

## **FIRST AID**

First aid is the immediate and temporary care given to a person who has been injured or suddenly taken ill. Administered properly, first aid may prevent death and further injury until professional medical help becomes available. The following sections are not all-inclusive and should be used only as a reference by trained personnel.

**NOTE:** Employees should follow all procedures/practices covered in OSHA's Bloodborne Pathogens Standard and **EAGLE INDUSTRIAL INSTRUMENTATION's** Bloodborne Pathogens Policy.

**EAGLE INDUSTRIAL INSTRUMENTATION** shall ensure that medical services are in a near proximity of the work site before work at the site begins. If medical services are not in a reasonable proximity of the work site **EAGLE INDUSTRIAL INSTRUMENTATION** shall have employees that have valid first aid training from the EMP International, American Red Cross, American Heart Association, National Safety Council or equivalent available to render emergency first aid.

An adequate First Aid Kit, in a weatherproof container, shall be readily available at every work site. The first aid kits shall be checked before being sent out on the work site by the Safety Coordinator and then at least weekly by the work site supervisor or the first aid trained employee. The employee that checks the first aid kits shall replace any expended items. The first aid kits shall contain at a minimum the required supplies to care for the number of employees working at the site and a bloodborne pathogen PPE kit (see Appendix A). All emergency phone numbers shall be posted next to or on the inside of all the first aid kits at the work site. **EAGLE INDUSTRIAL INSTRUMENTATION** shall ensure that a means of communication shall be available to call necessary emergency personnel and/or ambulance services for prompt transportation of injured employees to a physician or hospital.

All areas at **EAGLE INDUSTRIAL INSTRUMENTATION** that present a risk of contact to corrosive materials or other chemicals shall have an emergency shower and/or eye wash immediately available for employees to use in an emergency situation.

### **A. SEVERE BLEEDING**

Loss of 1 quart of blood can present a life-threatening situation. Death by bleeding can occur in less than 1 minute. The following procedures may be used if severe bleeding is present:

1. Applying direct pressure to the wound area with the hand or fingers will minimize the flow of blood. The first aid responder should wear surgical gloves and utilize a compress of sterilized gauze or cloth to cover the wound area.
2. Continue applying pressure until the bleeding stops. If blood soaks through the compress, do not remove the compress, but add additional material.
3. Secure the compress by wrapping cloth, tape or other material directly over the pad and wound area.
4. If injuries permit, elevate the area above the heart.
5. Beware of signs of shock and treat accordingly.

**NOTE:** A steady stream of dark red blood indicates venous bleeding. Control by using pressure either on the wound directly or at a spot near the injury but away from the heart. Spurting bright red blood indicates arterial bleeding. Control by using pressure either on the wound directly or on the nearest pressure point in the direction of the heart.

## **B. SHOCK**

Shock is a life threatening condition resulting from a depressed state of many vital functions. Shock may be caused from severe injuries, hemorrhage, burns, loss of body fluid, heart attack, stroke, poisoning, drugs, alcohol, or lack of oxygen. **IN ANY ACCIDENT, ALWAYS TREAT FOR SHOCK.** First aid treatments for shock should (1) improve blood circulation, (2) provide an adequate supply of oxygen, and (3) maintain normal body temperature.

1. Early symptoms of shock may include:
  - a. Cold skin
  - b. Pale or bluish skin
  - c. Weakness
  - d. Rapid pulse (usually over 100) for adults
  - e. Increased breathing rate and/or shallow breathing
  - f. Deep, irregular breathing
  - g. Restlessness, anxiety, extreme thirst if shock is associated with hemorrhaging.
2. Latter symptoms of shock may include:
  - a. Apathy and relative unresponsiveness
  - b. Sunken eyes
  - c. Vacant expression
  - d. Dilated pupils
  - e. Mottled skin
3. First Aid shock treatment should include:
  - a. Keep the injured lying down
  - b. Cover the injured to prevent loss of body heat
  - c. Elevate the feet 7 – 10 inches
4. Obtain professional medical assistance as quickly as possible.

## **C. BURNS**

1. Burn injuries are the result of exposure to heat, chemicals, electricity, or radiation. Temperature, length of exposure, location, age, and victim's medical condition all effect the severity of the burn. Burns are typically classified by their source and depth (the deeper the burn, the more severe it is). The three classifications of burns are: (1) First Degree (superficial); (2) Second Degree (partial thickness); and (3) Third Degree (full thickness).
  - a. First Degree Burns – The burn is only on the skin surface, red in color, painful and normally dry. Swelling may occur. First-degree burns normally heal in 5 – 6 days.

- b. Second Degree Burns – The burn is deeper, red in color, painful and normally causes blistering. The skin may look mottled and swelling is usually present. Second-degree burns normally heal in 3 – 4 weeks with possible scarring.
  - c. Third Degree Burns – The burn extends through the skin to underlying structures. Third degree burns may appear brown or black (charred) and can be extremely painful. However, if nerve damage is present, the victim may not experience pain. Third degree burns are life threatening and usually result in severe scarring.
2. First aid treatment of burns should include the following:
- a. Look for burns to the face (especially the areas around the nose & mouth). These burns may be an indication of lung and breathing airway damage. Monitor the victim's breathing for any irregularities.
  - b. Cool the burned area by immersing in cool water or by applying cool wet cloths. Continue cooling the burn area until the pain subsides.
  - c. Carefully remove/cut clothing away from the burn area. DO NOT remove clothing that is sticking to the skin.
  - d. Cover the burn area with loosely bandaged, dry sterile dressings. If the burn area covers a large portion of the body, use a clean, dry sheet or cloth.
  - e. Prevent infection from setting in. Do not break blisters.
  - f. Do not apply any ointments to burns requiring further medical attention.
  - g. Injuries allowing, elevate the burn area above the heart and provide first aid treatment for shock.

**NOTE:** Electrical burn severity is not easily defined. If any doubt exists, seek immediate professional medical help.

Chemical burns are the same as burns caused by flame, steam, or hot liquids. Immediately wash the chemical off with water, remove clothing from the effected area and follow first aid instructions on the chemical label/MSDS sheet. Then administer first aid for burns caused by heat.

## **D. HEAT AND COLD EXPOSURE**

1. Cold Emergencies: Two types of cold emergencies are Frostbite and Hypothermia.
- a. Frostbite: Symptoms of frostbite include: lack of feeling and skin that appears waxy, cold to the touch and/or discolored (blue, yellow, white).
    - 1) Frostbite is the superficial or deep freezing of body tissues and can result in loss of fingers, hands, arms, legs, feet and toes. Frostbite normally occurs to exposed areas of the body and is dependent on air temperature, length of exposure and wind factors.
    - 2) Treatment for frostbite should include:
      - Warming the effected area by soaking in warm water (100° – 105°) until the skin appears red and feels warm to the touch.
      - Bandage the effected area with a dry, sterile dressing. Cotton or gauze should be placed between affected fingers and/or toes.
      - Avoid breaking any blisters.
      - Seek professional medical attention.

b. Hypothermia

- 1) Hypothermia is a medical emergency caused by a drop in body temperature below 95°F. As body temperature cools, the heart may begin to beat erratically and eventually stop. **SEEK PROFESSIONAL MEDICAL ASSISTANCE IMMEDIATELY.**
- 2) Symptoms of hypothermia include shivering, slow irregular pulse, numbness, glassy stare and decreasing levels of consciousness.
- 3) Treatment for hypothermia should include:
  - Immediately notifying professional medical services.
  - Gradually warm the body by wrapping the victim in blankets, putting on dry clothing and moving the victim to a warm environment. **DO NOT WARM THE VICTIM TOO QUICKLY.**
  - Apply hot water bottles, heating pads and/or other heat sources to the body. A barrier should be placed between the victim and the heat source to prevent burning.
  - If the victim is conscious and alert, warm liquids may be given.
  - If the victim is unconscious, monitor breathing and other vital signs. Be prepared to give CPR.

**NOTE:** Air temperature does not have to be below freezing to develop hypothermia. Poor nutrition, alcohol and medical conditions can adversely contribute to the body's ability to maintain proper body temperature. Wind chill factors should also be considered.

***Commonly Asked Questions***

1. ***How does it kill?*** In cold water, the skin and external tissue become cooled very quickly, but it takes 10 to 15 minutes before the temperature of the heart and brain begin to cool. Intense shivering occurs in a futile attempt to increase the body's heat production and counteract the large heat loss. Unconsciousness when the deep body temperature falls from the normal 98.6°F to approximately 89.6°F.

**NOTE:** Heart failure is the usual cause of death when deep body temperature cools below 89°F.

2. ***How long can I survive in cold water?*** Survival time varies depending upon the water temperature, size of the person, the amount of body fat and the sex of the person. Movement in the water also has an effect on the survival time.

Example: In 50°F water, the predicted survival time is 2 ½ to 3 hours.

3. ***Should I swim to keep warm?*** NO. Even though the body produces three times as much heat when swimming slowly and steadily in cold water compared to holding still, this heat and more is lost due to increased blood circulation to the arms, legs and, skin and increased water circulation through the clothing. Test results indicate that the average person swimming in a life jacket cools 35% faster than when holding still.
4. ***How far can I swim?*** The shore may appear to be close enough to reach by swimming, despite the faster cooling rate of the body with this activity. Tests on average people indicated that a person in 50°F water with a standard life jacket and light clothing could

swim 0.85 of a mile before being incapacitated by hypothermia. It is very difficult to judge distance when in the water, especially under emergency conditions. In water temperatures of around 50°F, the shore should be within one mile before making the decision to swim. Exercise caution, as distances can be deceiving.

5. ***What if I have no life jacket or other flotation device?*** In this unfortunate situation one is forced to adopt either of the following two anti-drowning techniques:

Treading Water: Continuous movement of the arms and legs will keep the head out of the water, but the body cooling rate is approximately 34% faster than holding still.

Drown proofing: This involves restful floating with lungs full of air, interrupted every 10 to 15 seconds for raising the head out of the water to breathe. Heat loss using this process was 82% faster than holding still in a life jacket. The reason for the great amount of heat loss was due to the head being underwater. This method is the fastest way to die from hypothermia.

6. ***What areas of the body are most critical for heat loss?*** (A) the head, (B) sides of the chest, (C) groin area due to large blood vessels near the surface. If an effort is to be made to conserve body heat, these areas need special attention.

7. ***What behavior will increase my survival time?*** Based on the heat loss information in #5, the position to assume is called the HELP or Heat Escape Lessening Posture. This technique involves holding the inner side of the arms tight against the side of the chest. The thighs are pressed together and raised to close of the groin area. In other words, ball up inwards to the chest.

8. ***Do different style of Personal Flotation Devices offer more or less thermal protection?*** YES...PFD's are classed into three categories of thermal heat protection: Good, Fair, Poor.

**NOTE:** All loose fitting PFD's offer no significant protection from cold water.

9. ***Does it help to get your body out of the water?*** YES... The body surrenders its heat to the water many times more quickly than to air of the same temperature. Once you are out of the water, it is possible to stabilize body temperature.

10. ***Does alcohol consumption affect survival time?*** About one third of the boating fatalities involve the use of alcohol. It is known that the use of alcohol will put you in the water, due to a boating accident. Tests indicate that alcohol did not significantly increase the cooling rate of the body. Cold water seems to overcome the mild anesthesia of intoxication. Tests were performed on persons considered legally impaired with blood alcohol of 0.08 g/100ml.

11. ***Do people ever die from shock from falling into cold water?*** Falling into cold water causes immediate major changes in body function. There have been isolated cases of sudden death. The cases of sudden death are not clear. Heart attack is possible, but unlikely in a healthy person. Another possible cause of death is hyperventilation (over

breathing). The inhalation of water could cause this situation. Prolonged hyperventilation can lead to unconsciousness and subsequent drowning.

12. ***How do you warm someone who has been in cold water?*** This is not an easy question to answer due to the large number of various circumstances. Nevertheless, in general the following steps should be taken:

1. Warm person by your bodily contact.
2. Exercise the limbs of those with mild hypothermia.
3. Hot wet towels and water bottles.
4. Heating pads, electric or chemical type.
5. Hot sweet drinks.

\*The above are to be used only on conscious people.

\*If unconscious, handle the body gently to avoid jolts that may adversely affect the heart. Get the person to a hospital or doctor's office as soon as possible.

13. ***What if the person appears to be dead from hypothermia?*** Recent examples have shown that persons who are apparently dead from hypothermia or drowning in cold water can often be resuscitated successfully even after quite long periods without breathing and blood circulation (10 to 40 minutes). The main reason for this is that cold body tissues required less oxygen than when warm. Therefore, never give up. Maintain ventilation.

WIND CHILL CHART										
Wind Speed MPH	Temp 50	40	30	20	10	0	-10	-20	-30	-40
	Equivalent Temperature Degrees F									
Calm	50	40	30	20	10	0	-10	-20	-30	-40
5	48	37	27	16	6	-5	-15	-26	-36	-47
10	40	28	16	4	-9	-21	-33	-46	-58	-70
15	36	22	9	-5	-18	-36	-45	-58	-72	-85
20	32	18	4	-10	-25	-39	-53	-67	-82	-96
25	30	16	0	-15	-29	-44	-59	-74	-88	-104
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109
35	27	11	-4	-20	-35	-49	-67	-82	-98	-113
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116
Wind Speeds above 40 MPH have little additional effect.	Little danger to properly clothed			Increasing Danger of exposed flesh				Great Danger – flesh may freeze within 30 seconds.		

2. **Heat Emergencies:** Heat cramps, exhaustion and stroke are three conditions caused by overexposure to heat.

a. **Heat Cramps:**

- 1) The cause of heat cramps is believed to be a combination of fluid and salt loss due to heavy sweating. Heat cramps develop rapidly and usually occur after heavy exercise or work in warm and/or moderate temperatures.
- 2) Symptoms of heat cramps include; severe muscle spasms/contractions, usually in the legs and abdomen but can occur in any voluntary muscle.
- 3) Treatment for heat cramps include:
  - Move the employee to a cool environment

- Give the person cool water or sports drinks
  - Lightly stretch and massage the effected muscle
  - DO NOT GIVE THE VICTIM SALT TABLETS OR SALT WATER
- b. Heat Exhaustion:
- 1) Heat exhaustion is the result of extended periods of heavy work in a hot environment and is the early stage of heat related illness. Loss of fluid through sweating decreases blood volume and increases the blood flow to the skin. This reduces blood flow to vital organs and may cause the victim to go into shock.
  - 2) Symptoms of heat exhaustion include: below normal body temperature, cool/moist/pale or red skin, headache, nausea, dizziness, weakness and overall exhaustion.
  - 3) Treatment for heat exhaustion include:
    - Move the victim to a cool environment
    - Give the victim cool water
    - Monitor for any worsening of the victim's condition (i.e., vomiting, changes in level of consciousness)
- c. Heat Stroke:
- 1) Heat stroke is the most sever heat emergency and can result in convulsions, coma and death. Heat stroke develops when the body systems are overwhelmed by heat and begin to stop functioning. Sweating ceases, body temperature rises rapidly and may reach a level where vital organs (brain, heart, kidneys) begin to fail. **HEAT STROKE IS A SERIOUS MEDICAL EMERGENCY. PROFESSIONAL MEDICAL SERVICES SHOULD BE CONTACTED.**
  - 2) Symptoms of heat stroke include: red/dry/hot skin, progressive loss of consciousness, rapid/weak pulse and rapid/shallow breathing.
  - 3) Treatment for heat stroke should include:
    - Move the victim to a cool environment
    - Give the victim cool water, if conscious
    - Loosen tight clothing
    - Remove perspiration soaked clothing
    - Apply wet, cool cloths to the skin and fan to increase evaporation
    - Monitor for any worsening of the victim's condition (i.e., vomiting, changes in level of consciousness)
    - Call for professional medical services
    - Worsening conditions may require increased efforts to cool down the body. Place soaked towels/sheets, ice packs and cold packs on the victim's ankles, wrists, neck, groin, and armpits to cool large blood vessels.
    - Maintain an open airway and monitor vital signs
    - Be prepared to administer CPR

## **E. FRACTURES**

1. Three basic types of fractures may occur: compound, simple and commuted.
  - a. Compound Fracture: Fracture with an open wound extending from the break to the outer skin.

- b. Simple Fracture: Break in a bone not resulting in an open wound.
  - c. Commuted Fracture: A shattered broken bone with or without an open wound.
2. First aid treatment of fractures should include the following:
- a. All bone injuries should be treated as fractures.
  - b. Apply a splint and bandage to keep broken bones and adjacent joints from moving.
  - c. Control the bleeding, if present, by applying gently direct pressure on a dressing over the wound. In severe cases, use of a loosely applied tourniquet directly above the wound may be required. **USE A TOURNIQUET ONLY AS A LAST RESORT.**
  - d. Do not move broken, dislocated, sprained or strained injuries more than is absolutely necessary.

**NOTE:** Treat back injuries as a broken back or neck. If moving the victim is absolutely necessary, move the body as a unit minimizing twisting and turning of the body. Hold the head and trunk in traction while placing on a stretcher.

If the victim has a head injury, use a pillow, cushion or other soft material to support the head to prevent further internal injury.

## **F. POISON**

1. A poison may be defined as any substance that causes injury or illness when introduced into the body. Poisons may be a solid, liquid or fume (gas/vapor). The severity of the poisoning will depend on the type, amount, how it entered the body, and the victim's weight, size and age. Ingestion, inhalation, absorption and injection are the four (4) methods by which poison may be introduced into the body.
- a. Ingestion: means swallowing. Ingested poisons may include food (shellfish), medication, cleaning supplies and/or pesticides.
  - b. Inhalation: means breathing in toxic fumes. Examples of inhaled poisons may include, hydrogen sulfide, carbon monoxide, nitrous oxide, chlorine fumes from household products and drugs.
  - c. Absorption: means the poison enters the body after coming in contact with the skin. Absorbed poisons come from plants (poison ivy), pesticides and fertilizers.
  - d. Injection: means the poison enters the body through bites, stings or injections with a hypodermic needle.
2. Symptoms of poisoning include:
- a. nausea
  - b. vomiting
  - c. diarrhea
  - d. chest or abdominal pain
  - e. breathing difficulty
  - f. sweating
  - g. seizures
  - h. loss of consciousness
  - i. burning around the lips, tongue, skin



3. General First Aid treatment for poisoning should include:
  - a. Survey the environment to make sure it is safe to approach the victim.
  - b. If necessary, remove the victim from the source.
  - c. Assess the victim's airway, breathing and circulation. Provide care for any life threatening conditions.
  - d. If the victim is unconscious, gather additional information regarding cause. What type of poisoning? How much was taken? When was it taken?
  - e. Call a Poison Control Center for instructions.
  - f. Never give the victim food or drink unless instructed to do so by professional medical personnel.