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II. APPENDIXES - Material Safety Data Sheets

Introduction

This manual was developed to comply with Oregon Occupational Safety and Health Administration (OR-OSHA) guidelines. All employees of Idaho Conservation Corps are required to become familiar with the information provided in this guide. ICC field staff will provide training to all corpsmembers concerning this material.

The information in this manual is organized into five different sections. At the end of each section you will find a sign-off sheet that all corpsmembers are required to sign to document that they have received this training. **Leave these pages in the manual.** They will be collected at the end of each session.

This training will be provided to all participants during the first week of each session. Choose one section each morning and review it during the safety circle. During the first weekend's staff meeting the Woods Boss will check to ensure that all corpsmembers have received this training and have signed off on each section. The law requires we provide documentation that this material has been covered. Please make sure all of your corpsmembers sign the appropriate signature pages.

If a new corpsmember joins your crew, you must cover this information immediately. Make sure all new corpsmembers also sign-off on each section as they receive this training.

A variety of Material Safety Data sheets are located at the end of this manual. They provide information about potentially hazardous chemicals that we use at ICC (e.g., gas or propane). They contain information on how to treat a corpsmember if they ingest or come into contact with these chemicals. Please take the time to review these data sheets so you have an idea of the potential hazards associated with these chemicals.

GENERAL LABORER ICC Training Guide Supplement

The following is a supplement to company-specific training, other training aids, and the applicable provisions of the Division Seven Forest Activities Code that apply to the job title listed above. **Every employee will sign the attached signature page to indicate that they have received this training.**

- Be sure that the employee is properly dressed including proper boots, hard hat, gloves, hearing protection, rain gear, etc.
- Explain the requirements concerning his/her proper use of all personal protective equipment. Boots must be laced and tied snugly, hard hats worn, etc.
- Discuss the dangers from slips and falls and the hazards of working/walking on steep or unstable terrain.
- Provide an on-site overview of the work process. Explain how employees should interact to provide for maximum productivity and safety. Explain the basic aspects of each job. Explain the basic function and safe use of all equipment to be used.
- Explain that horseplay and inattention are a great source of danger and will not be tolerated.
- Discuss how the crew will approach each step of the project for maximum safety and production.
- Explain the hazards of the specific job that the employee will perform. Note the hazards of any equipment they may come into contact with or be required to work around. Stress that if they don't understand a particular task they should contact their supervisor immediately.
- Discuss the operation of any power tools that they may use and the equipment manufacturer's safe operating guidelines.
- Explain the company radio system, emergency medical plan, and the location of the First Aid supplies.
- Explain all maintenance/service requirements and responsibilities including Lockout/Tagout and Hearing Conservation. Establish inspection and service schedules.
- Whenever staff will be using power equipment, explain safety procedures for employees working in the area.
- Before assigning any new task, make sure the employee understands the process and is competent to do the various jobs that he/she may be called upon to perform.

- Explain the importance of proper body posture when lifting (i.e. Lift with the legs, not the back).
- Ensure that all employees have stretched out and performed basic back exercises before starting work.

Fire Control Training Course

Introduction

All employees engaged in forest activities are required to receive basic fire suppression training. This course will provide instruction in the safe use of basic fire fighting tools and equipment, and what to do in an emergency to escape a fire area.

1. **Fire Protection Systems in Idaho.** Landowners, logging operators, and woods crews are responsible for wildland fires resulting from their activities.
2. **Need For This Training Course.** Logging crews and woods workers are often the closest personnel available to start the initial fire suppression effort. Logging crews are likely to be well prepared for this initial attack on a fire, especially during fire season. Logging crews may also be asked to assist with Slash Burning or Project Fires. These fires require the same safety precautions as a wildland fire.
3. **Loggers** can be called upon to provide the initial suppression effort against a wildland fire. Personnel need to be properly trained in basic fire fighting procedures and equipment.
4. **ICC crew members and staff** will make a reasonable and cautious initial effort to suppress any fire resulting from ICC activity. ICC crews and staff will retreat from suppression efforts if immediate control is not possible. ICC crews and staff will not work on direct suppression of **any** other fires.

Basic Fire Behavior

The basic factors that affect a fire are fuels, weather conditions, and the topography of the land. These factors are constantly changing, making fire fighting very difficult.

1. **How a Fire Burns.** A fire is made up of three essential elements: heat, air, and fuel. A fire cannot exist if any one of these elements is missing. If all three are present, a fire can burn on a self-sustaining basis. Handy forest fuels include: slash, brush, logs, and even equipment.
2. **How a Fire Spreads.** A fire can spread four different ways: conduction, radiation, convection, and mass transport.

Conduction is the direct transfer of heat from one object to another. Wood is not a good conductor of heat, so conduction is not a major factor in wildland fires.

Radiation is the transfer of heat through space. The closer you get to the heat source, the hotter it gets. This is a primary method by which wildland fires spread. Fuels become dry and heated as a fire gets closer, increasing the ease of ignition.

Convection is the upward movement of hot gases from a heat source. This is another primary method by which wildfires spread. In a stand of timber, the fire below heats fuel in the upper bark and needles of the standing timber.

Mass Transport is when burning material moves from one point to another, like rolling down a hill. It can also occur when burning material is lifted in a column of smoke and dropped downwind. The ability of Mass Transport to affect a wildfire should not be underestimated. It is another primary method by which a wildfire spreads.

3. **The Fire Environment.** There are many factors that make up a fire's environment. These factors determine how a fire will burn and how it will spread.

Fire suppression crews will often be called upon to control the availability to a fire of heavy woody material. Such fuels may be located under ground, on the surface, or above ground. Underground fuels, such as roots and rotten wood, will burn for a long time and be difficult to extinguish. Surface fuels include timber, slash, and brush. Aerial fuels include tree canopies that burn fast and are hard to control.

Weather conditions greatly affect a fire. Wind, humidity, and temperature can all dry fuels out, making ignition conditions favorable.

The topography of the land also affects how a fire burns and spreads. Higher elevations will generally be cooler and will take longer to heat up during the daylight hours. Steep hillsides will burn faster, as heat moves quickly up a slope, drying out the fuels. South slopes are dangerous because they receive more sun and will be drier.

4. **Summary.** Fire behavior is a complex combination of many factors, most of which are beyond a person's control. Woods workers need to understand how a fire burns, how it spreads, and the environmental conditions that affect it in order to effectively suppress a fire or safely escape its path.

Basic Fire Control

1. **Pre-Planning for an operational fire.** In the case of a wildland fire, Woods workers must immediately notify the landowner and the Idaho Department of Lands. Provisions for the timely notification of these two should be a part of every operation's emergency communication procedure.

Once suppression activities have started, employees should be advised as to who is responsible for fireline construction, hose lays, engine operation, and where the water supply for engine refilling is located. All employees should know the location of the engine refilling area.

2. **Size-up.** When a fire is first reported, the landowner and Department of Forestry will want certain information. If there are not enough people fighting the fire to fight it safely or to contain it, tell them. They may also ask for the following information:

Location: Be as specific as possible. Give township, range, and section numbers if possible.

Size of the fire.

Topography: Is it mid-slope, top of ridge, in the draw, etc.

Fuels: What is burning? Grass, slash, trees?

Weather: What is the velocity and direction of the wind?

Fire Behavior: Is it moving fast? Is it spotted ahead?

3. **Control.** Based on observations of the Fire's Behavior, a strategy to control the fire will be developed. There are two basic ways of controlling a wildland fire.

Direct Attack. This attack is carried out by placing a control line next to the fire. The radiant heat from the fire must be low enough to work close to the fire. Water, heavy equipment, or aircraft is used in any combination in a direct attack.

Indirect Attack. This attack is carried out by placing control lines back from the fire and waiting for the fire to cool off to permit a direct attack.

4. **Use of Water.** Water is used on fires to cool the fire, reduce the oxygen by smothering the fire, and to dampen the fuel to make it less combustible. Pump and hose lay systems are used to get the water to the fire. There are four hose lay systems used when the radiant heat from the fire allows persons to work safely near the fire.

Simple. One pump with a single hose line with a nozzle.

Progressive. One pump with several lateral lines off the main line, several nozzles.

Short-Coupled Tandem. Two pumps plumbed in a series. Increases the pressure and lift.

Relay Pump. Two or more pumps located at different elevations with water tanks, for moving lots of water up a hill.

The proper use of water to control wildfires is essential. Water is used for the initial attack, holding and reinforcing the line, extinguishing spot fires, cooling for a direct attack, and mop-up. It's vital that employees understand that they should not attempt to apply water if the radiant heat is too intense to allow for their own personal safety.

5. **Mop-Up.** Once a fire has cooled, water is used to extinguish, or mop-up the fire. Employees doing mop-up need to be aware of the possibility of radiant heat in hot spots. Employees must also be concerned with loose objects in any area that was

recently burned. At no time should employees mop-up alone. Another person must always be within visual or audible contact.

6. **Safety.** The primary concern for personnel when suppressing wildland fires should always be safety. No fire is worth a human life. Four safety related topics must be reviewed with all employees.

Personal Protective Equipment. Employees whose primary duty is not fire suppression shall wear the following protective clothing when fighting fire:

- Pants and a long-sleeved shirt
- Eight inch high-top leather lace-up boots.
- Hand protection of at least cotton gloves.
- An approved hard hat, which must be of a bright contrasting color.

Employees must also wear any personal protective equipment that would be required in the Forest Activities Code 6 Book. An example would be leg protection when operating a power chain saw.

The Safe Use of Tools and Equipment. Hand tools should be kept in good operating condition. Heads of driving tools shall be dressed or ground to remove any mushrooming. Cutting edges of tools shall be kept sharp and properly shaped. Tools should never be used for anything other than their designed purpose. Racks, boxes, holsters or the equivalent should be used when transporting tools in vehicles. Power saws should only be operated when all manufacturers' safety devices are in place and fully operational.

Equipment used in fire suppression operations should be well-maintained in accordance with the Forest Activities Code 6 rules. Any defective tool or machine should be removed from service immediately.

Emergency Burn Treatment. First degree burns are characterized by redness of the skin, second degree burns by blistering, and third degree burns by destruction of the underlying tissue.

Burns should not be treated with butter, Vaseline, or ointments. Minor burns that do not cover a large area of the body should be immersed in water to relieve the pain. Major burns or burns that cover large areas of the body are serious.

Treat the victim for shock, then bandage the burn with many layers of dry sterile gauze or any other clean, dry material. Do not treat the burn itself with any salves or ointments. Get professional medical help as soon as possible.

Emergency Escape From a Fire. The best way to escape wildfire is to have a good strategy for fighting the fire. This course attempts to provide the basic training needed to determine when a fire can be safely fought by examining what makes a fire burn and spread.

When confronted with any fire suppression situation it is critical that you:

- Realize the safety of your crew is your first priority.
- Immediately plan escape routes.
- Keep your crew together.
- Continue to assess changes in the situation.
- Retreat **before** your crew is threatened.

Eighteen "Watch Out" Situations

1. Fire not scouted and sized up.
2. Fire burning in country not seen in daylight.
3. Safety zones and escape routes not identified.
4. Unfamiliar with weather, fuels, topography, and other local factors influencing fire behavior.
5. Uninformed on strategy, tactics, and hazards.
6. Instructions and assignments not clear.
7. No communication link with crew members or supervisor.
8. Constructing fire line without a safe anchor point.
9. Building fire line downhill with fire below.
10. Attempting frontal attack on fire.
11. Unburned fuel between you and the fire.
12. Cannot see the main fire and are not in contact with someone who can.
13. On a hillside where rolling material can ignite fuel below.
14. Weather becoming hotter and drier.
15. Wind is increasing and/or changing direction.
16. Getting frequent spot fires across line.
17. Terrain and fuels make escape to safety zones difficult.
18. Taking a nap near the fire line.

Industrial Fire Prevention Statutes and Rules

There are two general principles, basic to industrial fire prevention, that are included in the laws of the State of Idaho. These laws and regulations have also been adopted by the United States Forest Service and the Bureau of Land Management. This means that regardless of where you are working, the same rules apply.

These two basic principles are:

1. The first objective in conducting logging or any other forestry operation is to prevent a fire from occurring.
2. The second objective is for the logging contractor to be able to fight the fire should one occur.

None of these regulations apply unless the State Forestry Department and the USFS have declared that **Fire Season** is closed. This announcement is a legal requirement of the government and it must be publicized in local newspapers and by other means.

Once **Fire Season** has been declared, a series of requirements go into effect. These requirements can be broken down into the two categories of fire prevention and fire fighting. They are as follows:

1. **Fire Prevention**

No fires are permitted without a burning permit.

All woods operations must operate under the Industrial Fire Precaution Levels program. These levels range from Level 1 which allows logging without restriction on time of shut down or type of logging being done. The most restrictive level is Level 4 which stops all logging unless specifically allowed on a case-by-case basis. The Fire Precaution Level for the day is generally displayed at forestry offices such as Ranger Stations.

Certain types of logging equipment, such as chain saws, must be equipped with approved spark arresters and all equipment should be maintained in such a way as to minimize it starting a fire.

Powersaws must be equipped with an approved spark arrestor and must be used with the attachments that came with them such as chain brakes and dogs.

Powersaws must be moved at least 20 feet from the point of fueling before starting and the operator of the saw must have a shovel and an approved fire extinguisher with them.

A watchman is required to be on the work site for three hours after the equipment is shut down or that amount of time designated in writing by the fire

fighting agency. The watchman must be able to radio for help and must observe area where work took place that day.

2. **Fire Fighting**

If a fire starts from any cause on the project site while work is actually being done, the woods crew is required to make every **reasonable** effort to extinguish the fire. This is a requirement of law and failure to comply will make the contractor responsible for all fire costs. **If a fire does occur the fire fighting agency must be called immediately.**

Each woods crew must be provided with enough tools for each person to use in the event of a fire. The tools must be in good repair. The fire fighting agency will designate the kind of tools required and the total number.

Each piece of equipment with an internal combustion engine shall be equipped with a fire extinguisher rated by the Underwriters Laboratory as not less than 4-B-C. This extinguisher will be placed where it is visible and be available for immediate use. It must have a reliable gauge to indicate its charge.

Hazard Communication Program

Idaho Conservation Corps has developed a Hazard Communication Program to protect the health and safety of our employees. As a company, we intend to provide information about chemical hazards and the control of hazards via our comprehensive Hazard Communication Program, which includes container labeling, Material Safety Data Sheets (MSDS), and training.

Container Labeling

It is ICC's policy that no container of hazardous chemicals will be released for use until the following label information is verified:

1. Containers are clearly labeled regarding the contents.
2. Appropriate hazard warnings are noted.
3. The name and address of the manufacturer are listed.

This responsibility has been assigned to ICC's Logistical Coordinator and will be checked by each Program Supervisor.

To further ensure that employees are aware of the chemical hazards of materials used in their work areas, all secondary containers will be labeled.

Each Program Supervisor will ensure that all secondary containers are labeled with either an extra copy of the original manufacturer's label or with generic labels which have a block for product identity and blocks for the hazard warning.

Material Safety Data Sheets (MSDS)

Copies of MSDS for all hazardous chemicals to which employees may be exposed are kept on each job site.

MSDS are available to all employees for review during each work shift. If MSDS are not available or chemicals in use do not have MSDS, employees should contact the Program Supervisor immediately.

Hazardous Non-Routine Tasks

will Prior to starting work on projects involving the use of non-standard chemicals, employees be given information regarding hazards to which they may be exposed during the project.

This information will include:

1. Specific chemical hazard information.
2. Protective/safety measures which will be utilized.
3. Measures the company has taken to lessen the hazards, including ventilation, respirators, presence of another employee, and emergency procedures.

Employee Training and Information

All employees will participate in a health and safety orientation meeting covering the following:

1. An overview of the requirements contained in the Hazard communication Rules, Division 155.
2. Review of the chemicals present in workplace.
3. Location and availability of ICC's written hazard program.
4. Physical and health effects of hazardous chemicals.
5. Methods and observation techniques used to determine the presence or release of hazardous chemicals in the work area.
6. How to lessen or prevent exposure to these hazardous chemicals through usage of control/work practices and personal protective equipment.
7. Steps the company has taken to lessen or prevent exposure to these chemicals.
8. How to read labels and review MSDS to obtain appropriate hazard information.

It is critically important that all employees understand this training. If you have any questions, please contact your Program Supervisor.

When new chemicals are introduced, each Program Supervisor will review the above items as part of your weekly/daily safety meeting.

List of Hazardous Chemicals

The following is a list of hazardous chemicals used in Idaho Conservation Corps operations. Further information on each chemical can be obtained by reviewing the Material Safety Data Sheets.

Hazardous Chemicals Example List

<u>Generic Name</u>	<u>Hazard Ranking</u>	<u>Health Hazard-Blue</u>
Mixed gas	Health Hazard 2	4 - Deadly
Leaded gas	Flammability 3	3 - Extreme Danger
Unleaded gas	Reactivity 0	2 - Hazardous 1 - Slightly hazardous
Oil 30-140 W	Health Hazard 0 Flammability 1 Reactivity 0	0 - Normal Material <u>Flammability-Red</u>
Diesel #2	Health Hazard 0 Flammability 2 Reactivity 0	4 - below 73 F 3 - below 100 F 2 - between 100-200 F 1 - above 200 F
Hydraulic oil AW 32, 46, 68	Health Hazard 1 Flammability 1 Reactivity 0	0 - will not burn <u>Reactivity-Yellow</u>
Line lube	Health Hazard 1 Flammability 2 Reactivity 0	4 - May detonate 3 - Shock and Heat may detonate 2 - Violent Chemical Change 1 - Unstable if heated
Solvent	Health Hazard 1 Flammability 4 Reactivity 0	0 - Stable
Carb cleaner	Health Hazard 1 Flammability 0 Reactivity 3	<u>Specific Hazard-white</u> OX - Oxidizer
Transmission oil	Health Hazard 0 Flammability 1 Reactivity 0	ACID - Acid ALK - Alkali COR - Corrosive W - Use no water ** - Radioactive
Antifreeze	Health Hazard 1 Flammability 4 Reactivity 1	

Lockout/Tagout

Introduction

Although the mandated lockout/tagout program applies primarily to electrical equipment and heavy machinery, ICC has adopted this program to further assure the safety of all employees. Clearly a vehicle with bad brakes must receive lockout/tagout treatment; probably by disconnecting the battery and securing appropriate tags. However, with ingenuity you will discover additional ways to use this process to help protect fellow employees. Examples include:

Clearly tagging a Pulaski with a loose head so it won't be used by mistake.
Pulling the sparkplug and tagging a chainsaw with a broken chain brake.

The Legislation

When it is time for maintenance or repairs on a piece of equipment, simply turning the machine off or unplugging it while it is being worked on does not offer enough protection for workers. Many serious accidents happen when someone thought the machine, or all of the energy, was safely turned off.

The federal Occupational Safety and Health Administration (OSHA) and the Oregon Occupational Safety and Health Division (OR-OSHA) have adopted a standard for locking out and tagging out equipment. It is known as 29 CFR 1910.147, and it presents a minimum performance standard for the control of hazardous energy. This lockout/tagout standard covers all situations where the energization, start-up, or release of stored energy from machines or equipment could cause injury to employees.

The standard further establishes minimum requirements to control this hazardous energy and then describes the exact steps that must be taken whenever lockout/tagout is to be performed.

Lockout/tagout rules cannot stop serious accidents by themselves. Both employer and employee must be committed to safety and health in the workplace and follow strict procedures to prevent these serious accidents.

The following is a partial list of typical conditions which require the lockout procedures:

1. Any time repair or work is being done on electrical circuits.
2. Whenever moving parts of machinery or equipment must be cleaned or oiled, or wherever accidental contact with moveable parts is possible.
3. When it becomes necessary to remove jammed parts or to clear blocked mechanisms.
4. Any situation that would require maintenance staff, electricians, millwrights, or pipe-fitters to work on potentially hazardous equipment.
5. Locking out power to equipment in order to prevent use by unauthorized persons.

Lockout/Tagout Procedure

Introduction

This lockout/tagout procedure has been established to protect employees whenever they must isolate machines or equipment from energy sources and to prevent unexpected energization, start-up or release of stored energy that could cause them injury. This procedure shall be used by all employees assigned to service or maintain our equipment in order to ensure that the machines or equipment are isolated from all potentially hazardous energy and locked out or tagged out before they perform any of the servicing or maintenance activities.

Equipment Included

All ICC equipment is included in this program. Equipment that is capable of being locked out, must be locked out during service or maintenance. Equipment that is not capable of being locked out, can be tagged out.

Each piece of equipment that is capable of storing energy must be locked out or tagged out whenever it must be serviced or require maintenance. Specific lockout procedures for each piece of equipment can be found in its manufacturer's service manual.

If you are responsible for lockout/tagout as one of **Idaho Conservation Corps'** employees, you will receive special training on how to effectively utilize lockout/tagout. It is your responsibility as a trained employee to follow this procedure. If equipment is new to the employee, the service manual will need to be used. If the service manual is not available, or is not completely understood, **NO** service or maintenance should proceed.

Periodic Inspection

Idaho Conservation Corps has designated **Program Supervisors** as the people who will conduct periodic inspections to see that the provisions of the company's Lockout/Tagout Program are being followed.

Contractors

When we hire outside contractors to come into our facility to work on our machines and equipment, their activities may create hazards which normally are not present to our regular employees. To protect our employees and the contractor's workers, a mutually agreed upon procedure will be established concerning the lockout/tagout of devices that will be used .

All equipment shall be locked out or tagged out to protect against accidental or inadvertent operations when a start-up of that equipment could cause injury to any of our employees.

Responsibility

Employees who are affected by our lockout/tagout program shall also receive instruction about the significance of the lockout/tagout procedure. Each new or transferred affected employee shall receive the same type of instruction.

All ICC staff are responsible for carrying out ICC's lockout/tagout procedure.

Preparation for Lockout or Tagout

The Program Director has surveyed the facility and identified all of the isolating devices such as switches or electrical circuits that must be locked or tagged out. Since some of our pieces of equipment have more than one type of energy source that must be isolated (electrical, mechanical, or hydraulic), it will be important that only authorized persons lockout or tagout the equipment. Only those authorized employees who locked or tagged the equipment out are authorized to remove the lock or tag.

Sequence for a Lockout or Tagout System

The lockout procedure must be conducted in the following manner. No deviations will be tolerated.

1. The authorized employee shall notify the affected employees that the lockout/tagout system is going to be utilized.
2. If a particular piece of equipment is operating, it must be shut down by normal stopping procedure (by depressing the stop button or opening the toggle switch).
3. The authorized employee must operate the switch, valve or other energy-isolating device to make sure the equipment is isolated from its energy source. Stored energy, such as the energy found in springs, rotating fly wheels, hydraulic systems or compressed air or gas lines, must be dissipated or restrained by either repositioning, blocking or bleeding down.
4. The authorized person shall lockout and tagout the energy-isolating device of the equipment or machines with their individually assigned lock, or their individual tag and a tie down.
5. After ensuring that no personnel are exposed, the authorized person shall complete another check to make sure that all of the energy sources have been disconnected.

The authorized person should then, once again, operate the push button or other operating controls to make certain the equipment will not operate. (**CAUTION: Return operating controls to neutral or off position after test.**) For equipment that cannot be locked out, a tag will be used. The tagout device must be attached on or as close as possible to the energy-isolating device. The tag must clearly indicate that the operation or start-up of the energy-isolating device from the safe or off position is prohibited.

Equipment Testing Under Lockout/Tagout

At times, some of our equipment must be tested while doing maintenance or repair. The following procedure must be followed under those conditions:

1. Clear the machine or equipment of all tools and materials that are non-essential items.
2. Make sure that all of the employees are clear of the machine or equipment and notify them that the machine will be energized.
3. The authorized employee shall remove the lock.
4. Energize and proceed with the testing or positioning.
5. De-energize all systems and complete the shut down procedures before continuing any maintenance or service.

Removal of Lockout or Tagout Devices

When the authorized employee has completed his/her work, then the lockout device or tag can be removed.

The authorized person shall inspect the work area to make sure that all of their tools have been removed from the machine. Notify all affected persons that the equipment is to be restarted.

The authorized employee is the only person who shall remove the lockout or tagout device.

Tagout devices must contain a date of application, the name of the worker, and the name of the supervisor in charge. Each tagout device must also have a generic warning on it, such as, "**Do not start,**" and "**Do not energize.**"

Failure by employees to comply with or observe these procedures in the **Idaho Conservation Corps** Lockout/Tagout Procedure will result in disciplinary action.

Lockout/Tagout

Definitions:

Authorized employee. An authorized employee is a person who locks out or tags out any machines or equipment in order to service or maintain them. An authorized employee and an affected employee may be the same person when the affected employee's duties include performing maintenance or service on a machine or equipment that requires use of the lockout/tagout system.

Capable of being locked out. An energy-isolating device will be considered to be capable of being locked out if it is designed with a hasp or other attachment or integral part to which, or through which, a lock can be affixed; or if it has a built in locking mechanism. Other energy isolating devices will also be considered to be capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device or permanently alter its energy control capability.

Energized. Connected to an energy source or containing residual or stored energy.

Energy-isolating device. A mechanical device that physically prevents the transmission or release of energy, such as a manually operated electrical circuit breaker, a disconnect switch, or a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors. The term does not include a push button, selector switch, or other control circuit-type devices.

Lockout. The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout Device. A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy-isolating device in the safe position and prevents the energizing of a machine or equipment.

Servicing and/or maintenance. Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning, or unjamming of machines or equipment and making adjustments or tool changes where the employee may be exposed to the unexpected energization or start up of the equipment or release of hazardous energy.

Tagout. The placement of a tagout device on an energy-isolating device, in accordance with an established procedure, to indicate that the energy-isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout device. A prominent warning device, such as a tag, and a means of attachment that can be securely fastened to an energy-isolating device in accordance with an established procedure to indicate that the equipment being controlled may not be operated until the tagout device is removed.

Hearing Conservation Training Program

Effects of Noise on Hearing

Prolonged exposure to excessive noise levels can cause a noise-induced hearing loss. When you are exposed to excessive noise levels, the first effect is usually a temporary hearing loss. You may have difficulty in conversation or the ears may feel "plugged" and "ring." Over a period of time, an individual who experiences repeated temporary hearing loss will have some permanent, irreversible hearing loss.

Noise-induced hearing loss (or acoustic trauma) involves damage to the receptor cells in the inner ear and is classified as sensory-neural impairment. A noise-induced hearing loss typically begins with a drop in hearing level at the higher frequencies. As the hearing loss increases, it normally spreads to lower speech frequencies. Early noise-induced hearing loss normally is not detected by an individual, since it occurs above the speech range. By the time an individual is aware of a hearing loss, the amount of loss may be significant.

Hearing Protectors

There are three types of ear protectors: a muff which covers the entire ear, a plug which is inserted into the ear canal, and a "stopper" which covers the outer end of the ear canal.

Selection of Ear Protectors

The reduction of noise by hearing protectors is called attenuation. This is expressed in decibels. The manufacturer of each hearing protector will indicate the amount of attenuation for each type of protector. It will be listed on the package as the Noise Reduction Rating (NRR).

Ear protectors should be selected which are convenient and comfortable, and provide the proper amount of protection for the noise encountered. Under-attenuating would lead to excessive noise exposure. Over-attenuating in moderate noise levels can lead to a feeling of isolation and, consequently, poor acceptance of the protectors.

Fitting

Earplugs must fit tightly to provide a good seal. The earplug is inserted by grasping the ear with the opposite hand, pulling it up and out to open the ear canal, and then inserting the plug with the other hand.

Muffs normally fit all people without any difficulty. Eyeglasses may interfere with the proper fitting of the muff. Muffs that attach directly to hard hats are also available.

Ear stoppers are usually easy to position. The headband can be worn on top of or behind the head, or under the chin.

When hearing protectors are initially worn, it may take a short time to adjust to the new sounds. The same noises are heard, but at a much lower level. After this adjustment period, voices, machinery noises, etc., can still be heard and understood the same as before, if not better.

Care and Use of Ear Protectors

Ear protectors must be maintained in sanitary condition. It is important that earplugs be clean when inserted into the ears. If plugs are dirty when inserted, they may cause irritation which could lead to infection of the ear canal. The same applies to stoppers.

Earplugs, when not in use, should be stored in some type of container which can be closed to seal out dust or dirt. Earplugs should be replaced when they no longer can be cleaned or lose their pliability.

Ear muffs have a replaceable seal which should be kept clean. The seal should be replaced whenever it becomes stiff or cracked.

Audiometric Testing

Audiometric testing is a means of determining your hearing ability. "Normal" hearing is the median hearing level of a large group of American adults between 18 and 25 years of age having no known history of ear disease and no appreciable high-level noise exposure. The accepted normal range of hearing is between 0 and 25 decibels. The audiometric test consists of exposing each ear separately to sound at six different frequencies.

The audiometric test will show the amount of hearing loss, if any, of an individual. The higher the decibel reading, the greater the hearing loss. As an individual ages, a natural hearing loss occurs. This is called presbycusis. A cold, an ear infection, or recent high noise exposure can cause a temporary hearing loss that would produce poor test results.

Noise and Hearing Conservation Code Summary

8-Hour Average Sound Level Below 85 dBA (daily noise dose less than 50%)

1. No requirements.
2. Recommend maintaining records.

8-Hour Average Sound Level 85-90 dBA (daily noise dose 50-100%)

1. Complete noise evaluation (records to be kept for 2 years).
2. Audiometric Exams Annually.
 - a. Records to be kept for length of employment plus 5 years.
 - b. Baseline test within 180 days of hire.
3. Audiograms showing hearing loss must be reviewed by qualified specialist.
4. Referral of employees with hearing loss to a qualified specialist at no cost to employee.
5. Hearing protection use is mandatory.
6. Employer must furnish a choice of 2 or more hearing protectors.
7. Training of employees in fitting and wearing hearing protectors, purpose of audiometric test, and effect of noise on hearing.
8. Noise Code and training material available to employees.

Average 8-Hour Sound Level Above 90 dBA (daily noise dose greater than 100%)

1. Engineering or administrative controls to reduce noise to 90 dBA or below, if technically and economically "feasible."
2. Hearing protection use mandatory for all employees exposed to 8-hour average sound level of 90 dBA or greater.
3. Hearing protectors must have a NRR sufficient to reduce the average noise exposure to 90 dBA or below.
4. All of the above requirements for audiometric tests must also be met.

Noise and Hearing Conservation

Noise exposure

Noise exposure can produce a permanent loss of hearing in exposed workers. Whether or not it does depends on a number of factors:

1. Loudness
2. Exposure Time
3. Individual susceptibility

The more intense the noise, the more it will produce hearing loss. The longer a worker is exposed to a particular noise, the greater the chance injury will occur to the auditory system.

In order to prevent hearing loss, ICC limits employee exposure by:

1. **Engineering Controls.** Reducing noise at the source by enclosing noisy machinery, placing employees in sound-proof booths, installing less noisy machinery.
2. **Administrative Controls.** Moving employees from noisy areas to quieter areas so that exposure to high intensity noise is reduced.
3. **Personal Protective Equipment. Requiring** The use of earplugs and ear muffs to reduce the amount of noise entering the employee's ear.

I. Noise Exposure (Section A)

The permissible noise exposure section requires engineering or administrative controls to reduce exposures exceeding 90 dBA (decibels A scale) for eight hours; 95 dBA for four hours; 100 dBA for two hours. The impulse or impact noise standard allows no sound level exceeding 140 dBA peak sound pressure level.

II. Hearing Conservation (Section B)

The audiometric examination section requires the employer to institute a **Hearing Conservation Program** whenever employee noise exposures equal or exceed an 8-hour Time Weighted Average (TWA) sound level of 85 dBA, or a noise dose of 50 percent "action level."

The employer must **monitor** employee's exposures to determine where they exceed the TWA of 85 dBA. The requirement for noise dosimetry includes all "continuous, intermittent and impulsive sound levels from 80 dB to 130 dB."

The **audiometric testing program** requires that audiometric testing be provided to all employees whose exposure exceeds the 85 dBA TWA "action level." The **baseline** audiogram must be provided within 180 calendar days of placement in a job with high noise exposures. This audiogram should be preceded by at least 14 hours of quiet. The **annual** audiogram shall be obtained at any time during the work shift.

If the annual audiogram reveals a hearing level **change** of 10 dB or greater in any of the frequencies when compared to the baseline, it shall also be reviewed. This change or loss of hearing of 10 dB or more is considered a "significant threshold shift." Employees that have experienced a significant threshold shift must be handled separately from others. A revised baseline may be established after clinical evaluation and confirmation of a threshold shift.

The area in which audiometric exams are conducted must be tested to show that background noise levels are low enough. The audiometer must be checked each day on a person whose hearing is stable. This is the daily, biological calibration. In addition, the audiometer must be electronically calibrated at least annually.

Hearing protectors must be made available to all employees exposed above the 85 dBA TWA. The employer must **enforce** their use by employees who are exposed above 90 dBA or above 85 dBA **and** who have experienced significant threshold shift. For those employees who do have a significant threshold shift, the hearing protector must also attenuate the noise level so that the calculated exposure of the inner ear is 85 dBA or below. For all other employees, the attenuation must only reduce the exposure to a 90 dBA TWA. The attenuation factor or noise reduction rating (NRR) is found on each package of protectors. To calculate the dBA attenuation, subtract 7 from the NRR. Thus, if the noise level is 100 dBA, a NRR of 25 would reduce the exposure to 82 dBA.

The employer must provide a **training program** to be repeated annually. Refer to SAIF Guide SS-485 for guidelines.

The employer must keep **records** of exposure measurements, audiograms, audiometer calibration, and audiometric test area background noise.

Bloodborne Pathogens

ICC Policy Statement

ICC personnel will not be considered "designated first aid responders," such as could be the case with ambulance or hospital staff. No company job descriptions or other policies include such a designation.

Employee rendering of first aid is encouraged, but only voluntarily. If an employee chooses not to render first aid, no negative consequences will result to the employee by ICC. The fact that all staff are required to possess current first aid and CPR cards will not change their volunteer status. First aid is a voluntary act of one person rendering assistance to another, assistance that can and often will save a life.

Prevention

As a preventative measure, ICC will provide, in each first aid kit, Latex Gloves and a Mouth Barrier Device. This will help protect assisting employees from exposure contact on hands and mouth area (artificial respiration/CPR). A package of antiseptic wipes for post first aid clean up is also included. Employees must become familiar with the proper use of these protective measures.

Exposure

What is the definition of "exposure" under the rules? An incident of exposure is a person's contact with the blood or other body fluids of another person, when such contact involves a broken skin surface, eyes, nasal passages or oral cavity of the exposed person. Note: a drop of blood or fluid that gets on an unbroken area of skin surface probably does not constitute an exposure incident, because there is not a direct path for the potentially infectious material to enter the body of the other person.

If someone is exposed to the blood or body fluids of another, a special report will be made by the supervisor of the exposure incident, and there will be an offer of a company-paid medical evaluation, including a Hepatitis B vaccination for an unvaccinated employee.

Hepatitis B Virus (HBV)

Hepatitis means "inflammation of the liver". Hepatitis is most commonly caused by viruses. There are four types of viral hepatitis that are important in this country. One of these, Hepatitis B (HBV), is the major infectious bloodborne occupational hazard in the United States.

The primary means of workplace exposure is through contact with an infected person's blood, through needle sticks, mucous membrane contamination (blood contamination of the eyes or mouth), or through pre-existing skin cuts or lesions.

Acquired Immunodeficiency Syndrome (AIDS)

AIDS is caused by a virus known as Human Immunodeficiency Virus (HIV). Most persons infected with HIV do not have disease symptoms and may be unaware that they are infected. All persons infected with HIV are believed to be capable of transmitting the virus to others.

Fortunately, the HIV is quite fragile outside the human body, making it extremely difficult to become infected in most occupational settings. The virus is quickly killed on environmental surfaces when treated with many common disinfectants.

HIV is **not** transmitted by casual personal contact and activities which occur in the workplace (e.g. shaking hands, sneezing, coughing, sharing food, eating utensils, glasses, bathrooms, telephones, drinking fountains).

Post-Exposure Action Summary

In the event of an **exposure** (review the definition of an exposure, i.e., has blood come in contact with an open wound etc.) incident, these steps must be followed.

All forms concerning BBP exposures are included in the accident packet carried in each ICC vehicle.

1. Immediately following an exposure incident, complete the BBP Incident Report and turn it in to the Woods Boss (**that week**). Make sure the exposure site is cleaned up to limit additional employee exposure. Give the Woods Boss a list of all first aid supplies used so they can be replenished.
2. Offer the exposed employee a Hepatitis B vaccination and medical evaluation within 24 hours of the exposure incident.
3. If the employee refuses, have him or her sign the refusal form (make sure that it is witnessed) and turn it in to the Woods Boss. The ICC office will make a copy of this form and return it to the employee. If the employee should change his/her mind later, ICC will still pay for the HBV vaccination and medical evaluation.
4. If the employee wants the HBV vaccination and evaluation:
 - a. Contact the Woods Boss or the ICC office **immediately** so that the exam can be scheduled.
 - b. At or before the time of the exam, provide the Doctor with a copy of the administrative rules concerning BBP.
 - c. Complete and give to the Doctor a post exposure and follow-up form. A copy of this form, filled out by the Doctor and placed in a sealed envelope, must be sent to the ICC office.
 - d. Make sure the Doctor completes form C. This form covers the Doctor's written opinion concerning the HBV vaccination and the post exposure evaluation and follow up. This form needs to be returned to the ICC office immediately. A copy of this form will be sent to the employee.
5. An entry in the OSHA 200 log must be made if the vaccination is given.

NOTE: ALL paperwork for an exposure incident must be turned in to the office immediately after an incident!

Bloodborne Pathogens

Employee Refusal of Vaccination

Employee: _____ Date: _____
 Last First Middle

Social Security Number: _____

Date of Exposure: _____

I understand that due to my occupational exposure to blood or other potentially infectious materials, I may be at risk of acquiring Hepatitis B Virus (HBV) infection. I have been given the opportunity to be vaccinated with Hepatitis B vaccine at no charge to myself. However, I decline Hepatitis B vaccination at this time.

I understand that by declining this vaccine, I may be at risk of acquiring Hepatitis B, a serious disease. If, in the future, I continue to have occupational exposure to blood or other potentially infectious materials, and I want to be vaccinated with Hepatitis B vaccine, I can receive the vaccination series at no charge to me.

Employee Signature: _____

Date: _____

Witness: _____

Witness Signature: _____ Date: _____

Note: This form must be attached to Exposure Report.

NYC/ ICC Heat Illness Prevention Training 2022

Heat on project sites is a concern to be taken seriously, particularly during our summer season. The following information outlines ways to keep your team safe when working in high temperatures and or high humidity.

This training has three parts:

- I. Background: What Is Heat Illness?
- II. Signs & Symptoms: How Do I Recognize and Address Heat Illness in the Field?
- III. Policy & Prevention: How Can I Prevent Heat-Related Illnesses in the Field?

As a leader, it is your responsibility to ensure that both you AND your members understand heat illness—including how to prevent its onset, and how to recognize signs and symptoms when it does present in the field.

I. BACKGROUND: WHAT IS HEAT ILLNESS?

Definition: a heat illness is one caused by high temperatures and humidity.

- Illness occurs when your body becomes exposed to so much heat that it can no longer tolerate or cope with the heat load and is not able to properly get rid of the excess heat to cool down.
- How much heat comprises 'excess' varies from person to person—someone who is not used to high temperatures and humidity might have a smaller tolerance for a particular heat load compared to someone who is well adapted to hotter climates. However, heat illness can present in anyone, even in someone who has been working in high temperatures and humidity for years!

Prevalence: heat emergencies are extremely common in outdoor environments.

- This is especially true in NYC/ICC settings as our crews work outside for long periods of time with multiple different types of physical exertion (hiking, swinging tools, backpacking, etc.).

Causes: imbalances of water, electrolytes, and heat in the body are all factors that can lead to a heat-related illness. **Poor sleep** can also add heat illness potential.

- These factors do not necessarily occur concurrently.

Physiology: Your body naturally regulates its internal temperature in a process called thermoregulation. When you are exposed to high temperatures and or humidity, **your body works to accomplish heat loss so that you may cool down. This heat loss is accomplished in one of four different ways:** radiation, evaporation, conduction, and convection.

Evaporation (#1 method during exercise or in hot climates): when your body activates receptors in your skin to induce sweating, and the sweat evaporates to release the heat from your body.

- Ambient humidity will decrease the effectiveness of evaporative cooling.

Radiation (#1 method in temperate climates): when the ambient temperature is less than your body temperature, you lose heat through infrared rays (such as the sun transferring heat to your body without any physical contact).

Conduction: when you lose heat via physical contact with another object or body (such as by lying on the cold ground).

Convection: when you lose heat by moving air or water molecules across your skin (such as by inducing airflow through a fan, or by applying water to your skin surface).

Understanding the four different ways in which your body naturally mitigates heat exposure will help you better understand how to treat a heat-related illness when excess heat exposure occurs.

II. SIGNS AND SYMPTOMS: How do I Recognize and Address Heat Illness in the Field?

Heat-related illnesses can develop rapidly and are not always obvious. Illnesses range from less severe (such as heat cramps or heat exhaustion, which are still serious but are easier to treat on site) to deadly (heat stroke, which requires immediate medical attention). The four most common heat illnesses are: heat cramps, heat syncope, heat exhaustion, and heat stroke.

HEAT SYNCOPE (FAINTING)

Definition: A sudden, transient loss of consciousness (or near loss of consciousness) and postural tone (control of body position) that resolves promptly with supine positioning, rest, removal from heat, and hydration.

Signs and Symptoms

- Brief loss of consciousness (complete or partial) during upright positioning
- Rapid pulse
- Pale, sweaty
- LOR after event quickly returns to alert and oriented with supine positioning
- Normal to slightly increased body temperature

Treatment

1. Lay patient flat.
2. Move patient to a cool environment. Rest for 1-2 hours.
3. Provide 1-2 liters of water with electrolytes or supplemental salty foods as tolerated by patient.
4. Monitor vitals – if body temperature is elevated and/or persistent with significant change in LOR, consider heat exhaustion and/or heat stroke.

HEAT CRAMPS (EXERCISE-ASSOCIATED MUSCLE CRAMPS)

Definition: Muscle pain and spasms (usually in legs and abdomen) following water and electrolyte loss.

Signs and Symptoms

- Severe pain and cramping in muscles and abdomen, associated primarily with exercise
- Rapid pulse
- LOR (level of responsiveness) usually alert and oriented
- Normal to slightly increased body temperature

Treatment

1. Move patient to a cool environment. Rest for 1-2 hours. Massaging and stretching may help.
2. Provide 1-2 liters of water with electrolytes or supplemental salty foods as tolerated by patient.
3. Monitor vitals – if body temperature is elevated and/or persistent with significant decrease in LOR, consider heat exhaustion and/or heat stroke.

HEAT EXHAUSTION

Definition: Patient loses water and electrolytes (usually through exercise) and becomes dehydrated. This is a form of hypovolemic shock.

Signs and Symptoms

- Skin is pale and clammy with profuse perspiration; or slightly flushed
- Headache, dizziness, fatigue, weakness, syncope (fainting), irritability
- Nausea/vomiting, loss of appetite
- Heart Rate (HR) = rapid, weak
- Respiratory Rate (RR) = shallow and rapid
- Body temperature = slightly elevated above normal (< 104°F, or 40°C)

Treatment

1. Move to a cool, shaded environment. Rest and cool for 12-24 hours.
2. Lay the patient flat.
3. Slowly rehydrate the patient, starting with about 200 ml/hr, as patient can tolerate.
4. Facilitate evaporative cooling by sponging with cool water and fanning the patient.
5. Record vitals. If Level of Responsiveness (LOR) is significantly altered, treat for heat stroke.

HEAT STROKE (EXERTIONAL)

Definition: A true life-threatening emergency in which the body's cooling mechanism fails. Often, overexertion with low fluid replacement in a hot, humid environment brings on this condition. Other patients may have pre-existing medical conditions or an acute medical event, such as a stroke, that leaves them unable to care for themselves in the heat.

Signs and Symptoms

- Decreased or altered LOR: confusion, disorientation, agitation, hallucinations, etc.
- May be no warning before sudden collapse and unresponsiveness
- Headache, dizziness
- Seizures
- Skin warm or hot to touch; may be flushed and dry (classic heat stroke) or wet (exertional heat stroke)
- Body temperature >104°F (40°C)
- Rapid HR and RR

Treatment

1. ABCDEs - maintain an open airway and provide continuous monitoring during cooling measures.
2. Immediately remove from heat and initiate rapid cooling of the patient.
 - Most effective: Remove clothing and immerse patient's torso and extremities in cold water.
 - Less effective: Remove clothing, sponge with cool water, and fan patient
 - Least effective: Apply cold packs to groin, armpits, head and neck.
3. Do not administer fever reducers (Tylenol®, aspirin).
4. Continue to monitor while evacuating. The person is at risk for other complications.

An Evidence-Based Guide to Beat Stress

Beat Exhaustion

Consider activity, environment,

Nausea
Fatigue
Dizziness
Weakness
Rapid Pulse

Seek Shade
Drink Cool Fluids
Rest



Heat Stroke

clothing and predisposing factors.

Seizures
Agitation
Confusion
Slurred Speech
Loss of Consciousness

Immerse or Douse
in Cold Water

Call 911

Only some of these signs/symptoms may be present

Altered Mental Status is the cardinal sign of Beat Stroke.

The presence or absence of sweat on skin is inelevant

CWI (Cold Water Immersion) is standard of care for Beat Stroke.

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III. POLICY AND PREVENTION: How Can I Prevent Heat-Related Illnesses in the Field?

- 1. Allow Time for Acclimatization:** In any of the heat-related conditions, acclimatization reduces the incidence and severity of injury. Acclimatization requires daily activity in a hot environment for 1.5 to 2 weeks and confers four primary advantages: (1) a lower sweating threshold, (2) elevated sweating rates, (3) decreased electrolyte loss in sweat, and (4) more effective cooling through elevated skin blood flow. You may be well acclimated at mid-season, but your new members likely are not.
- 2. Stay Properly Hydrated:** Like so much in medicine, preventing dehydration is often easier than treating it. Work vigilantly to maintain hydration by drinking often (4-6 liters a day in a hot environment). **Be sure folks have enough water and have extra on hand!**

Some general guidelines for drinking water are as follows:

- drink 1 liter of water 1 to 2 hours before activity begins, then about 1 liter of water for every hour of activity or about 1 to 2 liters per mile hiked.
 - Do not drink more than 10 liters in 24 hours. Take frequent hydration stops, maintain good nutrition, and make water palatable.
 - Maintain your own hydration, while watching your crew members closely for good habits
 - Store your water in a cool place throughout the day.
 - Don't leave your water bottle sitting in a sunny spot while you work.
- 3. Ensure Proper Rest at Night:** You and your members should be getting 8 or more hours of sleep every night. Lack of sleep increases your chances of developing a heat-related illness.
 - 4. Avoid Working in the High Heat of the Day:** Start workdays EARLY when you are working in high heat or humid conditions. Your goal should be to be having safety circle with first light. That way you are done with your workday before the hottest temperatures occur.
 - 5. Take Smaller, More Frequent Breaks in the Shade:** Ensure that breaks/lunch take place in the shade so folks can cool off. Especially in the afternoon, if it is very hot out you should implement mandatory rest breaks every 1-2 hours. Have your team sit in the shade for 5-10 minutes and drink water. If your project site is short on shade, bring a tarp to the worksite and pitch to create a shaded space.
 - 6. Plan Ahead:** Bring tarps as extra shade. Bring enough water for the day. And know the temperature high for the day before you get to the worksite. You are responsible for monitoring the temperature throughout the day at your worksite. No, you do not need to keep a temperature record, but yes, you should be aware of the temperature as it changes throughout the day and adjust start, break, and end times accordingly.

POLICY: Start workdays early (have safety circle with first light) so that you finish the workday before the hottest temperatures occur. Drink plenty of water throughout the day and the evening and get plenty of sleep. Ensure that breaks/lunch take place in the shade so folks can cool off, if your project site is short on shade, bring a tarp to the worksite and pitch to create a shaded space. Implement smaller rest breaks more frequently, particularly when the heat index equals or exceeds 89 – 90 degrees Fahrenheit.