Short Safety Subject

Short Safety Subjects are provided by the Public Safety Business Center, Fort Bragg, NC. Our intent is to provide safety topics for the purpose of increasing safety awareness and improving safety performance. Additional Short Safety Subjects are available on the PSBC Business Management Web Site at:

www.bragg.army.mil/psbc-bm/PubsAndForms/ShortSafetySubjects.htm

Cold Kills!…So

END EXPOSURE! If you cannot stay dry and warm under existing weather conditions, get out of the wind and the rain. A storm proof tent gives the best shelter. However, if you are unable to find immediate shelter, build a fire outdoors as quickly and safely as possible. Never ignore shivering. Persistent or violent shivering is a clear warning that you are on the verge of hypothermia.

AVOID EXHAUSTION! Make camp before you get tired. Remember exposure greatly reduces your normal endurance. Do not go out alone. Watch each other for the warnings of "hypothermia weather."

WINDCHILL! The human body is continually producing and losing heat. Wind increases heat loss by reducing the thin layer of warm air next to the skin. Whenever a breeze is blowing, or a person is walking or riding exposed to the air, the wind-chill factor is evidenced.

When the air temperature is below freezing (32 degrees Fahrenheit) and the wind takes away heat from the body faster than the body can produce it, frostbite can occur. Temperatures of -20 degrees Fahrenheit will freeze exposed tissue regardless of the wind speed. The lower the temperature is expressed as an equivalent temperature,

REMEMBER! Cold injuries result from prolonged exposure to cold. Wind is a big factor in cold injury because it increases the loss of heat by reducing the thin layer of warm air next to the skin. Heat loss increases as wind speed increases.

FROSTBITE! Frostbite is the freezing of a part of the body exposed to temperatures of 32 degrees Fahrenheit or below. The first symptom is usually an uncomfortable aching sensation, tingling, or stinging, If the condition is allowed to continue, numbness sets in. On Caucasian skin it will initially turn red and later becomes pale gray or waxy white.

When tissue - skin, muscle or nerve - freezes, the water between and within the cells changes into crystals of ice. These crystals draw water out of the cells causing the injury. The face, hands and feet are especially susceptible to frostbite.

Effects of frostbite range in severity from first degree, the least serious, to fourth degree. In simple frostbite, the skin becomes spotted, bluish or red, and hot and dry after rewarming. Often there is intense itching or burning and later a deep-seated ache. Within a few hours there may be swelling which may remain for several days. Then the skin begins to peel off and may continue to do so for as long as a month.

In more serious cases of frostbite, clear blisters may appear a few hours after rewarding. When they dry, dark scabs form, which eventually separate and reveal open sores. Healing may take several months. the most severe cases involve completer gangrene and loss of tissue and bone. Sometimes amputation of the affected part is necessary.

TREATMENT! Frostbite attacks in two stages, superficial and deep. treatment depends on the degree of frostbite injury. You can decide how severe the frostbite has become by finding out how long the part has been without feeling. If the time is very short, the frostbite is probably superficial. Otherwise, you should assume the injury is deep, and therefore serious.

In cases of superficial frostbite, warm the affected area by going indoors where it's warm. If you can't do that, cover your cheeks, nose, or ears with your warm hands until pain returns. Place frostbitten hands under your armpits, next to your bare skin. Don't rewarm frostbitten areas by massage, exposure to open fires, exhaust pipes, cold water soaks, or rubbing with snow. Be prepared for pain when the area thaws out.

In cases of deep frostbite, don't attempt to treat the frostbite in the field. Get to a hospital or aid station as quickly as possible. If transportation is available, don't walk. Protect the frozen part from further injury, but don't try to thaw it by rubbing, bending, or massage. Don't soak the frozen area in either cold or warm water. Don't rub with snow, Don't expose the area to hot air, engine exhaust, or open fires. Don't use ointments or salves.

Thawing in the field increases pain, and may lead to infection, greater damage, and gangrene. If the feet are deeply frostbitten, there is less danger involved in walking on the feet while they are frozen than there is in walking on them after they have thawed. Although thawing of the frozen part is not recommended, the rest of the body should be kept warm.

PREVENTION. It's a lot easier to prevent frostbite, or to stop it in its early stages, than to thaw and care for badly frozen flesh. Wear sufficient clothing. Avoid wearing clothing which interferes with circulation. Tight fitting shoes, socks, and hand wear are especially dangerous. Keep dry. Avoid becoming wet from perspiration. Exercise your face, fingers, and toes to keep them warm.

Use the buddy system. You should always travel with a buddy in extreme cold weather. That way each person can watch for white spots, one of the first signs of frostbite, on the face and neck. Numbness is also a sign that frostbite has occurred. You can apply first aid to mild frostbite. However, you should not try to treat severe, deep frostbite in the field. GET MEDICAL AID as soon as possible.

TRENCH FOOT! Trench foot is just as nasty as it sounds. It's a cold weather injury resulting from exposure to a cold, damp environment. It is caused by prolonged standing in water, insufficient clothing, and having wet socks and boots for hours while the temperature is just above freezing. The injury normally occurs when temperatures range between 32 and 50 degrees Fahrenheit.

In the early stages of trench foot, the feet and toes are pale, numb and stiff. Walking becomes difficult. In later stages, the feet and toes become red, swollen, and warm. In cases of extreme injury, the flesh dies, and amputation may become necessary.

Prevention is important because the feet are more vulnerable to cold than other parts of the body. Cold attacks feet most often because they get wet easily (both externally and from perspiration) and because circulation is restricted, the feet will be cold. Socks, worn too tightly, might easily lead to freezing of the feet. For the same reasons, avoid lacing your footgear tightly.

Whenever your feet get wet, dry them as soon as possible and put on a dry pair of socks. Also wipe the inside of your boots as dry as possible. Exercise your feet. Stamping your feet, double-timing a few steps back and forth, and flexing and wiggling your toes inside your boots all require muscular action, produce heat, and will help keep your feet warm. Message your feet when you change socks.

If you do develop trench foot, handle your feet very gently. Do not rub or massage them. Wash them carefully with a mild soap and water. Dry and elevate your feet. Leave them uncovered and at room temperature. Do not walk on damaged feet. Seek medical attention.

Remember, trench foot is a cold weather injury that can disable you. Keep your feet healthy during winter operations by preventing a cold weather injury.

HYPOTHERMIA! Another non-freezing injury is hypothermia. It is an abnormally low body temperature. It's not always associated with cold weather but it can occur when you get wet. A plunge in cold water or a sudden drenching rain can bring it on. It can be fatal and is called "death from exposure."

It stalks its victim in 30 to 50 degree weather. Anybody outside could be its next fatality during the cold weather season. It is the number one killer of outdoor recreationists and could be a major killer in winter training. Hypothermia is a threat in cold-weather operations. Many leaders who are quick to recognize symptoms of frostbite may not know as much about hypothermia.

It is a condition involving the rapid, progressive mental and physical collapse that accompanies chilling of the vital organs. It is caused by exposure to any combination of cold, wetness and wind, and is affected by exhaustion.

Hypothermia is the lowering of the body core temperatures (temperature of the vital organs: heart, lungs, brain, etc.). To function properly, the body core temperature must be 98.6 degrees Fahrenheit. Hypothermia results when the body is unable to produce heat as quickly as it is being lost. A person will die if the internal body temperature drops below 78.6 degrees Fahrenheit.

There are two steps to death by cold. The first step is exposure and exhaustion. The moment you begin to lose heat faster than your body can replace it, you are undergoing exposure.

Victims will be aware of feeling cold. Some may realize they are becoming clumsy, but most will not be aware of what is happening to them. As skin temperature drops, sense of touch and pain decreases; muscles and their motor nerves are weakened.

Two things happen: you voluntarily exercise to stay warm, and your body makes involuntary adjustments to preserve the normal temperature of the vital organs. Both responses drain your energy reserves as shivering produces heat, but it also consumes energy. The only way to stop the drain is to reduce the degree of exposure.

The second step is hypothermia. If exposure continues, the body takes more and more drastic measures to conserve its energy resources and to maintain the temperature of your internal organs. Intense and prolonged shivering can result in exhaustion. Continued heat loss produces violent an uncontrollable shivering, speaking difficulty, sluggish thinking and amnesia. Advanced heat loss results in muscular rigidity, erratic heartbeat and labored breathing, unconsciousness and, finally, death.

STAGES OF HYPOTHERMIA WITHIN SELECTED BODY FAHRENHEIT TEMPERATURE RANGES.

As the body's core temperature drops, the following symptoms develop:

- 98-96 Degrees - Shivering becomes more intense and uncontrollable. The ability to perform complex tasks is impaired.
- 95-91 Degrees - Violent shivering persists. Difficulty in speaking, sluggish thinking, and amnesia start to appear.
- 90-86 Degrees - Shivering decreases and is replaced by strong muscular rigidity. Muscle coordination is affected, producing erratic jerky movements. Thinking is less clear; general comprehension of the situation is dulled, and may be accompanied by total amnesia. The victim is generally still able to maintain posture and the appearance of psychological contact with the surroundings.
- 85-81 Degrees - The victim becomes irrational, loses contact with the environment, and drifts into stupor. Muscular rigidity continues. Pulse and breathing are slowed.
- 80-78 Degrees - Unconsciousness develops. The victim does not respond to the spoken word. Most reflexes stop functioning at this temperature level. The heartbeat becomes erratic.
- Below 78 Degrees - Failure of the cardiac and respiratory control centers in the brain. DEATH WILL OCCUR!

TREATMENT. The treatment of hypothermia consists of reducing the heat loss from the victim's body, and adding heat to the victim's hypothermic and can be helped immediately when removed from the chilling environment. Do the following to rewarm the mildly hypothermic victim:

- Remove them from the cold environment and if possible, get the victim to a sheltered area.
- Replace the victim's wet clothes with warm dry ones.
- Apply moderate heat to the whole body (from a room heater or if possible, a warm shower.)
- Cover them with blankets and other warming and insulating materials. Or put the victim in a pre-warmed sleeping bag, along with canteens of heated water or with another person.
- Give the victim hot, nonalcoholic drinks, but avoid caffeine, which narrows the blood vessels.

PREVENTION. Want to outsmart the killer? If you do, take action during the period of exposure and gradual exhaustion. Don't run the risk of hypothermia. Take steps to prevent overexposure. Here's how:

1. **STAY DRY**. Wet clothes lose 90 percent of their insulating value. Choose rain clothes that have proven effective against wind-driven rain. Cover your head, neck, body, and legs.
2. **BEWARE OF THE WIND**. A slight breeze carries heat away form bare skin much faster than still air. Wind drives cold air under and through clothing. Wind refrigerates wet clothes by evaporating moisture from the surface. Two-piece woolen underwear, or long wool pants and sweater or shirt, and a knit cap to protect neck and chain are the best type of clothing in hypothermia weather.
3. **UNDERSTAND COLD**. Most hypothermia cases develop in air temperatures between 30 and 50 degrees. Many people underestimate the danger of being wet at such temperatures - with fatal results. The cold that kills is cold water running down neck and

4. legs, cold water held against the body by sopping wet clothes and cold water flushing body heat from the surface of the clothes. Don't ask, "How cold is the air?" Ask instead, "How cold is the water against my body?"
5. **END EXPOSURE**. If you can't stay dry and warm under existing weather conditions, get out of the wind and rain. Build a fire. A storm proof tent gives the best shelter. Never ignore shivering, persistent or violent shivering is a clear warning that you are on the verge of hypothermia.
6. **AVOID EXHAUSTION**. Make camp before you get tired. Remember, exposure greatly reduces your normal endurance.
7. **USE THE BUDDY SYSTEM**. Don't go out alone. Members of squads and other patrols should watch each other for the warning signs of hypothermia and take action.

Take heed of "hypothermia weather." Choose equipment with hypothermia in mind. Watch carefully for warning symptoms. NCOs should watch soldiers for these symptoms:

- Uncontrollable fits of shivering.
- Slurred or vague, slow speech.
- Incoherence, lapses in memory.
- Immobile, fumbling hands.
- Frequent stumbling or lurching gait.
- Drowsiness.
- Apparent exhaustion, inability to sit up after a rest.

THINK HYPOTHERMIA, YOUR LIFE DEPENDS ON IT!

HEAT EXHAUSTION. Heat exhaustion and dehydration can occur in even the coldest whether. Your many layers of heavy clothing readily absorb perspiration, so you may not always be aware of how much water your body is losing. Perspiration is also rapidly evaporated by the cold, dry air, and is rarely visible on the skin.
The signs of cold weather dehydration are much like the signs of heat exhaustion. The mouth, tongue, and throat become parched and dry. Swallowing becomes difficult. Nausea may be accompanied by faintness, extreme dizziness, and vomiting. A feeling of general tiredness and weakness sets in, and muscle cramps, especially in the legs, may set in. Eyes become hard to focus. Fainting or "blacking out" may occur.

TREATMENT. Keep the victim warm, by loosen the clothes so that circulation is not restricted. Gradually feed the victim warm liquids. Don't let the victim eat snow; eating snow uses up body heat. The victim will need plenty of rest. Get the victim to medical personnel as soon as possible.

PREVENTION. Consume enough additional liquids and salt with your food to replace the excessive amounts lost by the body. Remember to be aware of the dangers of exhaustion when working bundled up in several layers of clothing.

DEHYDRATION. The loss of water from the body occurs in cold weather as well as in hot climates. Personnel bundled un many layers cannot feel perspiration forming as it is readily absorbed by the clothing, however, the loss of liquids and salt does occur. Difficulty in obtaining water in winter often is given as a reason for omitting consumption of water. Dehydration will decrease an individual's effectiveness and lead to fatigue. Always drink plenty of water during winter activities/operations.

FIRST AID FACTORS FOR FROZEN TISSUE

- Do not let personnel continue usual duties/activities until severity can be determined by a doctor.
- No smoking or alcohol (affects blood flow adversely). No ointments or salves. Do not open blisters.
- Lower extremity damage, treat as litter case. If victim must walk, do not thaw feet. Help victim get to medical aid.
- Thaw frozen tissue as rapidly as possible in bath water at carefully controlled temperature of 104 degrees Fahrenheit. No more than 109 degrees Fahrenheit.
- Do not put personnel in warm bath water if already thawing from room heat, and do not keep body in water beyond thaw.
- Clothing should be carefully removed from area injured. Cover with blanket or loose clothing.

Perform available first aid at the scene or on the way to the medical facility. Immediately take individual to a doctor.

PHYSICAL CONDITIONING AND HEART ATTACKS

Physical conditioning is the greatest single factor that will assist the body in combating cold weather dangers. Well-built bones and well-toned muscles along with good coordination will prevent slips, falls, sprains and fractures inherent to cold weather and snow. A proper diet will aid the heat-generating properties of the body.

Every winter numerous individuals die of heart attacks by engaging in strenuous activities like shoveling snow. This unaccustomed labor puts a sudden stress on the circulation plus the exposure to cold weather raises the blood pressure bringing on a heart attack. Be careful not to overexert yourself during the winter months.

INDIVIDUAL PHYSICAL FITNESS is an excellent deterrent for combating cold injuries and/or illness. Physically fit individuals have a warmer than average skin temperature which:

- Increases tolerance to frostbite.
- Permits skin heat loss without perspiration.
- Increases digital dexterity.

GET IN, AND STAY IN, SHAPE!