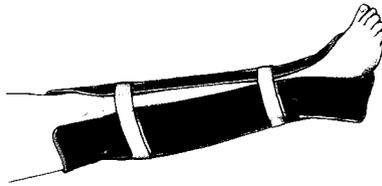


Figure 4-21. SAM® splint applied to fractured lower leg or ankle.

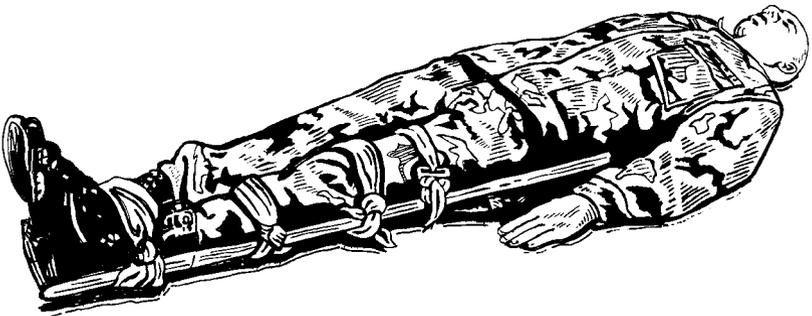


Figure 4-22. Improvised splints applied to fractured lower leg or ankle.

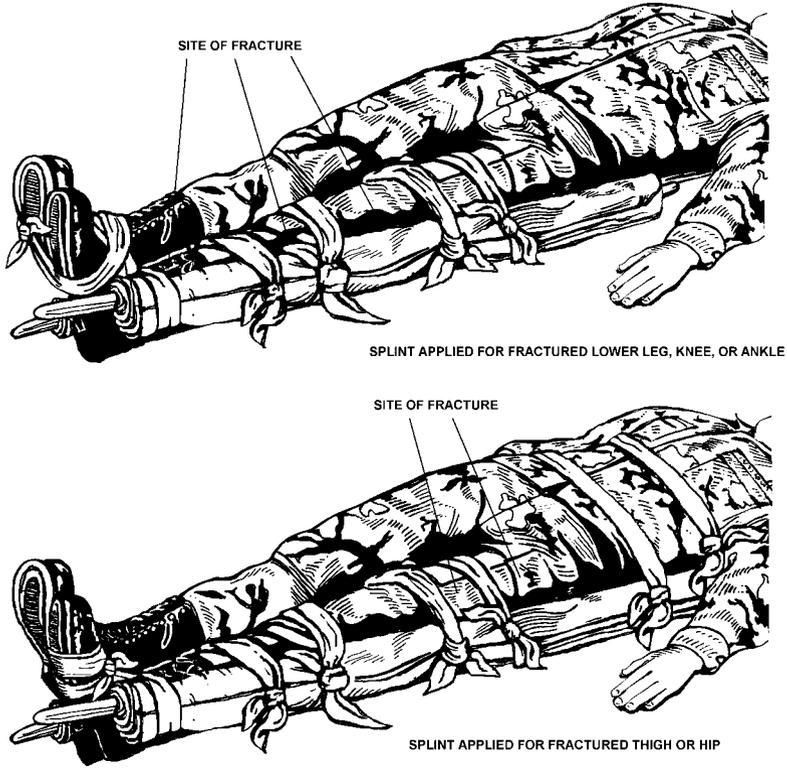


Figure 4-23. Poles rolled in a blanket and used as splints applied to fractured lower extremity.

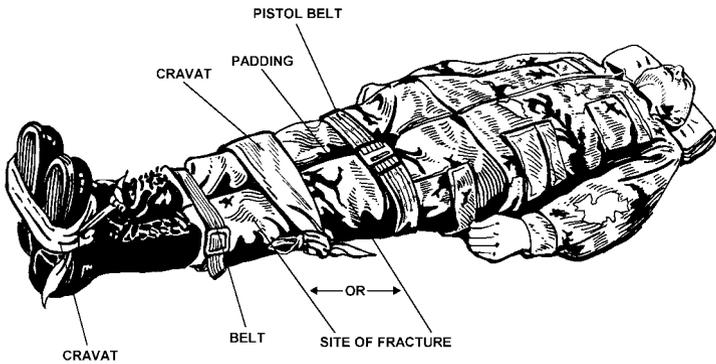


Figure 4-24. Uninjured leg used as splint for fractured leg (anatomical splint).

4-9. Jaw, Collarbone, and Shoulder Fractures

a. Apply a cravat to immobilize a fractured jaw as illustrated in Figure 4-25. Direct all bandaging support to the top of the casualty's head, not to the back of his neck. If incorrectly placed, the bandage will pull the casualty's jaw back and interfere with his breathing.



Figure 4-25. Fractured jaw immobilized.

WARNING

Casualties with lower jaw (mandible) fractures cannot be laid flat on their backs because facial muscles will relax and may cause an airway obstruction.

b. Apply two belts, a sling, and a cravat to immobilize a fractured collarbone, as illustrated in Figure 4-26.



Figure 4-26. Application of belts, sling, and cravat to immobilize a fractured collarbone.

c. Apply a sling and a cravat to immobilize a fractured or dislocated shoulder, using the technique illustrated in Figure 4-27.

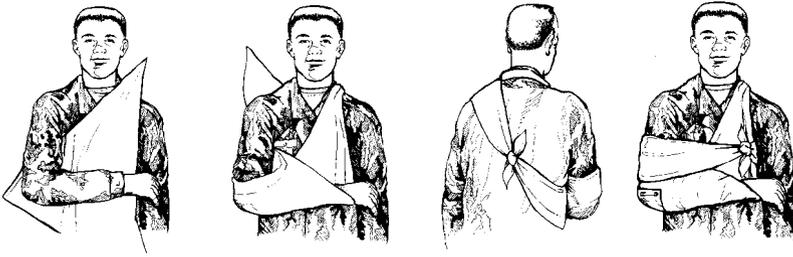


Figure 4-27. Application of sling and cravat to immobilize a fractured or dislocated shoulder.

4-10. Spinal Column Fractures

It is often impossible to be sure a casualty has a fractured spinal column. Be suspicious of any back injury, especially if the casualty has fallen or if his back has been sharply struck or bent. If a casualty has received such an injury and does not have feeling in his legs or cannot move them, you can be reasonably sure that he has a severe back injury, which should be managed as a fracture. Remember, that the possibility of a neck fracture or injury to the back should always be suspected, and it is often impossible to be sure if a casualty has a fractured spinal column. If the spine is fractured, bending it can cause the sharp bone fragments to bruise or cut the spinal cord and result in permanent paralysis or death (Figure 4-28A). The spinal column must maintain normal spinal position at the lower back (lumbar region) to help remove pressure from the spinal cord.

a. If the casualty is not to be transported until medical personnel arrive—

- Caution him not to move. Ask him if he is in pain or if he is unable to move any part of his body.
- Leave him in the position in which he is found. **DO NOT** move any part of his body, unless he is in imminent danger.
- If the casualty is lying face up, slip a blanket or other supporting material under the arch of his lower back to help support the spine in a normal position (Figure 4-28B). Take care not to place so much bulky padding as to cause potential damage by causing undo pressure on the spine. If he is lying face down, **DO NOT** put anything under any part of his body.

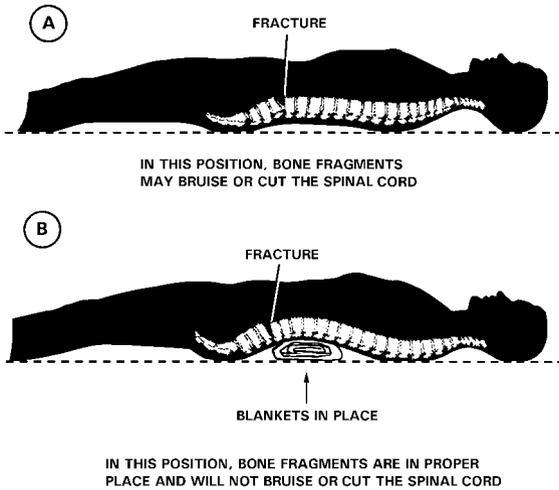


Figure 4-28. Spinal column must maintain a normal spine position.

b. If the casualty must be transported to a safe location before medical personnel arrive and if the casualty is in a—

- Face-up position, transport him by litter or use a firm substitute, such as a wide board or a door longer than his height. Loosely tie the casualty's wrists together over his waistline, using a cravat or a strip of cloth. Tie his feet together to prevent the accidental dropping or shifting of his legs. Lay a folded blanket across the litter where the arch of his back is to be placed. Using a four-man team (Figure 4-29), place the casualty on the litter without bending his spinal column or his neck.



Figure 4-29. Placing face-up casualty with fractured back onto litter.

- The number two man positions himself at the casualty's head. His responsibility is to provide manual in-line (neutral) stabilization of the head and neck. The number three, and four men position themselves on one side of the casualty; all kneel on one knee along the side of the casualty. The number one man positions himself to the opposite side of the casualty (or can be on the same side of number three and four). The numbers two, three, and four men gently place their hands under the casualty. The number one man on the opposite side places his hands under the injured part to assist.

- When all four men are in position to lift, the number two man commands, "**PREPARE TO LIFT**" and then, "**LIFT.**" All men, in unison, gently lift the casualty about 8 inches. Once the casualty is lifted, the number one man recovers and slides the litter under the casualty, ensuring that the blanket is in proper position. The number one man then returns to his original lift position (Figure 4-29).

- When the number two man commands, "**LOWER CASUALTY,**" all men, in unison, gently lower the casualty onto the litter.

- Facedown position, he must be transported in this same position. The four-man team lifts him onto a regular or improvised litter, keeping the spinal column in a normal spinal position. If a regular litter is used, first place a folded blanket on the litter at the point where the chest will be placed.

4-11. Neck Fractures

A fractured neck is extremely dangerous. Bone fragments may bruise or cut the spinal cord just as they might in a fractured back.

a. If the casualty is not to be transported until medical personnel arrive—

- Caution him not to move. Moving may cause permanent injury or death.

- Leave the casualty in the position in which he is found. If his neck and head (cervical spine) are in an abnormal position, immediately immobilize the neck and head.

- Keep his head still, if the casualty is lying face up, raise his shoulders slightly, and slip a roll of cloth that has the bulk of a bath towel under his neck (Figure 4-31). The roll should be thick enough to arch

his neck only slightly, leaving the back of his head on the ground. **DO NOT** bend his neck or head forward. **DO NOT** raise or twist his head. Immobilize the casualty's head (Figure 4-32). Do this by padding heavy objects (such as rocks or his boots filled with dirt, sand, gravel, or rock) and placing them on each side of his head. If it is necessary to use boots, after filling them, tie the top tightly or stuff with pieces of cloth to secure the contents.)

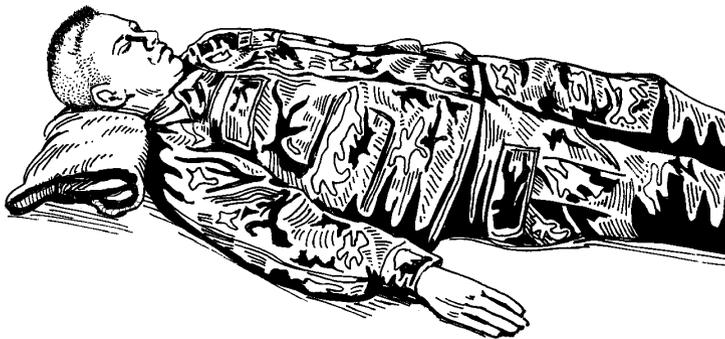


Figure 4-30. Casualty with roll of cloth (bulk) under neck.



Figure 4-31. Immobilization of fractured neck.

- **DO NOT** move him if the casualty is lying face down. Immobilize the head and neck by padding heavy objects and placing them on each side of his head. **DO NOT** put a roll of cloth under the neck. **DO NOT** bend the neck or head, nor roll the casualty onto his back.

b. If the casualty must be prepared for transportation before medical personnel arrive—

- If the casualty has a fractured neck, at least two persons are needed because the casualty's head and trunk must be moved in unison. The two persons must work in close coordination (Figure 4-32) to avoid bending of the neck.

- A wide board is placed lengthwise beside the casualty. It should extend at least 4 inches beyond the casualty's head and feet (Figure 4-32A).

- If the casualty is lying face up, the number one man steadies the casualty's head and neck between his hands. At the same time, the number two man positions one foot and one knee against the board to prevent it from slipping. He then grasps the casualty underneath his shoulder and hip and gently slides him onto the board (Figure 4-32B).

- If the casualty is lying face down, the number one man steadies the casualty's head and neck between his hands, while the number two man gently rolls the casualty over onto the board (Figure 4-32C).

- The number one man continues to steady the casualty's head and neck. The number two man simultaneously raises the casualty's shoulders slightly, places padding under his neck, and immobilizes the casualty's head (Figures 4-32D—E).

- Any improvised supports are secured in position with a cravat or strip of cloth extended across the casualty's forehead and under the board (Figure 4-32D).

- The board is lifted onto a litter or blanket in order to transport the casualty (Figure 4-32E).

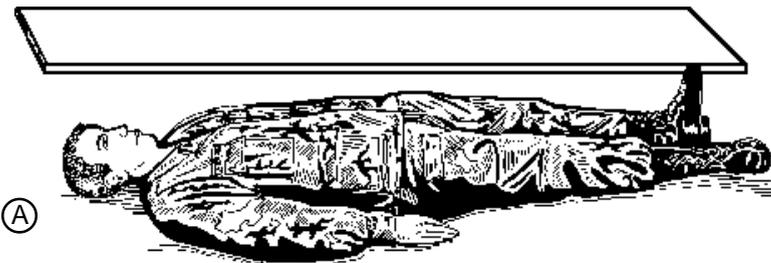


Figure 4-32. Preparing casualty with fractured neck for transportation (Illustrated A—E).

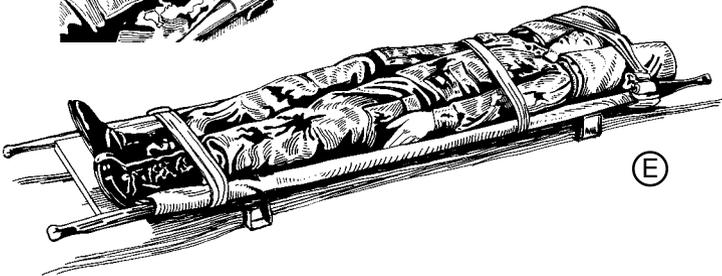
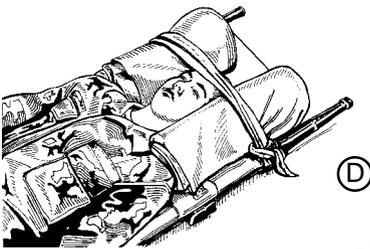
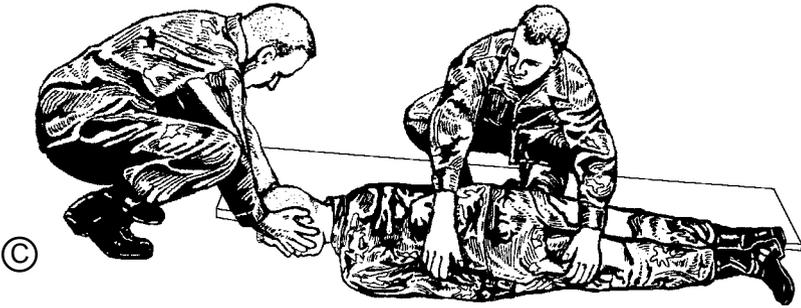


Figure 4-32. Preparing casualty with fractured neck for transportation (Illustrated A—E) (Continued).

CHAPTER 5

FIRST AID FOR CLIMATIC INJURIES

5-1. General

a. It is desirable, but not always possible, for an individual's body to become adjusted (acclimated) to an environment.

(1) The service members physical condition determines the amount of time their bodies need to adjust to the environment. Even those individuals in good physical condition need time before working or training in extremes of hot or cold weather. Climate-related injuries are usually preventable; prevention is both an individual and leadership responsibility.

(2) Several factors contribute to health and well-being in any environment—

- Diet.
- Sleep and rest.
- Exercise.
- Suitable clothing.

(3) Diet should be suited to an individual's needs in a particular climate. A special diet started for any purpose (such as weight reduction) should be done with appropriate medical supervision.

WARNING

Service members should use extreme caution when starting fad diets or taking over-the-counter herbal supplements. Medical records revealed that deaths and severe injuries occurred in individuals using dietary/herbal supplements without medical monitoring.

NOTE

Weight loss and the use of weight loss supplements should be supervised by a trained health care provider.

(4) Specialized clothing and equipment (such as cold weather gear) for a specific environment should be obtained and used properly.

b. For information on the prevention of heat and cold injuries, refer to FM 21-10/Marine Corps Reference Publication (MCRP) 4-11.1D.

5-2. Heat Injuries

a. Heat injuries are environmental injuries. They may result when a service member—

- Is exposed to extreme heat, such as from the sun or from high temperatures.
- Does not wear proper clothing.
- Is in MOPP gear.
- Is inside closed spaces, such as inside an armored vehicle.
- Wears body armor.

b. Heat injury can be divided into three categories: heat cramps, heat exhaustion, and heatstroke.

c. Each service member must be able to recognize and give first aid for heat injuries.

WARNING

The heat casualty should be continually monitored for development of conditions which may require the performance of necessary basic lifesaving measures.

CAUTION

Do not use salt solutions in first aid procedures for heat injuries.

(1) Check the casualty for signs and symptoms of *cramping*.

- *Signs and symptoms.* Cramping is caused by an imbalance of chemicals (called electrolytes) in the body as a result of excessive sweating. This condition causes the casualty to exhibit:

- Cramping in the extremities (arms and legs).
- Abdominal (stomach) cramps.
- Excessive sweating.

NOTE

Thirst may or may not occur. Cramping can occur without the service member being thirsty.

- *First aid measures.*
 - Move the casualty to a cool, shady area or improvise shade if none is available.
 - Loosen his clothing (if not in a chemical environment).

NOTE

In a chemical environment, transport the heat casualty to a noncontaminated area as soon as the mission permits.

- Have him slowly drink at least one canteen full of water. (The body absorbs cool water faster than warm or cold water; therefore, cool water is preferred if it is available.)
- Seek medical assistance should cramps continue.

(2) Check the casualty for signs and symptoms of *heat exhaustion*.

- *Signs and symptoms.* Heat exhaustion is caused by loss of body fluids (dehydration) through sweating without adequate fluid replacement. It can occur in an otherwise fit individual who is involved in physical exertion in any hot environment especially if the service member is not acclimatized to that environment. These signs and symptoms are—
 - Excessive sweating with pale, moist, cool skin.
 - Headache.
 - Weakness.

- Dizziness.
 - Loss of appetite.
 - Cramping.
 - Nausea (with or without vomiting).
 - Urge to defecate.
 - Chills (gooseflesh).
 - Rapid breathing.
 - Tingling of hands and/or feet.
 - Confusion.
- *First aid measures.*
 - Move the casualty to a cool, shady area or improvise shade if none is available.
 - Loosen or remove his clothing and boots (unless in a chemical environment); pour water on him and fan him.
 - Have him slowly drink at least one canteen of water.
 - Elevate his legs.
 - If possible, the casualty should not participate in strenuous activity for the remainder of the day.
 - Monitor the casualty until the symptoms are gone, or medical assistance arrives.
- (3) Check the casualty for signs and symptoms of *heatstroke*.

WARNING

Heatstroke is a medical emergency which may result in death if care is delayed.

- *Signs and symptoms.* A service member suffering from heatstroke has been exposed to high temperatures (such as direct sunlight) or been dressed in protective overgarments, which causes the body temperature to rise. Heatstroke occurs more rapidly in service members who are engaged in work or other physical activity in a high heat environment. Heatstroke is caused by a failure of the body's cooling mechanism which includes a decrease in the body's ability to produce sweat. The casualty's skin is red (flushed), hot, and dry. He may experience weakness, dizziness, confusion, headaches, seizures, nausea, stomach pains or cramps, and his respiration and pulse may be rapid and weak. Unconsciousness and collapse may occur suddenly.

- *First aid measures.* Cool casualty immediately by—

- Moving him to a cool, shady area or improvising shade if none is available.

- Loosening or removing his clothing (except in a chemical environment).

- Spraying or pouring water on him; fanning him to permit the coolant effect of evaporation.

- Massaging his extremities and skin, which increases the blood flow to those body areas, thus aiding the cooling process.

- Elevating his legs.

- Having him slowly drink at least one canteen full of water if he is conscious.

NOTE

Start cooling casualty immediately. Continue cooling while awaiting transportation and during transport to an MTF.

- *Medical assistance.* Seek medical assistance because the casualty should be transported to an MTF as soon as possible. Do not interrupt the cooling process or lifesaving measures to seek help; if someone else is present send them for help. The casualty should be continually monitored for development of conditions that may require the performance of necessary basic lifesaving measures.

d. Table. See Table 5-1 for further information.

Table 5-1. Heat Injuries

INJURIES	SIGNS AND SYMPTOMS	FIRST AID ¹
HEAT CRAMPS	THE CASUALTY EXPERIENCES MUSCLE CRAMPS OF THE ARMS, LEGS, AND/OR STOMACH. THE CASUALTY MAY ALSO HAVE EXCESSIVE SWEATING.	<ol style="list-style-type: none"> 1. MOVE THE CASUALTY TO A COOL SHADY AREA OR IMPROVISE SHADE AND LOOSEN CLOTHING.² 2. HAVE HIM SLOWLY DRINK AT LEAST ONE CANTEEN FULL OF COOL WATER SLOWLY. 3. MONITOR THE CASUALTY AND GIVE HIM MORE WATER AS TOLERATED.
HEAT EXHAUSTION	THE CASUALTY EXPERIENCES HEAVY SWEATING WITH PALE, MOIST, COOL SKIN; HEADACHE, WEAKNESS, DIZZINESS, AND/OR LOSS OF APPETITE, HEAT CRAMPS, NAUSEA (WITH OR WITHOUT VOMITING), URGE TO DEFECATE, CHILLS (GOOSE-FLESH), RAPID BREATHING, CONFUSION, AND TINGLING OF THE HANDS AND/OR FEET.	<ol style="list-style-type: none"> 1. MOVE THE CASUALTY TO A COOL, SHADY AREA OR IMPROVISE SHADE AND LOOSEN OR REMOVE HIS CLOTHING.² 2. POUR WATER ON HIM AND FAN HIM TO PERMIT THE COOLANT EFFECT OF EVAPORATION. 3. HAVE HIM SLOWLY DRINK AT LEAST ONE CANTEEN FULL OF COOL WATER. 4. ELEVATE THE CASUALTY'S LEGS. 5. SEEK MEDICAL ASSISTANCE IF SYMPTOMS CONTINUE; MONITOR UNTIL SYMPTOMS ARE GONE OR MEDICAL ASSISTANCE ARRIVES.
HEATSTROKE³ (SUNSTROKE)	THE CASUALTY STOPS SWEATING (RED [FLUSHED] HOT, DRY SKIN). HE FIRST MAY EXPERIENCE HEADACHE, DIZZINESS, NAUSEA, FAST PULSE AND RESPIRATION, SEIZURES, AND MENTAL CONFUSION. HE MAY COLLAPSE	<ol style="list-style-type: none"> 1. MOVE THE CASUALTY TO A COOL, SHADY AREA OR IMPROVISE SHADE AND LOOSEN OR REMOVE HIS CLOTHING, REMOVE THE OUTER GARMENTS AND PROTECTIVE

Table 5-1. Heat Injuries (Continued)

INJURIES	SIGNS AND SYMPTOMS	FIRST AID ¹
	<p>AND SUDDENLY BECOME UNCONSCIOUS. THIS IS A MEDICAL EMERGENCY.</p>	<p>CLOTHING IF THE SITUATION PERMITS.²</p> <p>2. START COOLING THE CASUALTY IMMEDIATELY. SPRAY OR POUR WATER ON HIM. FAN HIM. MASSAGE HIS EXTREMITIES AND SKIN.</p> <p>3. ELEVATE HIS LEGS.</p> <p>4. IF CONSCIOUS, HAVE HIM SLOWLY DRINK AT LEAST ONE CANTEEN FULL OF COOL WATER.</p> <p>5. SEEK MEDICAL AID. CONTINUE COOLING WHILE AWAITING TRANSPORT AND CONTINUE FIRST AID WHILE EN ROUTE.</p>

LEGEND:

- 1 THE FIRST AID PROCEDURE FOR HEAT RELATED INJURIES CAUSED BY WEARING INDIVIDUAL PROTECTIVE EQUIPMENT (IPE) IS TO MOVE THE CASUALTY TO A CLEAN AREA AND GIVE HIM WATER TO DRINK.
- 2 WHEN IN A CHEMICAL ENVIRONMENT, DO NOT LOOSEN OR REMOVE THE CASUALTY'S CLOTHING.
- 3 CAN BE FATAL IF NOT PROVIDED FIRST AID AND MEDICAL TREATMENT PROMPTLY.

5-3. Cold Injuries

Cold injuries are most likely to occur when conditions are moderately cold, but accompanied by wet or windy conditions. Cold injuries can usually be prevented. Well-disciplined and well-trained service members can be protected even in the most adverse circumstances. They and their leaders must know the hazards of exposure to the cold. They must know the importance of personal hygiene, exercise, care of the feet and hands, and the use of protective clothing.

a. Contributing Factors.

(1) Temperature, humidity, precipitation, and wind greatly increase likelihood of cold injuries, and the service members with wet clothing are at great risk of cold injuries. Riverine operations (river, swamp, and stream crossings) increase likelihood of cold injuries. Low temperatures and low relative humidity (dry cold) promote frostbite. Higher temperatures, together with moisture, promote immersion syndrome. Windchill accelerates the loss of body heat and may aggravate cold injuries.

(2) Relatively stationary activities such as being in an observation post or on guard duty increase the service member's vulnerability to cold injury. Also, a service member is more likely to receive a cold injury if he is—

- In contact with the ground (such as marching, performing guard duty, or engaging in other outside activities).
- Immobile for long periods (such as while riding in an unheated or open vehicle).
- Standing in water, such as in a foxhole.
- Out in the cold for days without being warmed.
- Deprived of an adequate diet and rest.
- Not able to take care of his personal hygiene.

(3) Physical fatigue contributes to apathy, which leads to inactivity, personal neglect, carelessness, and reduced heat production. In turn, these increase the risk of cold injury. Service members with prior cold injuries have a higher-than-normal risk of subsequent cold injury; not necessarily involving the body part previously injured.

(4) Depressed or unresponsive service members are also vulnerable because they are less active. These service members tend to be careless about precautionary measures, especially warming activities, when cold injury is a threat.

(5) Excessive use of alcohol or drugs leading to faulty judgment or unconsciousness in a cold environment increases the risk of becoming a cold injury casualty.

b. Signs and Symptoms. Once a service member becomes familiar with the factors that contribute to cold injury, he must learn to recognize cold injury signs and symptoms.

(1) Many service members suffer cold injury without realizing what is happening to them. They may be cold and generally uncomfortable. These service members often do not notice the injured part because it is already numb from the cold.

(2) Superficial cold injury usually can be detected by numbness or tingling sensations. These signs and symptoms often can be relieved simply by loosening boots or other clothing and by exercising to improve circulation. In more advanced cases involving deep cold injury, the service member often is not aware that there is a problem until the affected part feels like a stump or block of wood.

(3) Outward signs of cold injury include discoloration of the skin at the site of injury. In light-skinned persons, the skin first reddens and then becomes pale or waxy white. In dark-skinned persons, grayness in the skin is usually evident. An injured foot or hand feels cold to the touch. Swelling may be an indication of deep injury. Also note that blisters may occur after rewarming the affected parts. Service members should work in pairs (buddy teams) to check each other for signs of discoloration and other symptoms.

c. First Aid Measures. First aid for cold injuries depends on whether they are superficial or deep. Rewarming the affected part using body heat can adequately treat cases of superficial cold injury. (For example, this can be done by covering cheeks with hands, putting fingertips in armpits, or placing the casualty's feet under the clothing of a buddy [next to his belly].) The injured part should **NOT** be massaged, exposed to a fire or stove, rubbed with snow, slapped, chafed, or soaked in cold water. Walking on injured feet should be avoided. Deep cold injury (frostbite) is very serious and requires prompt first aid to avoid or to minimize the loss of parts or all of the fingers, toes, hands, or feet. The sequence for treating cold injuries depends on whether the condition is life-threatening. The first priority in managing cold injuries is to remove the casualty from the cold environment (such as building an improvised shelter). Other injuries the casualty may have are provided first aid simultaneously while waiting for transportation or evacuation. If the casualty is to be transported in a nonmedical vehicle, first aid measures should be continued en route to the MTF.

d. Conditions Caused by Cold. Conditions caused by cold include chilblain, immersion syndrome (immersion foot and trench foot), frostbite, snow blindness, dehydration, and hypothermia.

(1) *Chilblain.*

• *Signs and symptoms.* Chilblain is caused by repeated prolonged exposure of bare skin at temperatures from 60° Fahrenheit (F) to

32°F, or 20°F for acclimated, dry, unwashed skin. The area may be acutely swollen, red, tender, and hot with itchy skin. There may be no loss of skin tissue in untreated cases but continued exposure may lead to infected, ulcerated, or bleeding lesions.

- *First aid measures.* Within minutes, the area usually responds to locally applied body heat. Rewarm the affected part by applying firm steady pressure with your hands, or placing the affected part under your arms or against the stomach of a buddy. **DO NOT** rub or massage affected areas.

NOTE

Medical personnel should evaluate the injury, because signs and symptoms of tissue damage may be slow to appear.

(2) *Immersion syndrome (immersion foot and trench foot).* Immersion foot and trench foot are injuries that result from fairly long exposure of the feet to wet conditions at temperatures from approximately 32°F to 50°F. Inactive feet in damp or wet socks and boots, or tightly laced boots which impair circulation, are even more susceptible to injury. This injury can be very serious; it can lead to loss of toes or parts of the feet. If exposure of the feet has been prolonged and severe, the feet may swell so much that pressure closes the blood vessels and cuts off circulation. Should an immersion injury occur, dry the feet thoroughly and transport the casualty to an MTF by the fastest means possible.

- *Signs and symptoms.* At first, the parts of the affected foot are cold and painless, the pulse is weak, and numbness may be present. Second, the parts may feel hot, and burning and shooting pains may begin. In later stages, the skin is pale with a bluish cast and the pulse decreases. Other signs and symptoms that may follow are blistering, swelling, redness, heat, hemorrhaging (bleeding), and gangrene.

- *First aid measures.* First aid measures are required for all stages of immersion syndrome injury. Rewarm the injured part gradually by exposing it to warm air. Protect it from trauma and secondary infections. Dry, loose clothing or several layers of warm coverings are preferable to extreme heat. Under no circumstances should the injured part be exposed to an open fire. Elevate the injured part to relieve the swelling. Transport the casualty to an MTF as soon as possible. When the part is rewarmed, the casualty often feels a burning sensation and pain. Symptoms may persist for days or weeks even after rewarming.

NOTE

When providing first aid for immersion foot and trench foot—
DO NOT massage the injured part. **DO NOT** moisten the skin.
DO NOT apply heat or ice.

(3) *Frostbite.* Frostbite is the injury of tissue caused from exposure to cold, usually below 32°F depending on the windchill factor, duration of exposure, and adequacy of protection. Individuals with a history of cold injury are likely to suffer an additional cold injury. The body parts most easily frostbitten are the cheeks, nose, ears, chin, forehead, wrists, hands, and feet. Frostbite may involve only the skin (superficial), or it may extend to a depth below the skin (deep). Deep frostbite is very serious and requires prompt first aid to avoid or to minimize the loss of parts or all of the fingers, toes, hands, or feet.

- *Signs and symptoms.*
 - Loss of sensation (numb feeling) in any part of the body.
 - Sudden blanching (whitening) of the skin of the affected part, followed by a momentary tingling sensation.
 - Redness of skin in light-skinned service members; grayish coloring in dark-skinned service members.
 - Blisters.
 - Swelling or tender areas.
 - Loss of previous sensation of pain in affected area.
 - Pale, yellowish, waxy-looking skin.
 - Frozen tissue that feels solid (or wooden) to the touch.

CAUTION

Deep frostbite is a very serious injury and requires immediate first aid and subsequent medical treatment to avoid or minimize loss of body parts.

- *First aid measures.*
 - *Face, ears, and nose.* Cover the casualty's affected area with his and/or your bare hands until sensation and color return.
 - *Hands.* Open the casualty's field jacket and shirt. (In a chemical environment, do not loosen or remove the clothing and protective overgarments.) Place the affected hands under the casualty's armpits. Close the field jacket and shirt to prevent additional exposure.
 - *Feet.* Remove the casualty's boots and socks if he does not need to walk any further to receive additional treatment. (Thawing the casualty's feet and forcing him to walk on them will cause additional pain and injury.) Place the affected feet under clothing and against the body of another service member.

WARNING

DO NOT attempt to thaw the casualty's feet or other frozen areas if he will be required to walk or travel to an MTF for additional medical treatment. The possibility of additional injury from walking is less when the feet are frozen than when they are thawed. (However, if possible avoid walking.) Thawing in the field increases the possibilities of infection, gangrene, or other injury.

NOTE

Thawing may occur spontaneously during transportation to the MTF; this cannot be avoided since the body in general must be kept warm.

In all of the above areas, ensure that the casualty is kept warm and that he is covered (to avoid further injury). Seek medical treatment as soon as possible. Reassure the casualty, protect the affected area from further injury by covering it lightly with a blanket or any dry clothing, and seek shelter out of the wind. Remove or loosen constricting clothing (except in a contaminated environment) and increase insulation. Ensure the casualty exercises as much as possible, avoiding trauma to the injured part, and is prepared for pain when thawing occurs. Protect the frostbitten part from additional injury. **DO NOT—**

- Rub the injured part with snow or apply cold water soaks.

- Warm the part by massage or exposure to open fire because the frozen part may be burned due to the lack of feeling.
- Use ointments or other salves.
- Manipulate the part in any way to increase circulation.
- Use alcohol or tobacco because this reduces the body's resistance to cold.

NOTE

Remember, when freezing extends to a depth below the skin, it is a much more serious injury. Extra care is required to reduce or avoid the chances of losing all or part of the toes or feet. This also applies to the fingers and hands.

(4) *Snow blindness.* Snow blindness is the effect that glare from an ice field or snowfield has on the eyes. It is more likely to occur in hazy, cloudy weather than when the sun is shining. Glare from the sun will cause an individual to instinctively protect his eyes. However, in cloudy weather, he may be overconfident and expose his eyes longer than when the threat is more obvious. He may also neglect precautions such as the use of protective eyewear. Waiting until discomfort (pain) is felt before using protective eyewear is dangerous because a deep burn of the eyes may already have occurred.

- *Signs and symptoms.* Symptoms of snow blindness are a sensation of grit in the eyes with pain in and over the eyes, made worse by moving the eyeball. Other signs and symptoms are watering, redness, headache, and increased pain on exposure to light.

- *First aid measures.* First aid measures consist of blindfolding or covering the eyes with a dark cloth which stops painful eye movement. Complete rest is desirable. If further exposure to light is not preventable, the eyes should be protected with dark bandages or the darkest glasses available. Once unprotected exposure to sunlight stops, the condition usually heals in a few days without permanent damage. The casualty should be evacuated to the nearest MTF.

(5) *Dehydration.* Dehydration occurs when the body loses too much fluid. A certain amount of body fluid is lost through normal body processes. A normal daily intake of liquids replaces these losses. When individuals are engaged in any strenuous exercises or activities, fluid is lost

through sweating and this loss creates an imbalance of fluids in the body, and if not matched by rehydration it can contribute to dehydration. The danger of dehydration is as prevalent in cold regions as it is in hot regions. In hot weather, the individual is aware of his body losing fluids through sweat. In cold weather, however, it is extremely difficult to realize that this condition exists since sweating is not as apparent as in a hot environment. The danger of dehydration in cold weather operations is a serious problem. In cold climates, sweat evaporates so rapidly or is absorbed so thoroughly by layers of heavy clothing that it is rarely visible on the skin. Dehydration also occurs during cold weather operations because drinking is inconvenient. Dehydration will weaken or incapacitate a casualty for a few hours, or sometimes, several days. Because rest is an important part of the recovery process, casualties must take care that limited movement during their recuperative period does not enhance the risk of becoming a cold injury casualty.

- *Signs and symptoms.* The symptoms of cold weather dehydration are similar to those encountered in heat exhaustion. The mouth, tongue, and throat become parched and dry, and swallowing becomes difficult. The casualty may have nausea (with or without vomiting) along with extreme dizziness and fainting. The casualty may also feel generally tired and weak and may experience muscle cramps. Focusing the eyes may also become difficult.

- *First aid measures.* The casualty should be kept warm and his clothes should be loosened (if not in a chemical environment) to allow proper circulation. Shelter from wind and cold must be provided. Fluid replacement should begin immediately and the service member transported to an MTF as soon as possible.

(6) *Hypothermia (general cooling).* When exposed to prolonged cold weather a service member may become both mentally and physically numb, thus neglecting essential tasks or requiring more time and effort to achieve them. Under some conditions (particularly cold water immersion), even a service member in excellent physical condition may die in a matter of minutes. The destructive influence of cold on the body is called *hypothermia*. This means bodies lose heat faster than they can produce it. Hypothermia can occur from exposure to temperatures either above or below freezing, especially from immersion in cold water, wet-cold conditions, or from the effect of wind. Physical exhaustion and insufficient food intake may also increase the risk of hypothermia. General cooling of the entire body to a temperature below 95°F is caused by continued exposure to low or rapidly dropping temperatures, cold moisture, snow, or ice. Fatigue, poor physical condition, dehydration, faulty blood circulation, alcohol or other drug use, trauma, and immersion can cause hypothermia. Remember, cold

may affect the body systems slowly and almost without notice. Service members exposed to low temperatures for extended periods may suffer ill effects even if they are well protected by clothing.

- *Signs and symptoms.* As the body cools, there are several stages of progressive discomfort and impairment. A sign that is noticed immediately is shivering. Shivering is an attempt by the body to generate heat. The pulse is faint or very difficult to detect. People with temperatures around 90°F may be drowsy and mentally slow. Their ability to move may be hampered, stiff, and uncoordinated, but they may be able to function minimally. Their speech may be slurred. As the body temperature drops further, shock becomes evident as the person's eyes assume a glassy state, breathing becomes slow and shallow, and the pulse becomes weaker or absent. The person becomes very stiff and uncoordinated. Unconsciousness may follow quickly. As the body temperature drops even lower, the extremities freeze, and a deep (or core) body temperature (below 85°F) increases the risk of irregular heart action. This irregular heart action or heart standstill can result in sudden death.

- *First aid measures.* Except in cases of the most severe hypothermia (marked by coma or unconsciousness and a weak pulse), first aid measures for hypothermia are directed towards protecting the casualty from further loss of body heat. For the casualty who is conscious, first aid measures are directed at rewarming the body evenly and without delay. Provide heat by using a hot water bottle or field expedient or another service member's body heat.

CAUTION

DO NOT expose the casualty to an open fire, as he may become burned.

NOTE

When using a hot water bottle or field expedient (canteen filled with warm water), the bottle or canteen must be wrapped in cloth prior to placing it next to the casualty. This will reduce the chance of burning the casualty's skin.

Always call or send for help as soon as possible and protect the casualty immediately with dry clothing or a sleeping bag. Then, move him to a warm place. Evaluate other injuries and provide first aid as required. First aid measures can be performed while the casualty is waiting transportation or

while he is en route. In the case of an accidental breakthrough into ice water, or other hypothermic accident, strip the casualty of wet clothing immediately and bundle him into a sleeping bag. Rescue breathing should be started at once if the casualty's breathing has stopped or is irregular or shallow. Warm liquids (**NOT HOT**) may be given gradually if the casualty is conscious. **DO NOT** force liquids on an unconscious or semiconscious casualty because he may choke. The casualty should be transported on a litter because the exertion of walking may aggravate circulation problems. Medical personnel should immediately treat any hypothermia casualty. Hypothermia is life threatening until normal body temperature has been restored. The first aid measures for a casualty with severe hypothermia are based upon the following principles: attempt to avoid further heat loss, handle the casualty gently, and transport the casualty as soon as possible to the nearest MTF. If at all possible, the casualty should be evacuated by medical personnel.

WARNING

Rewarming a severely hypothermic casualty is extremely dangerous in the field due to the possibility of such complications as rewarming, shock and disturbances in the rhythm of the heartbeat. These conditions require treatment by medical personnel.

NOTE

Resuscitation of casualties with hypothermic complications is difficult if not impossible to do outside of an MTF setting.

CAUTION

The casualty is unable to generate his own body heat. Therefore, merely placing him in a blanket or sleeping bag is not sufficient.

- e. *Table.* See Table 5-2 for further information.

Table 5-2. Injuries Caused by Cold and Wet Conditions

INJURIES	SIGNS/SYMPTOMS	FIRST AID
CHILBLAIN	RED SWOLLEN, HOT, TENDER, ITCHING SKIN. CONTINUED EXPOSURE MAY LEAD TO INFECTED (ULCERATED OR BLEEDING) SKIN LESIONS.	<ol style="list-style-type: none"> 1. AREA USUALLY RESPONDS TO LOCALLY APPLIED REWARMING (BODY HEAT). 2. DO NOT RUB OR MASSAGE AREA. 3. SEEK MEDICAL AID.
IMMERSION SYNDROME (IMMERSION FOOT/TRENCH FOOT)	AFFECTED PARTS ARE COLD, NUMB, AND PAINLESS. PARTS MAY THEN BE HOT, WITH BURNING AND SHOOTING PAINS. ADVANCED STAGE: SKIN PALE WITH BLUISH CAST; PULSE DECREASES; BLISTERING, SWELLING, HEAT, HEMORRHAGING, AND GANGRENE MAY FOLLOW.	<ol style="list-style-type: none"> 1. GRADUAL REWARMING BY EXPOSURE TO WARM AIR. 2. DO NOT MASSAGE OR MOISTEN SKIN. 3. PROTECT AFFECTED PARTS FROM TRAUMA. 4. DRY FEET THOROUGHLY, AVOID WALKING. 5. SEEK MEDICAL AID.
FROSTBITE	LOSS OF SENSATION (NUMB FEELING) IN ANY PART OF THE BODY. SUDDEN BLANCHING (WHITENING) OF THE SKIN OF THE AFFECTED PART, FOLLOWED BY A MOMENTARY TINGLING SENSATION. REDNESS OF SKIN IN LIGHT-SKINNED SERVICE MEMBERS; GRAYISH COLORING IN DARK-SKINNED SERVICE MEMBERS. BLISTERS. SWELLING OR TENDER AREAS. LOSS OF PREVIOUS SENSATION OF PAIN IN THE AFFECTED AREA. PALE YELLOWISH, WAXY-LOOKING SKIN. FROZEN TISSUE THAT FEELS SOLID (WOODEN) TO THE TOUCH.	<ol style="list-style-type: none"> 1. WARM THE AREA AT THE FIRST SIGN OF FROSTBITE, USING FIRM, STEADY PRESSURE OF THE HAND, UNDERARM, OR ABDOMEN. 2. FACE, EARS, NOSE: COVER AREA WITH HANDS (CASUALTY'S OWN OR BUDDY'S). 3. HANDS: OPEN FIELD JACKET AND PLACE CASUALTY'S HANDS AGAINST HIS BODY, THEN CLOSE THE JACKET TO PREVENT HEAT LOSS. 4. FEET: REMOVE THE CASUALTY'S BOOTS AND SOCKS AND PLACE HIS FEET AGAINST THE BODY OF ANOTHER SERVICE MEMBER.

Table 5-2. Injuries Caused by Cold and Wet Conditions (Continued)

INJURIES	SIGNS/SYMPTOMS	FIRST AID
		<p>5. WARNING: DO NOT ATTEMPT TO THAW THE CASUALTY'S FEET OR OTHER FROZEN AREAS IF HE WILL BE REQUIRED TO WALK OR TRAVEL TO AN MTF FOR ADDITIONAL TREATMENT. THE POSSIBILITY OF INJURY FROM WALKING IS LESS WHEN THE FEET ARE FROZEN THAN WHEN THEY HAVE BEEN THAWED. (HOWEVER, IF POSSIBLE AVOID WALKING.) THAWING IN THE FIELD INCREASES THE POSSIBILITY OF INFECTION, GANGRENE, OR INJURY.</p> <p>6. LOOSEN OR REMOVE CONSTRICTING CLOTHING AND REMOVE ANY JEWELRY.</p> <p>7. INCREASE INSULATION (COVER WITH BLANKET OR OTHER DRY MATERIAL). ENSURE CASUALTY EXERCISES AS MUCH AS POSSIBLE, AVOIDING TRAUMA TO INJURED PART.</p>
SNOW BLINDNESS	EYES MAY FEEL SCRATCHY. WATERING, REDNESS, HEADACHE, AND INCREASED PAIN WITH EXPOSURE TO LIGHT CAN OCCUR.	<p>1. COVER THE EYES WITH A DARK CLOTH.</p> <p>2. SEEK MEDICAL AID.</p>
DEHYDRATION	SIMILAR TO HEAT EXHAUSTION (REFER TO TABLE 5-1).	<p>1. KEEP WARM.</p> <p>2. CASUALTY NEEDS FLUID REPLACEMENT, REST, AND PROMPT MEDICAL AID.</p>
HYPOTHERMIA	CASUALTY IS COLD. SHIVERING. CORE TEMPERATURE IS LOW. CONSCIOUSNESS MAY BE	<p>MILD HYPOTHERMIA</p> <p>1. REWARM BODY</p>

Table 5-2. Injuries Caused by Cold and Wet Conditions (Continued)

INJURIES	SIGNS/SYMPTOMS	FIRST AID
	<p>ALTERED. UNCOORDINATED MOVEMENTS MAY OCCUR. SHOCK AND COMA MAY RESULT AS BODY TEMPERATURE DROPS.</p>	<p>EVENLY AND WITHOUT DELAY. (NEED TO PROVIDE HEAT SOURCE; CASUALTY'S BODY UNABLE TO GENERATE HEAT.)</p> <p>2. KEEP DRY, PROTECT FROM THE ELEMENTS.</p> <p>3. WARM (NOT HOT) LIQUIDS MAY BE GIVEN GRADUALLY (TO CONSCIOUS CASUALTIES ONLY).</p> <p>4. BE PREPARED TO START BASIC LIFE SUPPORT MEASURES FOR THE CASUALTY.</p> <p>5. SEEK MEDICAL TREATMENT IMMEDIATELY.</p> <p>SEVERE HYPOTHERMIA</p> <p>1. STABILIZE THE TEMPERATURE.</p> <p>2. ATTEMPT TO AVOID FURTHER HEAT LOSS.</p> <p>3. HANDLE THE CASUALTY GENTLY.</p> <p>4. EVACUATE TO THE NEAREST MTF AS SOON AS POSSIBLE.</p> <p>5. WARNING: HYPOTHERMIA IS A MEDICAL EMERGENCY. PROMPT MEDICAL ATTENTION IS NECESSARY.</p>

CHAPTER 6

FIRST AID FOR BITES AND STINGS

6-1. General

Snakebites, insect bites, or stings can cause intense pain and/or swelling. If not treated promptly and correctly, they can cause serious illness or death. The severity of a snakebite depends upon: whether the snake is poisonous or nonpoisonous, the type of snake, the location of the bite, and the amount of venom injected. Bites from humans and other animals, such as dogs, cats, bats, raccoons, and rats, can cause severe bruises and infection and tears or lacerations of tissue. Awareness of the potential sources of injuries can reduce or prevent them from occurring. Knowledge and prompt application of first-aid measures can lessen the severity of injuries from bites and stings and keep the service member from becoming a serious casualty.

6-2. Types of Snakes

a. Nonpoisonous Snakes. There are approximately 130 different varieties of nonpoisonous snakes in the United States. They have oval-shaped heads and round eyes. Unlike poisonous snakes, discussed below, nonpoisonous snakes do not have fangs with which to inject venom. Figure 6-1 depicts the characteristics of a nonpoisonous snake.

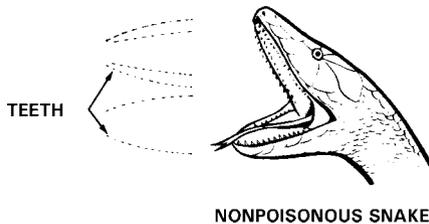


Figure 6-1. Characteristics of nonpoisonous snake.

b. Poisonous Snakes. Poisonous snakes are found throughout the world, primarily in tropical to moderate climates. Within the United States, there are four kinds: rattlesnakes, copperheads, water moccasins (cottonmouth), and coral snakes. Poisonous snakes in other parts of the world include sea snakes, the fer-de-lance, the bushmaster, and the tropical rattlesnake in tropical Central America; the Malayan pit viper in the tropical Far East; the cobra in Africa and Asia; the mamba (or black mamba) in central and southern Africa; and the krait in India and Southeast Asia. Refer to Figure 6-2 for characteristics of a poisonous pit viper.

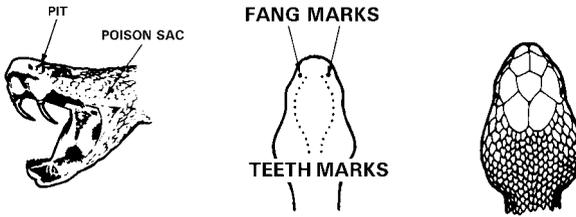


Figure 6-2. Characteristics of poisonous pit viper.

c. *Pit Vipers (Poisonous).* Figure 6-3 depicts a variety of poisonous snakes.

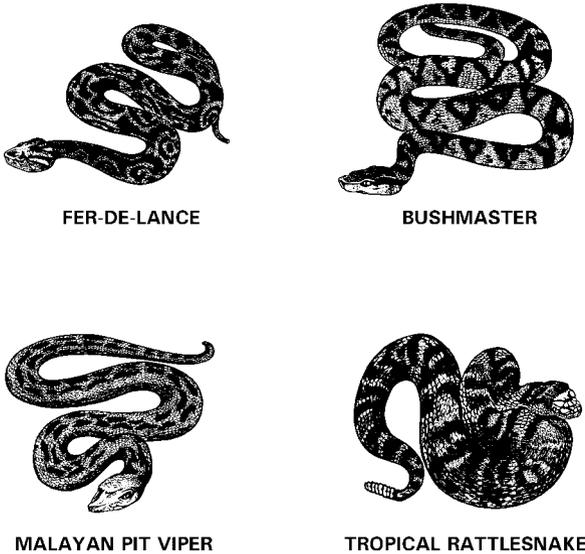


Figure 6-3. Poisonous snakes.

(1) Rattlesnakes, bushmasters, copperheads, fer-de-lance, Malayan pit vipers, and water moccasins (cottonmouth) are called pit vipers because of the small, deep pits between the nostrils and eyes on each side of the head (Figure 6-2). In addition to their long, hollow fangs, these snakes have other identifying features: thick bodies, slit-like pupils of the eyes, and flat, almost triangular-shaped heads. Color markings and other identifying characteristics, such as rattles or a noticeable white interior of the mouth (cottonmouth), also help distinguish these poisonous snakes. Further

identification is provided by examining the bite pattern of the wound for signs of fang entry. Occasionally there will be only one fang mark, as in the case of a bite on a finger or toe where there is no room for both fangs, or when the snake has broken off a fang.

(2) The casualty's condition provides the best information about the seriousness of the situation, or how much time has passed since the bite occurred. Pit viper bites are characterized by severe burning pain. Discoloration and swelling around the fang marks usually begins within 5 to 10 minutes after the bite. If only minimal swelling occurs within 30 minutes, the bite will almost certainly have been from a nonpoisonous snake or possibly from a poisonous snake which did not inject venom. The venom destroys blood cells, causing a general discoloration of the skin. Blisters and numbness in the affected area follow this reaction. Other signs, which can occur, are weakness, rapid pulse, nausea, shortness of breath, vomiting, and shock.

d. Corals, Cobras, Kraits, and Mambas. Corals (Figure 6-4), cobras (Figure 6-5), kraits, and mambas all belong to the same group even though they are found in different parts of the world. All four inject their venom through short, grooved fangs, leaving a characteristic bite pattern.

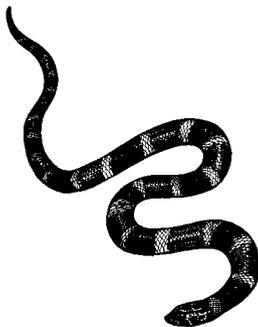


Figure 6-4. Coral snake.

(1) The small coral snake, found in the Southeastern US, is brightly colored with bands of red, yellow (or almost white), and black completely encircling the body. Other nonpoisonous snakes have the same coloring, but on the coral snake found in the US, the red ring always touches the yellow ring. To know the difference between a harmless snake and the coral snake found in the United States, remember the following:

“Red on yellow will kill a fellow,
Red on black, venom will lack.”

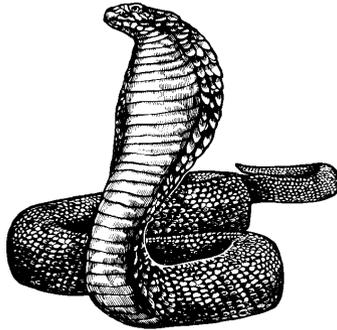


Figure 6-5. Cobra snake.

(2) The venom of corals, cobras, kraits, and mambas produces symptoms different from those of pit vipers. Because there is only minimal pain and swelling, many people believe that the bite is not serious. Delayed reactions in the nervous system normally occur between 1 to 7 hours after the bite. Symptoms include blurred vision, drooping eyelids, slurred speech, drowsiness, and increased salivation and sweating. Nausea, vomiting, shock, respiratory difficulty, paralysis, convulsions, and coma will usually develop if the bite is not treated promptly.

e. Sea Snakes. Sea snakes (Figure 6-6) are found in the warm water areas of the Pacific and Indian oceans, along the coasts, and at the mouths of some larger rivers. Their venom is **VERY** poisonous, but their fangs are only 1/4 inch long. The first aid outlined for land snakes also applies to sea snakes.

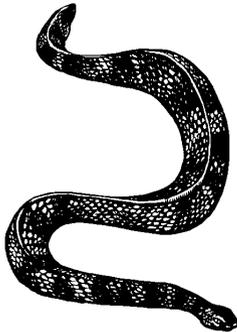


Figure 6-6. Sea snake.

6-3. Snakebites

a. Poisonous snakes **DO NOT** always inject venom when they bite or strike a person. However, all snakes may carry tetanus (lockjaw); anyone bitten by a snake, whether poisonous or nonpoisonous, should immediately seek medical attention.

- Poison is injected from the venom sacs through grooved or hollow fangs. Depending on the species, these fangs are either long or short. Pit vipers have long hollow fangs. These fangs are folded against the roof of the mouth and extend when the snake strikes. This allows them to strike quickly and then withdraw. Cobras, coral snakes, kraits, mambas, and sea snakes have short, grooved fangs. These snakes are less effective in their attempts to bite, since they must chew after striking to inject enough venom (poison) to be effective. Figure 6-7 depicts the characteristics of a poisonous snakebite.

- In the event you are bitten, attempt to identify and/or kill the snake. Take it to medical personnel for inspection/identification. This provides valuable information to medical personnel who deal with snakebites. **TREAT ALL SNAKEBITES AS POISONOUS.**

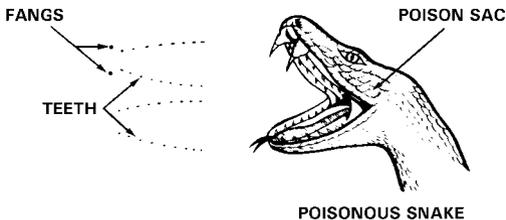


Figure 6-7. Characteristics of poisonous snakebite.

b. The venoms of different snakes cause different effects. Pit viper venom (hemotoxin [blood toxin]) destroys tissue and blood cells. Cobras, adders, and coral snakes inject powerful venom (neurotoxin [nerve toxin]) which affect the central nervous system, causing respiratory paralysis. Water moccasins and sea snakes have venom that is both hemotoxic and neurotoxic.

c. The identification of poisonous snakes is very important since medical treatment will be different for each type of venom. *Unless it can be positively identified, the snake should be killed and saved.* When this is not possible or when doing so is a serious threat to others, identification may

sometimes be difficult since many venomous snakes resemble harmless varieties. When dealing with snakebite problems in foreign countries, seek advice, professional or otherwise, which may help identify species in the particular area of operations.

d. Get the casualty to an MTF as soon as possible and with minimum movement. Until evacuation or treatment is possible, have the casualty lie quietly and not move any more than necessary. If the casualty has been bitten on an extremity, **DO NOT** elevate the limb; keep the extremity level with the body. Keep the casualty comfortable and reassure him. If the casualty is alone when bitten, he should go to the medical facility himself rather than wait for someone to find him. Unless the snake has been positively identified, attempt to kill it and send it with the casualty. Be sure that retrieving the snake does not endanger anyone or delay transporting the casualty.

(1) If the bite is on an arm or leg, place a constricting band (narrow cravat [swathe], or narrow gauze bandage) one to two fingerbreadths above and below the bite (Figure 6-8). If the bite is on the hand or foot, place a single band above the wrist or ankle. The band should be tight enough to stop the flow of blood near the skin, but not tight enough to interfere with circulation. In other words, it should not have a tourniquet-like affect. If no swelling is seen, place the bands about 1 inch from either side of the bite. If swelling is present, put the bands on the unswollen part at the edge of the swelling. If the swelling extends beyond the band, move the band to the new edge of the swelling. (If possible, leave the old band on, place a new one at the new edge of the swelling, and then remove and save the old one in case the process has to be repeated.)

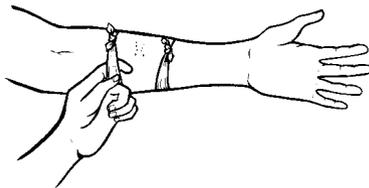


Figure 6-8. Constricting band.

CAUTION

DO NOT attempt to cut open the bite nor suck out the venom. If the venom should seep through any damaged or lacerated tissues in your mouth, you could immediately lose consciousness or even die.

(2) If the bite is located on an arm or leg, immobilize it at a level below the heart. **DO NOT** elevate an arm or leg even with or above the level of the heart.

CAUTION

When a splint is used to immobilize the arm or leg, take **EXTREME** care to ensure the splinting is done properly and does not bind. Watch it closely and adjust it if any changes in swelling occur.

(3) When possible, clean the area of the bite with soap and water. **DO NOT** use ointments of any kind.

(4) **NEVER** give the casualty food, alcohol, stimulants (coffee or tea), drugs, or tobacco.

(5) Remove rings, watches, or other jewelry from the affected limb.

6-4. Human or Animal Bites

Human or other land animal bites may cause lacerations or bruises. In addition to damaging tissue, bites always present the possibility of infection.

a. Human Bites. Human bites that break the skin may become seriously infected since the mouth is heavily contaminated with bacteria. Medical personnel **MUST** treat all human bites.

b. Animal Bites. Land animal bites can result in both infection and disease. Tetanus, rabies, and various types of fevers can follow an untreated animal bite. Because of these possible complications, the animal causing the bite should, if possible, be captured or killed (without damaging its head) so that it can be tested for disease.

c. First Aid.

- (1) Cleanse the wound thoroughly with soap.
- (2) Flush it well with water.
- (3) Cover it with a sterile dressing.

- (4) Immobilize the injured arm or leg, if appropriate.
- (5) Transport the casualty immediately to an MTF.

NOTE

If unable to capture or kill the animal, provide medical personnel with any information that will help identify it.

6-5. Marine (Sea) Animals

With the exception of sharks and barracuda, most marine animals will not deliberately attack. The most frequent injuries from marine animals are wounds by biting, stinging, or puncturing. Wounds inflicted by marine animals can be very painful, but are rarely fatal.

a. Sharks, Barracuda, and Alligators. Wounds from these marine animals can involve major trauma as a result of bites and lacerations. Bites from large marine animals are potentially the most life threatening of all injuries from marine animals. Major wounds from these animals can be treated by controlling the bleeding, preventing shock, giving basic life support, splinting the injury, and by securing prompt medical aid.

b. Turtles, Moray Eels, and Corals. These animals normally inflict minor wounds. Treat by cleansing the wound(s) thoroughly and by splinting if necessary.

c. Jellyfish, Portuguese Man-of-War, Anemones, and Others. This group of marine animals inflict injury by means of stinging cells in their tentacles. Contact with the tentacles produces burning pain with a rash and small hemorrhages on the skin. Shock, muscular cramping, nausea, vomiting, and respiratory distress may also occur. Gently remove the clinging tentacles with a towel and wash or treat the area. Use diluted ammonia or alcohol, meat tenderizer, and talcum powder. If symptoms become severe or persist, seek medical assistance.

d. Spiny Fish, Urchins, Stingrays, and Cone Shells. These animals inject their venom by puncturing the skin with their spines. General signs and symptoms include swelling, nausea, vomiting, generalized cramps, diarrhea, muscular paralysis, and shock. Deaths are rare. Treatment consists of soaking the wounds in hot water (when available) for 30 to 60 minutes. This inactivates the heat sensitive toxin. In addition, further first aid measures (controlling bleeding, applying a dressing, and so forth) should be carried out as necessary.

CAUTION

Be careful not to scald the casualty with water that is too hot because the pain of the wound will mask the normal reaction to heat.

6-6. Insect (Arthropod) Bites and Stings

An insect bite or sting can cause great pain, allergic reaction, inflammation, and infection. If not treated correctly, some bites/stings may cause serious illness or even death. When an allergic reaction is not involved, first aid is a simple process. In any case, medical personnel should examine the casualty at the earliest possible time. It is important to properly identify the spider, bee, or creature that caused the bite/sting, especially in cases of allergic reaction.

a. Types of Insects. The insects found throughout the world that can produce a bite or sting are too numerous to mention in detail. Commonly encountered stinging or biting insects include brown recluse spiders (Figure 6-9), black widow spiders (Figure 6-10), tarantulas (Figure 6-11), scorpions (Figure 6-12), urticating caterpillars, bees, wasps, centipedes, conenose beetles (kissing bugs), ants, and wheel bugs. Upon being reassigned, especially to overseas areas, take the time to become acquainted with the types of insects to avoid.

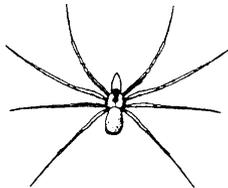


Figure 6-9. Brown recluse spider.

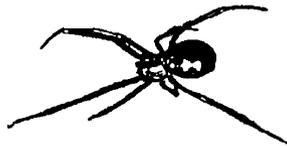


Figure 6-10. Black widow spider.

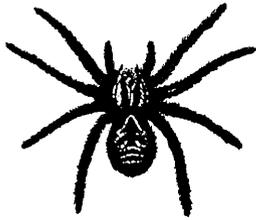


Figure 6-11. *Tarantula.*



Figure 6-12. *Scorpion.*

b. Signs and Symptoms. Discussed in paragraphs (1) and (2) below are the most common effects of insect bites/stings. They can occur alone or in combination with the others.

(1) *Less serious.* Commonly seen signs/symptoms are pain, irritation, swelling, heat, redness, and itching. Hives or wheals (raised areas of the skin that itch) may occur. These are the least severe of the allergic reactions that commonly occur from insect bites/stings. They are usually dangerous only if they affect the air passages (mouth, throat, nose, and so forth), which could interfere with breathing. The bites/stings of bees, wasps, ants, mosquitoes, fleas, and ticks are usually not serious and normally produce mild and localized symptoms. A tarantula's bite is usually no worse than that of a bee sting. Scorpions are rare and their stings (except for a specific species found only in the Southwest desert) are painful but usually not dangerous.

(2) *Serious.* Emergency allergic or hypersensitive reactions sometimes result from the stings of bees, wasps, and ants. Many people are allergic to the venom of these particular insects. Bites or stings from these insects may produce more serious reactions, to include generalized itching and hives, weakness, anxiety, headache, breathing difficulties, nausea, vomiting, and diarrhea. Very serious allergic reactions (called *anaphylactic shock*) can lead to complete collapse, shock, and even death. Spider bites (particularly from the black widow and brown recluse spiders) can also be

serious. Venom from the black widow spider affects the nervous system. This venom can cause muscle cramps, a rigid, nontender abdomen, breathing difficulties, sweating, nausea, and vomiting. The brown recluse spider generally produces local rather than system-wide problems; however, local tissue damage around the bite can be severe and can lead to an ulcer and even gangrene.

c. *First Aid.* There are certain principles that apply regardless of what caused the bite/sting. Some of these are—

- If there is a stinger present (for example, from a bee), remove the stinger by scraping the skin's surface with a fingernail or knife. **DO NOT** squeeze the sac attached to the stinger because it may inject more venom.

- Wash the area of the bite/sting with soap and water (alcohol or an antiseptic may also be used) to help reduce the chances of an infection and remove traces of venom.

- Remove jewelry from bitten extremities because swelling may occur.

- In most cases of insect bites the reaction will be mild and localized; use ice or cold compresses (if available) on the site of the bite/sting. This will help reduce swelling, ease the pain, and slow the absorption of venom. Meat tenderizer (to neutralize the venom) or calamine lotion (to reduce itching) may be applied locally. If necessary, seek medical assistance.

- In more serious reactions (severe and rapid swelling, allergic symptoms, and so forth) treat the bite/sting like you would treat a snakebite; that is, apply constricting bands above and below the site.

- Be prepared to perform basic life-support measures, such as rescue breathing.

- Reassure the casualty and keep him calm.

- In serious reactions, attempt to capture the insect for positive identification; however, be careful not to become a casualty yourself.

- If the reaction to the bite/sting appears serious, seek medical assistance.

WARNING

Insect bites/stings may cause *anaphylactic shock* (a shock caused by a severe allergic reaction). This is a life-threatening event and a TRUE MEDICAL EMERGENCY. Be prepared to perform the basic life-support measures and to immediately transport the casualty to an MTF.

NOTE

Be aware that some allergic or hypersensitive individuals may carry identification or emergency insect bite treatment kits. If the casualty is having an allergic reaction and has such a kit, administer the medication in the kit according to the instructions which accompany the kit.

d. Supplemental Information. For additional information concerning biting insects, see FM 21-10.

6-7. First Aid for Bites and Stings

See the table below for information on bites and stings.

Table 6-1. First Aid Measures for Bites and Stings

TYPES	FIRST AID MEASURES
SNAKEBITE	<ol style="list-style-type: none"> 1. MOVE CASUALTY AWAY FROM THE SNAKE. 2. REMOVE JEWELRY FROM THE AFFECTED AREA, IF APPLICABLE. 3. REASSURE CASUALTY AND KEEP HIM QUIET. 4. APPLY CONSTRICTING BAND, 1-2 FINGERBREADTHS FROM THE BITE. YOU SHOULD BE ABLE TO INSERT A FINGER BETWEEN THE BAND AND THE SKIN. <ol style="list-style-type: none"> a. <i>ARM OR LEG BITE.</i> PLACE ONE BAND ABOVE AND ONE BAND BELOW THE BITE SITE. b. <i>HAND OR FOOT BITE.</i> PLACE ONE BAND ABOVE THE WRIST OR ANKLE.

Table 6-1. First Aid Measures for Bites and Stings

TYPES	FIRST AID MEASURES
	<ol style="list-style-type: none"> 5. IMMOBILIZE THE AFFECTED PART IN A POSITION BELOW THE LEVEL OF THE HEART. 6. KILL THE SNAKE (IF POSSIBLE, WITHOUT DAMAGING ITS HEAD OR ENDANGERING YOURSELF) AND SEND IT WITH THE CASUALTY. 7. SEEK MEDICAL ASSISTANCE IMMEDIATELY.
<p>BROWN RECLUSE SPIDER OR BLACK WIDOW SPIDER BITE</p>	<ol style="list-style-type: none"> 1. KEEP CASUALTY QUIET. 2. REMOVE ALL JEWELRY FROM AFFECTED PART, IF APPLICABLE. 3. WASH THE AREA. 4. APPLY ICE OR FREEZE PACK, IF AVAILABLE. 5. SEEK MEDICAL ASSISTANCE.
<p>TARANTULA BITE OR SCORPION STING OR ANT BITE</p>	<ol style="list-style-type: none"> 1. WASH THE AREA. 2. REMOVE ALL JEWELRY FROM AFFECTED PART, IF APPLICABLE. 3. APPLY ICE OR FREEZE PACK, IF AVAILABLE. 4. APPLY BAKING SODA, CALAMINE LOTION, OR MEAT TENDERIZER (IF AVAILABLE) TO BITE SITE TO RELIEVE PAIN AND ITCHING. 5. IF THE SITE OF THE BITE IS ON THE FACE, NECK (POSSIBLE AIRWAY PROBLEMS), OR GENITAL AREA, OR IF LOCAL REACTION SEEMS SEVERE, OR IF THE STING IS BY THE DANGEROUS TYPE OF SCORPION FOUND IN THE SOUTHWEST UNITED STATES DESERT, KEEP THE CASUALTY AS QUIET AS POSSIBLE. SEEK MEDICAL ASSISTANCE.
<p>BEE STING</p>	<ol style="list-style-type: none"> 1. IF THE STINGER IS PRESENT, REMOVE BY SCRAPING WITH A KNIFE OR FINGERNAIL. DO NOT SQUEEZE VENOM SAC ON STINGER; MORE VENOM MAY BE INJECTED. 2. REMOVE ALL JEWELRY FROM AFFECTED PART, IF APPLICABLE.

Table 6-1. First Aid Measures for Bites and Stings

TYPES	FIRST AID MEASURES
	<ol style="list-style-type: none"><li>3. WASH THE AREA.<li>4. APPLY ICE OR FREEZE PACK, IF AVAILABLE.<li>5. IF ALLERGIC SIGNS OR SYMPTOMS APPEAR, BE PREPARED TO PERFORM BASIC LIFE SUPPORT MEASURES. SEEK IMMEDIATE MEDICAL ASSISTANCE.

CHAPTER 7

FIRST AID IN A NUCLEAR, BIOLOGICAL,
AND CHEMICAL ENVIRONMENT**7-1. General**

American forces have not been exposed to NBC weapons/agents on the battlefield since World War I. In future conflicts and wars we can expect the use of such agents. Nuclear, biological, and chemical weapons will rapidly degrade unit effectiveness by forcing troops to wear protective clothing and by creating confusion and fear. Through training in protective procedures and first aid, units can maintain their effectiveness on the integrated battlefield.

7-2. First Aid Materials

You may be issued the following materials to protect, decontaminate, and use as first aid for NBC exposure. You must know how to use the items; some items are described in *a* through *d* below. It is equally important that you know when to use them.

a. Nerve Agent Pyridostigmine Pretreatment (NAPP). You may be issued a blister pack of pretreatment tablets when your commander directs. The NAPP is a pretreatment; it is not an antidote. It improves the effectiveness of the nerve agent antidote. When ordered to take the pretreatment you must take one tablet every 8 hours, mission permitting. This must be taken prior to exposure to nerve agents, since it may take several hours to develop adequate blood levels.

NOTE

Commanders must follow investigational new drug protocols for use of the NAPP.

b. M291 Skin Decontaminating Kit. The M291 Skin Decontaminating Kit (Figure 7-1) contains six packets of XE-555 decontaminant resin.

WARNING

For external use only. May be slightly irritating to the eyes. Keep decontaminating powder out of eyes. Use water to wash toxic agent out of eyes.

c. *Nerve Agent Antidote Kit, MARK I.* Each service member is issued three MARK Is for use in first aid for nerve agent poisoning (Figure 7-2 and paragraph 7-6).



Figure 7-1. M291 Skin Decontamination Kit.

d. *Antidote Treatment, Nerve Agent, Autoinjector.* A new nerve agent antidote injection device, Antidote Treatment, Nerve Agent, Autoinjector (ATNAA) is currently under development that will replace the MARK I. The ATNAA is a multichambered device with the atropine and pralidoxime chloride in separate chambers. Both antidotes will be administered through a single needle.

7-3. Classification of Chemical and Biological Agents

a. Chemical agents are classified according to the primary physiological effects they produce, such as blistering, choking, vomiting, and incapacitating agents.

b. Biological warfare agents are classified according to the effect they have on man. The effects include their ability to incapacitate and cause death. Most biological warfare agents are delivered as aerosols that effect the respiratory tract; some can be delivered by releasing infected insects, by contaminating food and water, and by injection (injecting material in individuals by terrorist, not mass exposure). These agents are found in living organisms such as fungi, bacteria, and viruses.

WARNING

Swallowing water or food contaminated with nerve, blister, and other chemical agents and with some biological agents can be fatal. NEVER consume water or food that is suspected of being contaminated until it has been tested and found safe for consumption by medical personnel.

7-4. Conditions for Masking Without Order or Alarm

a. Once an attack with a chemical or biological agent is detected or suspected, or information is available that such an agent is about to be used, you must **STOP BREATHING** and mask immediately. **DO NOT WAIT** to receive an order or alarm under the following circumstances:

- Your position is hit by artillery missiles, rockets that produce vapors, smoke, and mists, and aerial sprays.
- Smoke or vapor cloud from an unknown source is present or approaching.
- A suspicious odor, liquid, or solid is present.
- A chemical or biological warfare agent attack is occurring.
- You are entering an area known or suspected of being contaminated.
- When casualties are being received from an area where chemical or biological agents have reportedly been used.
- You have one or more of the following symptoms:
 - An unexplained runny nose.
 - A sudden unexplained headache.
 - A feeling of choking or tightness in the chest or throat.
 - Dimness of vision.
 - Irritation of the eyes.
 - Difficulty in or increased rate of breathing without obvious reasons.
 - Sudden feeling of depression.
 - Dread, anxiety, or restlessness.
 - Dizziness or light-headedness.

- Slurred speech.
- Unexplained laughter or unusual behavior is noted in others.
- Numerous unexplained ill personnel.
- Service members suddenly collapsing without evident cause.
- Animals or birds exhibiting unusual behavior or suddenly dying.

b. For further information on protection and masking procedures, refer to FM 3-4, FM 4-02.7, FM 8-284, and FM 8-285.

7-5. First Aid for a Chemical Attack

Your field protective mask gives protection against biological and chemical warfare agents as well as radiological fallout. With practice you can mask in 9 seconds or less, or put on your mask with hood within 15 seconds.

a. Stop breathing. Don your mask, seal it properly, and clear and check it; then resume breathing. Give the alarm, and continue the mission. Keep your mask on until the “all clear” signal has been given.

NOTE

Keep your mask on until the area is no longer hazardous and you are told to unmask.

b. If symptoms of nerve agent poisoning (paragraph 7-7) appear, immediately give yourself one MARK I or ATNAA.

CAUTION

Do not inject a nerve agent antidote until you are sure you need it.

c. If your eyes and face become contaminated, you must immediately try to get under cover. You need shelter to prevent further contamination while performing decontamination procedures on your face. If no overhead cover is available, put your poncho over your head before beginning the decontamination process. Then you put on the remaining

protective clothing. If vomiting occurs, the mask should be lifted momentarily and drained—with your eyes closed and while holding your breath—then replaced, cleared, and sealed.

d. If nerve agents are used, mission permitting, watch for persons needing nerve agent antidotes and immediately follow procedures outlined in paragraph 7-8*b* or *c*.

e. Decontaminate your skin immediately and clothing and equipment as soon as the mission permits.

7-6. Background Information on Nerve Agents

a. Nerve agents are among the deadliest of chemical agents. Nerve agents enter the body by inhalation, by ingestion, and through the skin. Depending on the route of entry and the amount, nerve agents can produce injury or death within minutes. Nerve agents can achieve their effects with small amounts. Nerve agents are absorbed rapidly, and the effects are felt immediately upon entry into the body. You will be issued three MARK Is or three ATNAAs and one Convulsant Antidote for Nerve Agent (CANA). Each MARK I consists of one atropine autoinjector and one pralidoxime chloride (2 PAM Cl) autoinjector (Figure 7-2A). Each ATNAA consist of a multichambered autoinjector with the atropine and pralidoxime chloride in separate chambers (Figure 7-2C). The CANA is a single autoinjector with flanges (Figure 7-2B). Procedures for use of both the MARK I and ATNAA are described below. You will use either the MARK I or the ATNAA in self-aid and buddy aid as issued.

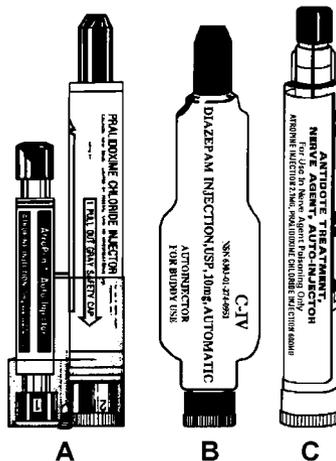


Figure 7-2. Nerve Agent Antidote Kit, MARK I, CANA, and ATNAA.

b. When you have the signs and symptoms of nerve agent poisoning, you should immediately put on the protective mask and then inject yourself with one set of the MARK I or ATNAA. Do not administer the CANA. You should inject yourself in the outer (lateral) thigh muscle (Figure 7-3) or if you are thin, in the upper outer (lateral) part of the buttocks (Figure 7-4).

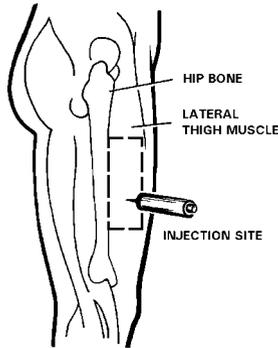


Figure 7-3. Thigh injection site.

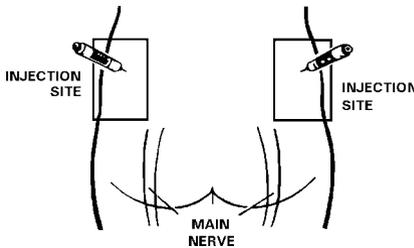


Figure 7-4. Buttocks injection site.

c. Also, you may come upon an unconscious chemical agent casualty who will be unable to care for himself and who will require first aid. You should be able to successfully—

- (1) Mask him if he is unmasked.
- (2) Inject him, if necessary, with all of **HIS** autoinjectors.
- (3) Decontaminate his skin.
- (4) Seek medical assistance.

7-7. Signs and Symptoms of Nerve Agent Poisoning

The symptoms of nerve agent poisoning are grouped as **MILD**—those that you recognize and for which you can perform self-aid, and **SEVERE**—those which require buddy aid.

a. *MILD Signs and Symptoms.*

- Unexplained runny nose.
- Unexplained sudden headache.
- Sudden drooling.
- Difficulty seeing (dimness of vision and miosis).
- Tightness in the chest or difficulty in breathing.
- Localized sweating and muscular twitching in the area of contaminated skin.
- Stomach cramps.
- Nausea.
- Tachycardia followed by bradycardia. (*Tachycardia* is an abnormally rapid heartbeat with a heart rate of over 100 beats per minute. *Bradycardia* is a slow heart rate of less than 60 beats per minute.)

b. *SEVERE Signs and Symptoms.*

- Strange or confused behavior.
- Wheezing, dyspnea (difficulty in breathing), and coughing.
- Severely pinpointed pupils.
- Red eyes with tearing.
- Vomiting.
- Severe muscular twitching and general weakness.
- Involuntary urination and defecation.

- Convulsions.
- Unconsciousness.
- Respiratory failure.
- Bradycardia.

7-8. First Aid for Nerve Agent Poisoning

First aid for nerve agent poisoning consists of administering the MARK I or ATNAA and CANA.

a. Injection Site. The injection site for administering the antidotes is normally in the outer thigh muscle. The thigh injection site is the area about a hand’s width above the knee to a hand’s width below the hip joint (Figure 7-3). It is important that the injection be given into a large muscle area. If the individual is thinly built, then the injections should be administered into the upper outer quarter (quadrant) of the buttock (Figure 7-4). Injecting in the buttocks of a thinly built individual avoids injury to the thighbone.

b. Self-Administer MARK I. If you experience any or all of the nerve agent **MILD** symptoms (paragraph 7-7a), you must **IMMEDIATELY** put on your protective mask and self-administer one MARK I (Figure 7-2A). Follow the procedure given in Table 7-1. The MARK I is carried in your protective mask carrier, pocket of the MOPP overgarment, or other location as specified in your unit tactical standing operating procedure (TSOP). (In cold weather, the MARK I should be stored in an inside pocket of your clothing to protect the antidote from freezing. A frozen MARK I cannot be immediately used to provide you with antidote, when needed. (However, the MARK I can still be used after complete thawing.)

Table 7-1. Self Aid for Nerve Agent Poisoning

MARK I*	ATNAA*
STEP 1. OBTAIN ONE MARK I.**	STEP 1. OBTAIN ONE ATNAA.**
STEP 2. CHECK INJECTION SITE.	STEP 2. CHECK INJECTION SITE.
STEP 3. HOLD MARK I AT EYE LEVEL WITH NONDOMINANT HAND WITH THE LARGE INJECTOR ON TOP (FIGURE 7-5A).	STEP 3. HOLD ATNAA WITH DOMINANT HAND (FIGURE 7-12A).

Table 7-1. Self Aid for Nerve Agent Poisoning (Continued)

MARK I*	ATNAA*
STEP 4. GRASP SMALL INJECTOR (ATROPINE) (FIGURE 7-5B) AND REMOVE FROM CLIP (FIGURE 7-5C).	STEP 4. GRASP SAFETY CAP WITH NONDOMINANT HAND AND REMOVE FROM INJECTOR (FIGURE 7-12B).
STEP 5. CLEAR HARD OBJECTS FROM INJECTION SITE.	STEP 5. CLEAR HARD OBJECTS FROM INJECTION SITE.
STEP 6. INJECT ATROPINE AT INJECTION SITE APPLYING EVEN PRESSURE TO THE INJECTOR (FIGURE 7-6 OR 7-7). HOLD IN PLACE FOR 10 SECONDS.	STEP 6. INJECT ATNAA AT INJECTION SITE APPLYING EVEN PRESSURE TO THE INJECTOR (FIGURE 7-14 OR 7-15). HOLD IN PLACE FOR 10 SECONDS.
STEP 7. HOLD USED INJECTOR WITH NONDOMINANT HAND.	STEP 7. BEND NEEDLE OF USED INJECTOR BY PRESSING ON A HARD SURFACE TO FORM A HOOK.
STEP 8. GRASP THE LARGE (2 PAM CI) INJECTOR (FIGURE 7-8B) AND PULL IT FROM CLIP (FIGURE 7-8C). DROP CLIP TO GROUND.	STEP 8. ATTACH USED INJECTOR TO BLOUSE POCKET FLAP OF BDO/JSLIST (FIGURE 7-16).
STEP 9. INJECT 2 PAM CI AT INJECTION SITE APPLYING EVEN PRESSURE TO THE INJECTOR (FIGURE 7-6 OR 7-7). HOLD IN PLACE FOR 10 SECONDS.	STEP 9. MESSAGE INJECTION SITE, MISSION PERMITTING.
STEP 10. BEND THE NEEDLES OF ALL USED INJECTORS BY PRESSING ON A HARD SURFACE TO FORM A HOOK.	
STEP 11. ATTACH ALL USED INJECTORS TO BLOUSE POCKET FLAP OF BDO/JSLIST (FIGURE 7-9).	
STEP 12. MESSAGE INJECTION SITE, MISSION PERMITTING.	

* USE STEPS LISTED FOR TYPE OF ANTIDOTE DEVICE ISSUED.

** ONLY ADMINISTER ONE MARK I OR ATNAA AS SELF-AID. DO NOT SELF-ADMINISTER CANA.

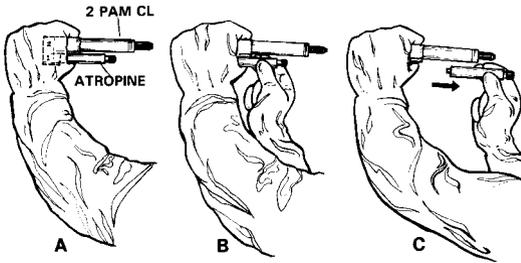


Figure 7-5. Removing the atropine autoinjector from the MARK I clip.

CAUTION

DO NOT cover or hold the needle end with your hand, thumb, or fingers—you might accidentally inject yourself. An accidental injection into the hand **WILL NOT** deliver an effective dose of the antidote, especially if the needle goes through the hand.



Figure 7-6. Thigh injection site for self-aid.

NOTE

If you are thinly built, inject yourself into the upper outer quadrant of the buttock (Figure 7-7). There is a nerve that crosses the buttocks; hitting this nerve can cause paralysis. Therefore, you must only inject into the *upper outer quadrant* of the buttock.



Figure 7-7. Buttocks injection site for self-aid.

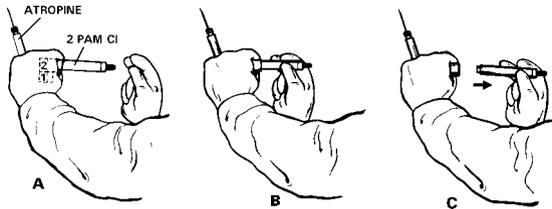


Figure 7-8. Removing the 2 PAM CI autoinjector from the MARK I clip.



Figure 7-9. One set of used MARK I autoinjectors attached to pocket flap.

NOTES

1. **DO NOT** give yourself another set of injections. If you are able to walk without assistance, know who you are, and where you are, you **WILL NOT** need the second set of injections. (If not needed, giving yourself a second set of MARK I injections or ATNAA may create a nerve agent antidote overdose, which could cause incapacitation [inability to perform mission or defend yourself].)
2. If you continue to have symptoms of nerve agent poisoning, seek someone else (a buddy) to check your symptoms and administer the additional sets of injections, if required.

c. *Buddy Evaluation and Buddy Aid.* Service members may seek assistance after self-aid (self-administering one MARK I or ATNAA) or may become incapacitated after self-aid. A buddy must evaluate the individual to determine if additional antidotes are required to counter the effects of the nerve agent. Also, service members may experience **SEVERE** symptoms of nerve agent poisoning (paragraph 7-7b); they will not be able to treat themselves. In either case, other service members must perform buddy aid as quickly as possible. Before initiating buddy aid, determine if one set of MARK I autoinjectors has already been used so that no more than three sets of the antidote are administered. Buddy aid also includes administering the CANA with the third MARK I or ATNAA to prevent convulsions. Follow the procedures indicated in Table 7-2.

WARNING

Squat, DO NOT kneel, when masking the casualty or administering the nerve agent antidote to the casualty. Kneeling may force the chemical agent into or through your protective clothing.

CAUTION

DO NOT use your own MARK I, ATNAA, or CANA on a casualty. If you use your own, you may not have any antidote if needed for self-aid.

WARNING

DO NOT inject into areas close to the hip, knee, or thigh-bone.

Table 7-2. Buddy Aid/Combat Lifesaver Aid for Nerve Agent Casualty.

MARK I*	ATNAA*	CANA**
STEP 1. MASK THE CASUALTY AND POSITION HIM ON HIS SIDE (SWIMMER'S POSITION).	STEP 1. MASK THE CASUALTY AND POSITION HIM ON HIS SIDE (SWIMMER'S POSITION).	STEP 1. OBTAIN BUDDY'S CANA.
STEP 2. POSITION YOURSELF NEAR THE CASUALTY'S THIGH.	STEP 2. POSITION YOURSELF NEAR THE CASUALTY'S THIGH.	STEP 2. CHECK INJECTION SITE.

Table 7-2. Buddy Aid/Combat Lifesaver Aid for Nerve Agent Casualty (Continued).

MARK I*	ATNAA*	CANA**
STEP 3. OBTAIN BUDDY'S THREE OR REMAINING MARK Is.	STEP 3. OBTAIN BUDDY'S THREE OR REMAINING ATNAAs.	STEP 3. HOLD CANA IN A CLOSED FIST WITH DOMINANT HAND (FIGURE 7-12A).
STEP 4. CHECK INJECTION SITE.	STEP 4. CHECK INJECTION SITE.	STEP 4. GRASP SAFETY CAP WITH NONDOMINANT HAND AND REMOVE FROM INJECTOR (FIGURE 7-12B).
STEP 5. HOLD MARK I WITH NONDOMINANT HAND (FIGURE 7-5A).	STEP 5. HOLD ATNAA IN A CLOSED FIST WITH DOMINANT HAND (FIGURE 7-12A).	STEP 5. CLEAR HARD OBJECTS FROM INJECTION SITE.
STEP 6. GRASP SMALL INJECTOR (ATROPINE) AND REMOVE FROM CLIP (FIGURE 7-5B).	STEP 6. GRASP SAFETY CAP WITH NONDOMINANT HAND AND REMOVE FROM INJECTOR (FIGURE 7-12B).	STEP 6. INJECT CANA AT INJECTION SITE BY APPLYING EVEN PRESSURE TO THE INJECTOR, NOT A JABBING MOTION (FIGURE 7-14 OR 7-15). HOLD IN PLACE FOR 10 SECONDS.
STEP 7. CLEAR HARD OBJECTS FROM INJECTION SITE.	STEP 7. CLEAR HARD OBJECTS FROM INJECTION SITE.	STEP 7. BEND NEEDLE OF INJECTOR BY PRESSING ON A HARD SURFACE TO FORM A HOOK.
STEP 8. INJECT ATROPINE AT INJECTION SITE BY APPLYING EVEN PRESSURE TO THE INJECTOR, NOT A JABBING MOTION (FIGURE 7-10 OR 7-11). HOLD IN PLACE FOR 10 SECONDS.	STEP 8. INJECT ATNAA AT INJECTION SITE BY APPLYING EVEN PRESSURE TO THE INJECTOR, NOT A JABBING MOTION (FIGURE 7-14 OR 7-15). HOLD IN PLACE FOR 10 SECONDS.	STEP 8. ATTACH USED INJECTOR TO BLOUSE POCKET FLAP OF BDO/JSLIST (FIGURE 7-16).
STEP 9. HOLD USED INJECTOR BETWEEN LITTLE FINGER AND RING FINGER OF NONDOMINANT HAND (FIGURE 7-5A).	STEP 9. BEND NEEDLE OF INJECTOR BY PRESSING ON A HARD SURFACE TO FORM A HOOK.	STEP 9. MESSAGE INJECTION SITE, MISSION PERMITTING.
STEP 10. PULL LARGE INJECTOR (2 PAM CI) FROM CLIP (FIGURE 7-5C). DROP CLIP TO GROUND.	STEP 10. ATTACH ALL USED INJECTORS TO BLOUSE POCKET FLAP OF BDO/JSLIST (FIGURE 7-16).	

Table 7-2. Buddy Aid/Combat Lifesaver Aid for Nerve Agent Casualty (Continued).

MARK I*	ATNAA*	CANA**
STEP 11. INJECT 2 PAM CI AT INJECTION SITE BY APPLYING EVEN PRESSURE TO THE INJECTOR, NOT A JABBING MOTION (FIGURE 7-10 OR 7-11). HOLD IN PLACE FOR 10 SECONDS.	STEP 11. MESSAGE INJECTION SITE, MISSION PERMITTING.	
STEP 12. REPEAT STEPS ABOVE FOR REMAINING MARK IS.		
STEP 13. BEND THE NEEDLES OF ALL USED INJECTORS BY PRESSING ON A HARD SURFACE TO FORM A HOOK.		
STEP 14. ATTACH ALL USED INJECTORS TO BLOUSE POCKET FLAP OF BDO/JSLIST (FIGURE 7-13).		
STEP 15. MESSAGE INJECTION SITE, MISSION PERMITTING.		
<p>* USE STEPS LISTED FOR TYPE OF ANTIDOTE DEVICE ISSUED. ** CANA IS USED IN BUDDY AID/CLS AID ONLY. DO NOT USE IN SELF-AID.</p>		

NOTE

If the casualty is thinly built, inject the antidote into the buttock. Only inject the antidote into the upper outer portion of the casualty's buttock (Figure 7-11). This avoids hitting the nerve that crosses the buttocks (Figure 7-4). Hitting this nerve can cause paralysis.



Figure 7-10. Injecting the casualty's thigh (Mark I or CANA).



Figure 7-11. Injecting the casualty's buttocks (Mark I or CANA).

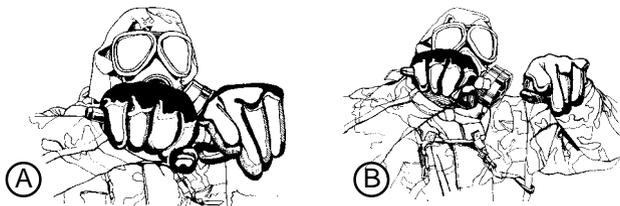


Figure 7-12. Preparing CANA or ATNAA for injection.

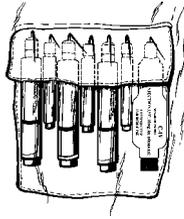


Figure 7-13. Three sets of used MARK I autoinjectors and one CANA autoinjector attached to pocket flap.

d. Self-Administer Antidote Treatment Nerve Agent Autoinjector. If you experience any or all of the nerve agent **MILD** symptoms (paragraph 7-7*b*), you must **IMMEDIATELY** self-administer one ATNAA following the procedure given Table 7-1.

NOTE

If you are thinly-built, inject yourself into the upper outer quarter (quadrant) of the buttock (Figure 7-15). There is a nerve that crosses the buttocks; hitting this nerve can cause paralysis. Therefore, you must only inject into the upper outer quarter (quadrant) of the buttocks.



Figure 7-14. Self-administration of ATNAA (thigh).



Figure 7-15. Self-administration of ATNAA (buttock).

NOTE

If you continue to have symptoms of nerve agent poisoning, seek someone else (a buddy) to check your symptoms and administer your remaining sets of injections, if required.

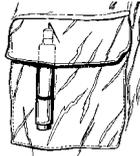


Figure 7-16. Used ATNAA attached to clothing.

e. **Buddy Assistance.** Service members may seek assistance after self-aid (self-administering one ATNAA) or may become incapacitated after self-aid. A buddy must evaluate the individual to determine if additional antidotes are required to counter the effects of the nerve agent. Also, service members may experience **SEVERE** symptoms of nerve agent poisoning (paragraph 7-7b); they will not be able to treat themselves. In either case, other service members must perform buddy aid as quickly as possible. Before initiating buddy aid, determine if one ATNAA has already been used so that no more than three ATNAA are administered. Buddy aid also includes administering the CANA with the third ATNAA to prevent convulsions. Follow the procedures indicated in Table 7-2.

WARNING

Squat, **DO NOT** kneel, when masking the casualty or administering the nerve agent antidotes to the casualty. Kneeling may force any chemical agent on your overgarment into or through your protective clothing.



Figure 7-17. Buddy injecting casualty's outer thigh (ATNAA or CANA).

NOTE

If the casualty is thinly built, inject the antidote into the buttocks (Figure 7-18). Only inject the antidote into the upper outer portion of the casualty's buttocks. This avoids hitting the nerve that crosses the buttocks (Figure 7-4). Hitting this nerve can cause paralysis.

WARNING

DO NOT inject into areas close to the hip, knee, or thighbone.



Figure 7-18. Buddy injecting casualty's buttocks (ATNAA or CANA).



Figure 7-19. Three used ATNAAs and one CANA autoinjector attached to clothing.

f. Combat Lifesaver.

(1) The combat lifesaver must check to verify if the individual has received three sets of MARK I or ATNAAs. If not, the combat lifesaver performs first aid as described for buddy aid above. If the

individual has received the initial three sets of MARK I, then the combat lifesaver may administer additional atropine injections at approximately 15 minute intervals until atropinization is achieved (that is a heart rate above 90 beats per minute, reduced bronchial secretions, and reduced salivations). Administer additional atropine at intervals of 30 minutes to 4 hours to maintain atropinization or until the casualty is placed under the care of medical personnel. Check the heart rate by lifting the casualty's mask hood and feeling for a pulse at the carotid artery. Request medical assistance as soon as the tactical situation permits.

(2) The CLS should administer additional CANA to casualties suffering convulsions. Administer a second, and if needed, a third CANA at 5 to 10 minute intervals for a maximum of three injections (30 milligrams diazepam). Follow the steps and procedures described in buddy aid for administering the CANA. **DO NOT** give more than two additional injections for a total of three (one self-aid plus two by the CLS).

7-9. Blister Agents

Blister agents (vesicants) include mustard (H and HD), nitrogen mustards (HN), lewisite (L), and other arsenicals, mixtures of mustards and arsenicals, and phosgene oxime (CX). Blister agents may act on the eyes, mucous membranes, lungs, and skin. They burn and blister the skin or any other body parts they contact. Even relatively low doses may cause serious injury. Blister agents damage the respiratory tract (nose, sinuses, and windpipe) when inhaled and cause vomiting and diarrhea when absorbed. Lewisite and CX cause immediate pain on contact. However, mustard agents are deceptive as there is little or no pain at the time of exposure. Thus, in some cases, signs of injury may not appear for several hours after exposure.

a. *Protective Measures.* Your protective mask with hood and protective overgarment provide protection against blister agents. If it is known or suspected that blister agents are being used, **STOP BREATHING**, put on your mask and your protective overgarment.

CAUTION

Large drops of liquid vesicants on the protective overgarment ensemble may penetrate it if allowed to stand for an extended period. Remove large drops as soon as possible.

b. Signs and Symptoms of Blister Agent Poisoning.

(1) Immediate and intense pain upon contact with L, LH (lewisite and mustard) mixture, and CX. No initial pain upon contact with mustard.

(2) Inflammation and blisters (burns) resulting in tissue destruction. The severity of a chemical burn is directly related to the concentration of the agent and the duration of contact with the skin. The longer the agent is in contact with the tissue, the more serious the injury will be.

(3) Vomiting and diarrhea. Exposure to high concentrations of vesicants may cause vomiting or diarrhea.

(4) Death. The blister agent vapors absorbed during ordinary field exposure will probably not cause enough internal body (systemic) damage to result in death. However, death may occur from prolonged exposure to high concentrations of vapor or from extensive liquid contamination over wide areas of the skin, particularly *when decontamination is neglected or delayed*.

c. First Aid Measures.

(1) Use your M291 Skin Decontaminating Kit to decontaminate your skin and use water to flush contaminated eyes. Decontamination of vesicants must be done immediately (within 1 minute is best).

(2) If blisters form, cover them loosely with a field dressing and secure the dressing.

CAUTION

Blisters are actually burns. **DO NOT** attempt to decontaminate the skin where blisters have formed, as the agent has already been absorbed.

(3) If you receive blisters over a wide area of the body, you are considered seriously burned. Seek medical assistance immediately.

(4) If vomiting occurs, the mask should be lifted momentarily and drained—while the eyes are closed and the breath is held—and replaced, cleared, and sealed.

(5) Remember, if vomiting or diarrhea occurs after having been exposed to blister agents, seek medical assistance immediately.

7-10. Choking Agents (Lung-Damaging Agents)

Chemical agents that attack lung tissue, primarily causing fluid buildup (pulmonary edema), are classified as choking agents (lung-damaging agents). This group includes phosgene (CG), diphosgene (DP), chlorine (Cl), and chloropicrin (PS). Of these four agents, CG is the most dangerous and is more likely to be employed by the enemy in future conflict.

a. Protective Measures. Your protective mask gives adequate protection against choking agents.

b. Signs and Symptoms. During and immediately after exposure to choking agents (depending on agent concentration and length of exposure), you may experience some or all of the following signs and symptoms:

- Tears (lacrimation).
- Coughing.
- Choking.
- Tightness of chest.
- Nausea and vomiting.
- Headaches.

c. Self-Aid.

(1) The protective mask should be put on immediately when any of the conditions described in *b* above exist. Another indication of a CG attack is an odor like newly mown hay; however, **DO NOT** rely upon odor as indication of a chemical attack.

(2) If some CG is inhaled, normal combat duties should be continued unless there is difficulty in breathing, nausea, vomiting, or more than the usual shortness of breath during exertion. If any of the above symptoms occur and the mission permits, remain at quiet rest until medical evacuation is accomplished.

d. Death. With ordinary field exposure to choking agents, death will probably not occur. However, *prolonged exposure to high concentrations of the vapor and neglect or delay in masking can be fatal.*

7-11. Cyanogen (Blood) Agents

Cyanogen agents interfere with proper oxygen utilization in the body. Hydrogen cyanide (AC) and cyanogen chloride (CK) are the primary agents in this group.

a. Protective Measures. Your protective mask with a fresh filter gives adequate protection against field concentrations of cyanogen agent vapor. The protective overgarments, as well as the mask, are needed when exposed to liquid AC.

b. Signs and Symptoms. During and immediately after exposure to cyanogen agents (depending on agent concentration and length of exposure), you may experience some or all of the following signs and symptoms:

- Tearing (lacrimation).
- Eye, nose, and throat irritation.
- Sudden stimulation of breathing (unable to hold breath).
- Nausea.
- Coughing.
- Tightness of chest.
- Headache.
- Light-headedness (dizziness).
- Unconsciousness.

c. First Aid.

(1) *Hydrogen cyanide.* During any chemical attack, if you get a sudden stimulation of breath or detect an odor like bitter almonds, **PUT ON YOUR MASK IMMEDIATELY**. Speed is absolutely essential since this agent acts so rapidly that within a few seconds its effects will make it impossible for service members to put on their mask by themselves. Stop breathing until the mask is on, if at all possible. This may be very difficult since the agent strongly stimulates respiration.

(2) *Cyanogen chloride.* Put your mask on immediately if you experience any irritation of the eyes, nose, or throat. Service members

who are unable to mask should be masked by the nearest service member (buddy).

d. Medical Assistance. If you suspect that you have been exposed to blood agents, seek medical assistance immediately.

7-12. Incapacitating Agents

An incapacitating agent is a chemical agent which produces temporary, disabling conditions which persist for hours to days after exposure. Unlike riot control agents, which usually are momentary or fleeting in action, incapacitating agents have a persistent effect. It is likely that smoke-producing munitions or aerosols will disseminate such agents, thus making breathing their means of entry into the body. The protective mask is, therefore, essential.

a. There are no specific first aid measures to relieve the symptoms of incapacitating agents. Supportive first aid and physical restraint may be indicated. If the casualty is stuporous or comatose, be sure that respiration is unobstructed; then turn him on his side in case vomiting should occur. Complete cleansing of the skin with soap and water should be done as soon as possible; or, the M291 Skin Decontaminating Kit can be used if washing is impossible. Remove weapons and other potentially harmful items from service members who are suspected of having these symptoms. Harmful items include cigarettes, matches, medications, and small items that might be swallowed accidentally. Delirious (confused) persons have been known to attempt to eat items bearing only a superficial resemblance to food.

b. Incapacitating agents (anticholinergic drugs BZ type) may produce alarming dryness and coating of the lips and tongue; however, there is usually no danger of immediate dehydration. Fluids should be given sparingly, if at all, because of the danger of vomiting and because of the likelihood of temporary urinary retention due to paralysis of bladder muscles.

c. If the body temperature is elevated and mucous membranes are dry, immediate and vigorous cooling (as for heatstroke) is indicated. Methods that can be used to cool the skin are spraying with cool water and air circulation (fanning); applying alcohol soaked cloths and air circulation; and providing maximum exposure to air in a shaded area, along with maximum air circulation. Such cases are usually a result of anticholinergic poisoning. Rapid evacuation should be accomplished since medical treatment with the appropriate medication may be lifesaving.

CAUTION

DO NOT use **ice** for cooling the skin.

d. Reassurance and a firm, but friendly, attitude by individuals providing first aid will be beneficial if the casualty appears to comprehend what is being said. Conversation is a waste of time if the service member is incoherent or cannot understand what is being said. In such cases, the less said, the better it is—these casualties will benefit more from prompt and vigorous restraint and evacuation to an MTF.

7-13. Incendiaries

Incendiaries can be grouped as WP, thickened gasoline, metal, and oil and metal. You must learn to protect yourself against these incendiaries.

a. White phosphorus is used primarily as a smoke producer but can be used for its incendiary effect to ignite field expedients and combustible materials. The burns from WP are usually multiple, deep, and variable in size. When particles of WP get on the skin or clothing, they continue to burn until deprived of air. They also have a tendency to stick to a surface and must be brushed off or picked out.

(1) If burning particles of WP strike and stick to your clothing, quickly take off the contaminated clothing before the WP burns through to the skin.

(2) If burning WP strikes your skin, smother the flame with water, a wet cloth, or mud.

NOTE

Since WP is soluble in oil, **DO NOT** use grease, oily ointments, or eye ointments to smother the flame.

(3) Keep the WP particles covered with a wet material to exclude air until you can remove them or have them removed from your skin.

(4) Remove the WP particles from the skin by brushing them with a wet cloth and by picking them out with a knife, bayonet, stick, or other available object.

(5) Seek medical assistance when the mission permits.

b. Thickened fuel mixtures (napalm) have a tendency to cling to clothing and body surfaces, thereby producing prolonged exposure and severe burns. The first aid for these burns is the same as for other heat burns. The heat and irritating gases given off by these combustible mixtures may cause lung damage, which must be treated by medical personnel.

c. Metal incendiaries pose special problems. Thermite particles on the skin should be immediately cooled with water and then removed. The first aid for these burns is the same as for other heat burns. Particles of magnesium on the skin burn quickly and deeply. Like other metal incendiaries, they must be removed. Ordinarily, medical personnel should do the complete removal of these particles as soon as possible. Immediate medical treatment is required.

d. Oil and metal incendiaries have much the same effect on contact with the skin and clothing as those discussed (*b* and *c* above). First aid measures for burns are discussed in Chapter 3.

7-14. Biological Agents and First Aid

a. Biological attacks can result in combat ineffectiveness by introducing disease-causing organisms into a troop population.

b. Once a disease is identified, first aid or medical treatment is initiated, depending on the seriousness of the disease. First aid measures are concerned with observable symptoms of the disease such as diarrhea or vomiting.

7-15. Toxins

Toxins are alleged to have been used in past conflicts. Witnesses and victims have described the agent as toxic rain (or yellow rain) because it was reported to have been released from aircraft as a yellow powder or liquid that covered ground, structures, vegetation, and people.

a. Signs and Symptoms. The occurrence of the symptoms from toxins may appear in a period of a few minutes to several hours depending on the particular toxin, the service member's susceptibility, and the amount of toxin inhaled, ingested, or deposited on the skin. Symptoms from toxins usually involve the central nervous system but are often preceded by less prominent symptoms, such as nausea, vomiting, diarrhea, cramps, or stomach

irritation and burning sensation. Typical neurological symptoms often develop rapidly in severe cases; for example, visual disturbances, inability to swallow, speech difficulty, lack of muscle coordination, and sensory abnormalities (numbness of mouth, throat, or extremities). Yellow rain (mycotoxins) also may have hemorrhagic symptoms, which could include any or all of the following:

- Dizziness.
- Severe itching or tingling of the skin.
- Formation of multiple, small, hard blisters.
- Coughing up blood.
- Shock (which could result in death).

b. Self-Aid. Upon recognition of an attack employing toxins, you must immediately take the following actions:

(1) Stop breathing, put on your protective mask with hood, and then resume breathing. Next, put on your protective clothing.

(2) Should severe itching of the face become unbearable, quickly—

- Loosen the cap on your canteen.
- Take and hold a deep breath and lift your mask.
- While holding your breath, close your eyes and flush your face with generous amounts of water.

CAUTION

DO NOT rub or scratch your eyes. Try not to let the water run onto your clothing or protective overgarment.

• Put your protective mask back on, seat it properly, clear it, and check it for a seal; then resume breathing.

• Decontaminate your skin by bathing with soap and water as soon as the mission permits.

- Change clothing and decontaminate your protective mask using soap and water. Replace the filters if directed.

(3) If vomiting occurs, the mask should be lifted momentarily and drained—while the eyes are closed and the breath is held—and replaced, cleared, and sealed.

c. Medical Assistance. If you suspect that you have been exposed to toxins, you should seek medical assistance immediately.

7-16. Nuclear Detonation

a. Three types of injuries may result from a nuclear detonation. These are thermal, blast, and radiation injuries. Many times the casualty will have a combination of these types of injuries. First aid for thermal and blast injuries is provided based on observable injuries, such as burns, hemorrhage, or fractures.

b. The signs and symptoms of radiation illness in the initial phase include the rapid onset of nausea, vomiting, and malaise (tiredness). The only first aid procedure for radiological casualties is decontamination.

CHAPTER 8

FIRST AID FOR
PSYCHOLOGICAL REACTIONS**8-1. General**

Psychological first aid is as natural and reasonable as physical first aid and is just as familiar. When you were hurt as a child, the understanding attitude of your parents did as much as the psychological effect of a bandage. Later, your disappointment or grief was eased by supportive words from a friend. Certainly, taking a walk and talking things out with a friend are familiar ways of dealing with an emotional crisis. The same natural feelings that make us want to help a person who is injured make us want to give a helping hand to a buddy who is upset. *Psychological first aid* really means nothing more complicated than assisting people with emotional distress whether it results from physical injury, disease, or excessive stress. Emotional distress is not always as visible as a wound or a broken bone. However, overexcitement, severe fear, excessive worry, deep depression, misdirected irritability, and anger are signs that stress has reached the point of interfering with effective coping. The more noticeable the symptoms become, the more urgent the need for you to be of help and the more important it is for you to know *how* to help.

8-2. Importance of Psychological First Aid

You must know how to give psychological first aid to be able to help yourself, your buddies, and your unit in order to keep performing the mission. Psychological first aid measures are simple and easy to understand. Your decision of what to do depends upon your ability to observe the service member and understand his needs. Making the best use of resources requires ingenuity on your part. A stress reaction resulting in poor judgment can cause injury or even death to yourself or others on the battlefield. It can be even more dangerous if other persons are affected by the judgment of an emotionally upset service member. If it is detected early enough, the affected service member stands a good chance of remaining in his unit as an effective member. If it is not detected early and if the service member becomes more emotionally upset, he may become a threat to himself and to others.

8-3. Situations Requiring Psychological First Aid

- Psychological first aid (buddy aid) is most needed at the first sign that a service member cannot perform the mission because of emotional

distress. Stress is inevitable in combat, in hostage and terrorist situations, and in civilian disasters such as floods, hurricanes, or industrial accidents. Most emotional reactions to such situations are temporary, and the service member can still carry on with encouragement. Painful or disruptive symptoms may last for minutes, hours, or days. However, if the stress symptoms are seriously disabling, they may be psychologically contagious and endanger not only the emotionally upset service member but also the entire unit.

- Sometimes people continue to function well during a disastrous event, but suffer from emotional scars which impair their job performance or quality of life at a later time. Painful memories and dreams may recur for months and years and still be considered a normal reaction. However, if the memories are so painful that the person must avoid all situations which arouse them, becomes socially withdrawn, or shows symptoms of anxiety, depression, or substance abuse, he needs treatment. Experience with police, firemen, emergency medical technicians, and others who deal with disasters has proved that the routine application of psychological first aid to all the participants, including those who have functioned well, greatly reduces the likelihood of future serious post-traumatic stress disorders (PTSDs).

8-4. Interrelationship of Psychological and Physical First Aid

Psychological first aid should go hand in hand with physical first aid. The discovery of a physical injury or cause for an inability to function does not rule out the possibility of a psychological injury (or vice versa). The person suffering from pain, shock, fear of serious injury, or fear of death does not respond well to joking, indifference, or fearful-tearful attention. Fear and anxiety may take as high a toll of the service member's strength as does the loss of blood.

8-5. Goals of Psychological First Aid

The goals of psychological first aid are to—

- Be supportive; assist the service member in dealing with his stress reaction.
- Prevent, and if necessary control, behavior harmful to himself and to others.
- Return the service member to duty as soon as possible after dealing with the stress reaction.

8-6. Respect for Others' Feelings

a. Accept the service member you are trying to help without censorship or ridicule. Respect his right to his own feelings. Even though your feelings, beliefs, and behavior are different, DO NOT blame or make light of him for the way he feels or acts. Your purpose is to help him in this tough situation, not to be his critic. A person DOES NOT WANT to be upset and worried. When he seeks help, he needs and expects consideration of his fears, not abrupt dismissal or ridicule.

b. Realize that people are the products of a wide variety of factors. All people DO NOT react the same way to the same situations. Each individual has complex needs and motivations, both conscious and unconscious, that are uniquely his own. Often the one thing that finally causes the person to become overloaded by a stressful situation is not the stressor itself, but some other problem.

8-7. Emotional and Physical Disability

a. Accept emotional disability as being just as real as physical disability. If a service member's ankle is seriously sprained in a fall, no one expects him to run right away. A service member's emotions may be temporarily strained by the overwhelming stress of battle or other traumatic incident. DO NOT demand that he pull himself together immediately and carry on without a break. Some individuals can pull themselves together immediately, but others cannot. The service member whose emotional stability has been disrupted has a disability just as real as the service member who has sprained his ankle. There is an unfortunate tendency in many people to regard as real only what they can see, such as a wound or bleeding. Some people tend to assume that damage involving a person's mind and emotions is just imagined, that he is not really sick or injured, and that he could overcome his trouble by using his will power.

b. The terms *it's all in your head*, *snap out of it*, and *get control of yourself* are often used by people who believe they are being helpful. Actually, these terms are expressions of hostility because they show lack of understanding. They only emphasize weakness and inadequacy. Such terms are of no use in psychological first aid.

c. Every physically injured person has some emotional reaction to the fact that he is injured.

(1) It is normal for an injured person to feel upset. The more severe the injury, the more insecure and fearful he becomes, especially

if the injury is to a body part which is highly valued. For example, an injury to the eyes or the genitals, even though relatively minor, is likely to be extremely upsetting. An injury to some other part of the body may be especially disturbing to an individual for his own particular reason. For example, an injury of the hand may be a terrifying blow to a surgeon or an injury to the eye of a pilot.

(2) An injured service member always feels less secure, more anxious, and more afraid not only because of what has happened to him but because of what he imagines may happen as a result of his injury. This fear and insecurity may cause him to be irritable, uncooperative, or unreasonable. As you help him, always keep in mind that such behavior has little or nothing to do with you personally. He needs your patience, reassurance, encouragement, and support.

8-8. Combat and Other Operational Stress Reactions

Stress reaction is a temporary emotional disorder or inability to function, experienced by a previously normal service member as a reaction to the overwhelming or cumulative stress of combat. Stress reaction gets better with reassurance, rest, physical replenishment, and activities that restore confidence. All service members are likely to feel stress reaction under conditions of intense and/or prolonged stress. They may even become stress reaction casualties, unable to perform their mission for hours or days. Other combat and operational stress reactions (COSRs) may result in negative behavior, but are not termed *stress reaction*, as they need more intensive treatment. These negative COSRs may result in misconduct stress behaviors such as drug and alcohol abuse, criminal acts, looting, desertion, and self-inflicted wounds. These harmful COSRs can often be prevented by good psychological first aid. Service members who commit misconduct stress behaviors may require disciplinary action rather than medical treatment.

8-9. Reactions to Stress

Most service members react to stressful incidents after the situation has passed. All service members feel some fear. This fear may be greater than they have experienced at any other time, or they may be more aware of their fear. In such a situation, they should not be surprised if they feel shaky or become sweaty, nauseated, or confused. These reactions are normal and are not a cause for concern. However, some reactions, either short- or long-term, will cause problems if left unchecked. See paragraph 8-13 for more information.

a. Emotional Reactions.

(1) The most obvious combat stress reaction (CSR) is inefficient performance. This can be demonstrated by—

- Slow thinking (or reaction time).
- Difficulty recognizing priorities and seeing what needs to be done.
- Difficulty getting started.
- Indecisiveness and having trouble focusing attention.
- Tendency to do familiar tasks and be preoccupied with familiar details. (This can reach the point where the person is very passive, such as just sitting or wandering about not knowing what to do.)

(2) A less common reaction may be uncontrolled emotional outbursts; this can be demonstrated by crying, screaming, or laughing. Some service members will react in the opposite way. They will be very withdrawn and silent and try to isolate themselves from everyone. These service members should be encouraged to remain with their assigned unit. Uncontrolled reactions may appear by themselves or in any combination (the person may be crying uncontrollably one minute and then laughing the next). In this state, the person is restless and cannot keep still. He may run about, apparently without purpose. Inside, he feels a great rage or fear and his physical acts may show this. In his anger he may indiscriminately strike out at others.

b. Loss of Adaptability.

(1) In a desperate attempt to get away from the danger, which has overwhelmed him, a service member may panic and become confused. His mental ability may be so impaired he cannot think clearly or even follow simple commands. His judgment may be faulty and he may not be aware of his actions, such as standing up in his fighting position during an attack.

(2) In other cases, overwhelming stress may produce symptoms that are often associated with head injuries. For example, the service member may appear dazed or be found wandering around aimlessly. He may appear confused and disoriented and may seem to have a complete or partial loss of memory. In such cases, especially when no eyewitnesses can provide evidence that the service member has NOT suffered a head injury, it is necessary for him to be rapidly medically evacuated. **DO NOT** allow the

service member to expose himself to further personal danger until the cause of the problem has been determined.

c. *Sleep Disturbance and Repetition of Dreams.* A person who has been overwhelmed by stress often has difficulty sleeping. The service member may experience nightmares related to the stressors. Remember that nightmares, in themselves, are not considered abnormal when they occur soon after a period of intensive stress. As time passes, the nightmares usually become less frequent and less intense. In extreme cases, a service member, even when awake, may think repeatedly of the incident, feel as though it is happening again, and act out parts of his stress over and over again. For some persons, this repetitious reexperiencing of the stressful event may be necessary for eventual recovery; therefore, it should not be discouraged or viewed as abnormal. For the person reexperiencing the event, such reaction may be disruptive. The service member needs to be encouraged to *ventilate* about the incident. Ventilation is a technique where the service member is given the opportunity to talk extensively, often repetitiously about the experience.

8-10. Severe Stress or Stress Reaction

You do not need specialized training to recognize severe stress or stress reaction that will cause problems for the service member, the unit, or the mission. Reactions that are less severe, however, are more difficult to detect. To determine whether a person needs help, you must observe him to see whether he is doing something meaningful, performing his duties, taking care of himself, behaving in an unusual fashion, or acting out of character.

8-11. Application of Psychological First Aid

The emotionally disturbed service member has built a barrier against fear. He does this for his own protection, although he is probably not aware that he is doing it. If he finds that he does not have to be afraid and that there are normal, understandable things about him, he will feel safer in dropping this barrier. Persistent efforts to make him realize that you want to understand him will be reassuring, especially if you remain calm. Nothing can cause an emotionally disturbed person to become even more fearful than feeling that others are afraid of him. Try to remain calm. Familiar things, such as a cup of coffee, the use of his name, attention to a minor wound, being given a simple job to do, or the sight of familiar people and activities, will add to his ability to overcome his fear. He may not respond well if you get excited, angry, or abrupt.

a. Ventilation. After the service member becomes calmer, he is likely to have dreams about the stressful event. He also may think about it when he is awake or even repeat his personal reaction to the event. One benefit of this natural pattern is that it helps him master the stress by going over it just as one masters the initial fear of parachuting from an aircraft by doing it over and over again. Eventually, it is difficult to remember how frightening the event was initially. In giving first aid to the emotionally disturbed service member, you should let him follow this natural pattern. Encourage him to talk. Be a good listener. Let him tell, in his own words, what actually happened. If home front problems or worries have contributed to the stress, it will help him to talk about them. Your patient listening will prove to him that you are interested in him, and by describing his personal problem, he can work at mastering his fear. If he becomes overwhelmed in the telling, suggest a cup of coffee or a break. Whatever you do, assure him that you will listen again as soon as he is ready. Do try to help put the service member's perception of what happened back into realistic perspective; but DO NOT argue about it.

b. Activity.

(1) A person who is emotionally disturbed as the result of a combat action is a casualty of anxiety and fear. He is disabled because he has become temporarily overwhelmed by his anxiety. A good way to control fear is through activity. Almost all service members, for example, experience a considerable sense of anxiety and fear while they are poised, awaiting the opening of a big offensive; but this is normally relieved, and they actually feel better once they begin to move into action. They take pride in effective performance and pleasure in knowing that they are good service members, perhaps being completely unaware that overcoming their initial fear was their first major accomplishment.

(2) Useful activity is very beneficial to the emotionally disturbed service member who is not physically incapacitated. After you help a service member get over his initial fear, help him to regain some self-confidence. Make him realize his job is continuing by finding him something useful to do. Encourage him to be active. Get him to help load trucks, clean up debris, or dig fighting positions. If possible, get him back to his usual duty. Seek out his strong points and help him apply them. Avoid having him just sit around. You may have to provide direction by telling him what to do and where to do it. The instructions should be clear and simple and should be repeated. A person who has panicked is likely to argue. Respect his feelings, but point out more immediate, obtainable, and demanding needs. Channel his excessive energy and, above all, DO NOT argue. If you cannot get him interested in doing more profitable work, it may be necessary to enlist aid in controlling his overactivity before it spreads to the group and

results in more panic. Prevent the spread of such infectious feelings by restraining and segregating if necessary.

(3) Involvement in activity helps a service member in three ways; he—

- Forgets himself.
- Has an outlet for his excessive tensions.
- Proves to himself he can do something useful.

c. Rest. There are times, particularly in combat, when physical exhaustion is a principal cause for emotional reactions. A unit sleep plan should be established and implemented. When possible, service members should be given a safe and relatively comfortable area in which to sleep. Examples would be an area away from heavy traffic, noise, and congestion or a place that is clean and dry and protected from environmental conditions. The more uninterrupted sleep a service member gets the better he will be able to function in the tactical environment.

d. Hygiene. Field hygiene is an important ingredient in a service member's morale. A service member who is dirty and unkempt will not function as well as a service member who has had the opportunity to bathe and put on clean, dry clothing. During combat, unit leaders should stress the importance of personal hygiene. Good personal hygiene not only improves morale, it also is a preventive measure against disease and nonbattle injury (DNBI).

e. Group Activity. You have probably already noticed that a person works, faces danger, and handles serious problems better if he is a member of a closely-knit group. Each service member in the team supports the other team members. Esprit de corps is built because the service members have the same interests, goals, and mission, and as a result they are more productive; furthermore, they are less worried because everyone is involved. It is this spirit that takes a strategic hill in battle. It is so powerful that it is one of the most effective tools you have in your *psychological first aid bag*. Getting the service member back into the team or squad activities will reestablish his sense of belonging and security and will go far toward making him a useful member of the unit.

8-12. Reactions and Limitations

Up to this point the discussion has been primarily about the feelings of the emotionally distressed service member. What about your feelings toward

him? Whatever the situation, you will have emotional reactions (conscious or unconscious) toward this service member. Your reactions can either help or hinder your ability to help him. When you are tired or worried, you may very easily become impatient with him if he is unusually slow or exaggerates. You may even feel resentful toward him. At times when many physically wounded lie about you, it will be especially natural for you to resent disabilities that you cannot see. Physical wounds can be seen and easily accepted. Emotional reactions are more difficult to accept as injuries. On the other hand, will you tend to be overly sympathetic? Excessive sympathy for an incapacitated person can be as harmful as negative feelings in your relationship with him. He needs strong help, but not your sorrow. To overwhelm him with pity will make him feel even more inadequate. You must expect your buddy to recover, to be able to return to duty, and to become a useful service member again. This expectation should be displayed in your behavior and attitude as well as in what you say. If he can see your calmness, confidence, and competence, he will be reassured and will feel a sense of greater security.

8-13. Stress Reactions

See Tables 8-1, 8-2, and 8-3 for more information.

Table 8-1. Mild Stress Reaction

PHYSICAL SIGNS*	EMOTIONAL SIGNS*
<ol style="list-style-type: none"> 1. TREMBLING, TEARFUL 2. JUMPINESS, NERVOUSNESS 3. COLD SWEAT, DRY MOUTH 4. POUNDING HEART, DIZZINESS 5. INSOMNIA, NIGHTMARES 6. NAUSEA, VOMITING, DIARRHEA 7. FATIGUE 8. THOUSAND-YARD STARE 9. DIFFICULTY THINKING, SPEAKING, AND COMMUNICATING 	<ol style="list-style-type: none"> 1. ANXIETY, INDECISIVENESS 2. IRRITABLE, COMPLAINING 3. FORGETFUL, UNABLE TO CONCENTRATE 4. EASILY STARTLED BY NOISE, MOVEMENT 5. GRIEF, TEARFUL 6. ANGER, BEGINNING TO LOSE CONFIDENCE IN SELF AND UNIT

SELF- AND BUDDY AID

<ol style="list-style-type: none"> 1. CONTINUE MISSION PERFORMANCE, FOCUS ON IMMEDIATE MISSION. 2. EXPECT SERVICE MEMBER TO PERFORM ASSIGNED DUTIES. 3. REMAIN CALM AT ALL TIMES; BE DIRECTIVE AND IN CONTROL. 4. LET SERVICE MEMBER KNOW HIS REACTION IS NORMAL, AND THAT THERE IS NOTHING SERIOUSLY WRONG WITH HIM. 5. KEEP SERVICE MEMBER INFORMED OF THE SITUATION, OBJECTIVES, EXPECTATIONS, AND SUPPORT. CONTROL RUMORS. 6. BUILD SERVICE MEMBER'S CONFIDENCE, TALK ABOUT SUCCEEDING. 7. KEEP SERVICE MEMBER PRODUCTIVE (WHEN NOT RESTING) THROUGH RECREATIONAL ACTIVITIES, EQUIPMENT MAINTENANCE.

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- 8. ENSURE SERVICE MEMBER MAINTAINS GOOD PERSONAL HYGIENE.
- 9. ENSURE SERVICE MEMBER EATS, DRINKS, AND SLEEPS AS SOON AS POSSIBLE.
- 10. LET SERVICE MEMBER TALK ABOUT HIS FEELINGS. DO NOT "PUT DOWN" HIS FEELINGS OF GRIEF OR WORRY. GIVE PRACTICAL ADVICE AND PUT EMOTIONS INTO PERSPECTIVE.

* MOST OR ALL OF THESE SIGNS ARE PRESENT IN MILD STRESS REACTION. THEY CAN BE PRESENT IN ANY NORMAL SERVICE MEMBER IN COMBAT YET HE CAN STILL DO HIS JOB.

Table 8-2. More Serious Stress Reaction

PHYSICAL SIGNS*	EMOTIONAL SIGNS*
1. CONSTANTLY MOVES AROUND	1. RAPID AND/OR INAPPROPRIATE TALKING
2. FLINCHING OR DUCKING AT SUDDEN SOUNDS	2. ARGUMENTATIVE, RECKLESS MOVEMENTS/ACTIONS
3. SHAKING, TREMBLING (WHOLE BODY OR ARMS)	3. INATTENTIVE TO PERSONAL HYGIENE
4. CANNOT USE PART OF BODY, NO PHYSICAL REASON (HAND, ARM, LEGS)	4. INDIFFERENT TO DANGER
5. CANNOT SEE, HEAR, OR FEEL (PARTIAL OR COMPLETE LOSS)	5. MEMORY LOSS
6. PHYSICAL EXHAUSTION, CRYING	6. SEVERE STUTTERING, MUMBLING, OR CANNOT SPEAK AT ALL
7. FREEZING UNDER FIRE, OR TOTAL IMMOBILITY	7. INSOMNIA, NIGHTMARES
8. VACANT STARES, STAGGERS, SWAYS WHEN STANDS	8. SEEING OR HEARING THINGS THAT DO NOT EXIST
9. PANIC RUNNING UNDER FIRE	9. RAPID EMOTIONAL SHIFTS
	10. SOCIAL WITHDRAWAL
	11. APATHETIC
	12. HYSTERICAL OUTBURSTS
	13. FRANTIC OR STRANGE BEHAVIOR

TREATMENT PROCEDURES**

- 1. IF A SERVICE MEMBER'S BEHAVIOR ENDANGERS THE MISSION, SELF, OR OTHERS, DO WHATEVER IS NECESSARY TO CONTROL HIM.
- 2. IF THE SERVICE MEMBER IS UPSET, CALMLY TALK HIM INTO COOPERATING.
- 3. IF CONCERNED ABOUT THE SERVICE MEMBER'S RELIABILITY:
 - UNLOAD HIS WEAPON.
 - TAKE WEAPON IF SERIOUSLY CONCERNED.
 - PHYSICALLY RESTRAIN HIM ONLY WHEN NECESSARY FOR SAFETY OR TRANSPORTATION.
- 4. REASSURE EVERYONE THAT THE SIGNS ARE PROBABLY JUST STRESS REACTION AND WILL QUICKLY IMPROVE.
- 5. IF STRESS REACTION SIGNS CONTINUE:
 - GET THE SERVICE MEMBER TO A SAFER PLACE.
 - DO NOT LEAVE THE SERVICE MEMBER ALONE, KEEP SOMEONE HE KNOWS WITH HIM.
 - NOTIFY SENIOR NONCOMMISSIONED OFFICER (NCO) OR OFFICER.
 - HAVE THE SERVICE MEMBER EXAMINED BY MEDICAL PERSONNEL.

Table 8-2. More Serious Stress Reaction (Continued)

TREATMENT PROCEDURES**	
6.	GIVE THE SERVICE MEMBER EASY TASKS TO DO WHEN NOT SLEEPING, EATING, OR RESTING.
7.	ASSURE THE SERVICE MEMBER HE WILL RETURN TO FULL DUTY IN 24 HOURS; AND, RETURN HIM TO NORMAL DUTIES AS SOON AS HE IS READY.

* THESE SIGNS ARE PRESENT IN ADDITION TO THE SIGNS OF MILD STRESS REACTION.

** DO THESE PROCEDURES IN ADDITION TO THE SELF- AND BUDDY AID CARE.

Table 8-3. Preventive Measures to Combat Stress Reaction

1.	WELCOME NEW MEMBERS INTO YOUR TEAM, GET TO KNOW THEM QUICKLY. IF YOU ARE NEW, BE ACTIVE IN MAKING FRIENDS.
2.	BE PHYSICALLY FIT (STRENGTH, ENDURANCE, AND AGILITY).
3.	KNOW AND PRACTICE LIFESAVING SELF- AND BUDDY AID.
4.	PRACTICE RAPID RELAXATION TECHNIQUES (FM 22-51).
5.	HELP EACH OTHER OUT WHEN THINGS ARE TOUGH AT HOME OR IN THE UNIT.
6.	KEEP INFORMED; ASK YOUR LEADER QUESTIONS, IGNORE RUMORS.
7.	WORK TOGETHER TO GIVE EVERYONE FOOD, WATER, SHELTER, HYGIENE, AND SANITATION.
8.	SLEEP WHEN MISSION AND SAFETY PERMIT; LET EVERYONE GET TIME TO SLEEP. <ul style="list-style-type: none">• SLEEP ONLY IN SAFE PLACES AND BY STANDING OPERATING PROCEDURE (SOP).• IF POSSIBLE, SLEEP 6 TO 9 HOURS PER DAY.• TRY TO GET AT LEAST 4 HOURS SLEEP PER DAY.• GET GOOD SLEEP BEFORE GOING ON SUSTAINED OPERATIONS.• CATNAP WHEN YOU CAN, BUT ALLOW TIME TO WAKE UP FULLY.• CATCH UP ON SLEEP AFTER GOING WITHOUT.

APPENDIX A

FIRST AID CASE AND KITS,
DRESSINGS, AND BANDAGES**A-1. First Aid Case with Field Dressings and Bandages**

Every service member is issued a first aid case (Figure A-1A) with a field first aid dressing encased in a plastic wrapper (Figure A-1B). He carries it at all times for his use. The field first aid dressing is a standard sterile (germ-free) compress or pad with bandages attached (Figure A-1C). This dressing is used to cover the wound, to protect against further contamination, and to stop bleeding (pressure dressing). When a service member administers first aid to another person, he must remember to use the wounded person's dressing; he may need his own later. The service member must check his first aid case regularly and replace any used or missing dressing. The field first aid dressing may normally be obtained from his unit supply.

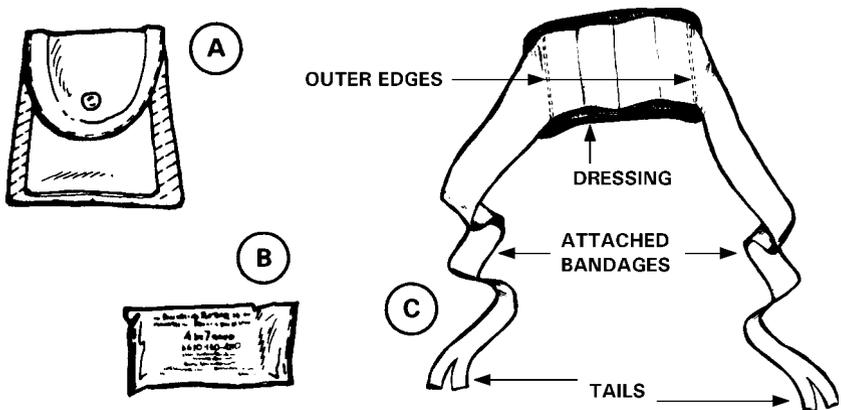


Figure A-1. Field first aid case and dressing (Illustrated A—C).

A-2. General Purpose First Aid Kits

General-purpose first aid kits are listed in the common table of allowances (CTA) 8-100. The operators, crew, and passengers carry these kits on Army vehicles, aircraft, and boats for use. Individuals designated by unit TSOP to be responsible for these kits are required to check them regularly and replace all items used. The general-purpose kit and its contents can be obtained through the unit supply system.

NOTE

Periodically check the dressings (for holes or tears in the packaging) and the medicines (for expiration date) that are in the first aid kits. If necessary, replace defective or outdated items.

A-3. Dressings

Dressings are sterile pads or compresses used to cover wounds. They usually are made of gauze or cotton wrapped in gauze (Figure A-1C). In addition to the standard field first aid dressing, other dressings such as sterile gauze compresses and small sterile compresses on adhesive strips may be available under CTA 8-100.

A-4. Standard Bandages

a. Standard bandages are made of gauze or muslin and are used over a sterile dressing to secure the dressing in place, to close off its edge from dirt and germs, and to create pressure on the wound and control bleeding. A bandage can also support an injured part or secure a splint.

b. Tailed bandages may be attached to the dressing as indicated on the field first aid dressing (Figure A-1C).

A-5. Triangular and Cravat (Swathe) Bandages

a. Triangular and cravat (or swathe) bandages (Figure A-2) are fashioned from a triangular piece of muslin (37 by 37 by 52 inches) provided in the general-purpose first aid kit. If it is folded into a strip, it is called a cravat. Two safety pins are packaged with each bandage. These bandages are valuable in an emergency since they are easily applied.

b. To improvise a triangular bandage, cut a square of available material, slightly larger than 3 feet by 3 feet, and *fold it diagonally*. If two bandages are needed, cut the material along the diagonal fold.

c. A cravat can be improvised from such common items as T-shirts, other shirts, bed linens, trouser legs, scarfs, or any other item made of pliable and durable material that can be folded, torn, or cut to the desired size.

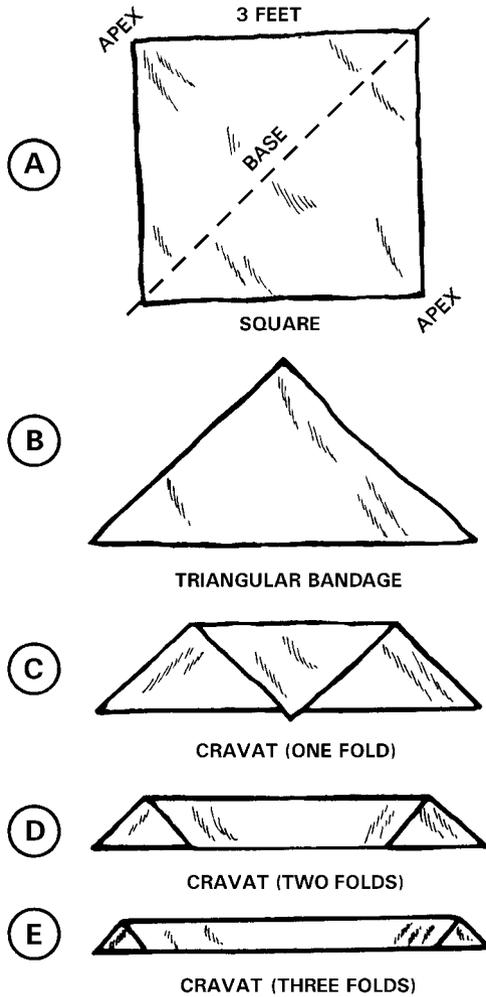


Figure A-2. Triangular and cravat bandages (Illustrated A–E).

APPENDIX B

RESCUE AND TRANSPORTATION
PROCEDURES**B-1. General**

A basic principle of first aid is to evaluate the casualty's injuries and administer first aid before moving him. However, adverse situations or conditions may jeopardize the lives of both the rescuer and the casualty if this is done. It may be necessary *first to rescue* the casualty before first aid can be effectively or safely given. The life and/or the well-being of the casualty will depend as much upon the manner in which he is *rescued and transported*, as it will upon the first aid and medical treatment he receives. Rescue actions must be done quickly and safely. Careless or rough handling of the casualty during rescue operations can aggravate his injuries.

B-2. Principles of Rescue Operations

a. When faced with the necessity of rescuing a casualty who is threatened by hostile action, fire, water, or any other immediate hazard, DO NOT take action without first determining the extent of the hazard and your ability to handle the situation. DO NOT become a casualty.

b. The rescuer must evaluate the situation and analyze the factors involved. This evaluation involves three major steps:

- Identify the task.
- Evaluate circumstances of the rescue.
- Plan the action.

B-3. Considerations

a. First determine if a rescue attempt is actually needed. It is a waste of time, equipment, and personnel to rescue someone not in need of rescuing. It is also a waste to look for someone who is not lost or needlessly risk the lives of the rescuer(s). In planning a rescue, attempt to obtain the following information:

• Who, what, where, when, why, and how the situation happened?

injuries?

- How many casualties are involved and the nature of their

casualties?

- What is the tactical situation?
- What are the terrain features and the location of the

casualties?

- Will there be adequate assistance available to aid in the

rescue/evacuation?

- Can first aid and/or medical treatment be provided at the scene; will the casualties require movement to a safer location?

rescue operation?

- What specialized equipment will be required for the

rescue operation?

- Is the rescue area contaminated? Will decontamination equipment and materiel be required for casualties, rescue personnel, and rescue equipment?

- How much time is available?

b. The time element can play a significant role in how the rescue is attempted. If the casualties are in imminent danger of losing their lives (such as near a burning vehicle or in a burning building) the time available will be relatively short and will sometimes cause a rescuer to compromise planning stages and/or the first aid which can be given. However, if the casualty is in a relatively secure area and his physical condition is strong, more deliberate planning can take place. A realistic estimate of time available must be made as quickly as possible to determine action time remaining. The key elements are the casualty's physical and mental condition, the tactical situation, and the environment.

B-4. Plan of Action

a. The casualty's ability to endure is of primary importance in estimating the time available. Age, physical condition, and extent of wounds and/or injuries will differ from casualty to casualty. Therefore, to determine the time available, you will have to consider—

- Endurance time of the casualty.
- Extent of injuries.

- Type of situation.
- Personnel and/or equipment availability.
- Weather.
- Terrain (natural and man-made).
- Environment (contaminated or uncontaminated).

b. In respect to terrain, you must consider altitude and visibility. In some cases, the casualty may be of assistance because he knows more about the particular terrain or situation than you do. Maximum use of secure/reliable trails or roads is essential.

c. When taking weather into account, ensure that blankets and/or rain gear are available. Even a mild rain can complicate a normally simple rescue. In high altitudes and/or extreme cold and gusting winds, the time available is critically shortened. Be prepared to provide shelter and warmth for the casualty as well as the rescuers.

B-5. Proper Handling of Casualties

a. You may have saved the casualty's life through the application of appropriate first aid measures. However, his life can be lost through rough handling or careless transportation procedures. Before you attempt to move the casualty—

- Evaluate the type and extent of his injuries.
- Ensure that dressings over wounds are adequately reinforced.
- Ensure that fractured bones are properly immobilized and supported to prevent them from cutting through muscle, blood vessels, and skin.

b. Based upon your evaluation of the type and extent of the casualty's injury and your knowledge of the various manual carries, you must select the best possible method of manual transportation. If the casualty is conscious, tell him how he is to be transported. This will help allay his fear of movement and gain his cooperation and confidence.

c. Buddy aid for chemical agent casualties includes those actions required to prevent an incapacitated casualty from receiving additional injury

from the effects of chemical hazards. If a casualty is physically unable to decontaminate himself or administer the proper chemical agent antidote, the casualty's buddy assists him and assumes responsibility for his care. Buddy-aid includes—

- Administering the proper chemical agent antidote.
- Decontaminating the incapacitated casualty's exposed skin.
- Ensuring that his protective ensemble remains correctly emplaced.
- Maintaining respiration.
- Controlling bleeding.
- Providing other standard first aid measures
- Transporting the casualty out of the contaminated area.

B-6. Positioning the Casualty

The first step in any manual carry is to position the casualty to be lifted. If he is conscious, he should be told how he is to be positioned and transported. This helps lessen his fear of movement and to gain his cooperation. It may be necessary to roll the casualty onto his abdomen, or his back, depending upon the position in which he is lying and the particular carry to be used.

a. To roll a casualty onto his abdomen, kneel at the casualty's uninjured side.

(1) Place his arms above his head; cross his ankle which is farther from you over the one that is closer to you.

(2) Place your hands on the shoulder which is farther from you; place your other hand in the area of his hip or thigh (Figure B-1).

(3) Roll him gently toward you onto his abdomen (Figure B-2).

b. To roll a casualty onto his back, follow the same procedure described in *a* above, except gently roll the casualty onto his back, rather than onto his abdomen.



Figure B-1. Positioning the casualty.



Figure B-2. Rolling casualty onto his abdomen.

B-7. Medical Evacuation and Transportation of Casualties

a. Medical evacuation of the sick and wounded (with en route medical care) is the responsibility of medical personnel who have been provided special training and equipment. Therefore, unless a good reason for you to transport a casualty arises, wait for some means of medical evacuation to be provided. When the situation is urgent and you are unable to obtain medical assistance or know that no medical evacuation assets are available, you will have to transport the casualty. For this reason, you must know how to transport him without increasing the seriousness of his condition.

b. Transporting a casualty by litter (FM 8-10-6) is safer and more comfortable for him than by manual means; it is also easier for you.

Manual transportation, however, may be the only feasible method because of the terrain or the combat situation; or it may be necessary to save a life. In these situations, the casualty should be transferred to a litter as soon as one can be made available or improvised.

B-8. Manual Carries

Casualties carried by manual means must be carefully and correctly handled, otherwise their injuries may become more serious or possibly fatal. Situation permitting, transport of a casualty should be organized and unhurried. Each movement should be performed as deliberately and gently as possible. Casualties should not be moved before the type and extent of injuries are evaluated and the required first aid is administered. The exception to this occurs when the situation dictates immediate movement for safety purposes (for example, it may be necessary to remove a casualty from a burning vehicle); that is, the situation dictates that the urgency of casualty movement outweighs the need to administer first aid. Manual carries are tiring for the bearers and involve the risk of increasing the severity of the casualty's injury. In some instances, however, they are essential to save the casualty's life. Although manual carries are accomplished by one or two bearers, the two-man carries are used whenever possible. They provide more comfort to the casualty, are less likely to aggravate his injuries, and are also less tiring for the bearers. The distance a casualty can be carried depends on many factors, such as—

- Nature of the casualty's injuries.
- Strength and endurance of the bearer(s).
- Weight of the casualty.
- Obstacles encountered during transport (natural or manmade).
- Type of terrain.

a. *One-man Carries.* These carries should be used when only one bearer is available to transport the casualty.

(1) The *fireman's carry* (Figure B-3) is one of the easiest ways for one individual to carry another. After an unconscious or disabled casualty has been properly positioned, he is raised from the ground, then supported and placed in the carrying position.

(a) After rolling the casualty onto his abdomen, straddle him. Extend your hands under his chest and lock them together.

(b) Lift the casualty to his knees as you move backward.

(c) Continue to move backward, thus straightening the casualty's legs and locking his knees.

(d) Walk forward, bringing the casualty to a standing position; tilt him slightly backward to prevent his knees from buckling.

(e) As you maintain constant support of the casualty with one arm, free your other arm, quickly grasp his wrist, and raise his arm high. Instantly pass your head under his raised arm, releasing it as you pass under it.

(f) Move swiftly to face the casualty and secure your arms around his waist. Immediately place your foot between his feet and spread them apart (approximately 6 to 8 inches).

(g) Grasp the casualty's wrist and raise his arm high over your head.

(h) Bend down and pull the casualty's arm over and down on your shoulder, bringing his body across your shoulders. At the same time, pass your arm between his legs.

(i) Grasp the casualty's wrist with one hand, and place your other hand on your knee for support.

(j) Rise with the casualty positioned correctly. Your other hand is free for use.



Figure B-3. Fireman's carry (Illustrated A—J).

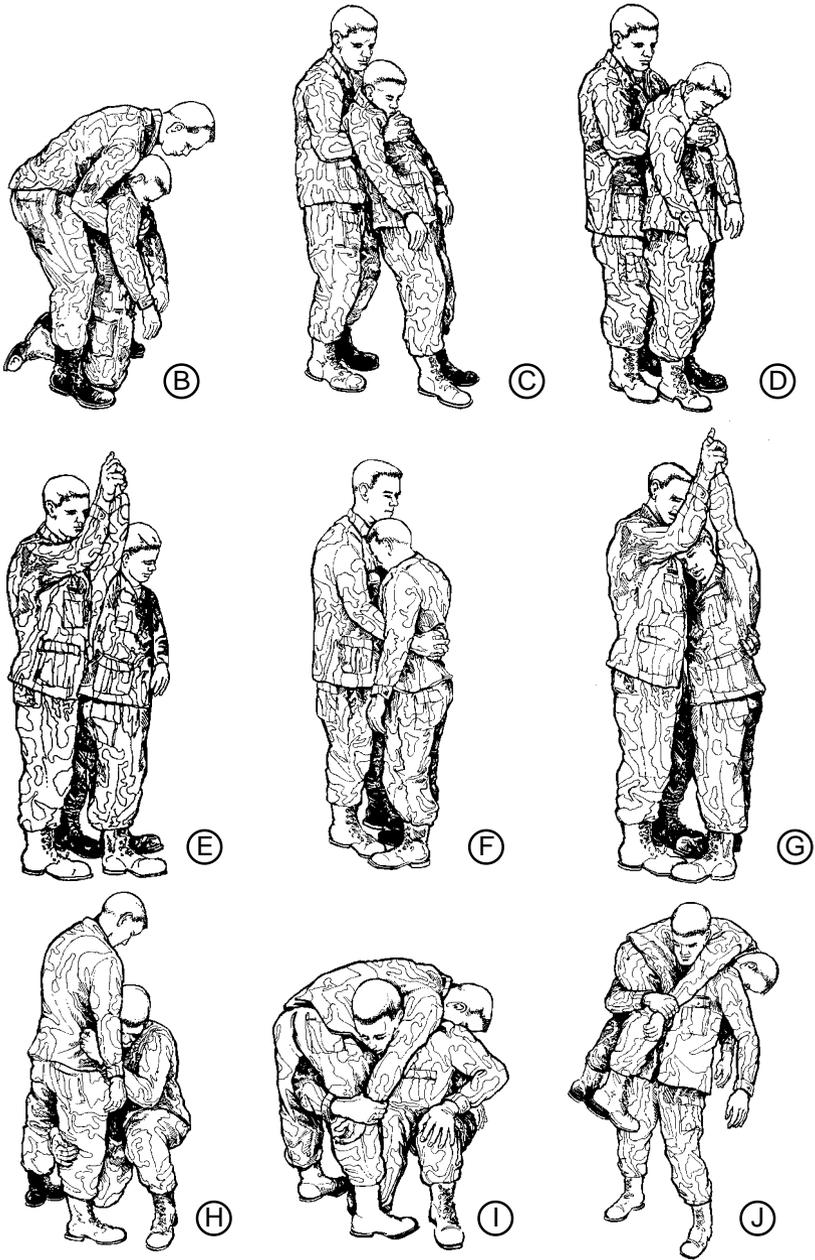


Figure B-3. Fireman's carry (Illustrated A—J) (Continued).

(2) The alternate method of the *fireman's carry* for raising a casualty from the ground is illustrated in Figure B-4; however, it should be used only when the bearer believes it to be safer for the casualty because of the location of his wounds. When the alternate method is used, care must be taken to prevent the casualty's head from snapping back and causing a neck injury. The steps for raising a casualty from the ground for the fireman's carry are also used in other one-man carries.

(a) Kneel on one knee at the casualty's head and face his feet. Extend your hands under his armpits, down his sides, and across his back.

(b) As you rise, lift the casualty to his knees. Then secure a lower hold and raise him to a standing position with his knees locked.



Figure B-4. Fireman's carry (alternate method) for lifting a casualty to a standing position (Illustrated A—B).

(3) In the *supporting carry* (Figure B-5), the casualty must be able to walk or at least hop on one leg, using the bearer as a crutch. This carry can be used to assist him as far as he is able to walk or hop.

(a) Raise the casualty from the ground to a standing position by using the fireman's carry.

(b) Grasp the casualty's wrist and draw his arm around your neck.

(c) Place your arm around his waist. The casualty is now able to walk or hop using you as a support.



Figure B-5. Supporting carry.

(4) The *arms carry* (Figure B-6) is useful in carrying a casualty for a short distance (up to 50 meters) and for placing him on a litter.

(a) Raise or lift the casualty from the ground to a standing position, as in the fireman's carry.

(b) Place one arm under the casualty's knees and your other arm around his back.

(c) Lift the casualty.

(d) Carry the casualty high to lessen fatigue.



Figure B-6. Arms carry.

(5) Only a conscious casualty can be transported by the *saddleback carry* (Figure B-7), because he must be able to hold onto the bearer's neck. To use this technique—

(a) Raise the casualty to an upright position, as in the fireman's carry.

(b) Support the casualty by placing an arm around his waist. Move to the casualty's side. Have the casualty put his arm around your neck and move in front of him with your back to support him.

(c) Have the casualty encircle his arms around your neck

(d) Stoop, raise him on your back and clasp your hands together beneath his thighs, if possible.



Figure B-7. Saddleback carry.

(6) In the *pack-strap carry* (Figure B-8), the casualty's weight rests high on the your back. This makes it easier for you to carry the casualty a moderate distance (50 to 300 meters). To eliminate the possibility of injury to the casualty's arms, you must hold his arms in a palms-down position.

(a) Lift the casualty from the ground to a standing position, as in the fireman's carry.

(b) Support the casualty with your arms around him and grasp his wrist closer to you.

(c) Place his arm over your head and across your shoulders.

(d) Move in front of him while still supporting his weight against your back.

(e) Grasp his other wrist and place this arm over your shoulder.

(f) Bend forward and raise or hoist the casualty as high on your back as possible so that his weight is resting on your back.

NOTE

Once the casualty is positioned on the bearer's back, the bearer remains as erect as possible to prevent straining or injuring his back.



Figure B-8. Pack-strap carry.

(7) The *pistol-belt carry* (Figure B-9) is the best one-man carry for a long distance (over 300 meters). The casualty is securely supported upon your shoulders by a belt. Both your hands and the casualty's (if conscious) are free for carrying a weapon or equipment, or climbing obstacles. With your hands free and the casualty secured in place, you are also able to creep through shrubs and under low-hanging branches.

(a) Link two pistol belts (or three, if necessary) together to form a sling. Place the sling under the casualty's thighs and lower back so that a loop extends from each side.

NOTE

If pistol belts are not available for use, other items such as a rifle sling, two cravat bandages, two litter straps, or any other suitable material, which will not cut or bind the casualty may be used.

(b) Lie face up between the casualty's outstretched legs. Thrust your arms through the loops and grasp his hands and trouser leg on his injured side.

(c) Roll toward the casualty's uninjured side onto your abdomen, bringing him onto your back. Adjust the sling, if necessary.

(d) Rise to a kneeling position. The belt will hold the casualty in place.

(e) Place one hand on your knee for support and rise to an upright position. (The casualty is supported on your shoulders.)

(f) Carry the casualty with your hands free for use in rifle firing, climbing, or surmounting obstacles.

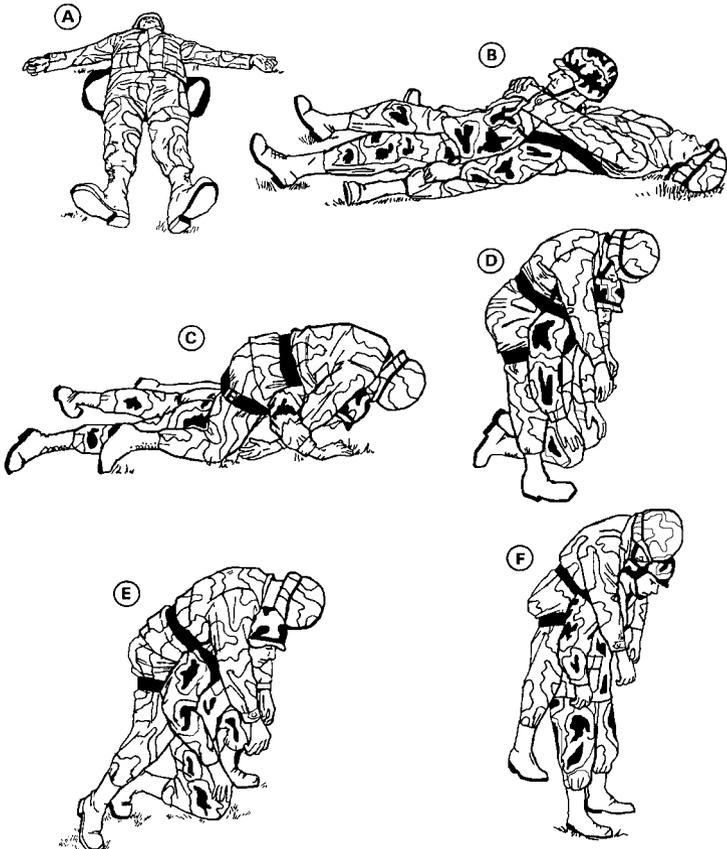


Figure B-9. Pistol-belt carry (Illustrated A—F).

(8) The *pistol-belt drag* (Figure B-10), as well as other drags, is generally used for short distances (up to 50 meters). This drag is useful in combat, since both the bearer and the casualty can remain closer to the ground than in any other drags.

(a) Extend two pistol belts or similar objects to their full length and join them together to make a continuous loop.

(b) Roll the casualty onto his back, as in the fireman's carry.

(c) Pass the loop over the casualty's head, and position it across his chest and under his armpits. Then cross the remaining portion of the loop, thus forming a figure eight. Keep tension on the belts so they do not come unhooked.

(d) Lie on your side facing the casualty.

(e) Slip the loop over your head and turn onto your abdomen. This enables you to drag the casualty as you crawl.

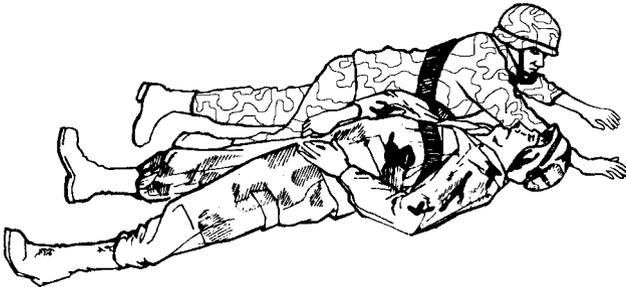


Figure B-10. Pistol-belt drag.

(9) The *neck drag* (Figure B-11) is useful in combat because the bearer can transport the casualty as he creeps behind a low wall or shrubbery, under a vehicle, or through a culvert. If the casualty is unconscious, his head must be protected from the ground. The neck drag cannot be used if the casualty has a broken arm.

NOTE

If the casualty is conscious, he may clasp his hands together around your neck.

(a) Tie the casualty's hands together at the wrists.

(b) Straddle the casualty in a kneeling face-to-face position.

(c) Loop the casualty's tied hands over and around your neck.

(d) Crawl forward dragging the casualty with you.

NOTE

If the casualty is unconscious, protect his head from the ground.



Figure B-11. Neck drag.

(10) The *cradle drop drag* (Figure B-12) is effective in moving a casualty up or down steps.

(a) Kneel at the casualty's head (with him lying on his back). Slide your hands, with palms up, under the casualty's shoulders and get a firm hold under his armpits.

(b) Rise (partially), supporting the casualty's head on one of your forearms. (You may bring your elbows together and let the casualty's head rest on both of your forearms.)

(c) Rise and drag the casualty backward. (The casualty is in a semisitting position.)

(d) Back down the steps, supporting the casualty's head and body and letting his hips and legs drop from step to step.

NOTE

If the casualty needs to be moved up the steps, you should back up the steps, using the same procedure.

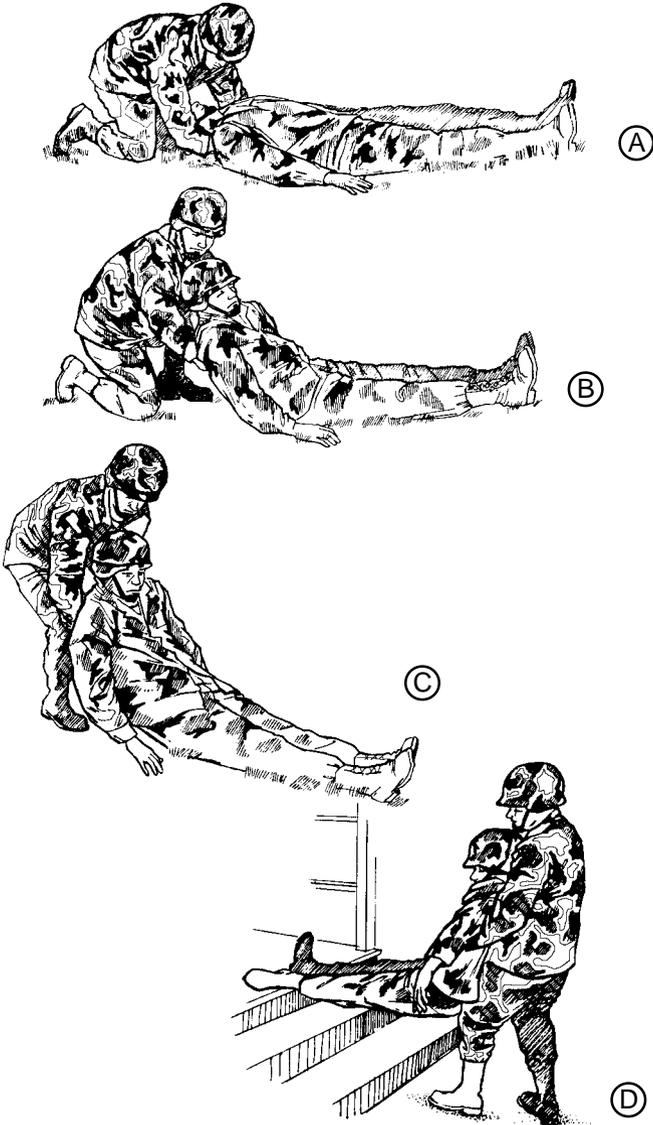


Figure B-12. Cradle-drop drag (Illustrated A—D).

(11) The LBE carry using the bearer's LBE can be used with a conscious casualty (Figure B-13).

- (a) Loosen all suspenders on your LBE.

(b) Have the casualty place one leg into the loop formed by your suspenders and pistol belt.

(c) Squat in front of the standing casualty. Have him place his other leg into the loop, also.

(d) Have the casualty place his arms over your shoulders, lean forward onto your back, and lock his hands together.

(e) Stand up and lean forward into a comfortable position.

(f) Continue the mission.

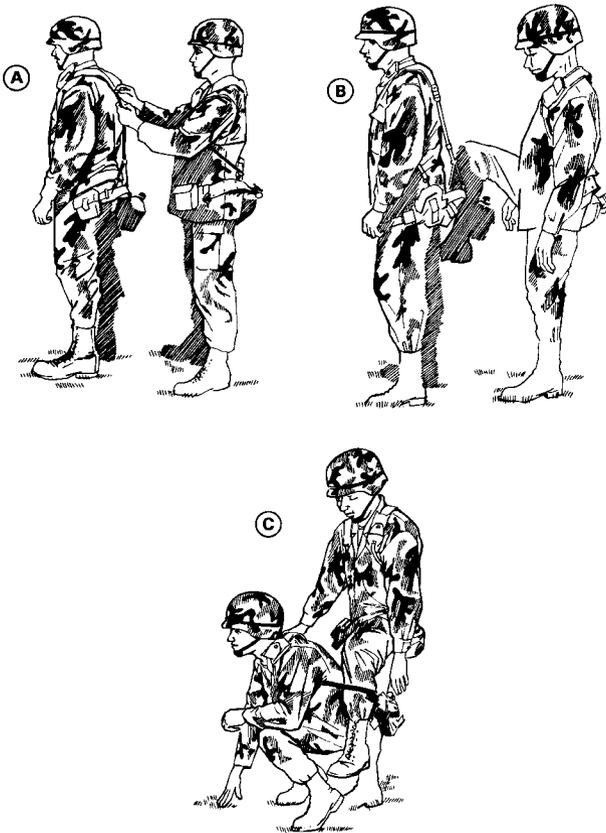


Figure B-13. Load bearing equipment carry using bearer's LBE (conscious casualty) (Illustrated A—F).

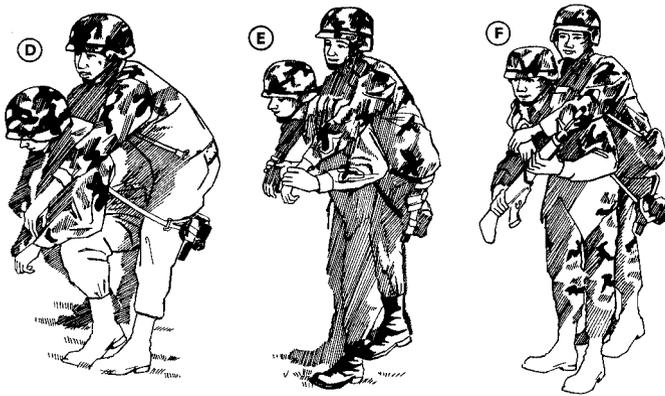


Figure B-13. Load bearing equipment carry using bearer's LBE (conscious casualty) (Illustrated A–F) (Continued).

(12) The *LBE carry using the bearer's LBE* can be used with an unconscious casualty or one who cannot stand (Figure B-14).

- (a) Position the casualty on the flat of his back.
- (b) Remove your LBE and loosen all suspender straps.
- (c) Lift the casualty's leg and place it through the loop formed by your suspenders and pistol belt. Then place the other leg through the same loop. The LBE is moved up until the pistol belt is behind the casualty's thighs.
- (d) Lay between the casualty's legs; work your arms through the LBE suspenders.
- (e) Grasp the casualty's hand (on the injured side), and roll the casualty (on his uninjured side) onto your back.
- (f) Rise to one knee and then push into a standing position.
- (g) Bring the casualty's arms over your shoulders. Grasp his hands and secure them if the casualty is unconscious. If the casualty is conscious, have him lock his hands in front if he is able to do so.
- (h) Lean forward into a comfortable position and continue the mission.

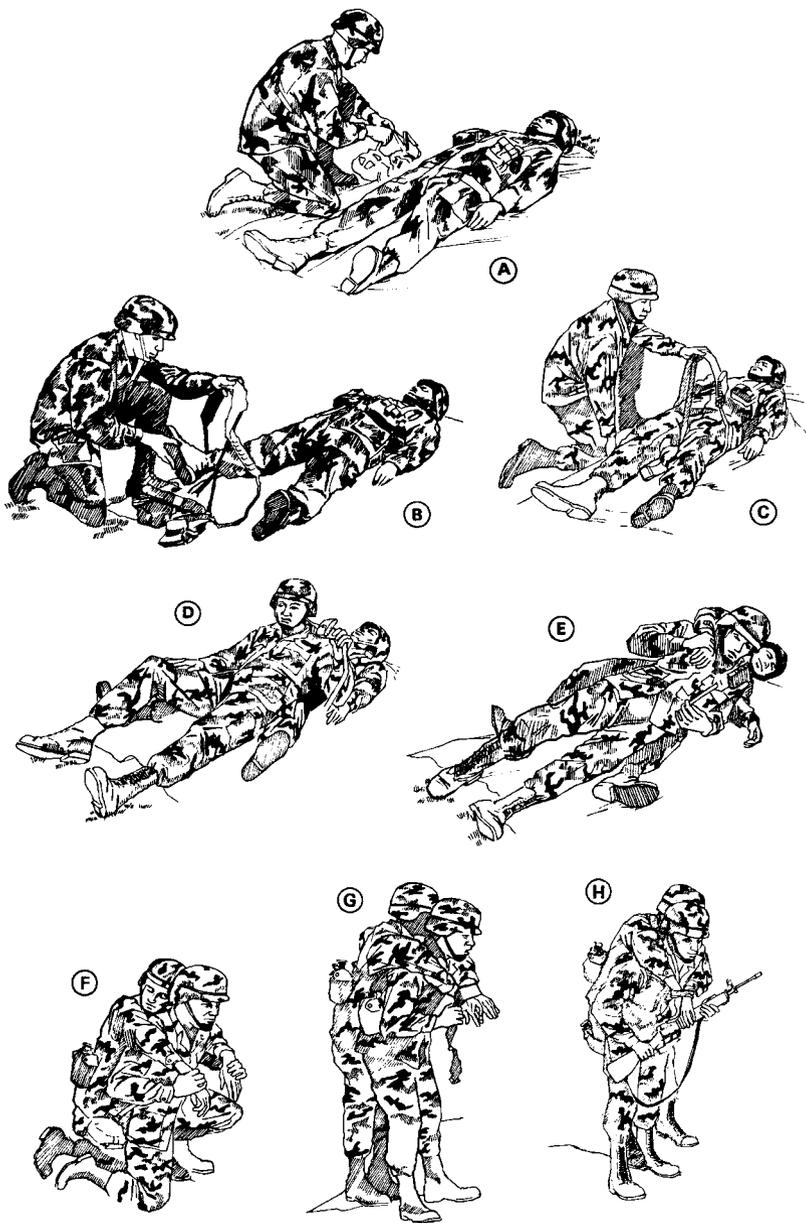


Figure B-14. Load bearing equipment carry using bearer's LBE (unconscious casualty or one that cannot stand) (Illustrated A–H).

(13) The *LBE carry using the casualty's LBE* (Figure B-15) can be used with a conscious or unconscious casualty.

- (a) Position the casualty on his back with his LBE on.
- (b) Loosen the casualty's two front suspenders.
- (c) Position yourself between the casualty's legs, and slip your arms into the casualty's two front suspenders (up to your shoulders).
- (d) Work his arms out of his LBE suspenders.
- (e) Grasp the casualty's hand (on the injured side), and roll him (on his uninjured side) onto your back.
- (f) Rise to one knee, then into a standing position.
- (g) Grasp the casualty's hands and secure them, if the casualty is unconscious. Have the casualty lock his hands in front of you, if he is conscious.
- (h) Lean forward into a comfortable position and continue the mission.



Figure B-15. Load bearing equipment carry using casualty's LBE (Illustrated A—G).

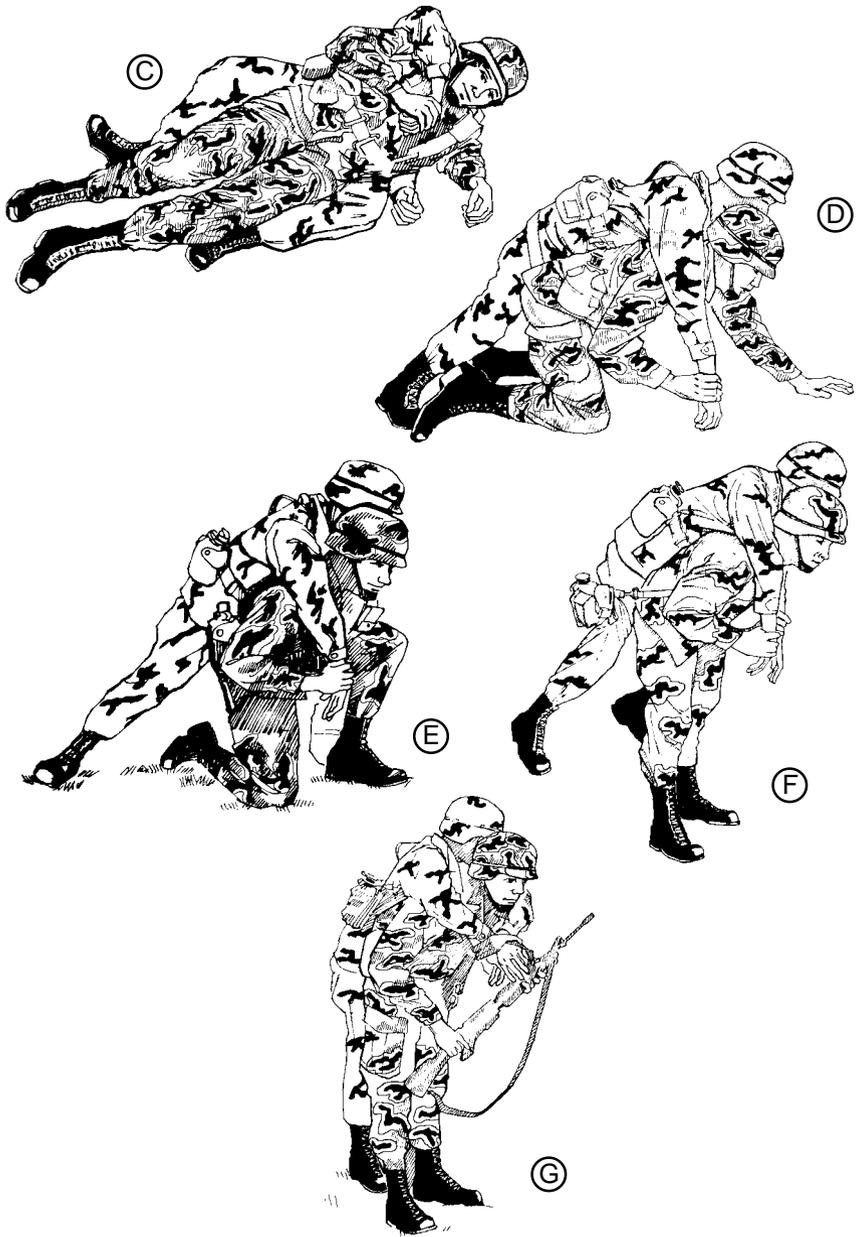


Figure B-15. Load bearing equipment carry using casualty's LBE (Illustrated A—G) (Continued).

b. Two-man Carries. These carries should be used whenever possible. They provide more casualty comfort, are less likely to aggravate injuries, and are less tiring for the bearers. Five different two-man carries can be used.

(1) The *two-man support carry* (Figure B-16) can be used in transporting either conscious or unconscious casualties. If the casualty is taller than the bearers, it may be necessary for the bearers to lift the casualty's legs and let them rest on their forearms. The bearers—

(a) Help the casualty to his feet and support him with their arms around his waist.

(b) Grasp the casualty's wrists and draw his arms around their necks.



Figure B-16. *Two-man supporting carry.*

(2) The *two-man arms carry* (Figure B-17) is useful in carrying a casualty for a moderate distance (50 to 300 meters) and placing him on a litter. To lessen fatigue, the bearers should carry the casualty high and as close to their chests as possible. In extreme emergencies when there is no time to obtain a spine board, this carry is the safest one for transporting a casualty with a back injury. If possible, two additional bearers should be used to keep the casualty's head and legs in alignment with his body. The bearers—

(a) Kneel at one side of the casualty; then they place their arms beneath the casualty's back, waist, hips, and knees.

(b) Lift the casualty while rising to their knees.

(c) Turn the casualty toward their chests, while rising to a standing position. Carry the casualty high to lessen fatigue.

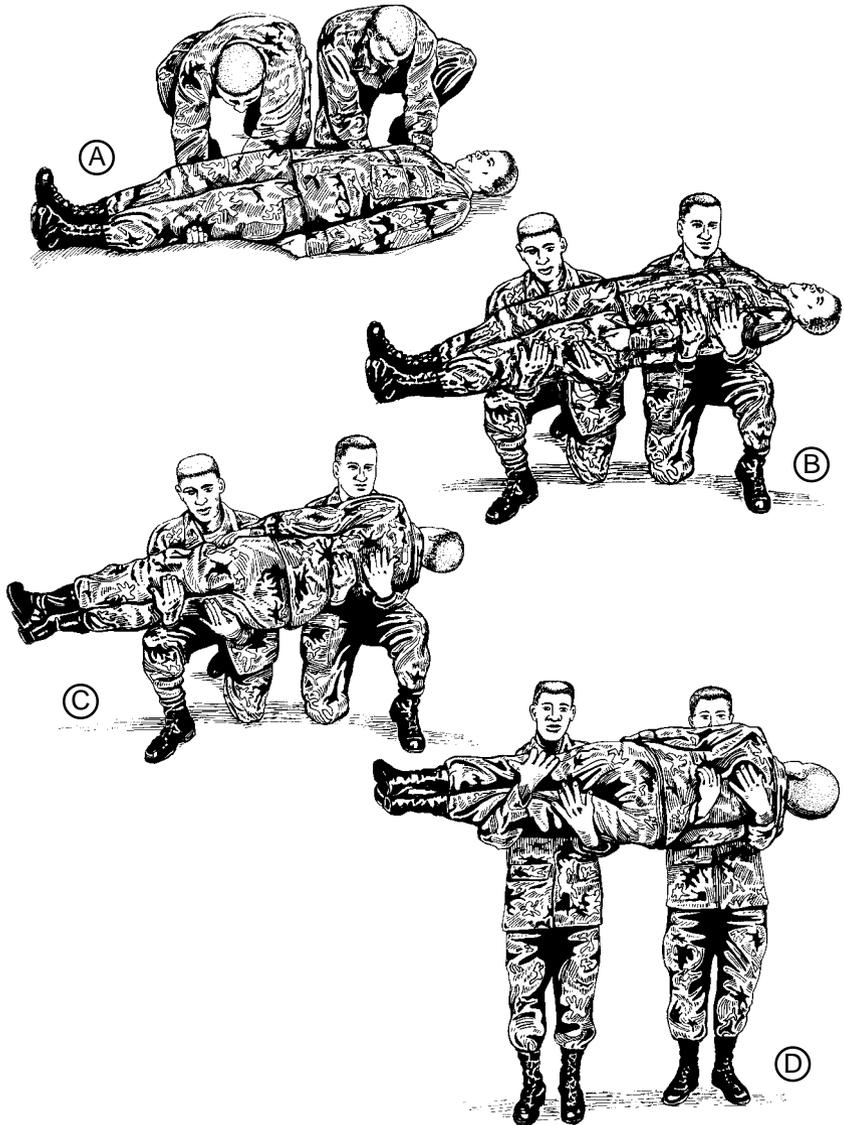


Figure B-17. Two-man arms carry (Illustrated A—D).

(3) The *two-man fore-and aft-carry* (Figure B-18) is a useful *two-man carry* for transporting a casualty for a long distance (over 300 meters). The taller of the two bearers should position himself at the casualty's head. By altering this carry so that both bearers face the casualty, it is useful for placing a casualty on a litter.

(a) The shorter bearer spreads the casualty's legs and kneels between them with his back to the casualty. He positions his hands behind the casualty's knees. The other bearer kneels at the casualty's head, slides his hands under the arms, across the chest, and locks his hands together.

(b) The two bearers rise together, lifting the casualty.



Figure B-18. *Two-man fore-and-aft carry* (Illustrated A—B).

(4) Only a conscious casualty can be transported with the *four-hand seat carry* (Figure B-19) because he must help support himself by placing his arms around the bearers' shoulders. This carry is especially useful in transporting a casualty with a head or foot injury for a moderate distance (50 to 300 meters). It is also useful for placing a casualty on a litter.

(a) Each bearer grasps one of his wrists and one of the other bearer's wrists, thus forming a packsaddle.

(b) The two bearers lower themselves sufficiently for the casualty to sit on the packsaddle; then, they have the casualty place his arms around their shoulders for support. The bearers then rise to an upright position.

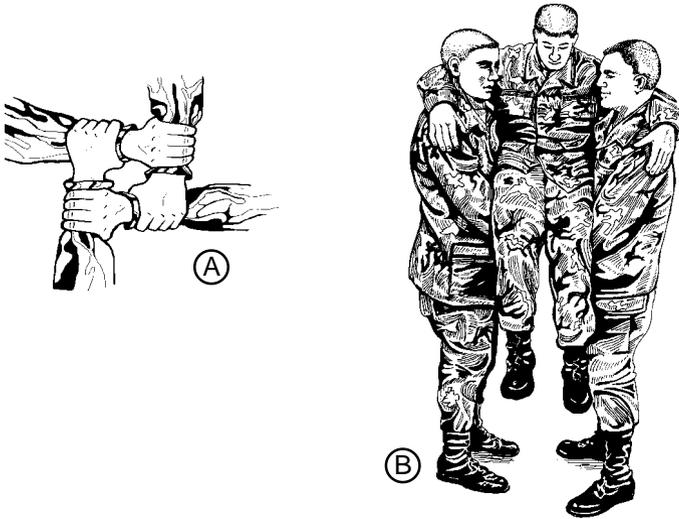


Figure B-19. Four-hand seat carry (Illustrated A—B).

(5) The *two-hand seat carry* (Figure B-20) is used when carrying a casualty for a short distance or for placing him on a litter. With the casualty lying on his back, a bearer kneels on each side of the casualty at his hips. Each bearer passes his arms under the casualty's thighs and back, and grasps the other bearer's wrists. The bearers rise lifting the casualty.

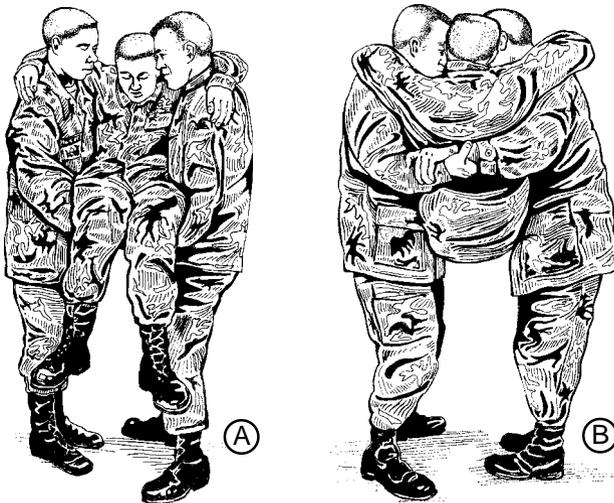


Figure B-20. Two-hand seat carry (Illustrated A—B).

B-9. Improvised Litters

Two men can support or carry a casualty without equipment for only short distances. By using available materials to improvise equipment, the casualty can be transported greater distances by two or more rescuers.

a. There are times when a casualty may have to be moved and a standard litter is not available. The distance may be too great for manual carries or the casualty may have an injury (such as a fractured neck, back, hip, or thigh) that would be aggravated by manual transportation. In these situations, litters can be improvised from materials at hand. Improvised litters must be as well constructed as possible to avoid risk of dropping or further injuring the casualty. Improvised litters are emergency measures and must be replaced by standard litters at the first opportunity.

b. Many different types of litters can be improvised, depending upon the materials available. A satisfactory litter can be made by securing poles inside such items as a blanket, poncho, shelter half, tarpaulin, mattress cover, jacket, shirt, or bed ticks, bags, and sacks (Figure B-18). Poles can be improvised from strong branches, tent supports, skis, lengths of pipe or other objects. If objects for improvising poles are not available, a blanket, poncho, or similar item can be rolled from both sides toward the center so the rolls can be gripped for carrying a patient. Most flat-surface objects of suitable size can be used as litters. Such objects include doors, boards, window shutters, benches, ladders, cots, and chairs. If possible, these objects should be padded for the casualty's comfort.

(1) To improvise a litter using a blanket and poles (Figure B-21), the following steps should be used.

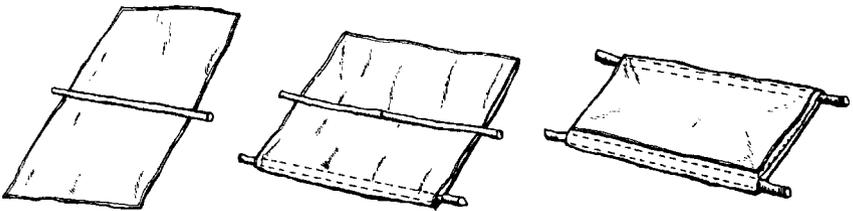


Figure B-21. Litter made with blanket and poles.

(*a*) Open the blanket and lay one pole lengthwise across the center; then fold the blanket over the pole.

(*b*) Place the second pole across the center of the folded blanket.

(c) Fold the free edges of the blanket over the second pole and across the first pole.

(2) To improvise a litter using shirts or jackets (Figure B-22), button the shirt or jacket and turn it inside out, leaving the sleeves inside, (more than one shirt or jacket may be required), then pass the pole through the sleeves.

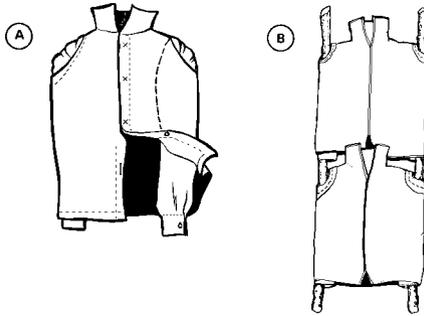


Figure B-22. Litter improvised from jackets and poles (Illustrated A—B).

(3) To improvise a litter from bed sacks and poles (Figure B-23), rip open the corners of bed ticks, bags, or sacks; then pass the poles through them.



Figure B-23. Litter improvised from bed sacks and poles.

(4) If no poles are available, roll a blanket, shelter half, tarpaulin, or similar item from both sides toward the center (Figure B-24). Grip the rolls to carry the casualty.

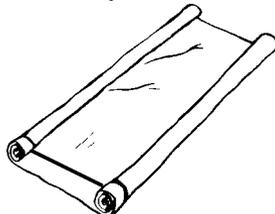


Figure B-24. Rolled blanket used as a litter.

c. Any of the appropriate carries may be used to place a casualty on a litter. These carries are:

- The one-man arms carry (Figure B-6).
- The two-man arms carry (Figure B-17).
- The two-man fore-and-aft carry (Figure B-18).
- The two-hand seat carry (Figure B-20).
- The four-hand seat carry (Figure B-19).

WARNING

Unless there is an immediate life-threatening situation (such as fire, explosion), DO NOT move a casualty with a suspected back or neck injury. Seek medical personnel for guidance on how to transport.

d. Either two or four service members (head/foot) may be used to lift a litter. To lift the litter, follow the procedure below.

- (1) Raise the litter at the same time as the other carriers/bearers.
- (2) Keep the casualty as level as possible.

NOTE

Use caution when transporting on a sloping incline/hill.

GLOSSARY

ACRONYMS, ABBREVIATIONS, AND
DEFINITIONS

AC hydrogen cyanide
AFMAN Air Force Manual
AOC area of concentration
AR Army regulation
ATM advanced trauma management
ATNAA Antidote Treatment, Nerve Agent, Autoinjector
attn attention

BDO battle dress overgarment
BDU battle dress uniform
BZ anticholinergic drugs

C Celsius
CANA Convulsant Antidote for Nerve Agent
CASEVAC casualty evacuation
cc cubic centimeter
CG phosgene
CHS combat health support
CK cyanogen chloride
Cl chlorine
CLS Combat Lifesaver
CNS central nervous system
CO₂ carbon dioxide
COSR combat and operational stress reactions
CSR combat stress reaction
CTA common table of allowance
CX phosgene oxime

DA Department of the Army
DD Department of Defense
DM diphenylaminochloroarsine (adamsite)
DNBI disease and nonbattle injury
DOD Department of Defense
DP diphosgene
DS direct support

EMT emergency medical treatment

F Fahrenheit
FM field manual

H mustard

HD mustard
HM Hospital Corpsman
HN nitrogen mustard
HSS health service support

IPE individual protective equipment
IV intravenous

JSLIST Joint Services Light Weight Integrated Suit Technology

L lewisite

lasers laser means Light Amplification by Stimulated Emission of Radiation and sources include range finders, weapons/guidance, communication systems, and weapons simulations such as MILES [Multiple Integrated Laser Engagement System].

LBE load bearing equipment
LX lewisite and mustard

MCRP Marine Corps Reference Publication
MILES Multiple Integrated Laser Engagement System
ml milliliter
MOPP mission-oriented protective posture
MOS military occupational specialty
MTF medical treatment facility

NAPP Nerve Agent Pyridostigmine Pretreatment
NATO North Atlantic Treaty Organization
NBC nuclear, biological, and chemical
NCO noncommissioned officer
NTRP Navy Tactical Reference Publication

occlusive dressing air tight transparent dressing used to seal and cover wounds
oz ounce

PAM pamphlet
PS chloropicrin
PTSD post-traumatic stress disorder

QSTAG Quadripartite Standardization Agreement

SOP standing operating procedure
STANAG standardization agreement
STP soldier training publication

2 PAM Cl pralidoxime chloride

TB MED technical bulletin medical

TM technical manual

TSOP tactical standing operating procedure

US United States

WP white phosphorus

REFERENCES

DOCUMENTS NEEDED

These documents must be available to the intended users of this publication.

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