

INDIAN AFFAIRS OCCUPATIONAL HEALTH HANDBOOK

25 IAM 3-H, Volume 2



Deputy Assistant Secretary - Management
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FOREWORD

Due to the extensive content covered by Indian Affairs' (IA) Occupational Safety and Health Program (OSHP) policy, as documented in 25 IAM 3, several handbooks have been created that tie to the original policy, but which cover a very specific procedural aspect of the program. These handbooks refer to the original policy (i.e., 25 IAM 3) but include a volume reference as well (e.g., 25 IAM 3-H, Volume 2).

This handbook documents the procedures required to implement the IA occupational health portion of the OSHP policy. Its content supersedes 25 IAM H: Bureau of Indian Affairs Safety and Health Handbook for Field Operations, issued (updated) 10/05/2004, and all policies and procedures related to IA occupational health that may have been created and/or distributed throughout IA previously.

Although this handbook is intended to primarily assist IA Safety Offices who administer the IA OSHP policy, it may also be informative for IA employees.

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Chapter 1: Overview

Occupational health is a multidisciplinary approach to developing and ensuring compliance with safe working practices and maintaining the health and well-being of those employed in a particular occupation or workplace.

Chapter 2: Environmental Controls and Air Contaminants

This chapter focuses on ventilation and indoor environmental quality and provides information on using environmental controls to maintain a safe working environment. Ventilation is one of the most important engineering controls available, using airflow to minimize airborne hazards in an occupational environment.

2.1 Ventilation

Ventilation controls should be considered whenever employees are working in areas where potentially hazardous atmospheres exist, such as industrial facilities with inadequate ventilation, areas with high occupant densities, confined spaces, and paint booths.

A. Industrial Ventilation.

Industrial ventilation reduces the concentration of air contaminants by mixing (diluting) the inside air with fresh, clean, uncontaminated outside air. Ventilation can be accomplished by natural means (e.g., opening a window) or mechanical means (e.g., a powered heating, ventilation, and air conditioning (HVAC) system).

Industrial ventilation systems are designed to circulate a specific amount of air at a specific speed. These systems support a healthy and safe working environment by removing harmful fumes, dusts, and vapors. While all ventilation systems follow the same basic principles, each system is designed to address the type of work and the rate of contaminant release for a given worksite.

B. Energy Conservation.

Energy conservation has resulted in tightening building envelopes to reduce air infiltration and leakage. Older buildings have greater outside air infiltration and higher air exchange rates that dilute indoor air pollutants. While this may provide better air quality overall, it does result in higher costs for conditioning the air when compared to newer buildings.

Modern buildings have lower air exchange rates because of their improved thermal efficiency. However, if ventilation is not adequate, the outdoor air introduced into the building may be insufficient to dilute contaminants.

C. General Dilution Ventilation.

The Centers for Disease Control and Prevention (CDC) recommends increasing the ventilation of indoor spaces to reduce employee exposure to indoor contaminants and diseases, such as the SARS-CoV-2 virus that causes COVID-19. Ventilation improvements relevant to all occupied spaces include the following:

- Increase outdoor airflow to occupied spaces through building ventilation systems.
- If the building does not have a mechanical ventilation system, open windows and doors as temperature and safety allows.
- Use fans to increase the effectiveness of open windows.
- Decrease occupancy in areas where outdoor ventilation cannot be increased.
- Ensure ventilation systems operate properly and provide adequate air exchanges for the occupancy level of each space.
- Open outdoor air dampers beyond minimum settings to reduce or eliminate the recirculation of indoor air.

2.2 Air Exchange Calculation

An air exchange is how many times a room could be filled with air in a 60-minute period. To calculate room air exchanges, the supply airflow into a room at the duct must be measured by using an anemometer instrument. The air velocity in the duct, measured in feet/minute, is multiplied by the area of the duct in square feet to determine the airflow moving through the duct.

$$\text{Airflow (Cubic Feet/Minute)} = \text{Area of Duct (square feet)} \times \text{Air Velocity (feet/minute)}$$

The airflow in cubic feet per minute (cfm) is multiplied by 60 minutes per hour, then divided by the volume of the room [Length (feet) x Width (feet) x Height (feet)] in cubic feet.

$$\text{Air changes/hour} = \frac{\text{cfm} \times 60 \text{ minutes}}{\text{Volume of Room}}$$

The greater the number of air changes, the more effective ventilation will be at diluting air contaminants. Note that there are various influences on air changes in a space (mixing factors, percent of air recirculated, pressure differentials). Managers and supervisors should consult an HVAC professional or the IA Public Health and Safety Program Industrial Hygienist to evaluate ventilation adequacy in an occupational environment.

2.3 Local Exhaust Ventilation (LEV)

For certain job tasks, LEV may be the best option to eliminate airborne contaminants at the source. Examples of LEV systems include the following:

- Laboratory fume hood
- Fixed exhaust hood for a welding table
- Portable “snorkel” trunks that can be moved to the work site
- Dust capture systems for carpentry equipment
- Vacuum attachment for powered tools
- Downdraft tables to pull air below the table where work is performed

With any LEV system, correct positioning is key. The exhaust should pull contaminants released from the source away from the worker’s breathing zone. If the worker is between the source of contaminants and the exhaust hood, the airborne contaminants will pass through the worker’s breathing zone which could increase hazardous exposure.

Managers and supervisors can consult the IA Industrial Hygienist for questions relating to LEV positioning.

2.4 Activities with Inhalation Risks

IA, the Bureau of Indian Affairs (BIA), and the Bureau of Indian Education (BIE) operations may also include the following activities that pose inhalation risks of airborne contaminants:

A. Abrasive Blasting.

Abrasive blasting creates dust particles that pose an inhalation risk from the blasting agents and from the material surface coatings being blasted. Engineering controls such as blasting enclosures and downrange exhaust systems are important methods used to protect the worker.

Depending on the size of the operation and the results of a job hazard analysis (JHA), personal protective equipment (PPE) may be the last resort option for protecting employees. PPE is specialized clothing or equipment worn by employees to protect against potentially infectious materials. It is designed to prevent blood and other potentially infectious materials (OPIMs) from contacting the employee’s work or street clothes, skin, eye, mouth, or other mucous membranes. PPE must be removed when employees leave the area of risk or following contamination, and be thoroughly cleaned, laundered, repaired, or disposed of. More information on PPE can be found in 25 IAM 3-H, Volume 1.

B. Grinding, Polishing, Buffing, and Finishing.

Abrasive cut-off wheels, grinding wheels, and wire brush wheels create inhalation risks for employees because of the fine particles expelled during grinding.

Local exhaust ventilation can help remove airborne particles from the employee's breathing zone. If ventilation is not an option or not in use, then PPE may be a viable option.

C. Spray-Finishing Operations.

Spray-finishing operations disperse and deposit organic or inorganic materials on surfaces to be coated, treated, or cleaned. Such methods of deposit may involve automatic, manual, or electrostatic deposition.

Given the flammable nature of spray finishing operations, exhaust ventilation enclosures are important to reducing inhalation and explosion hazards. In accordance with the results of a JHA, exhaust systems used in conjunction with PPE may provide adequate protections for employees.

2.5 General Indoor Environmental Quality Concerns

Beyond industrial shops, indoor environmental quality concerns may affect any office or facility. Potential sources of poor indoor environmental quality include the following:

- Inadequate airflow
- High or low temperature levels
- High or low relative humidity levels
- Allergens
- Dusts
- Mold and moisture
- Volatile organic compounds used in cleaners and preservatives
- Odors
- High or low lighting levels
- Background or nearby sources of noise

Indoor environmental quality concerns often require some investigation to uncover the source or issue. If occupants report concerns, managers and supervisors should pursue the following actions:

- Interview occupants to gather more information about the concerns.
- Eliminate obvious sources of moisture, odors, or chemicals.

- Ensure appropriate cleaning and sanitation schedules are followed in the facility.
- Check to see if the HVAC system has been serviced to ensure it is in working condition.
- Consult the BIA Regional Safety Manager (RSM), BIE Safety Program Manager (SPM), or an IA Industrial Hygienist for technical consultation.

The [Occupational Safety and Health Administration \(OSHA\) Technical Manual](#) has additional resources for indoor environmental quality investigation.

Chapter 3: Emergency Response and First Aid

This chapter covers emergency response and first-aid services and supplies, and applies to IA, BIA, and BIE sites and school facilities. The chapter supplements, but does not replace, the first-aid/cardiopulmonary resuscitation (CPR) training and certification provided by an accredited certifying organization such as the American Red Cross, American Heart Association, or the National Safety Council. This chapter also provides a reference for untrained employees providing a Good Smartian response to an injury or illness situation.

Guidance regarding a medical surveillance program is covered separately in section 5.8 of this handbook.

3.1 OSHA Requirements

Employees must be provided a safe and healthy workplace; however, even with the best efforts by managers and supervisors, accidents sometimes occur. The OSHA requires IA, BIA, and BIE to provide prompt first-aid treatment for injured employees. This can be accomplished by either having trained first-aid providers on site, or by ensuring that emergency medical services are in near proximity to the worksite.

OSHA recommends that every workplace include one or more employees who are trained and certified in first aid, including CPR. However, having a member of the workforce trained in first aid and CPR becomes a requirement when emergency medical services (EMS) are not near the worksite. Certain employees, such as those exposed to electrical hazards, must also be trained in CPR given the extra hazards of their duties.

EMS can be an infirmary, clinic, hospital, or fire department paramedics, OSHA has also interpreted the term “near proximity” to mean that emergency care must be available within 3-4 minutes from the workplace.

3.2 Emergency Response

First aid is a one-time, short-term treatment that requires little technology or training to administer. The initial emergency response is to get help for the victim as soon as possible. Additionally, the following actions should be taken by the first responder:

- Check the scene and person
- Call local emergency number (911)
- Care for the person

3.3 Emergency Care for Soft Tissue Injuries

Soft tissue injuries can be caused by wounds, burns, or other situations such as:

- crush injuries
- severed body parts
- embedded objects
- other injuries from blunt force trauma, cuts, or impact

Treatment for soft tissue injuries is most often treatment for external bleeding caused by the wounds. Specifically, the following actions should be taken to treat soft tissue injuries:

- Cover the wound
- Apply direct pressure
- Cover dressing with bandage
- Apply more pressure
- Call for help (911)

3.4 Emergency Care for Muscle, Bone, and Joint Injuries

Muscle, bone, and joint injuries are commonly caused by overuse and accidental injury such as the following:

- Injuries, like sprains, strains, muscle tears, and fractures.
- Wear-and-tear, because of aging or physical activity.
- Strenuous labor or repetitive motions, which are often job-related.
- Conditions that cause degeneration (wearing away) of the joints, such as arthritis.

Rest, Ice, Compression, and Elevation (also called RICE) is a popular method of dealing with a physical injury. Specifically:

1. **Rest.** Do not move or straighten the injured area.

2. **Immobilize.** Stabilize the injured area in the position it was found. Specifically:
 - Splint the injured part only if the person must be moved or transported to receive medical care and it does not cause more pain. These are the general steps for applying a splint:
 - Get the victim's consent
 - Support the injured part
 - Check circulation
 - Position bandages/soft object and splint
 - Align body parts to immobilize
 - Tie bandages or splint ties securely
 - Recheck circulation
 - Minimize movement to prevent further injury.
3. **Cold.** Cold reduces internal bleeding, pain and swelling. Take the following actions:
 - Fill a plastic bag with ice and water or wrap ice with a damp cloth, and apply ice to the injured area for periods of about 20 minutes.
 - Place a thin barrier between the ice and bare skin.
 - If 20-minute icing cannot be tolerated, apply ice for 10-minute periods.
 - If continued icing is needed, remove the packs for 20 minutes, and then replace them.
 - Do not apply heat, as there is no evidence that applying heat helps muscle, bone, or joint injuries.
4. **Elevate.** Elevate the injured part only if it does not cause more pain. Elevating the injured part may help reduce swelling.

3.5 Cardiac Emergencies

Cardiac emergencies (heart attack or cardiac arrest) can have some or all of the following symptoms:

- Pain, pressure, or discomfort in the chest or upper abdomen
- Shortness of breath
- Irregular heartbeat
- Sudden onset of sweating and nausea or vomiting
- Anxiety (feeling of impending doom)
- Abnormal pulse
- Abnormal blood pressure

Treat this emergency by performing CPR (only by a trained person) or by using an automated external defibrillation (AED) unit on the victim (note: the AED should only be used by a trained person).

3.6 Breathing Emergencies

Breathing emergencies include respiratory distress, respiratory arrest, and choking. To treat breathing emergencies, perform CPR for unconscious and not breathing victims; administer back blows for conscious and not breathing victims. For an employee who is choking, perform abdominal thrusts (Heimlich maneuver). To perform this maneuver, do the following:

1. Stand behind the person. Place one foot slightly in front of the other for balance. The responder should wrap their arms around the victim's waist. Tip the victim forward slightly. If a child is choking, kneel behind the child.
2. Make a fist with one hand. Position it slightly above the person's navel.
3. Grasp the fist with the other hand. Press hard into the abdomen with a quick, upward thrust as if trying to lift the person up.
4. Perform between six and 10 abdominal thrusts until the blockage is dislodged.

3.7 Sudden Illness

Sudden illness means a sudden and unpredictable deterioration of the state of health that represents a direct threat to the health or life of a person and requires the provision of acute and emergency healthcare. The following sudden illnesses should be responded to as follows:

1. **Fainting.** Lower the person to the ground, and check for breathing.
2. **Seizure.** Prevent injury; protect the person's airway and ensure their airway is open after the seizure has ended. Do not hold or restrain the person during a seizure.
3. **Stroke.** Perform CPR for an unconscious and not breathing victim. For a conscious victim, check for non-life-threatening conditions.
4. **Diabetic emergencies.** Give them something sweet to eat or a non-diet drink. Additionally:
 - A person can have a diabetic emergency if their blood sugar levels become too low, which can make them collapse.
 - Giving them something sugary will help raise their blood sugar levels and improve their bodily function.
5. **Allergic reactions.** Monitor the victim's breathing; give care for life-threatening emergencies. If the victim is conscious, ask the source of the allergic reaction (bee sting, nut allergy, etc.) and make sure the source is not still present; assist the person with using an epinephrine auto-injector if available.

6. **Poisoning.** Remove the person from the source of poison if the scene is dangerous. Additionally:
- Check person's consciousness and breathing.
 - Care for life-threatening conditions.
 - If conscious, obtain more information.
 - Call the National Poison Control Center Hotline at 1-800-222-1222.

3.8 AED Programs

IA sites are often in remote locations away from EMS. Therefore, IA strongly encourages AED programs in BIA and BIE sites, schools, and facilities. Guidelines for AED programs are as follows:

- Obtain program support by leadership and management.
- Designate national, regional, and local program coordinators.
- Train and retrain personnel in CPR and in using the AED and accessories.
- Obtain medical direction and medical oversight from nationally recognized institutions or agencies.
- Understand legal aspects.
- Develop and regularly review the AED program and standard operational protocols.
- Develop an emergency response plan and protocols, including a notification system to activate responders.
- Integrate with facility security and EMS systems.
- Maintain hardware and support equipment on a regular basis and after each use, including changing out expired attachment pads.
- Educate all employees about the existence and activation of the AED program.
- Develop quality assurance and data/information management plans.

3.9 Heat-Related Illness

The body's chemical activities take place in a limited temperature range. They cannot occur with the efficiency needed for life if the body temperature is too high or too low. For example, hyperthermia, an abnormally high body temperature, could lead to death if allowed to go unchecked. There are several heat-related illnesses to be aware of:

1. **Heat cramps** are severe muscle cramps, usually in the legs or abdomen, brought about by dehydration and exhaustion, and sometimes accompanied by dizziness and periods of faintness. Move the person to a nearby cool place. Give the person water to drink, or half-strength commercial electrolyte fluids. Massage the “cramped” muscle to help ease the person’s discomfort.

2. **Heat exhaustion** symptoms include displays of rapid and shallow breathing, weak pulse, cold and clammy skin, heavy perspiration, total body weakness, and dizziness that sometimes lead to unconsciousness.

Move the person to a nearby cool place. Keep the person at rest. Remove enough clothing to cool the person without chilling him or her (watch for shivering). Fan the person’s skin. Give the person salted water or half-strength commercial electrolyte fluids. Do not try to give fluids to an unconscious person. At this stage, treatment at a medical facility is essential.

3. **Heat stroke** starts out with deep breaths, followed by shallow breathing, then rapid, strong pulse, followed by rapid weak pulse. The skin becomes hot and dry. The victim may lose consciousness, and seizures or muscular twitching may occur.

Cool the victim rapidly in any manner. Move the victim out of the sun or away from the heat source. Remove the victim’s clothing and wrap him or her in wet towels and sheets. Pour cold water over these wrappings. Body heat must be lowered rapidly, or brain cells will die.

If cold packs or ice bags are available, wrap them and place them under victim’s armpits, behind each knee, on the groin, on each wrist and ankle, and on each side of his or her neck.

Transport the victim to a hospital as soon as possible. Should transport be delayed, immerse the person up to the face in a tub or container of cool (not cold) water. Constantly watch the victim so he or she does not drown. This is a life-threatening, heat-related emergency. CPR may need to be given.

Guidance for preventing heat-related illnesses includes:

- Reduce activity level immediately and seek a cooler environment.
- Stay in the shade.
- Keep food intake, especially intake of protein, to a minimum if sufficient water is not available since protein increases metabolic heat production and water loss.
- Keep clothing on, including shirt and hat. Clothing slows perspiration evaporation and prolongs the cooling effect, in addition to giving sun protection.
- Drink water to prevent dehydration.

- Do not sit or lie on the hot ground—it can be up to 30 degrees hotter on the ground than it is just 1 foot above the ground. To avoid skin burns, do not sit on metal surfaces unless material is placed between skin and place of contact.
- If foot travel is unavoidable, walk only at night and rest often.

Work and rest schedules can decrease the risk of heat illness for IA employees. The National Institute of Occupational Safety and Health (NIOSH) has published a recommended work/rest schedule for employees working in hot environments. This schedule can be found on the NIOSH webpage here: www.cdc.gov/niosh

Additional guidance based on the NIOSH recommendations includes the following:

1. Light work examples include operating equipment, inspection work, walking on level ground, using light hand tools (wrench, pliers).
2. Moderate work examples include loading and unloading vehicles, carrying equipment/supplies weighing 20–40 pounds, and using hand tools (shovel, fin-hoe, scaling bar) for short periods.
3. Heavy work examples include climbing, carrying equipment/supplies weighing 40 pounds or more, installing utilities, and using hand tools (shovel, fin-hoe, scaling bar) for extended periods.
4. “Normal” on the chart means conducting work in a routine manner, consistent with the tasks required.
5. “Caution” on the chart means that great care must be taken to avoid possible danger to employees working in these conditions.
6. The NIOSH work/rest schedule is based on air temperature, with adjustments for direct sunlight and humidity and may not be applicable to all worksites. Adjustments include the following:
 - Full sun (no clouds): add 13°F
 - Partly cloudy/overcast: add 7°F
 - No shadows visible, in the shade, or at night: no adjustment
 - 40% humidity: add 3°F
 - 50% humidity: add 6°F
 - 60% humidity or more: add 9°F

Other work/rest schedules are available, some of which are based on wet bulb globe temperature (a measure of the heat stress in direct sunlight, which accounts for temperature, humidity, wind speed, sun angle, and cloud cover).

3.10 Cold-Related Illness

Hypothermia and frostbite are the two most common types of cold-related illnesses.

Hypothermia is caused by exposure to cold. It is a condition that occurs when inner body temperature drops to a subnormal level. It impairs a person's ability to think and act rationally and can cause death. It is accelerated by wet or damp clothing, wind, exhaustion, or sudden contact with cold water. Watch for symptoms of hypothermia in yourself and others whenever outdoors. The following are symptoms of hypothermia:

- Uncontrollable spells of shivering or continuous shivering over a long period of time
- Slurred or slow speech, incoherent and vague statements
- Memory lapses
- Fumbling hands, frequent stumbling, lurching gait
- Drowsiness
- Exhaustion – inability to get up after a rest

Move the victim of hypothermia to shelter and warmth as quickly as possible. If shelter is not readily available, immediately build a fire to warm the person, and try to prevent further heat loss. Additionally:

- Handle the victim with care and prevent him or her from walking around.
- If the victim is only mildly impaired, give him or her warm drinks (do not give alcohol) and get him or her into dry clothes and a warm sleeping bag.
- If the victim is semiconscious or worse, try to keep him or her awake. Once the body temperature begins to rise, keep the person dry and wrapped in a warm blanket. Wrap the person's head and neck as well.
- Transport the victim to the nearest medical facility. Transport them gently and keep the victim lying down, as still as possible.
- Do not ever assume that a person suffering from severe hypothermia is dead, even though he or she may appear to be. There may be no detectable heartbeat, breathing, or any other sign of life. CPR can be given en route to a hospital.

Frostbite is local cooling. Most affected are the ears, nose, hands, and feet. When a part of the body is exposed to intensely cold air or liquid, blood flow to that part is limited by the constriction of blood vessels. When this happens, tissues do not receive enough warmth to prevent freezing. Ice crystals can form in the skin. There are three degrees of frostbite:

1. **Frostnip** is the first stage of frostbite, brought about by direct contact with a cold object or exposure of a body part to cold air. Wind chill and water chill also can be major factors. This condition is not serious. Frostnip develops slowly, and often a person is not aware of the condition until someone calls attention to it. The affected part blanches or becomes discolored or pale. As the cooling process continues, numbness replaces any sensation of cold or discomfort.

A person afflicted with frostnip may gently warm the affected body part, holding it in his or her bare hand, blowing warm air on it, or, if fingertips are involved, holding them in the armpits. If for some reason a person is unable to do this alone, another person can take the same steps.

Transfer the victim to a medical facility if it appears he or she has suffered more than a mild case of frostnip.

2. **Frostbite**, or superficial frostbite, occurs when the outer and inner layers of skin become involved. If frostnip goes untreated, it becomes superficial frostbite. The affected part becomes discolored and pale. It will feel frozen to a gentle touch. However, when the skin is gently pressed, it will feel soft and pliable beneath the frozen area.

Superficial frostbite treatment includes applying a cover and gentle handling of the affected part. If transportation to a hospital is delayed, apply steady warmth by submerging the body part in warm water.

The skin turns purple during thawing and can be painful. The person should receive follow-up medical care.

3. **Deep frostbite** happens when the inner and outer layers of the skin and the deeper structures of the body are affected. Muscles, bones, deep blood vessels, and organ membranes can become frozen. The affected part becomes a mottled or blotchy blue or gray. The tissue feels frozen to the touch, without the underlying resilience that is characteristic of superficial frostbite.

Emergency care for deep frostbite requires the victim to be immediately transported to a hospital. Additionally:

- Dry clothing over frostbite will help prevent further injury.
- Do not rub the frostbitten body part.
- Do not apply ointment or cover frostbitten parts with snow.
- If the tissue is frozen, keep it frozen until care can be started.
- Never begin thawing procedures if there is any danger of refreezing, keeping the tissue frozen is less dangerous than submitting it to refreezing.
- If blisters appear, do not open them.

3.11 Monitoring and Preventing Cold-Related Illnesses

It is important to know the wind chill temperature to gauge the exposure risk and plan how to safely work in cold weather. It is also important for supervisors to monitor their employees' physical condition while they are working in the cold.

Environmental cold can affect any employee exposed to cold air temperatures and increases the risk of cold stress. As wind speed increases, it causes the cold air temperature to feel even colder, increasing the risk of cold stress to exposed employees such as maintenance workers, road crews, and police officers. Risk factors for cold stress include:

- wetness/dampness, dressing improperly, and exhaustion;
- predisposing health conditions such as hypertension, hypothyroidism, and diabetes; and
- poor physical condition.

The effects of cold stress can vary across different geographical areas. In regions that are not used to winter weather, near freezing temperatures are considered factors for "cold stress." Increased wind speed causes heat to leave the body more rapidly (wind chill effect). Wetness or dampness, even from body sweat, can facilitate the heat loss from the body.

Cold stress occurs by driving down the skin temperature, and eventually the internal body temperature. When the body is unable to warm itself, serious cold-related illnesses and injuries can occur such as permanent tissue damage and death.

Although OSHA does not have a specific standard that covers working in cold environments, under the Occupational Safety and Health Act of 1970, IA, BIA, and BIE, have a duty to protect employees from recognized hazards, including cold stress hazards, that are causing or likely to cause death or serious physical harm. Employees required to work in cold conditions should receive training that includes the following:

- How to recognize the environmental and workplace conditions that can lead to cold stress.
- The symptoms of cold stress, how to prevent cold stress, and what to do to help those who are affected.
- How to select proper clothing for cold, wet, and windy conditions.

While IA employees are working in cold conditions, supervisors and managers should do the following:

- Monitor employees' physical condition.
- Schedule frequent breaks in warm dry areas.
- Schedule work during the warmest part of the day.
- Use the buddy system (work in pairs).

- Provide warm beverages.
- Provide engineering controls such as radiant heaters.

Wind chill is the term used to describe the rate of heat loss from the human body, and the wind chill temperature is a single value that takes both air temperature and wind speed into account. The National Weather Service has created a wind chill calculator that uses air temperature and wind speed to calculate the wind chill temperature: [Wind Chill Chart \(weather.gov\)](https://www.weather.gov/windchill).

The American Conference of Governmental Industrial Hygienists (ACGIH) has developed a work/warm-up schedule for a 4-hour shift that uses air temperature and wind speed to provide recommendations on scheduling work breaks and ceasing non-emergency work.

3.12 Poisonous Insects (Arthropod Bites and Stings)

Employees assigned to areas of heavy arthropod (i.e., ticks, chiggers, spiders, scorpions, bees, wasps, yellow jackets) infestation should do the following:

- Wear proper field attire. Additional protective clothing or equipment for specific activities will be determined by the JHA process and by management.
- Secure trousers by tucking pant legs into socks to prevent insects from going up pant legs.

3.13 Poisonous Plants

Plants that produce toxins and/or cause irritation on contact are referred to as poisonous plants. The toxins in poisonous plants affect herbivores and deter them from consuming the plants. Some plants have physical defenses such as thorns, spines, and prickles, but by far the most common type of protection is chemical. The following guidance should be followed regarding poisonous plants:

- Instruct all employees subject to exposure to poison sumac, oak, and ivy on how to identify them.
- Take extra precautions with persons known to be overly sensitive to poison sumac, oak, and ivy. If practical, do not assign allergic people to work in areas where exposure could occur.
- Wear proper field attire. Dried poison oak resin on clothing can cause a rash if it touches the skin, so wash clothing at regular intervals—daily if an employee is extremely sensitive.
- The palms of the hands are rarely affected, but poison oak resin can be transferred from the hands to other parts of the body. It can be removed by rinsing the affected areas with water. Wash hands before urinating. Be careful about wiping sweat from the face and around the eyes with hands.
- Do not use unidentified leaves as emergency toilet paper in the field.

- Tools can also be contaminated with the resin. This can be removed by rinsing them with water.
- Do not attempt to desensitize oneself by eating the leaves of poisonous plants. This can cause severe lesions in the mouth and around the rectum and can cause kidney damage.
- Do not stand in the smoke of fires made of brush, it may contain unburned poison oak.
- Do not use a leaf mulcher in areas with poison oak unless the employee's legs and arms are covered, and the employee is wearing a face shield.

3.14 Bee Stings

Perfumed toiletries, suede or leather odors, lotion, and sun block attract these insects and should be avoided. Bright colors and bright metal objects, such as jewelry and belt buckles also attract bees. Additionally:

- Swatting or running appears to aggravate stinging insects.
- Shield your face with your arms and move slowly out of a danger zone or lie face down on the ground if under attack.
- Do not poke at bee or wasp nests.

Single stings from bumblebees, hornets, and wasps rarely require medical attention. There may be an immediate sharp pain followed by some redness and swelling. Applying cool water will reduce the intensity and duration of the swelling.

Honeybees have a barbed stinger that could be left in the skin. The venom sac of the honeybee stinger may be attached and continue to inject venom for some time after the bee has left. The stinger only penetrates the skin for a small distance and should be removed promptly. To avoid squeezing, which would inject more venom, it should be removed by scraping the skin surface with a knife blade or a fingernail.

Moderate to severe medical emergencies may result from single or multiple bites because the tolerance for stings may vary by individual. If a reaction occurs, the victim should be transported for medical care.

Some individuals have become sensitized to these stings and react with a widespread rash, asthmatic breathing, tissue swelling, a drop in blood pressure, and sometimes unconsciousness. This is known as anaphylactic shock. This can be an extreme medical emergency, and such individuals should work only within an area providing rapid transport to a medical facility. In these cases, such employees should carry an appropriate prescription and inform supervisors and co-workers of its location and use.

These individuals should also be advised to wear a medical alert tag or similar device containing information about their sensitivity and emergency phone numbers.

3.15 Ticks

Do the following when working in areas infested with ticks:

- Tuck your pant legs into your socks.
- Tuck your shirt into your pants.
- Use a tick repellent on your clothes.
- Do a body check at the end of each workday, paying particular attention to armpits, navel, behind the ears, and the groin area.
- At night, place clothing where ticks, spiders, or scorpions cannot get in them. Arrange bedding so insects cannot crawl into it during the day and night.

The sooner ticks are removed, the better. Remove ticks using the following process:

- Tweezers work best at removing ticks. If fingers are used, shield them with a piece of paper.
- Grasp the tick as close to the skin surface as possible and pull outward with a steady, even pressure. Do not jerk or twist because this may cause the head of the tick to break off in the skin.
- Take care not to squeeze, crush, or puncture the body of the tick because this may cause fluids injected by the tick to enter the wound.
- After removing the tick, disinfect the area with alcohol or soap and water. The tick should be kept in a small jar for later identification in case the employee becomes sick with Lyme disease or another illness.
- Folklore methods of tick removal, such as painting the tick with Vaseline, fingernail polish, or alcohol, or applying a hot match head do not work.

Ticks carrying Lyme disease can be found in almost every part of the United States. The carriers are deer ticks and can be identified by their small size and color (black and reddish-brown). Ticks must be attached to the skin for 12 to 24 hours to transmit the spirochete that causes Lyme disease, so prompt removal is a safeguard against disease.

Lyme disease can cause severe health problems if left untreated. Prompt and accurate diagnosis is essential. Symptoms usually develop within a few days to a few weeks after the bite of an infected tick and include the following:

- Headache
- Stiff neck
- Fever
- Muscle ache
- Flu-like symptoms
- General malaise

In approximately 70% of Lyme disease cases, a “bull’s eye” rash or lesion is seen. If these symptoms occur following tick exposure, seek medical attention.

3.16 Poisonous Snakes

Snakes tend to be temperature sensitive. At cool to cold temperatures, they are slow and lethargic; at hot temperatures, they are quick, but also uncomfortable and will seek cool shelter. Be aware of these characteristics:

- On a cool morning, the snake may be sunning on a warm ledge; in the heat of the day, it might be under a rock or brush where it is cool.
- Snakes have excellent camouflage, so train your eye to see the correct shapes and colorations.
- Do not underestimate the speed and agility of a snake. Rattlesnakes can strike about one half of their length and can strike faster than an individual can jump. Give them a wide margin.
- Wear clothing, appropriate boots, and snake guards if possible.
- Be careful when walking in the back country, especially if ground is obscured by foliage. Walk on clear paths as much as possible. Do not step over a large log without looking on the other side first.
- Always watch where you are putting your feet and hands. Do not pick up rocks or other objects that might conceal a snake. Use a tool to turn the rock over first.

If bitten by a snake, and medical help can be secured within one hour, no first-aid measures are necessary. Otherwise, do the following:

- Keep still, avoid panic.
- Get away from the snake.
- Apply a constricting band, two inches wide, above the bite.
- Immobilize the extremity.

- Do not give aspirin because it can thin the blood (unless instructed to do so by a physician).

Not all strikes by rattlesnakes deposit venom. If there is an absence of pain and swelling shortly after the strike, it was probably a “dry bite.” In such a case, extraordinary measures are not needed. Dry bites occur about 20% to 25% of the time.

3.17 Lightning

Electricity passing through the body can burn tissues and cause muscle spasms or contractions. Vital nerve centers may be blocked, causing the heart or breathing to stop. Immediate revival should be attempted using appropriate artificial respiration and cardiac massage (i.e., CPR) techniques. Be assured, however, that a lightning-shock victim can be touched without any risk of shock to the rescuer.

3.18 Altitude-Related Problems (Above 8,000 Feet)

Most difficulties at high altitude are a direct result of less oxygen in the atmosphere. High-altitude pulmonary edema (excessive fluid in the lungs) usually occurs in the un-acclimatized individual who rapidly ascends to an altitude above 8,000 feet, particularly if heavy exertion is involved. Symptoms include the following:

- Shortness of breath
- Coughing up white phlegm
- Weakness
- Easily fatigued
- Rapid heart rate (more than 90 to 100 beats per minute at rest)
- Nausea
- Vomiting
- Headache
- Insomnia
- Acidic taste in mouth

Descending to a lower altitude can relieve symptoms. Do not take sleeping pills, alcohol, or smoke tobacco products. Stop strenuous activity and seek medical attention.

3.19 Asthma and Anaphylaxis

Asthma is a major noncommunicable disease affecting both children and adults and is the most common chronic disease among children. Inflammation and narrowing of the small airways in the lungs cause asthma symptoms, which can be any combination of cough, wheeze, shortness of breath, and chest tightness. Asthma symptoms include the following:

- A hoarse whistling sound made while exhaling
- Trouble breathing
- Rapid or shallow breathing

If these symptoms occur, assist the person with using his or her prescribed quick-relief medication or an inhaler if requested and available. Call for help (911) if the person's breathing trouble does not improve in a few minutes after using the quick-relief medication or inhaler.

Anaphylaxis is a severe, potentially life-threatening allergic reaction where skin or other areas of the body that come in contact with an allergen usually swell and turn red. If this occurs, monitor the person's breathing and for changes in their condition. Additionally:

- Give care for life-threatening emergencies.
- Check a conscious person to determine the substance (antigen) involved, route of exposure, and effects of exposure.
- Help the person use their prescribed epinephrine auto-injector if requested and available, and if permitted by state or local regulations.

3.20 Worksite First-Aid Kits

First-aid kits should be suitable for the workplace. A revision to the American National Standards Institute (ANSI)/International Safety Equipment Association (ISEA) Z308.1-2015 introduced two classes of first-aid kits:

1. **Class A** kits are for wounds, minor burns, and eye injuries like those that might be found in an office type environment.
2. **Class B** kits are intended for injuries that might be found in more industrial worksites such as warehouses, shops, and in the field.

First-aid kits should be evaluated periodically by competent medical staff to ensure they are equipped for any unique or hazardous situations or operations. The first-aid kits should also be large enough to accommodate the number of people working in the area.

Minimum First-Aid Kit Requirements

Supply	Minimum Quantity Minimum		Size/Volume/Number
	Class A	Class B	
Adhesive Bandages	16	50	1 x 3 inches
Adhesive Tape	1	2	2.5 yards (total)
Antibiotic Application	10	25	1/57 oz.
Antiseptic	10	50	1/57 oz.
Breathing Barrier	1	1	Each
Burn Dressing (gel soaked)	1	2	4 x 4 inches
Burn Treatment	10	25	1/32 oz.
Cold Pack	1	2	4 x 5 inches
Eye Covering (With Attachment)		2	22.9 square inches
Eye/Skin Wash	1 fl. oz. total	4 fl. oz. total	
First-Aid Guide	1	1	Each
Hand Sanitizer	6	10	1/32 oz.
Medical Exam Gloves	2	4	Pairs
Roller Bandage (2 inch)	1	2	2 inches x 4 yards
Roller Bandage (4 inch)	0	1	4 inches x 4 yards
Scissors	1	1	Each
Splint	0	1	4 x 24 inches
Sterile Pads	2	4	3 x 3 inches
Tourniquet	0	1	1-inch width
Trauma Pads	2	4	5 x 9 inches
Triangular Bandage	1	2	40 x 56 inches

3.21 Bloodborne Pathogens

OSHA requires IA, BIA, and BIE to protect employees who are exposed to blood or OPIMs. Bloodborne pathogens are infectious microorganisms present in blood that can cause serious or even life-threatening disease in humans. In general, the standard requires managers and supervisors to do the following:

1. **Establish an exposure control plan.** A written plan that contains an OPIM exposure determination for various job classifications and tasks performed to help guide exposure prevention. The plan must be updated at least annually to reflect changes in tasks, procedures, and positions that affect occupational exposure.
2. **Implement universal precautions.** Treat all human blood and OPIM as if is known to be infectious for bloodborne pathogens.
3. **Identify and use engineering controls.** These are devices that isolate or remove the bloodborne pathogens hazard from the workplace. They include self-sheathing needles and safer medical devices.
4. **Identify and use work practice controls.** These are practices that reduce the possibility of exposure by changing the way a task is performed, such as handling and disposing of contaminated sharps, handling specimens, handling laundry, and cleaning contaminated surfaces and items.
5. **Provide PPE.** PPE can include gloves, gowns, eye protection, and masks.
6. **Provide Hepatitis B Virus (HBV) vaccinations.** This vaccination must be offered to all employees after they have received the required bloodborne pathogens training and within 10 days of initial assignment to a job with occupational exposure.
7. **Post-exposure evaluation and follow-up.** All occupational exposures should be evaluated, and a follow-up conducted with the worker who experiences an exposure incident. The exposed employee should be advised of the source individual's HBV and Human Immunodeficiency Virus (HIV) (virus that causes acquired immunodeficiency syndrome (AIDS)) infectivity, and offered post-exposure prophylaxis, counseling, and monitoring for illnesses.
8. **Use labels and signs to communicate hazards.** Warning labels must be affixed to containers of regulated waste; containers of contaminated reusable sharps; refrigerators and freezers containing blood or OPIM; other containers used to store, transport, or ship blood or OPIM; contaminated equipment that is being shipped or serviced; and bags or containers of contaminated laundry.
9. **Provide information and training to employees.** Employees should receive regular training that covers all elements of the standard including, but not limited to, information on bloodborne pathogens and diseases, methods used to control occupational exposure, HBV vaccine, and medical evaluation and post-exposure follow-up procedures.

10. **Records.** The site, school, or facility must maintain worker exposure, medical, and training records. The site, school, or facility must also maintain a Sharps Injury Log.

Chapter 4: Recordkeeping and Reporting

This chapter provides information and guidance for OSHP recordkeeping and reporting, including:

- logging occupational injuries and illnesses;
- reporting accidents and incidents;
- quarterly summaries and reporting forms; and
- annual summaries and reporting forms.

4.1 Occupational Injury and Illness Recordkeeping

The OSHA requires injury and illness records be maintained at each IA, BIA, and BIE establishment. Records must be maintained at the establishment for at least five years. Copies of these records can be provided at no cost to current and former employees if they request them.

There are two OSHA forms for injury and illness recordkeeping:

1. Log of Work-Related Injuries and Illnesses (Form 300) - is the form for recording recordable injuries and illnesses that occur at the workplace. The form must be completed by the BIA RSM, BIE SPM, and DSRM Chief, for their respective locations. This form is available in the Department of the Interior's (DOI) Safety Management Information System (SMIS). The SMIS is the DOI's and IA's official system of record for reporting accidents, incidents, injuries, and illnesses. See section 4.2 for more information on the SMIS.
2. Summary of Work-Related Injuries and Illnesses (Form 300A) - is the summary form and must be posted in the workplace annually. At the end of each calendar year, Form 300A must be completed by the BIA RSM, BIE SPM, and DSRM Chief, for their respective locations. The form is also available in SMIS. The BIA RSM, BIE SPM, and DSRM Chief must submit the form to the location's Official-in-Charge (OIC). The OIC will certify that they have examined the form and that to the best of their knowledge, the entries are true, accurate, and complete. The OIC must then post the summary in the workplace where notices to workers are usually posted for 3 months, from February 1 until April 30.

A. Serious Injuries or Illnesses.

A serious work-related injury or illness that would require recording (OSHA recordable) on Form 300 includes the following:

- Any work-related fatality.

- Any work-related injury or illness that results in loss of consciousness, days away from work, restricted work, or transfer to another job.
- Any work-related injury or illness requiring medical treatment beyond first aid.
- Any work-related diagnosed case of cancer, chronic irreversible diseases, fractured or cracked bones or teeth, and punctured eardrums.
- There are also special recording criteria for work-related cases involving needle sticks, sharps injuries, medical removal from the workplace, hearing loss, and tuberculosis.

B. Minor Injuries and Illnesses.

Minor injuries that are only first-aid cases and are not considered OSHA recordable include the following:

- Using a non-prescription medication at non-prescription strength.
- Administering tetanus immunizations.
- Cleaning, flushing, or soaking wounds on the surface of the skin.
- Using wound coverings such as bandages, Band-Aids, or gauze pads.
- Using butterfly bandages or Steri-Strips.
- Using hot or cold therapy.
- Using any non-rigid means of support, such as elastic bandages, wraps, or non-rigid back belts.
- Using temporary immobilization devices while transporting an accident victim.
- Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister.
- Using eye patches.
- Removing foreign bodies from the eye using only irrigation or a cotton swab.
- Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs, or other simple means.
- Using finger guards.
- Drinking fluids for relief of heat stress.

This information helps managers, supervisors, and employees evaluate the safety of a workplace and implement protections to eliminate hazards and prevent future workplace injuries and illnesses.

4.2 Accident Reporting in the SMIS

The SMIS (<https://smis.doi.net>) is a web-based system managed by the DOI's Office of Occupational Safety and Health. SMIS is the Department's official accident, injury, and illness reporting, analysis, and recordkeeping system for DOI employees, contractors, volunteers, and visitors to DOI facilities.

SMIS assists the Department with compliance with the Department of Labor's (DOL) OSHA regulations, mandates, and requirements (29 CFR 1960), and with Basic Program Elements for Federal Employees, which require that agencies maintain recordkeeping systems for proper requirements.

The SMIS application provides the functionality to support business processes within DOI, bureaus, and offices that enhance the health and safety of employees, contractors, volunteers, and visitors. The following must be reported on an Incident Report/Near Miss Report/Property Damage Report in SMIS:

- Any accidental injury or property damage involving the public when there is a reasonable possibility of a tort claim being filed against the United States.
- A fire resulting in at least a \$500 loss involving vehicles, motorized equipment, aircraft, watercraft, structures, or contents of any property under Departmental control.
- Property damage or injury resulting from the operation of Departmental, General Services Administration (GSA), privately-owned, or commercially leased vehicles, or motorized equipment used for official business.
- Other property under Departmental control that is damaged by accident, whether or not it is to be repaired or replaced, and regardless of who caused the damage (i.e., employee, volunteer, contractor, emergency fire fighter, or public individual).
- Any near miss incidents that could have resulted in damage or injury.

Chapter 5: Occupational Contaminants

This chapter describes occupational exposure limits, monitoring, and controls for employees exposed to hazardous substances in the performance of their work duties. It also provides guidance for a medical surveillance program. Health effects from exposure depend on the hazardous substance present in the workplace. Some contaminants, like benzene, have long-term health impacts such as cancer. Other contaminants, like carbon monoxide, can be acutely fatal at high levels. Exposure limits are established to protect employees from these health effects. Exposures must be controlled to levels below the established limits.

5.1 OSHA Enforcement

The OSHA lists the exposure limits for employees to toxic or hazardous substances in the subpart Z tables attached to 29 CFR 1910.1000, Air Contaminants. Table Z-1 lists the limits for air contaminants, Table Z-2 list the limits for toxic and hazardous substances, and Table Z-3 lists the limits for mineral dusts.

OSHA recognizes and has stated that many of its permissible exposure limits (PEL) are outdated and inadequate to protect worker health. Most of the OSHA PELs were issued shortly after the Occupational Safety and Health Act was adopted in 1970 and have not been updated since.

To provide employers, workers, and other interested parties with a list of alternate occupational exposure limits that may serve to better protect workers, OSHA has annotated the existing Z-tables with other selected occupational exposure limits. OSHA has chosen to present a side-by-side table with the California OSHA PELs, the NIOSH recommended exposure limits (REL), and the ACGIH threshold limit values (TLV) and biological exposure indices (BEI).

OSHA mandatory PELs in the Z-tables remain in effect. However, federal agencies can enforce the more restrictive limits as noted in the tables linked below. If a contaminant cannot be located in any of the below tables, contact the servicing BIA RSM or BIE SPM for guidance.

5.2 OSHA Annotated Table Z-1

IA supervisors and managers will review annotated Table Z-1 for which of the alternative PEL/REL/TLVs is the more restrictive, and use that value for the limits on employee exposure. That table can be found here: <https://www.osha.gov/annotated-pels/table-z-1>.

Substances with limits preceded by “C” mean these are ceiling values. An employee’s exposure to any substance in annotated Table Z-1 cannot at any time exceed the ceiling value. If instantaneous monitoring is not feasible, then the employee’s exposure will be assessed as a 15-minute time weighted average (TWA) exposure that will not exceed the listed ceiling value at any time during the working day.

An employee’s exposure to any substance in annotated Table Z-1 where the exposure limit is not preceded by a “C,” will not exceed the 8 hour TWA given for that substance.

5.3 OSHA Annotated Table Z-2

IA supervisors and managers will review annotated Table Z-2 for which of the alternative PEL/REL/TLVs is the more restrictive, and use that value for the limits on employee exposure. That table can be found here: <https://www.osha.gov/annotated-pels/table-z-2>.

During an 8 hour shift, an employee's exposure to a substance listed in annotated Table Z-2 will not exceed the 8 hour TWA.

An employee's exposure to a substance listed in annotated Table Z-2 should not exceed the ceiling concentration limit. However, the exposure can exceed the ceiling but not the peak if the duration does not exceed the maximum duration listed.

For example, Substance A has:

- 10 parts per million (ppm) TWA,
- 25 ppm ceiling with a 10-minute maximum duration, and
- 50 ppm peak

During an 8 hour work shift, an employee may be exposed to a concentration of Substance A above 25 ppm (but never above 50 ppm) only for a maximum period of 10 minutes. Such exposure must be compensated by exposures to concentrations less than 10 ppm so that the cumulative exposure for the entire 8 hour work shift does not exceed a weighted average of 10 ppm.

5.4 OSHA Annotated Table Z-3

IA supervisors and managers will review annotated Table Z-3 for which of the alternative TWA/TLVs is the more restrictive, and use that value for the limits on employee exposure. That table can be found here: <https://www.osha.gov/annotated-pels/table-z-3>.

An employee's exposure to any substance listed in annotated Table Z-3 will not exceed the 8 hour TWA given for that substance in the table.

Employers will monitor exposures in the workplace as needed to ensure compliance with the occupational exposure limits (OELs) noted above. This is typically done through air sampling and laboratory analysis, or through real-time air monitoring devices. Site managers will prioritize jobs with the highest hazards through the JHA process.

For jobs or tasks with potential over-exposure to air contaminants (e.g., welding or using paint thinner), managers will consult an industrial hygienist or occupational health and safety specialist to pursue workplace exposure monitoring. Results from the monitoring will be compared to the relevant OELs to determine if exposures are acceptable.

5.5 Exposure Computation Formula

The computation formula calculates employee exposure to air contaminants for which 8 hour TWAs are listed in the annotated Z-tables to determine whether an employee is exposed over the regulatory limit. The cumulative exposure for an 8 hour work shift is computed as follows:

$$E = (C_a T_a + C_b T_b + \dots + C_n T_n) \div 8$$

Where:

- E is the equivalent exposure for the working shift.
- C is the concentration during any period of time where the concentration remains constant.
- T is the duration in hours of the exposure at the concentration C.

The value of E will not exceed the 8 hour TWA for the substance listed in the annotated Z-tables.

For example, to illustrate the cumulative exposure formula, assume that Substance A has an 8 hour time weighted average limit of 100 ppm as noted in Annotated Table Z-1. Assume that an employee is subject to the following exposure:

- Two hours exposure at 150 ppm
- Two hours exposure at 75 ppm
- Four hours exposure at 50 ppm

Substituting this information in the formula gives:

$$(2 \times 150 + 2 \times 75 + 4 \times 50) \div 8 = 81.25 \text{ ppm}$$

The 81.25 ppm is less than 100 ppm, so the 8 hour TWA exposure is acceptable.

5.6 Mixed Air Contaminant Exposure Computation Formula

In case of a mixture of air contaminants, IA will compute the equivalent exposure as follows:

$$E_m = (C_1 \div L_1 + C_2 \div L_2) + \dots + (C_n \div L_n)$$

Where:

- E_m is the equivalent exposure for the mixture.
- C is the concentration of a particular contaminant.
- L is the exposure limit for that substance specified in subpart Z of 29 CFR part 1910.

The value of E_m will not exceed unity (1).

For example, to illustrate the mixed air contaminant formula, consider the following exposures:

Substance	Actual concentration of 8 hour exposure (ppm)	8 hour TWA PEL (ppm)
B	500	1000
C	45	200
D	40	200

Substituting in the formula, we have:

$$\begin{aligned} E_m &= 500 \div 1,000 + 45 \div 200 + 40 \div 200 \\ E_m &= 0.500 + 0.225 + 0.200 \\ E_m &= 0.925 \end{aligned}$$

E_m is less than unity (1), so the exposure combination is within acceptable limits.

5.7 Controlling Exposures

To achieve compliance with these requirements, engineering controls must first be implemented where feasible. Examples of engineering controls include local exhaust ventilation, physical barriers or enclosures, and tools with vacuum capture attachments. Refer to the NIOSH Engineering Controls Database for engineering control ideas and options to control specific air contaminants.

When engineering controls are not feasible for full compliance, administrative controls must be used. Examples of administrative controls include training employees on best practices to reduce exposure, rotating job duties to prevent all-day exposures, and moving the hazardous operation to an environment where fewer workers are present.

When engineering and administrative controls are inadequate, PPE must be used to keep the exposure of employees to air contaminants within the limits prescribed. Examples of PPE include respirators, gloves, eye protection, and hearing protection. Any equipment used must be approved for each particular use by the certifying standards agency; for respirators this is NIOSH. For most other PPE, this is the ANSI. Consult an Industrial Hygienist or a safety manager/specialist for more guidance. Whenever respirators are required, the organization must establish a program to comply with 29 CFR 1910.134.

5.8 Medical Surveillance Program for Occupational Exposures

As noted in the DOI's Manual 485-15, Occupational Medicine Program, IA must provide medical surveillance for "employees that are exposed to chemical, biological, and/or physical stressors that are in excess of established regulatory exposure limits or consensus industry guidelines." The medical surveillance program includes the following:

- Employees who are, or may be, exposed to contaminants or hazardous substances at or above their PELs; or, if there are no PELs, above the published exposure levels for these substances for 30 days or more a year.
- All employees who wear a respirator for 30 days or more a year or as required by 29 CFR 1910.134.
- All employees who are injured, become ill, or develop signs or symptoms due to possible overexposure to hazardous substances or health hazards from an emergency response or hazardous waste operation.
- Members of hazardous materials (HAZMAT) response teams comprised of hazardous material experts who specialize in detecting, containing, and removing hazardous substances and control or stabilize an incident.

IA must make medical examinations and consultations available to each employee as follows:

- prior to assignment in a position or area where they are exposed to stressors in excess of regulatory or consensus standard limits;
- at least once every 12 months unless a physician believes a longer interval (not greater than biennially) is appropriate;
- at employment termination or when the employee is reassigned to an area without contaminant or hazardous material exposure if the employee has not had an examination within the last six months; and
- at more frequent times if the physician determines that an increased frequency of examination is medically necessary.

Medical evaluations will also be completed for employees who may have been injured, become ill, developed signs or symptoms caused by exposure to a hazardous substance, or were exposed during an emergency incident to hazardous substances at concentrations above published exposure levels, without the necessary PPE being used. The medical evaluations will begin as soon possible following the emergency incident or development of signs or symptoms. Additional follow-up examinations or consultations will be carried out if the physician determines that they are medically necessary.

Medical examinations and consultations will include the following:

- A medical and work history with special emphasis on symptoms related to the handling of hazardous substances and health hazards, and fitness for duty including the ability to wear any required PPE under the conditions at the work site.
- Results will be provided by the physician to the employee.

All medical examinations and procedures will be performed by a licensed physician, preferably one knowledgeable in occupational medicine, and will be provided without cost to the employee, without loss of pay, and at a reasonable time and place.

IA will provide the physician with the following information for each employee:

- A description of the employee's duties as they relate to the employee's exposures.
- One copy of 29 CFR 1910.120 and any appendices.
- The employee's exposure levels or anticipated exposure levels.
- A description of any PPE used.
- Information from previous medical examinations of the employee which is not readily available to the examining physician.
- Information required by 29 CFR 1910.134.

IA will provide the employee with a copy of the physician's written opinion containing the following:

- The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from occupational exposures or from respirator use.
- The physician's recommended limitations upon the employee's assigned work, if any.
- The results of the medical examination and tests if requested by the employee.
- A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further examination or treatment.

The written opinion provided to IA should not reveal specific findings or diagnoses unrelated to occupational exposures.

The medical surveillance records will be retained following the criteria of 29 CFR 1910.20. The records will include at least the following information:

- The name and social security number of the employee.
- Physician's written opinion(s), recommended limitations, and results of examinations and tests.
- Any employee medical complaints related to exposure to hazardous substances.

- A copy of the information provided to the examining physician, except for the written copy of 29 CFR 1910.120 and any appendices.

Chapter 6: Asbestos

This chapter describes requirements that help prevent IA employees from occupational exposure to asbestos above the PEL or excursion limit. Elevated asbestos exposure can lead to long-term adverse health effects. Exposure is reduced by using a combination of work practices, engineering controls, and PPE.

6.1 Asbestos Uses

Asbestos is a naturally occurring mineral that is resistant to heat and corrosion. Asbestos has been used in countless products, such as fire proofing, pipe insulation, floor tiles, building materials, and in vehicle brakes and clutches. Asbestos includes the mineral fibers chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

The use of asbestos is restricted in the United States, but not banned. In 1989 the Environmental Protection Agency (EPA) issued the Asbestos Ban and Phase Out Rule (ABPR) to ban the use of asbestos, but it was overturned by the Fifth Circuit Court of Appeals. In its ruling, the court said that EPA could only ban asbestos products that were not in production as of July 12, 1989.

The EPA determined that spray-applied asbestos and the following six categories of asbestos containing materials fit within the court's ruling:

- Flooring felt
- Rollboard
- Commercial paper
- Corrugated paper
- Specialty paper
- New uses of asbestos

Asbestos fibers associated with health risks are too small to be seen, making it impossible to determine a material's asbestos concentration by visual inspection alone. If the material is suspect (e.g., the materials mentioned in the presumed asbestos-containing materials (PACM) definition in buildings constructed before 1981), sampling and lab analysis are needed to determine true asbestos concentration.

6.2 Asbestos Surveys/Inspections

The presence of asbestos is determined through inspections which include sampling and laboratory analysis of suspect materials. Facility operations and maintenance may be conducted based on a "survey" that does not involve sampling if suspected asbestos-containing materials (ACMs) are treated as though they *are* ACMs.

An asbestos inventory identifies ACM locations, condition, and whether it needs to be removed or not. An asbestos inventory is required at all IA sites, schools, or facilities with ACM and should include an outline of the safety measures for any work that may disturb ACMs or PACMs. ACMs are required to be labeled. If it is not feasible to label the material, alternatives such as a sign posted in a common room may be used.

Employees must be informed about the location and physical condition of ACMs at any IA site, school, or facility. Employees may be informed through written notices, posting signs, labels, and holding awareness or information sessions. Managers and supervisors must stress the need to avoid disturbing the material.

A. Asbestos Inspectors.

Each project where an asbestos survey is being conducted must have an assigned EPA/Asbestos Hazard Emergency Response Act (AHERA)-accredited inspector to supervise asbestos related activities.

The EPA/AHERA-accredited inspector can identify asbestos hazards in the environment or in the work conducted which are dangerous to employees. The EPA/AHERA-accredited inspector should also be authorized to take prompt corrective measures to eliminate those hazards. The EPA/AHERA-accredited inspector is responsible for seeing that the asbestos requirements are implemented including surveys, data collection, air monitoring, and PPE use.

Only the EPA/AHERA-accredited inspector may perform asbestos surveys and sampling activities. All employees assuming the role of accredited inspector must have successfully completed a training course from an EPA/AHERA-accredited training organization and have the accreditation for the state where the work is located.

IA employees qualified as EPA/AHERA-accredited inspectors conducting asbestos inspections must be placed in a medical surveillance program.

B. PPE for Asbestos Inspections.

PPE must be available and worn during asbestos inspections. Personal monitoring and initial exposure assessments must be conducted unless sufficient data exists to indicate that the assessments are not necessary. Respiratory protection must be worn until the assessments have been conducted, and it has been determined that respiratory protection is not warranted.

C. Identifying Asbestos Containing Materials.

IA is responsible for identifying ACM and PACM in all sites, schools, and facilities that it manages. The basis for determining the presence of asbestos is as follows:

- **Inspections.** Inspections are performed by an EPA/AHERA-accredited inspector and utilize nondestructive techniques to obtain samples. Inspection reports should identify areas sampled, areas not sampled, and the presence of any friable or damaged ACM. All suspected materials that are not sampled should be identified as PACM.
- **Limited sampling.** Bulk sampling to identify the presence of asbestos can only be conducted by an EPA/AHERA-accredited inspector. The samples collected must be analyzed by a laboratory accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

The following procedures should be followed when suspect ACM bulk samples are collected:

- Collect samples after hours or when the building is not in use.
- Collect samples from the area(s) already damaged.
- Place a drop cloth beneath the sample location.
- Wet the selected sample locations sufficiently before sampling to minimize fiber release.
- Use appropriate sample collection tools.
- Wet wipe the sample collection tools after sampling is completed.
- Place sampled material in a pre-labeled container or package capable of being tightly sealed.
- Place collected sample container or package in a separate, larger package capable of being tightly sealed for a “double seal.”
- Record sample collection data.
- Repair sample location to minimize further potential fiber release.
- Place all wet wipes, drop cloths, and disposable clothing and protective equipment into a labeled plastic bag. Seal and retain the bag until laboratory results are received.

If all samples are negative for asbestos, dispose of collection materials as normal refuse. If any of the samples are positive, the collection materials must be handled as asbestos waste and disposed of accordingly.

Facilities built before 1981 with no sampling records are assumed to have ACM. Those built after 1981 will be assumed to be asbestos-free.

D. Annual Inspections.

All ACM and PACM should be visually inspected annually to determine whether any conditions have changed. Inspections should:

- Confirm that ACM has been properly labeled.
- Identify ACM or PACM that has been damaged and the extent of damage.

- Indicate the suspected source of any damage or potential for damage.
- Note whether any ACM/PACM dust or debris is present.
- Determine friability.

The inventory of ACM and PACM should be updated to reflect any changes found and follow-up actions taken.

E. Inventory of ACM and PACM.

IA sites, schools, or facilities should have an inventory of all identified ACM and PACM. The inventory allows managers and supervisors to plan and execute maintenance and repair activities, control exposures to PACM and ACM, and avoid an uncontrolled fiber release incident.

The inventory also eliminates the need to repeatedly analyze suspected or presumed materials. Inventories should, at a minimum, include the following information:

- A unique identifier.
- The year the facility or structure was built.
- The presence of ACM or PACM.
- The location of ACM or PACM within the facility.
- The condition of ACM or PACM and potential for damage,
- The order for additional asbestos surveys or further sampling.

F. Information, Notifications, and Labeling.

Informed employees are less likely to unknowingly disturb ACM and cause the release of fibers into the air. Sites, schools, and facilities must let employees and contractors who may be working in a building know about the presence of ACM or PACM. Notification methods, such as asbestos awareness training, conducting an asbestos inventory, and employee notification, are described below.

Asbestos awareness training should cover:

- What asbestos is.
- What the common uses of asbestos are.
- Where asbestos may be found.
- The health hazards of asbestos.
- How to recognize and report damage or deterioration.
- How to avoid damaging it.
- How asbestos is managed in facilities.

An asbestos inventory should be conducted that provides information on the location of ACM or PACM in buildings or facilities. The inventory should be the primary resource for information used by maintenance employees and contractors whose work may impact ACM or PACM.

A notification letter to employees should be created that identifies the presence, location, and condition of ACM or PACM, and ACM should be clearly labeled to provide additional notification and warning. Labels should include the following:

DANGER:

CONTAINS ASBESTOS FIBERS

AVOID CREATING DUST

CANCER AND LUNG DISEASE HAZARD

Any ACM newly identified by an asbestos survey or sampling should be promptly labeled.

6.3 Asbestos Management Written Program

Each IA site, school, or facility should implement, as a best practice, an Asbestos Management Written Program (Program) if ACM or PACM is present in any of their buildings or facilities. This exceeds the requirements of 29 CFR 1910.1001(f)(2)(i) which only requires a written program when the TWA/excursion limits are exceeded, but is highly recommended as a best practice. The Program should include the following:

- Designation of a coordinator or contact person
- Applicable EPA/OSHA regulations
- Responsibilities for managers, supervisors, and employees
- Training
- Methods for inventorying ACM and PACM
- Labeling ACM and PACM
- Hazard communication procedures
- Inspection procedures
- Work practice controls and procedures to be used during maintenance activities that may disturb ACM or PACM
- Response procedures for uncontrolled fiber release episodes
- Housekeeping and waste disposal procedures
- Medical surveillance
- Recordkeeping

The Program must include asbestos inspection operations and identify PPE, emergency procedures, and location-specific requirements.

6.4 Training for employees working in the vicinity of ACMs or PACMs

Anyone working around asbestos hazards should have training even if they do not handle the materials directly. IA managers and supervisors should ensure that awareness level training is provided to employees who perform housekeeping or other operations in areas where ACM or PACM are present that includes:

- The health effects of asbestos
- Locations of ACM and PACM in the facility
- Signs of damage and deterioration of ACM and PACM
- The proper response to fiber release
- The requirements for housekeeping

Awareness level training helps prevent employees from unknowingly disturbing ACM or PACM and should be provided annually.

6.5 Response Actions

Whenever ACM or PACM is unknowingly disturbed or damaged, actions must be taken to make repairs and control the release of fibers. provides guidelines for responding to disturbed or damaged ACM.

6.6 Asbestos Removal and Abatement Activities

Asbestos removal and abatement activities include, but may not be limited to, the following:

- Removing and disposing of ACM encountered during maintenance, renovation, and construction activities.
- Encapsulating or enclosing ACM to abate the hazard from resulting in exposure to employees.
- Performing visual observations either for the intent of verifying that the removal contractor is complying with the approved work plan/removal specifications, and/or verifying the asbestos abatement activities conducted by the removal contractor have been sufficiently performed.
- Documenting daily work activities.
- Collecting air samples that include background, work-in-progress, and final air clearance samples.

A. Removal Classification.

OSHA has established a classification system for asbestos construction work that includes work practices to reduce worker exposures. Under this system, the following four classes of construction work are matched with increasingly stringent control requirements.

1. **Class I** asbestos work is the most potentially hazardous class of asbestos jobs. This work involves removing asbestos-containing thermal system insulation (TSI) and sprayed-on or troweled-on surfacing materials greater than 1% asbestos. Employers must presume that TSI and surfacing material found in pre-1981 construction is ACM. TSI includes ACM applied to pipes, boilers, tanks, ducts, or other structural components to prevent heat loss or gain. Surfacing materials include decorative plaster on ceilings and walls; acoustical materials on decking, walls, and ceilings; and fireproofing on structural members.
2. **Class II** work includes removing other types of ACM that are not TSI such as resilient flooring and roofing materials. Examples of Class II work include removing asbestos-containing floor or ceiling tiles, siding, roofing, or transite panels.
3. **Class III** asbestos work includes repair and maintenance operations where ACM or PACM are disturbed. This can include gasket removal (if gasket is crumbled, pulverized, or otherwise made friable); thermal system insulation; refractory; or cementitious material removal of less than one bag.
4. **Class IV** work includes custodial activities where employees clean up asbestos-containing waste and debris produced by construction, maintenance, or repair activities. This work involves cleaning dust-contaminated surfaces, vacuuming contaminated carpets, mopping floors, and cleaning up ACM or PACM from TSI or surfacing material.

B. Competent Person.

On all construction/renovation sites with asbestos operations, a competent person must oversee or monitor asbestos activities. The competent person must be able to identify asbestos hazards in the workplace and have the authority to correct them. The competent person must be qualified and authorized to ensure worker safety and health as required by the OSHA in Subpart C, General Safety and Health Provisions for Construction (29 CFR Part 1926.20).

Under these requirements for safety and health prevention programs, the competent person must frequently inspect job sites, materials, and equipment. The training for the Class I and II competent person is more stringent than the training for the Class III, Class IV, and asbestos survey competent person.

The competent person for Class I and II asbestos removal must attend a comprehensive training course for supervisors, employees, and contract employees certified by the EPA or a state-approved training provider, or complete a course that is equivalent in length and content.

For Class III and Class IV asbestos work, competent person training must include a course equivalent in length, stringency, and content to the 16-hour operations and maintenance course developed by the EPA for maintenance and custodial workers. For more specific information, see 40 CFR Part 763.92(a)(2).

The competent person is responsible for implementing the requirements in the field (e.g., engineering controls, work practices, data collection, air monitoring, and PPE use). For Class I and Class II asbestos work, the competent person must be on site, oversee all aspects of asbestos removal and handling, including abatement, installation, removal, and handling. For Class I, Class II, and Class III asbestos work, the competent person must inspect the job site. Inspections must be made at intervals sufficient to assess whether conditions have changed, and as requested by employees.

C. Engineering and Work Practice Controls.

Where IA or contractor employees will be directly involved in removing and disposing of ACM, appropriate engineering and work practice controls must be implemented to reduce employee exposure to asbestos to the lowest limit possible. Controls can consist of barriers and signs, use of ventilation/filtration equipment, use of non-aggressive and wet-removal methods, and worker hygiene.

D. Regulated Areas.

All Class I, Class II, and Class III asbestos work must be conducted in regulated areas. All other operations must be conducted in regulated areas if airborne concentrations of asbestos exceed or can be expected to exceed the PEL. Regulated areas must comply with the following:

- The regulated area must be demarcated so that the number of employees in the area is minimized, while protecting employees outside the area from exposure to airborne asbestos. Signs must be posted around the perimeter.
- Access must be limited to authorized employees.
- Respirators must be provided as required.
- Protective clothing must be provided and used as required.
- Employees may not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the area.

Negative pressure containment consisting of critical barriers designed to eliminate the release of asbestos fibers to other areas of the building must be erected. Air within the containment must be cleaned using high-efficiency particulate air (HEPA) filtration systems. These systems deposit the cleaned air outside the containment, creating a “negative” pressure within the containment relative to the outside atmosphere.

E. Signage.

Signs should be posted by the abatement contractor in control work areas to prevent unauthorized entry. Warning signs should be posted at all entryways into the work area. Signs must be at least 20 inches by 14 inches with the following wording:

DANGER ASBESTOS CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
PROTECTIVE CLOTHING IS REQUIRED IN THIS AREA

Other hazard warning signs will be posted as necessary depending upon working conditions (e.g., falls, noise).

F. Removal Methods.

All ACM removal will require a work plan detailing the techniques to be used and controls required to reduce exposures to employees. Once the work area has been isolated, non-aggressive removal methods should be used to ensure material will be removed in an intact state. Wet methods may be used to remove materials that are not intact unless such wet methods are not feasible or will create additional hazards.

Glove bags may be used to remove pipe runs and other insulation materials within regulation-prescribed limits. ACM removed from elevated areas such as transite boards and shingles will be lowered to the ground, placed in enclosed bags or containers by the end of each workday, and transported to a hazardous waste storage area.

Demolition operations may use water spray during large-scale operations according to an approved work plan. All exposed surfaces within the removal area will be final cleaned by HEPA vacuuming and wet cleaning before visual inspection by the competent person to ensure that visible ACM has been completely removed. All accessible and exposed surfaces will be visually inspected. Final clearance sampling will be performed as required.

G. Waste Disposal.

IA should ensure that asbestos waste is placed in a designated hazardous waste storage area and not commingled with other construction debris, industrial waste, or soil. Asbestos waste must be collected and labeled according to applicable regulations. Asbestos must be transported to an EPA-approved landfill.

H. Equipment and Tools.

All equipment and tools used in the asbestos abatement process must be decontaminated. Used filters must be discarded (i.e., discarded as asbestos-contaminated).

I. Required Hygiene Facilities, Work Practices, and Training.

Class I work requires a decontamination area, consisting of an equipment room to remove and bag protective clothing, a shower area where feasible, and a clean change room. Class II, Class III, or Class IV work, where exposure levels exceed the PEL or there is no negative exposure assessment, requires an equipment room (or area). Class IV work done in conjunction with a higher work class and in a regulated area requires the same hygiene practice used for the regulated-area employees.

Employees must enter and exit the regulated area through the decontamination area. Employees must remove contaminated clothing and place in labeled bags for disposal/cleaning, and must not wear any work clothing or equipment home.

Employees who work in negative-pressure enclosures or in areas where exposures exceed the PELs must shower at the end of the work shift. Respirators must not be removed until in the shower.

Employees overseeing decontamination areas must have completed and successfully passed a “Contractor/Supervisor training” course and refresher(s) from an approved and/or accredited training provider.

J. Medical Monitoring.

IA must provide a medical surveillance program for all employees who engage in Class I, Class II, or Class III work, are exposed at or above the PEL or short-term exposure limit for a combined total of 30 or more days per year, or who wear negative-pressure respirators. Guidance and requirements for medical surveillance are provided in section 5.8 of this handbook.

Specific to asbestos, the medical exam *must* include:

- completion of the standardized questionnaire with the initial exam (see 29 CFR Part 1926.1101, Appendix D, Part 1) and an abbreviated standardized questionnaire with annual exams (see 29 CFR Part 1926.1101, Appendix D, Part 2);
- physical exam focusing on the pulmonary and gastrointestinal systems; and
- a statement that the employee has been informed of the increased risk of lung cancer from the combined effect of smoking and asbestos exposure.

K. Safe Work Plan.

A Safe Work Plan should be prepared for IA employees, or the contractor’s safety plan should be reviewed by the Contracting Officer, and if it is applicable, then it should be followed by IA employees.

L. PPE for Abatement or Removal.

The following PPE must be worn by IA employees when they enter a negative-pressure containment area where asbestos removal is occurring, or where there is a reasonable potential for exposure to airborne asbestos fibers:

- Full-face powered air purifying respirator (PAPR) (or negative-pressure respirator) with P100 (HEPA) filters
- Hooded Tyvek coverall suit
- Hard hat
- Safety boots
- Full protection system as appropriate
- Gloves

The following PPE will be worn when IA employees are conducting activities outside a negative-pressure containment area:

- Safety glasses as appropriate
- Hardhat as appropriate
- Safety boots
- Fall protection system as appropriate
- Gloves

IA employees will adhere to the PPE policy of all locations where these activities may occur if it is more stringent than the above requirements. Asbestos operations employees will contact the BIA RSM or BIE SPM, if necessary, for additional information regarding the proper use and/or types of PPE that should be used.

M. Personal Monitoring and Initial Exposure Assessments.

For personal monitoring and initial exposure assessments, the following guidelines will be followed:

1. Supervisor and employee conducts JHA to identify positions/tasks at risk for occupational exposure to chemicals, noise, hazardous materials, etc.
2. Supervisor consults with the BIA RSM or BIE SPM and the IA Industrial Hygienist to conduct exposure assessments as needed, which may include personal air or noise monitoring. Supervisor provides assessment results to employee and maintains records for medical monitoring decision-making.

3. For Class I jobs, a negative exposure assessment (NEA) must be based on monitoring data collected during the job, or on data collected on a job closely resembling the job to be done. Data must have been collected within a year prior before starting the current job. If no monitoring has been done and no NEA can be made, employees have the potential to be exposed above the PEL.
4. For Class II, Class III, and Class IV jobs, the NEA may be based on objective data collected from past studies on similar jobs; no time limit is applied.
5. If no NEA can be made for Class I and Class II jobs, monitoring must be done daily until an NEA can be made.
6. If no NEA can be made for Class III and Class IV jobs, monitoring must be done periodically at intervals sufficient to document exposures and must continue until an NEA can be made.
7. Respiratory protection must be worn until such assessments have been conducted and it has been determined that respiratory protection is not warranted.

Chapter 7: Bloodborne Pathogens

This chapter identifies jobs and tasks with potential exposure to bloodborne pathogens and provides guidance for reducing or potentially eliminating the bloodborne disease risk in accordance with the OSHA bloodborne pathogen standard.

This chapter also describes provisions for affected employees to receive PPE, HBV vaccinations, training, and if necessary, confidential medical evaluations and follow-up.

7.1 Risk Identification

The OSHA bloodborne pathogens standard protects employees who may have an occupational exposure to blood and OPIMs from the hazards of the exposure. Good Samaritan acts, such as assisting a co-worker with a nosebleed, would not be considered an occupational exposure. The following people could reasonably expect exposures:

- Law enforcement personnel
- Designated providers of first aid and first response medical care
- Employees who are not designated first-aid responders but have a job that requires them to be first-aid trained
- Health care workers
- School nurses or other staff
- Firefighters
- Housekeeping staff and laundry workers

Common bloodborne pathogen exposures include the following:

- Needle sticks
- Cuts from other contaminated objects that can penetrate the skin (sharp metal, broken glass, scalpels)
- Contact of mucous membranes (eyes, nose, mouth) or broken skin with contaminated blood or OPIM

7.2 Exposure Control Plan

Wherever employees have the potential for exposure to bloodborne pathogens, the site manager, school principal, or facility supervisor will implement and annually evaluate an Exposure Control Plan (ECP). The ECP is a written plan to eliminate or minimize occupational exposures at the worksite.

The ECP identifies training, PPE, vaccinations, and other protections guaranteed by the OSHA standard for potentially exposed employees. The ECP must have an exposure determination that lists jobs where an exposure could happen along with lists of tasks that have exposure risks. The ECP must include the following:

- Prevention methods
- Universal precautions
- Engineering and work practice controls
- PPE
- Housekeeping
- Decontamination procedures
- Removing regulated waste
- Hepatitis B vaccination
- Managing exposure incidents
- Post-exposure evaluation and follow-up
- Communicating hazards to employees
- Recordkeeping
- Implementation schedule

The ECP must be reviewed and updated annually and include the following documentation:

- Changes in tasks, procedures, and positions that affect potential exposures.

- An annual review of commercially available safety devices designed to eliminate or minimize occupational exposure.
- The input from employees in the identification, evaluation, and selection of effective engineering and work practice controls.

7.3 Universal Precautions

Universal precautions are an approach to infection control used to protect employees from exposure to all human blood and OPIM. According to the concept, all human blood and human body fluids are treated as if they are infectious. The primary pathogens of concern include HIV (the virus that may cause AIDS), HBV, and Hepatitis C Virus (HCV), although other infectious agents are potentially transmissible by occupational bloodborne exposure.

7.4 Engineering and Work Practice Controls

Engineering controls reduce employee exposure by either removing the hazard or isolating the worker. They are the preferred method of controlling the hazard. They include:

- sharps disposal containers,
- self-sheathing needles, and
- safer medical devices.

Examples of OSHA-defined safer medical devices include non-needle-sharp substitutes or a sharp/needle device with a built-in safety feature or mechanism that effectively reduces the risk of a needlestick exposure incident. Work practices, such as the following, reduce the possibility of exposure by changing the way a task is performed:

- Washing hands after removing gloves and as soon as possible after exposure.
- Not bending or breaking sharps.
- Prohibiting food in work areas.
- Modifying procedures for handling laundry.
- Cleaning contaminated surfaces and items.

When occupational exposure remains after engineering controls and work practices are put in place, PPE must be used.

7.5 PPE

PPE must be readily accessible at the worksite or issued at no cost to employees. Employees using PPE must be aware of the following precautions:

- Employees must wear appropriate gloves when there may be hand contact with blood or other potentially infectious bodily fluids, and when handling or touching contaminated items or surfaces.
- Employees should wash hands immediately after removing gloves or other PPE.
- Employees should remove PPE after it becomes contaminated and before leaving the work area.
- Employees must properly dispose of used PPE in laundering, decontamination, or disposal containers.
- Employees should wear appropriate face and eye protection when splashes, sprays, spatters, or droplets of blood or other potentially infectious bodily fluids pose a hazard to eyes, nose, or mouth.
- Gloves must be replaced if they are torn, punctured, or contaminated or if their ability to function as a barrier is compromised.

7.6 Housekeeping

The ECP should include a schedule for cleaning and decontaminating worksites based on the following:

- Location within the facility
- Type of surface to be cleaned
- Type of potential contaminant present
- Tasks or procedures being performed

7.7 Regulated Waste

Regulated waste is any liquid or semi-liquid blood, potentially infectious material, and/or contaminated items that could release blood or OPIMs in a liquid or semi-liquid state if compressed. Regulated waste also includes items caked with dried blood or OPIMs, contaminated sharps, and pathological and microbiological wastes.

Regulated waste must be discarded in closeable, leak-proof containers that are labeled or color-coded. The containers must be sealed before removing to prevent contents from spilling or protruding during handling. For regulated waste, the ECP should include the following:

- Requirements for discarding contaminated sharps as soon as possible after use.
- Procedures for handling any regulated waste including sharps disposal containers.

- Location within the facility of sharps disposal containers.
- Requirement that trash cans, bins, pails, or other non-regulated waste containers are cleaned and decontaminated as soon as feasible after visible contamination.
- Requirement that broken glassware that may be contaminated is only picked up using mechanical means, such as a brush and dustpan.

7.8 Laundry

The ECP should have requirements for handling laundry if the school or facility has such. Contaminated laundry must be handled as little as possible, and employees must use PPE. Wet, contaminated laundry must be placed in leak-proof, labeled, or color-coded containers before transport.

7.9 HBV Requirements

IA must offer HBV vaccinations to all employees with the potential for occupational exposure to bloodborne pathogens at no cost. The vaccination must be offered after the employee has received bloodborne pathogens training and within 10 days of initial assignment to a job with potential for occupational exposure. Employees should be encouraged to receive the vaccination unless:

- documentation exists that the employee has previously received the series;
- antibody testing reveals that the employee is immune; or
- medical evaluation shows that vaccination is not advisable.

If an employee declines the vaccination, the employee must sign a declination form. Employees who decline may request and obtain the vaccination later at no cost.

7.10 Occupational Exposure

The establishment manager, with assistance from the BIA RSM or the BIE SPM, should determine which employees have potential for exposure to bloodborne pathogens. These employees require initial and annual training, and must be offered the HBV vaccination series following the procedures in the ECP.

The OSHA standard does not apply to employees who are not assigned to jobs with identified increased risk for bloodborne pathogen exposure, but who could be exposed during voluntary Good Samaritan assistance to an injured or ill individual, or other incidental situations.

When an employee has an occupational exposure to blood or other potentially infectious bodily fluids, they should immediately do the following:

- Wash exposed area with soap and water.

- Flush splashes to nose, mouth, or skin with water.
- Irrigate eyes with water or saline.
- Report the exposure to the site manager, school principal, or facility supervisor.

The manager or supervisor should ensure that the following information is provided to the evaluating health care professional:

- A copy of the OSHA bloodborne pathogens standard.
- A description of the employee's job duties.
- A description of the route(s) of exposure and circumstances of the exposure.
- If possible, the results of the source individual's blood test.
- Relevant employee medical records, including vaccination status.

Follow-up medical care should be provided to the exposed employee at no cost. The source individual should be identified if possible and promptly tested (with consent) for HIV, HBV, and HCV. If the source individual is already known to be HIV, HBV, and/or HCV positive, new testing need not be performed. The source individual's test results should be provided to the exposed employee's health care provider as soon as they are available.

The exposed employee should also be provided with information on disclosure laws and regulations concerning the identity and infection status of the source individual. The infected employee should be offered counseling and post-exposure protective treatment when medically indicated.

7.11 Post-Exposure Investigation

The engineering controls in place at the time of the exposure should be reevaluated to ensure they are still effective. The work practices the employee followed and PPE they may have used should also be evaluated to ensure they still meet the workplace requirements.

When an exposure incident occurs, it should be investigated by the workplace manager or supervisor, and include the following information:

- A list of protective equipment or clothing that was used at the time of the exposure incident (e.g., gloves and eye shields).
- The location of the incident.
- The procedures performed when the incident occurred.
- If the incident involved a contaminated sharps injury. If it did, it should be recorded in a Sharps Injury Log.

If revisions to the ECP are necessary, the establishment manager or delegated supervisors should ensure that appropriate changes are made.

7.12 Biohazard Warning Labels

The ECP should outline warning label methods to be used in the facility. Warning labels alert employees to biohazardous contents and are required on the following:

- Containers of regulated waste.
- Refrigerators and freezers containing blood and OPIMs.
- Other containers used to store, transport, or ship blood or OPIMs.
- Contaminated equipment that is being shipped or serviced.
- Bags or containers of contaminated laundry.

Biohazard warning labels must be predominantly fluorescent orange or orange red, with lettering and symbols in a contrasting color. The labels must be affixed to the container by string, wire, adhesive, or other method that prevents their loss or unintentional removal.

The ECP should let employees know who is assigned the task of ensuring that labels are in place, and what they should do when regulated waste is discovered.

7.13 Employee Training

Bloodborne pathogen training must be provided at the time of initial assignment to a job with occupational exposure and at least annually thereafter. Additional training must be provided when new or modified tasks or procedures affect a worker's occupational exposure. The training must be provided at no cost to employees. IA sites, schools, and facilities must offer bloodborne pathogen training that includes the following:

- The elements of the OSHA bloodborne pathogen standard.
- Information on bloodborne pathogens and diseases.
- The ECP and how employees can obtain copies.
- The workplace tasks that may involve exposure to blood and OPIMs.
- Methods used at the establishment to control occupational exposure.
- A description of an exposure incident.
- An explanation of the establishment's engineering controls and work practices.
- An explanation of PPE types, uses, location, removal, handling, decontamination, and disposal.
- Information on the HBV vaccine.
- Information on the actions to take in an emergency involving blood or OPIM.

- An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the follow-up medical evaluations that will be made available.
- Post-exposure follow-up procedures.
- An explanation of the labels and/or color coding used at the facility.

7.14 Training Records

Training records must be maintained for three years from the date the training occurred and include the following information:

- Dates of the training sessions.
- Curriculum outline.
- Names and qualifications of persons conducting the training.
- Names and job titles of all persons attending the training sessions.

7.15 Recordkeeping

OSHA requires IA, BIA, and BIE sites, schools, and facilities to maintain records of occupational exposures to bloodborne pathogens, blood, and OPIM.

All occupational needlestick injuries and cuts from sharp objects contaminated with another person's blood or OPIM must be entered on the site's OSHA 300 Form as an injury.

To protect the employee's privacy, their name may be withheld (see the requirements for privacy cases in paragraphs CFR 1904.29(b)(6) through CFR 1904.29(b)(9)). IA must maintain additional records for each employee with an occupational exposure that includes the following:

- Employee name and social security number.
- Employee HBV vaccination status.
- Results of examinations, medical testing, and post-exposure evaluation and follow-up procedures.
- Health care professional's written opinion.
- Information provided to the health care professional.

Employee medical records must be kept confidential and not be disclosed or reported without the employee's written consent.

Medical records must be maintained for duration of employment plus 30 years according to OSHA rules for employee exposure and medical records.

7.16 Sharps Injury Log

IA must maintain a Sharps Injury Log for work-related needlestick injuries or cuts from sharp objects that are contaminated with another person's blood or OPIM. The Sharps Injury Log is a tool for identifying high-risk areas and providing information that may be helpful in evaluating safer operations or devices. There is no standard template for the Log; offices may create their own version.

The Log should be reviewed annually, and the findings used to update the ECP. The log must be maintained in a way that ensures employee privacy and contains the following, at a minimum:

- Type and brand of device involved in the incident.
- Location of the incident.
- Description of the incident.

Chapter 8: Ergonomics Program

Ergonomics is the study of employees, their environment, and how the equipment, tools, facilities, and processes they use interact. When aspects of the work or workplace exceed the body's capabilities, the result is often a musculoskeletal disorder (MSD), cumulative trauma disorder, overuse syndrome, repetitive motion injury, or repetitive stress/strain injury. To avoid these injuries, work demands on IA employees should not exceed their physical capabilities.

Poor ergonomic conditions can cause employee wear-and-tear injuries that can negatively affect muscles, nerves, tendons, ligaments, joints, cartilage, blood vessels, or spinal discs. Repetitive motions, use of force or pressure, or improper workstation set up are the primary causes of ergonomic disorders.

8.1 Work Environment

An ergonomically sound work environment maximizes employee comfort while minimizing the risk of undue physical stress. The purpose of an ergonomics program is to reduce the number and severity of MSDs; increase productivity, quality, and efficiency; and decrease workers' compensation claims.

A proactive approach to ergonomics in the workplace focuses on incorporating ergonomics into the design phase of new facilities or processes, into purchasing new equipment or tools, and into evaluating current workplace activities to reduce stress and increase productivity.

8.2 Evaluation Methods

Worksite evaluation methods include walk-throughs and observations, employee interviews, surveys and questionnaires, checklists, safety inspections, and detailed worksite evaluations. Worksite ergonomic evaluations can be triggered by employee reports of MSD signs or

symptoms, and jobs, processes, or work activities where work-related ergonomic risk factors have been identified that may cause or aggravate MSDs.

Ergonomic evaluations may also be triggered when there is any change of jobs, tasks, equipment, tools, processes, scheduling, or work shift hours that may increase the likelihood of MSDs. Ergonomic evaluations can also be triggered by safety walk-throughs/inspections, employee complaints, or surveys that uncover potential MSD hazards.

8.3 Risk Factors for Exposure

Personal risk factors include gender, age, work method, attitude, training, sight, hearing, smell, physical strength, and weight. The following are additional risk factors:

- Upper extremities risk factors include: repetitive and/or prolonged activities, forceful exertions (usually with the hands), pinch grips, prolonged static postures, awkward postures (reaching and twisting), continued physical contact with work surfaces, excessive vibration from power tools, inappropriate or inadequate hand tools.
- Back disorder risk factors include: body mechanics (bending, lifting, and twisting), prolonged sitting with poor posture, lack of adjustable equipment (chairs, footrests, etc.), poor grips on handles, slippery footing, frequency of movement, duration and pace, load stability, reach distances, and work height.
- Environmental risk factors include: floor surfaces and platforms, temperature extremes, air quality, humidity, noise, glare, PPE, and vibration.
- Physical risk factors include: force, postures (awkward and static), static loading and sustained exertion, fatigue, repetition, contact stress, extreme temperatures, and vibration.
- Administrative risk factors include: job rotation/enlargement, inadequate staffing, excessive overtime, inadequate or lack of rest breaks, stress from deadlines, lack of training, work pace, work methods, and psychosocial issues.

The combined effect of several risk factors is sometimes referred to as “multiple causation.” For example, a job might entail forceful work with no job rotation, or precision work done in a dimly lit room.

8.4 Training

Training is intended to enhance the ability of managers, supervisors, and employees to recognize work-related ergonomic risk factors and to apply appropriate control strategies. To recognize and control ergonomic risk factors, training should be given as follows:

- To all new employees during orientation.
- To all employees assuming a new job assignment.

- When new jobs, tasks, tools, equipment, machinery, workstations, or processes are introduced.
- When high exposure levels to ergonomic risk factors have been identified.

All training must be documented, and all employees should be required to sign a training sign-in roster.

8.5 Medical Management and Return to Work

Employees who suffer work related MSDs can submit a CA-2, Federal Employee's Notice of Occupational Disease and Claim for Continuation of Pay/Compensation. This form must be filed through the Department's Employees' Compensation Operations and Maintenance Portal (ECOMP) website. The claim is then adjudicated through the DOL's Federal Employees' Compensation Program, Office of Workers' Compensation Programs. For more on workers' compensation and claims, see 25 IAM 6: Employee Injury Compensation Program and 25 IAM 6-H: Employee Injury Compensation Program Handbook.

Employees may sometimes visit their own health care provider and be given instructions for improving their ergonomic environment on the job. In cases where the employee has instructions from a licensed health care professional, every effort should be made to provide accommodation. In the event of a work-related MSD, the health care provider should do the following:

- Provide diagnosis and treatment.
- Determine if reported MSD signs or symptoms are work-related.
- Recommend restricted, modified, or transitional work duties when appropriate.
- Refer injured employees to other clinical resources for therapy or rehabilitation.
- Provide timely work status reports.

IA should offer return-to-work opportunities to all federal injured employees in accordance with work restrictions identified by the health care provider.

8.6 Program Evaluation and Follow-Up

To ensure that issues have been addressed and that new problems have not been created, monitoring and evaluation should be ongoing. Follow-up methods include using individual interviews and checklists to reevaluate the job/task to ensure that risks have been reduced, minimized, or eliminated.

8.7 Ergonomic Assessment Checklist

OSHA has developed an ergonomic assessment checklist for the workplace to help managers and supervisors determine the risk level for ergonomic injury. This checklist can be found online at: https://www.osha.gov/sites/default/files/2018-12/fy14_sh-26336-sh4_Ergonomic-Assessment-Checklist.pdf

OSHA has also developed an office ergonomic checklist to evaluate computer workstations. This checklist can be found online at: <https://www.osha.gov/etools/computer-workstations/checklists/evaluation>

Chapter 9: General Environmental Controls

This chapter describes the layout, construction, and sanitation requirements for sites, schools, and facilities as well as permanent and temporary camp locations. These requirements apply to camps used by IA, BIA, and BIE for employees, students, or volunteers. This chapter also covers the general safety color coding for accident prevention signs and tags.

9.1 Housekeeping

All places of employment within IA, BIA, and BIE sites, schools, and facilities will be kept as clean as the nature of the work allows. The floor of every workroom will be maintained, so far as practicable, in a dry condition. Where wet processes are used, drainage will be maintained and false floors, platforms, mats, or other dry standing places will be furnished, or appropriate waterproof footwear will be provided.

To facilitate cleaning, every floor, working place, and passageway will be kept free from protruding nails, splinters, loose boards, and unnecessary holes and openings.

9.2 Food Handling

All employee food service facilities and operations will be carried out in accordance with sound hygienic principles. In all sites, schools, or facilities, where all or part of the food service is provided, the food will be wholesome; free from spoilage; and be processed, prepared, handled, and stored in a manner that prevents contamination.

9.3 Waste Disposal

Any waste receptacle used for solid or liquid waste or refuse must be leak-proof and thoroughly cleaned and kept sanitary. Waste receptacles should be equipped with a tight-fitting cover.

The number, size, and location of these receptacles will encourage their use and will not be overfilled. They will be emptied at least once each working day, unless unused, and will be maintained in a clean and sanitary condition.

All sweepings, solid or liquid wastes, refuse, and garbage will be removed from the workplace in a way that avoids creating a health danger to employees, students, or visitors and as often as necessary to maintain sanitary conditions.

9.4 Pest Management

Every workplace should be constructed, equipped, and maintained in a way that prevents access or infestation of rodents, insects, and other vermin. If their presence is detected, an effective extermination program will be instituted.

The principle of integrated pest management (IPM) is used for preventing and responding to pest issues. This principle emphasizes using preventive measures first, such as sealing areas where pests enter the building, and eliminating sources of food (food stored on the floor or out in the open), moisture (standing water), and harborage (piles of debris).

Training is also an important piece of prevention: educating employees and occupants on cleaning and sanitation behaviors. If an infestation does occur, non-chemical controls are preferred, including setting traps and installing barriers. If chemical controls are necessary, apply targeted, safe-for-humans pesticides. Document where, when, and by whom the chemicals were applied.

9.5 Potable Water Supply

Potable water, also known as drinking water, will be provided in all sites, schools, facilities, and camps for drinking, washing, cooking, food preparation, washing cooking or eating utensils, washing food-preparation areas, and toilet facilities.

The source of drinking water cannot be an open container such as a barrel, pail, or tank from which the water must be dipped or poured, whether it is fitted with a cover or not. Common shared drinking cups and other common utensils are also not allowed.

9.6 Non-Potable Water Supply

Outlets for non-potable water, such as water for industrial or firefighting purposes, will be posted or otherwise marked in a manner that clearly shows that the water is unsafe and cannot be used for drinking, handwashing, bathing, food preparation, cooking, or other sanitary processes.

Non-potable water systems will be equipped with devices to prevent backflow or back siphonage into the potable water system.

Non-potable water may be used for cleaning work premises provided it does not contain chemicals, fecal coliform (a group of bacteria that are passed through the fecal excrement of humans, livestock, and wildlife), or other substances that could create unsanitary conditions or be harmful to employees, students, volunteers, or visitors.

9.7 Toilet Facilities

Separate toilet facilities will be provided for each gender. The number of facilities is based on the number of employees of that gender in the workplace. Where toilet rooms will be occupied by no more than one person at a time, can be locked from the inside, and contain at least one

water closet, separate toilet rooms for each gender need not be provided. The number of water closets provided in the workplace will meet the requirements of 29 CFR 1910.141.

These toilet requirements do not apply to mobile crews or to normally unattended work locations so long as employees at these locations have transportation available to nearby toilet facilities that meet the toilet requirements.

Each toilet room will occupy a separate compartment with a door and walls or partitions between fixtures sufficiently high to assure privacy.

The sewage disposal method will not endanger the health of employees.

9.8 Handwashing Facility

Handwashing facilities will be maintained in a sanitary condition.

Lavatories will be made available in all places of employment except for mobile crews or normally unattended work locations if employees working at these locations have transportation available to nearby washing facilities. Lavatories will meet the following minimum requirements:

- Each lavatory will have hot and cold running water, or tepid running water.
- Hand soap or similar cleansing agents will be provided.
- Individual hand towels or sections thereof of cloth or paper, air blowers, or clean individual sections of continuous cloth toweling, convenient to the lavatories, will be provided.

Whenever showers are required by a particular OSHA standard, or an IA safety program, the showers will have the following:

- One shower will be provided for each 10 employees of each gender, or portion thereof, who are required to shower during the same shift.
- Body soap or other appropriate cleansing agents convenient to the showers will be provided.
- Showers will be provided with hot and cold water feeding a common discharge line.
- Employees who use showers will receive individual clean towels.

9.9 Changing Rooms

Whenever employees are required to wear protective clothing because of the possibility of contamination with toxic materials, changing rooms equipped with storage facilities for street clothes and separate storage facilities for the protective clothing will be provided.

9.10 Clothes Drying Facilities

When uniforms or protective clothing are provided by IA and become wet or are washed between shifts, the employee should ensure the clothing is dry before reuse.

9.11 Food and Beverages on the Premises

No food or beverages will be stored in toilet rooms, washing facilities/lavatories, or in an area exposed to a toxic material.

Employees are not allowed to consume food or beverages in a toilet area or in any area exposed to toxic materials, such as a chemical laboratory or industrial workbench.

9.12 Temporary Labor Camp Sanitation

In general, all campsites must be adequately drained and not be subject to flooding. Campsites will be graded, ditched, and free of depressions where water may pool.

Campsites must be located at least 200 feet from swamps, pools, sink holes, or other surface collections of water. Campsites can be closer than 200 feet if mosquito control is possible.

Food preparation, service areas, and sleeping quarters must be located at least 500 feet from livestock areas.

Each room for sleeping will be at least 50 square feet of floor space for each occupant and have at least a 7-foot ceiling. Additionally:

- In a room where workers cook, live, and sleep a minimum of 100 square feet per person will be provided.
- Sanitary facilities will be provided to store and prepare food.

Beds, cots, or bunks, and suitable storage facilities such as wall lockers for clothing and personal articles will be provided in every room used for sleeping purposes.

Beds, cots, and bunks will be spaced at least 36 inches both laterally and end to end and elevated at least 12 inches from the floor. Additionally:

- Double-deck bunks will be spaced not less than 48 inches both laterally and end to end.
- The minimum clear space between the lower and upper bunk should be not less than 27 inches.
- Triple-deck bunks are not allowed.

Shelter floors will be constructed of wood, asphalt, or concrete and kept in good repair. Additionally:

- Wooden floors will be smooth and tightly constructed.
- Wooden floors will be not less than one foot above the ground level at all points to prevent dampness and to permit free circulation of air beneath.

Living quarters will have windows not less than one-tenth of the floor area. At least half of each window will be able to be opened for ventilation. All exterior openings will be effectively screened with 16-mesh material (1.19 millimeters or 0.0469 inch). All screen doors will be equipped with self-closing devices.

In camps with common cooking facilities, stoves will be provided in an enclosed and screened shelter (in ratio of one stove to 10 persons or one stove to two families). And sanitary facilities will be provided to store and prepare food.

All heating, cooking, and water-heating equipment will be installed in accordance with local ordinances, codes, and regulations governing such installations. If a camp is used during cold weather, adequate heating equipment will be provided.

A. Water Supply.

Camps will have a convenient water supply, approved by the appropriate health authority, for drinking, cooking, bathing, and laundry. The water supply should be capable of delivering 35 gallons per person per day to the campsite at a peak rate of 2½ times the average hourly demand.

Distribution lines will supply water at normal operating pressures to all fixtures for simultaneous operation. Water outlets will be distributed throughout the camp so that no shelter is more than 100 feet from a yard hydrant if water is not piped to the shelters.

Where water under pressure is available, one or more drinking fountains will be provided for each 100 occupants or fraction thereof. Common drinking cups are not allowed.

B. Toilet Facilities.

Adequate toilet facilities for each camp will be provided and each toilet room will be accessible without requiring an individual to pass through a sleeping room. Toilet rooms will have a window not less than six square feet in area opening directly to the outside area or otherwise be satisfactorily ventilated. All outside openings will be screened with 16-gauge mesh material.

No fixture, water closet, chemical toilet, or urinal will be in a room used for other than toilet purposes. A toilet building will be located within 200 feet of the door of each sleeping room. No privy will be closer than 100 feet to any sleeping room, dining room, lunch area, or kitchen.

Shared toilet rooms, such as in multifamily shelters and in barracks-type facilities, will have separate toilet rooms for each gender and be distinctly marked “for men” and “for women” by

signs printed in English and in the native language of the people occupying the camp, or marked with easily understood pictures or symbols.

If the facilities for each gender are in the same building, they will be separated by solid walls or partitions extending from the floor to the roof or ceiling.

Shared toilet facilities will have water closets or privy seats provided for each gender in the ratio of one such unit to each 15 persons, with a minimum of two units for any shared facility, based on the maximum number of persons of that gender that the camp is designed to house at any one time. Additionally:

- Each toilet room must have an adequate supply of toilet paper.
- Privies and toilet rooms must be kept in a sanitary condition and cleaned at least daily.

Urinals will be provided based on one unit or two linear feet of urinal trough for each 25 men. Additionally:

- The floor from the wall and for a distance not less than 15 inches measured from the outward edge of the urinals will be constructed of materials impervious to moisture.
- Where water under pressure is available, urinals will have an adequate water flush.
- Urinal troughs in privies will drain freely into the pit or vault, and the construction of this drain will be so that it excludes flies and rodents from the pit.

C. Sewage Disposal.

In camps where public sewers are available, all sewer lines and floor drains from buildings will connect to the public sewers.

D. Laundry, Hand Washing, and Bathing Facilities.

The following facilities will be provided:

- One hand washbasin per family shelter or per six persons in shared facilities.
- One showerhead per 10 persons.
- One laundry tray or tub per 30 persons.
- One slop/utility sink in each building used for laundry, hand washing, and bathing.

Floors will be constructed of smooth material, be impervious to moisture, and will not have a slippery finish. Floor drains will be provided in all shower baths, shower rooms, or laundry rooms to remove wastewater and facilitate cleaning.

All junctions of the curbing and the floor will be covered, and the walls and partitions of shower rooms will be smooth and impervious to the height of splash.

An adequate supply of hot and cold running water will be available for bathing and laundry purposes. Service buildings will have heating equipment that will maintain a temperature of at least 70°F during cold weather.

Clothes-drying equipment will be available. All service buildings will be kept clean.

E. Lighting.

Where electric service is available, habitable rooms in a camp will have at least one ceiling-type light fixture and at least one separate floor- or wall-type convenience outlet. Laundry and toilet rooms and rooms where people congregate will contain at least one ceiling- or wall-type fixture.

Light levels in toilet and storage rooms will be at least 20 foot-candles 30 inches from the floor. Other rooms, including kitchens and living quarters, will be at least 30 foot-candles 30 inches from the floor.

F. Refuse Disposal.

Garbage storage will be in fly-tight, rodent-resistant, impervious, cleanable, or single-service containers approved by the correct health authority. At least one such container will be provided for each family shelter and located within 100 feet of each shelter on a wooden, metal, or concrete stand. Garbage containers will be kept clean and emptied when full, but not less than twice a week.

G. Construction and Operation of Kitchens, Dining Halls, and Feeding Facilities.

Where central dining or multiple family feeding operations are provided, the food handling facilities will comply with the requirements of the U.S. Food and Drug Administration's (FDA) Food Code (2016 version or whatever is most recent).

A properly constructed and sized kitchen and dining hall, separate from the sleeping quarters of any of the workers or their families, will be provided with all food-handling facilities. There will be no direct opening from living or sleeping quarters into a kitchen or dining hall.

No person with any infectious or contagious disease will be employed or permitted to prepare, cook, serve, or handle food or foodstuffs, in any kitchen or dining room operated in connection with a camp or used by employees, students, or volunteers living in a camp.

H. Insect and Rodent Control.

Camp supervisors will prevent infestation of harboring animal or insect vectors/pests using the principles of IPM as described above in section 9.4.

I. First Aid.

Camps must have available adequate first-aid facilities approved by a health authority to treat an injured person in an emergency. These facilities must be managed by an employee trained in first aid, and always be ready for use. The first-aid equipment should be operational, not expired, and replenished when used.

J. Reporting Contagious (Infectious) Disease.

The camp supervisor will immediately report to the local health officer the name and address of any individual in the camp known to have, or suspected of having, an infectious or contagious disease.

The camp supervisor will report an outbreak to the health authority whenever there is a case of suspected food poisoning or an unusual incident of any illness in which fever, diarrhea, sore throat, vomiting, or jaundice is an obvious symptom.

9.13 Safety Color Coding and Accident Prevention Signs and Tags

Red means danger and will be the basic color to identify the following:

- Fire protection equipment and apparatus.
- Safety cans or other portable containers of flammable liquids having a flash point at or below 80°F. In addition to red paint, safety cans or portable containers should have clearly visible yellow identifiers either in a band around the can or the name of the contents conspicuously stenciled or painted on the can.
- Red lights will be provided at barricades and at temporary obstructions.
- Danger signs.
- Emergency stop bars on hazardous machines such as rubber mills, wire blocks, and flat work ironers.
- Stop buttons or electrical switches on which letters or other markings appear, used for emergency stopping of machinery will be red.

Yellow means caution and will be used to mark the following physical hazards:

- Striking against
- Stumbling
- Falling
- Tripping

- “Caught in between” hazards. According to OSHA, these are injuries resulting from a person being squeezed, caught, crushed, pinched, or compressed between two or more objects, or between parts of an object.

Orange designates warning. Fluorescent orange or orange red designates a biological hazard.

Chapter 10: Hearing Conservation

Hearing loss from workplace noise exposure may occur at some IA, BIA, and BIE sites, schools, and facilities. Exposure to high levels of noise causes employees to lose hearing and has other harmful health effects. Exposed employees who understand the reasons for hearing conservation programs and the need to protect their hearing are more likely to wear hearing protection and participate in audiometric testing.

Damage to an employee’s hearing depends on the intensity of the noise and the duration of exposure, which means hearing loss can be temporary or permanent. Temporary hearing loss comes from short-term exposures to noise, with hearing returning after a period of rest. Permanent hearing loss is the result of high noise exposure over time.

10.1 Overview

The ear is a complicated system that damages easily. Once it is damaged, it does not heal, so it is extremely important to protect the ear before damage occurs. Fortunately, noise-induced hearing loss can be controlled by applying engineering controls, safe work practices, administrative controls, and PPE.

A noisy workplace will likely trigger requirements for IA to implement what the OSHA calls a Hearing Conservation Program. When hazardous noise is evident, IA, BIA, and BIE sites, schools, and facilities must protect employees by implementing a Hearing Conservation Program to guide providing protections and implementing feasible controls.

10.2 The Hearing Conservation Program

The Hearing Conservation Program consists of a written program with the following elements that guide the program’s implementation:

- Exposure monitoring
- Audiometric testing
- Engineering, work practice, and administrative controls
- Hearing protection
- Training
- Recordkeeping

10.3 Exposure Monitoring

The following factors affect noise exposure:

- The loudness of the noise (measured in decibels (dBs)).
- The duration of the employee's exposure to the noise.
- Whether employees move between work areas with different noise levels.
- Whether noise is generated from one or multiple sources.

Generally, the louder the noise, the shorter the exposure time before hearing protection is required. Additionally:

- Normal conversation usually occurs around 60 dBs, well below the threshold for hearing protection.
- Hearing loss may occur to employees exposed to 85 dB over 8 hours per day so they must be offered hearing protection.
- Employees who are exposed to a noise level of 90 dB or higher for 8 hours per day require hearing protection.
- If the noise level reaches 115 dB, then hearing protection is required if the exposure exceeds 15 minutes.

When information comes to light that IA employees may be exposed to noise that exceeds a TWA of 85 dB, the worksite must implement a Hearing Conservation Program and begin monitoring for noise.

Measuring the noise levels workers encounter during their workday and correlating each noise level to the length of time the worker is exposed provides the TWA. The BIA RSM and BIE SPM can assist with these tasks.

Sound is measured using either a device that measures the amplitude of sound waves in decibels called a sound level meter, or an instrument that measures sound pressure over a time called a noise dosimeter.

Exposure measurements include all continuous, intermittent, and impact noise within an 80-dB to 130-dB range that employees may encounter during a typical workday. A noise is considered continuous if the interval between noise-producing events is less than one second, otherwise the noise is considered an impact noise.

Additional monitoring is needed whenever there are changes in production, process, or controls that increase noise exposure, or operational changes that increase noise levels above those already monitored, or above the protection levels provided by the hearing protection devices.

Changes like these may mean that more employees need to be included in the noise-monitoring program or that the hearing protector selection may need to be reevaluated.

Employees in general and workers at risk should be able to observe monitoring procedures and receive copies of the exposure monitoring results. If worker exposures are at or above 85 dB TWA, then IA must notify them of the results.

If employees move from place to place, or if sound levels vary significantly, then noise must be monitored using personal sampling (attaching dosimeters to employees), as opposed to area monitoring to determine exposure.

10.4 Audiometric Testing

Audiometric testing monitors an employee's hearing over time as part of the site, school, or facility Hearing Conservation Program. The important elements of the testing program include the following:

- Baseline audiograms
- Annual audiograms
- Follow-up procedures

IA employees who are exposed to noise levels of 85 dB or higher, measured as an 8 hour TWA, must be part of an audiometric testing program.

10.5 Baseline and Annual Audiograms

The baseline audiogram is the reference for comparing future audiograms. IA must provide baseline audiograms within six months of an employee's exposure to noise at or above 85 dB (8 hour TWA).

IA must conduct annual audiograms within one year of the baseline for employees covered by the Hearing Conservation Program. The annual exams test workers' hearing to spot deterioration before hearing loss progresses.

The professionals overseeing the program will compare annual audiograms to baseline audiograms to determine whether the employee has lost hearing ability or experienced a standard threshold shift (STS). An STS is an average shift in either ear of 10 dB or more at 2,000; 3,000; and 4,000 hertz.

10.6 Follow-Up Procedures

If an employee's annual audiogram shows an STS, the employee may be retested within 30 days to verify the STS.

When it is determined that an employee has an STS, they must be told within 21 days, provided copies of the Hearing Conservation Program, and referred for clinical testing if a medical problem is suspected.

Some employees may need additional testing if their test results are questionable. Employees may also be retested if they are having ear problems caused by wearing hearing protectors. IA must fit or refit employees showing an STS with hearing protection and instruct them how to use it. Employees showing an STS must be required to wear hearing protection.

10.7 Engineering Controls, Work Practice, and Administrative Controls

Controlling noise hazards at their source is the best way to protect employees. While using hearing protection is essential, it is the last line of defense after the following are implemented:

- Engineering controls involve physically changing the work environment to reduce sound levels.
- Work practices involve training workers how to perform tasks in ways that reduce their exposure to hazards noise.
- Administrative controls involve changing how or when workers do their jobs, such as scheduling work and rotating workers to reduce noise exposures.

When engineering, work practice, or administrative controls are not feasible or do not provide enough protection, then the site, school, or facility must have a Hearing Conservation Program, provide hearing protection to their employees, and ensure they use them properly.

Engineering controls involve modifying or replacing equipment or making physical changes at the noise source or along the transmission path to reduce the noise level for the worker's ear. Examples of engineering controls include the following:

- Substitute low-noise tools and machinery.
- Place a barrier between the noise source and employee (e.g., sound walls or curtains).
- Enclose or isolate the noise source.

Work practices involve making changes to how the work is performed, and changes to materials used. Examples of effective work practices include the following:

- Moving employee workstations further from noise sources.
- Changing to different, lower-noise-producing raw materials.
- Maintaining and lubricating machinery and equipment (e.g., oil bearings).

Administrative controls are changes in the workplace or schedule that reduce or eliminate the worker exposure to noise. Examples of effective administrative controls include the following:

- Operate noisy machines during shifts when fewer people are exposed.
- Limit the amount of time a person spends at a noise source.
- Install signage in areas where noise levels exceed 85 dB. These signs should warn workers before entering the area and serve as a reminder for workers to wear hearing protection in certain areas or job tasks.
- Provide quiet areas where workers can gain relief from hazardous noise sources.

10.8 Hearing Protection

Hearing protectors must be provided to ensure that employees do not experience hearing loss. Hearing protection is considered PPE and the hearing protection threshold requirements are as follows:

- IA must provide hearing protection, but its use is voluntary for employees when the noise levels are between 85 dB and 90 dB.
- The use of hearing protection becomes mandatory for noise levels of 90 dB and above.
- Hearing protection is required for employees when they experience an STS that shows they are susceptible to noise.

Hearing protection devices come in three basic types:

1. **Earmuffs** require a perfect seal around the ear. Glasses, facial hair, or facial movements such as chewing may reduce the protective value of the earmuffs.
2. **Single-use earplugs** are made out of waxed cotton, foam, silicone rubber, or fiberglass wool. They are self-forming and when properly inserted, they work as well.
3. **Preformed or molded earplugs** must be individually fitted by a professional and can be disposable or reusable. Reusable earplugs should be cleaned after each use.

OSHA's Table G-16 lists the limits for permissible noise exposures and can be found online at: <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.95>

When hearing protection is required, IA must give employees the option to select either an ear plug or earmuff. Additionally:

- Employees must decide which size and type protector will work best in the environment they work in.
- The hearing protection should be comfortable to wear and reduce employee exposures to at least 90 dB, or to 85 dB if an STS already has occurred in the worker's hearing.

- The noise reduction is calculated by subtracting the noise attenuation provided by the hearing protection from the measured noise level in the work environment.

Calculating attenuation using the Noise Reduction Rating (NRR) for a single hearing protection device would be done as follows:

$$\text{Attenuation} = (\text{NRR} - 7) \div 2$$

Calculating attenuation using the NRR for two hearing protection devices:

$$\begin{aligned} &\text{Add 5 dB to the higher NRR} = \text{the NRR for the two devices in combination} \\ &[(\text{NRR} + 5) - 7] \div 2 = \text{attenuation for two devices.} \end{aligned}$$

The noise exposure calculation using a single hearing protection device is as follows:

$$\text{Exposure (dB)} - \text{Attenuation} = \text{Noise Exposure at the ear}$$

The noise exposure calculation using two hearing protection devices (such as ear plug and earmuffs) is as follows:

$$\text{Exposure (dB)} - \text{Attenuation (from two device calculation)} = \text{Noise Exposure}$$

Hearing protectors worn by employees must reduce an employee's noise exposure to within acceptable limits (≤ 90 dB). Also, manufacturers of hearing protection devices all display the device's NRR on the product packaging.

For example: An employee is working in a machine shop where the noise level is 105 dB, and the facility manager would like to provide earmuffs with a NRR of 27.

The calculation would be: $(27 - 7) \div 2 = 10$. The noise level at the employee's ear would be $105 \text{ dB} - 10 = 95 \text{ dB}$. Therefore, these earmuffs would not be acceptable.

If the facility manager decided that employees would wear ear plugs with a NRR of 32 in addition to the earmuffs, then the calculation would be: $[(32 + 5) - 7] \div 2 = 15$. The noise level at the employee's ear would be $105 \text{ dB} - 15 = 90 \text{ db}$. Therefore, this earmuff and ear plug combination would be acceptable.

IA must reevaluate the suitability of the employee's hearing protection whenever there is a change in working conditions. Supervisors must also show employees how to use and care for their protectors, and supervise them on the job to ensure that they continue to wear them correctly.

10.9 Training

IA will institute a training program for all employees who are exposed to noise at or above an 8 hour TWA of 85 decibels and will ensure employees participate in the program. Employees who

understand the reasons for the Hearing Conservation Program and the need to protect their hearing will be more motivated to wear their hearing protectors and participate in audiometric testing.

The training program may be structured in any format, with different portions taught at different times, as long as the required topics are covered. At least annually, IA managers and supervisors must ensure that their employees are trained in the following:

- The effects of noise.
- The purpose, advantages, and disadvantages of various types of hearing protectors.
- The selection, use, and fit of hearing protective devices provided.
- The cleaning, care, and disposal of hearing protective devices used.
- The purpose, procedures, and elements of the audiometric testing program.

Information provided in the training program will be updated to be consistent with changes in protective equipment and work processes. Each employee will also be kept informed of such updates/changes.

10.10 Recordkeeping

IA sites, schools, and facilities must keep noise exposure measurement records for two years and maintain audiometric testing records for the duration of an employee's employment.

Audiometric test records must include the following:

- The employee's name
- The employee's job classification
- Date
- Examiner's name
- Date of the last acoustic or exhaustive calibration
- Measurements of the background sound pressure levels in audiometric test rooms
- The employee's most recent noise exposure measurement

IA managers and supervisors are also required to record work-related hearing loss cases on their injury and illness logs when an employee's audiometric test shows a hearing loss.

All records required by the Hearing Conservation Program will be provided upon request to employees, former employees, representatives designated by the individual employee, and representatives of OSHA. Copies of this program and the text of the regulation (29 CFR 1910.95) will be available and will be posted in the workplace noise zone.

Chapter 11: Lead

Inorganic lead is a malleable, blue-gray, heavy metal that occurs naturally in the earth's crust. Lead was one of the first metals used by humans and consequently, the cause of the first recorded occupational disease (lead colic in 4th century B.C.).

Lead is primarily used for automotive batteries, ammunition, water pipes, cable coverings, building materials, solder, radiation shielding, collapsible tubes, fishing weights, ceramic glazes, and as a plastics stabilizer.

There are also an estimated 6.1 million lead pipe potable water systems still in use in the United States, creating the potential for lead exposure in drinking water. Up until 1977, lead was used extensively as a corrosion inhibitor and pigment in paints.

11.1 OSHA Requirements

Lead enters the body primarily through inhalation and ingestion. IA employees are mainly exposed to lead by breathing in lead-containing dust and fumes. Lead passes through the lungs into the blood where it can harm many of the body's organs. While inorganic lead does not readily enter the body through the skin, it can enter the body through accidental ingestion (eating, drinking, and smoking) via contaminated hands, clothing, and surfaces. Workers may develop a variety of ailments, such as neurological effects, gastrointestinal effects, anemia, and kidney disease.

The OSHA requires IA, BIA, and BIE to protect their employees from lead exposure. The OSHA lead standards establish a PEL of 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) of lead over an 8 hour TWA for all employees covered.

The standards also set an action level of 30 $\mu\text{g}/\text{m}^3$, at which an employer must begin specific compliance activities, including testing blood for lead for exposed workers. The lead standards also include ancillary provisions such as medical surveillance, exposure monitoring, and hygiene facilities and practices that are critical in preventing lead exposure and elevated blood lead levels.

11.2 Written Lead Compliance Plan for all IA, BIA, BIE Facilities

OSHA requires that all IA, BIA, and BIE sites, schools, and facilities that may have lead contamination establish and implement a written compliance program to reduce exposures to below the PEL. Reducing employee exposure should be accomplished through engineering and work practice controls. The written plans for the compliance program will include at least the following:

- A description of each operation in which lead is emitted, including machinery used, material processed, controls in place, crew size, employee job responsibilities, operating procedures, and maintenance practices.

- An inventory of materials which contain lead hazards (e.g., older buildings with lead paint). Inventory will include location, color, condition, and any other helpful descriptors.
- A description of the specific means that will be used to achieve compliance, including engineering plans and studies used to determine methods selected for controlling lead exposure.
- A rationale for the technology/control actions considered in meeting the PEL.
- Air monitoring data that document the source of lead exposure.
- A detailed schedule for program implementation, including documentation such as copies of purchase orders for equipment and construction contracts.
- A description of the work practice program designed to reduce employee exposures.
- An outline of administrative controls that may also be employed to reduce employee lead exposures.

11.3 Initial Assessment

The site OIC, in consultation with the site facility manager, should determine whether any surface to be disturbed or altered contains lead or has a surface coating that contains lead using the following steps:

1. Review building records and external assessments to see if sampling/testing for lead has ever been done. Suspect materials include original paint coatings from before 1978. Records include information on paint/material sampling, lab analysis, recordkeeping for results, and labeling of materials.
2. If records cannot be found locally, the OIC should contact the servicing BIA Regional Environmental Scientist or BIE Branch of Environmental Management to request for any records on lead testing. If testing records do not exist, avoid disturbing suspect materials until samples can be taken.
3. In the absence of testing records, the employer or facility manager should contract a certified Lead Inspector to test the surface in question for the presence of lead. The OIC or site Facility Manager should consider having a comprehensive lead inspection for the entire facility done to be proactive if no testing records exist. Records should be maintained indefinitely to inform any future work on the facility.

If contracted testing or historical records confirm the presence of lead, workers disturbing the surface must comply with federal and local lead exposure regulations. All employees with the potential to be exposed to lead must be enrolled in a medical surveillance program and receive proper training. The OIC may consider:

- Contracting the work out to a certified renovator who is trained to work with lead-based paint. This is required for child-occupied homes and facilities built before 1978. The EPA maintains a searchable list of lead-safe renovators here: <https://cfpub.epa.gov/flpp/pub/index.cfm?do=main.firmSearch>.
- Contacting the BIA RSM or BIE SPM to determine whether historical air monitoring data are available that accurately represent exposure conditions for the proposed work. Since this is unlikely if no previous testing records exist, the RSM or SPM can provide guidance on air monitoring for airborne lead exposure.

Any time lead-based paint or other lead coatings are a concern for worker exposure, employers and facility managers should contact their servicing BIA and BIE environmental and safety offices for guidance.

11.4 Interim Measures – PPE

Until the initial exposure assessment can be conducted, or until a comprehensive engineering and administrative control plan is implemented, the following protective measures must be implemented.

1. If possible, avoid work that will disturb lead-containing coatings until they can be abated. Provide half-face air purifying respirators with high efficiency cartridges where lead coatings or paint are suspected and any of the following activities occur:
 - Manual demolition of structures
 - Manual scraping
 - Manual sanding
 - Heat gun applications
 - Power tool cleaning with dust collection applications
 - Spray painting with lead paint
2. Provide full-face air purifying or powered air purifying respirators with high efficiency filters, or full-face supplied air respirators operated in a demand mode when the following tasks are performed:
 - Lead-containing mortar
 - Lead burning
 - Rivet busting
 - Power tool cleaning without dust collection systems
 - Cleanup activities where dry expendable abrasives are used
 - Abrasive blasting enclosure movement and removal

3. Provide full-face supplied air respirators operated in pressure demand or other positive pressure when the following tasks are performed:
 - Abrasive blasting
 - Welding
 - Cutting
 - Torch burning
4. Provide additional PPE for work where lead is suspected. Additionally:
 - Provide coveralls or other similar full body covering
 - Provide gloves, head coverings, shoes, or disposable shoe coverings
 - Provide face shields, goggles, or other appropriate protective equipment
 - Provide change areas and either hand washing or showering facilities
 - Provide medical monitoring (i.e., medical surveillance program) – see Chapter 5.8 for guidance.
 - Provide training regarding hazard communication and the use of respiratory protection

11.5 Negative Initial Determination

Lead exposures at or below an 8 hour TWA of $30 \mu\text{g}/\text{m}^3$ requires a written record that includes the following:

- Date of determination
- Location within the job site
- Name of each employee monitored
- Monitoring results
- Type of activity conducted during monitoring

No further action regarding lead is required unless there is a change of equipment, process, or control, or a new task has been initiated that may result in additional employees being exposed to lead at or above the action level.

11.6 Positive Initial Determination

All employees exposed to lead above an 8 hour TWA of $30 \mu\text{g}/\text{m}^3$ and below $50 \mu\text{g}/\text{m}^3$ must:

- be enrolled in the medical surveillance program;
- have received the required training; and

- use appropriate PPE and personal hygiene procedures as outlined in the facility-specific safety plan.

11.7 Positive Initial Exposure above the PEL

Potential exposures above the 8 hour TWA PEL of 50 $\mu\text{g}/\text{m}^3$ require the development of a Lead Compliance Plan. The Lead Compliance Plan ensures that, using engineering controls, administrative practices, and PPE, no employee will be exposed to airborne lead concentrations above 50 $\mu\text{g}/\text{m}^3$ as an 8 hour TWA. The Compliance Plan must include the following topics:

- Description of work activities that expose personnel to lead.
- Equipment to be used and procedures to be followed during lead exposure activities.
- Employee job responsibility and crew size during lead exposure activities.
- Maintenance practices to be followed for servicing and cleaning equipment and disposing of waste.
- Specific instructions on how to set up engineering controls (e.g., ventilation and containment).
- Description of technology considered in meeting the permissible exposure limit.
- Air monitoring data from the initial determination.
- A detailed work schedule and supporting documentation (e.g., copies of purchase orders for equipment) for implementation.
- Description of the work practice program (e.g., protective work clothing and equipment, housekeeping, change areas, and other relevant work practices).
- Description of air monitoring to be performed to ensure the provisions of the Lead Compliance Plan adequately limit employee exposure. This will include full-shift air monitoring indicative of the employees' regular daily exposure to airborne lead.
- Recordkeeping requirements.
- A description of arrangements made among contractors on multi-contractor sites with respect to informing affected employees of potential exposure to lead.
- Appoint a competent person who will be responsible for performing regular inspections of the job site, materials, and equipment during the job.
- Ordering the PPE specified in the Lead Compliance Plan.

- Providing for the cleaning, laundering, and disposal of protective clothing and equipment.
- Notifying the BIA RSM or BIE SPM and the site Collateral Duty Safety Officer (CDSO) whenever there is a change in the lead job that has not been addressed by the Lead Compliance Plan.
- Perform air monitoring quarterly (every three months) and continue monitoring at the required frequency until at least two consecutive measures, taken at least seven days apart, are at or below the permissible exposure limit.

The Lead Compliance Plan should be revised and updated at least annually to reflect the program status.

11.8 Lead Compliance Plan Controls

The engineering controls specified in the Lead Compliance Plan should be on site and installed correctly before work begins. Hygiene facilities should be provided and include the following:

- A clean change room equipped with separate lockers for the storage of street clothes and work clothes.
- Hand-washing facilities.
- Showering facilities, where feasible.
- Eating facilities free from lead contamination.

Establish specific rules that will maintain proper housekeeping in the lead abatement area. Additionally:

- Prohibit contaminated clothing and equipment outside of lead work areas.
- Require lead workers to shower (where feasible) and/or wash hands and face at the end of the shift, and to wash hands and face before eating, drinking, smoking, or applying cosmetics outside the lead area.
- Segregate dirty or contaminated equipment from clean work areas.
- Vacuum all lead-contaminated surfaces using a high-efficiency particulate air filter.
- Mark lead hazard areas with boundary tape and signs as follows:

WARNING

LEAD WORK AREA

POISON

NO SMOKING OR EATING

- Ensure that signs are illuminated and cleaned as necessary to assure visibility.
- Mark lead-contaminated equipment and debris with labels warning of the lead hazard.

Notify contractors and subcontractors of the location of lead at the job site before work begins. Even if contract workers are not directly exposed, they may still need the training required under the OSHA hazard communication standard because of lead in their vicinity.

Maintain the requirements of the Lead Compliance Plan throughout the job. The designated competent person should inspect the job site at least daily on those days when lead operations are performed.

11.9 Training

Training must be provided for all employees subject to lead exposure at or above the action level on any day or subject to exposure to lead compounds that may cause skin or eye irritation. Before beginning the job assignment and at least annually, supervisors shall ensure that each employee is trained in the following:

- The content of the OSHA construction lead standard.
- The specific nature of the operations that could result in exposure to lead above the action level.
- The purpose, proper selection, fitting, use, and limitations of respirators.
- The purpose and description of the medical surveillance program and medical removal protection, including information concerning the adverse health effects associated with excessive exposure to lead.
- The engineering controls and work practices associated with the employee's job assignment, including training employees to follow relevant good work practices.
- The contents of any Lead Compliance Plan and the location of regulated areas.
- Instructions to employees that chelating agents should not be routinely used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician.
- The employees' right to access records.

Chapter 12: Hazardous Materials

This chapter provides a framework for developing hazardous material safety programs and for meeting the requirements of the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) standards (29 CFR 1910.120 and 29 CFR 1926.65).

Supervisors and employees interacting with hazardous materials should follow the medical surveillance program guidance discussed in section 5.8 of this handbook.

12.1 Site Characterization and Analysis

Each hazardous waste site should be evaluated following the procedures listed in the safety and health program to identify specific site hazards and to determine the control procedures needed to protect employees.

A preliminary evaluation of a site's characteristics must be performed before site entry to help select appropriate employee protection methods.

Immediately after initial site entry, a more detailed evaluation of the site's specific characteristics will be performed to further identify existing site hazards and to further help select the appropriate engineering controls and PPE for the tasks to be performed.

Inhalation or skin absorption hazards that are immediately dangerous to life or health (IDLH), or other conditions that may cause serious harm, must be identified during the preliminary survey and evaluated during the detailed survey. Examples of such hazards include, but are not limited to, confined space entry, explosive or flammable situations, visible vapor clouds, and areas where biological or environmental indicators such as dead animals or vegetation are located.

The following information is required before IA allows employees to enter a site:

- Location and approximate size of the site.
- Description of the response activity and/or the job task to be performed.
- Duration of the planned employee activity.
- Site topography and accessibility.
- Safety/health hazards expected at the site.
- Pathways for hazardous substance dispersion.
- Present status and capabilities of emergency response teams that would aid hazardous waste cleanup site employees at the time of an emergency.
- Hazardous substances and health hazards expected at the site and their chemical and physical properties.

PPE will be provided and used during initial site entry in accordance with the following requirements:

- Based on the results of the preliminary site evaluation, an ensemble of PPE will be provided for employee use. The PPE should reduce the level of exposure to below the PELs for known or suspected hazardous substances.
- If there is no PEL or published exposure level, IA may use other published studies and information as a guide to appropriate PPE.
- If positive-pressure self-contained breathing apparatus is not used as part of the entry ensemble, and if respiratory protection is needed by the potential hazards identified during the preliminary site evaluation, an escape self-contained breathing apparatus of at least 5-minute duration will be carried by employees during initial site entry.
- If the preliminary site evaluation does not produce sufficient information to identify the hazards or suspected hazards of the site, an ensemble providing protection equivalent to Level B PPE will be provided as minimum protection, and direct reading instruments will be used as appropriate for identifying IDLH conditions.
- Once the site hazards have been identified, and the engineering controls and work practices implemented, the appropriate PPE will be selected and provided for employee protection.

Monitoring will be required during initial site entry when the site evaluation shows the potential for ionizing radiation or IDLH conditions. Monitoring will also be required when site information is not sufficient to eliminate all possible conditions. Monitoring will consist of the following:

- Monitoring with direct reading instruments for hazardous levels of ionizing radiation.
- Monitoring the air with appropriate direct reading test equipment (i.e., combustible gas meters, detector tubes) for IDLH and other conditions that may cause death or serious harm (combustible or explosive atmospheres, oxygen deficiency, toxic substances).
- Visually observing for signs of actual or potential IDLH or other dangerous conditions.

An ongoing air monitoring program will be implemented after site characterization has determined the site is safe to begin operations.

Once the presence and concentrations of specific hazardous substances have been established, the risks associated with these substances will be identified and the information provided to employees who will be working on the site. Risks to be considered include, but are not limited to, the following:

- Exposures exceeding the PEL and published exposure levels

- IDLH concentrations
- Potential skin absorption and irritation sources
- Potential eye irritation sources
- Explosion sensitivity and flammability ranges
- Oxygen deficiency

Any information about the chemical, physical, and toxicological properties of the substances that may be present on the site must be provided to IA and to the affected employees before they begin their work activities.

Appropriate site control procedures will be implemented to control employee exposure to hazardous substances before cleanup work begins.

A site control program for protecting employees will be developed as a subpart of the HAZWOPER safety and health program during the planning stages of a hazardous waste cleanup operation, and modified as new information becomes available. The site control program will include at a minimum:

- A site map
- Site control, check-in, check-out areas
- Site work zones
- Using a “buddy system”
- Site communications including an emergency alerting system
- Programs for safe work practices
- Nearest medical assistance

12.2 Hazardous Site Tracking and Corrective Actions

Cleanup operations required by a federal/state/local governmental body involving hazardous substances that are conducted at uncontrolled hazardous waste sites are determined through a series of priority lists. Lists include, but are not limited to, the following:

- The EPA’s National Priority Site List (NPL)
- State priority site lists
- Sites recommended for the EPA NPL
- Sites initially investigated by the government to ascertain the presence or absence of hazardous substances.

The HAZWOPER standards apply to sites that fall under the following conditions:

- Corrective actions involving cleanup operations at sites covered by the 1976 Resource Conservation and Recovery Act (RCRA) as amended (42 U.S.C. 6901 et seq.).
- Voluntary cleanup operations at sites recognized by federal, state, local, or other governmental bodies as uncontrolled hazardous waste sites. Operations involving hazardous wastes that are conducted at treatment, storage, and disposal (TSD) facilities regulated by 40 CFR Part 264 and Part 265 pursuant to RCRA or by agencies under agreement with EPA to implement RCRA regulations.
- Emergency response operations for release of (or threats of release of) hazardous substances without regard to the location of the hazard.

12.3 Site Safety and Health Program

The written site safety and health program will be made available to:

- contractors, subcontractors, or their representatives who will be involved with the hazardous waste operation;
- all IA, BIA, and BIE employees and their designated representatives;
- OSHA personnel; and
- authorized personnel of other federal, state, or local agencies with regulatory authority over the site.

The site safety and health program organizational structure will establish the chain of command and outline supervisor and employee responsibilities. The organizational structure will be reviewed and updated as necessary to reflect the status of waste site operations and will include, at a minimum, the following elements:

- The site occupational safety and health (OSH) manager or their designated alternate will have the authority and responsibility for directing the hazardous waste operations.
- The site OSH manager or their designated alternative will have the authority and responsibility to develop and implement the hazardous waste operations safety and health program and monitoring compliance.
- The responsibilities of the other IA or contractor employees needed for hazardous waste site operations and emergency response.
- The lines of authority, responsibility, and communication for both general and site-specific activities.

A. Safety Information – Written Safety and Health Program.

IA will develop and implement a written safety and health program for employees involved in hazardous waste operations. The program will be designed to identify, evaluate, and control OSH hazards, and provide emergency response. The written safety and health program will incorporate the following at a minimum:

- An organizational structure
- A comprehensive work program
- A site-specific OSH program
- A safety and health training program
- A medical surveillance program
- PPE requirements
- Spill containment procedures
- Any necessary interface between general program and site-specific activities

B. Site-Specific Safety and Health Program.

IA will develop a HAZWOPER site-specific safety and health program that will be kept on site. The program will address the hazards of each phase of the site operation and include the requirements and procedures for employee protection. The program will address the following at a minimum:

- A safety and health risk or hazard analysis for each site task and operation in the work program.
- Employee training assignments to assure compliance with the training section of this safety program.
- PPE to be used by employees for each of the site tasks and operations being conducted.
- Medical surveillance requirements.
- Frequency and types of air monitoring, personnel monitoring, and environmental sampling. This will include the techniques and instrumentation to be used, and it will cover the maintenance and calibration of monitoring and sampling equipment.
- Site control measures.
- Decontamination procedures.

- Emergency response safety program covering effective responses to emergencies, including the necessary PPE and other equipment.
- Confined space entry procedures.
- Spill containment requirements.
- Pre-entry briefings to be held before beginning any site activity, and at such other times as necessary to ensure that employees know and follow the HAZWOPER program.
- Inspections to be conducted by the OSH manager or other designated person to determine the effectiveness of the HAZWOPER safety and health program. Any deficiencies in the effectiveness of the program should be promptly corrected.

12.4 Comprehensive Work Program

A comprehensive work program for each site addressing the tasks and objectives of site operations, logistics, and resource requirements will be available. The comprehensive work program should also outline the tasks and objectives for each site and will include the following:

- Address anticipated cleanup activities as well as normal operating procedures.
- Define work tasks and objectives and identify the methods for accomplishing those tasks and objectives.
- Establish personnel requirements for implementing the program.
- Outline the information and training required by workers involved in site activities.
- Cover the implementation of a medical surveillance program for workers involved in site activities.

12.5 Spill and Leak Prevention and Emergency Response

All machines using cutting, drilling, or machining oils and coolants, or plating, coating, and cleaning solutions (usually considered hazardous materials) should be equipped with secondary containment measures capable of holding the full content of the machine plus 10% freeboard.

These fluids must be prevented from contaminating sanitary sewer systems. If secondary containment is not available, suitable absorbent materials or diking must be used to prevent the spill from reaching the drain or sewer. A spill kit will be available appropriate to the size of the containment.

A. Site Excavation.

Site excavations created during initial site preparation or during hazardous waste operations will be shored, sloped, or protected by appropriate trench boxes or shielding systems to prevent accidental collapse in accordance with 29 CFR 1926, Subpart P.

B. Nitrogen Tanks.

Because nitrogen is an inert, relatively harmless gas, there would be no significant effect on the environmental or public health if this gas is released.

C. Propane Tanks.

External supply tanks or larger quantities of smaller cylinders must be stored safely. No more than five full propane cylinders should be stored inside a facility. Tanks stored outside should be protected from tampering and vandalism either by a chain link or barbed wire fence with restricted access or by a secure locking system to prevent theft.

A rupture in any tanks or cylinders containing propane may cause a potentially devastating explosion presenting a severe threat to human health and the environment. Tanks and storage areas must be inspected regularly to ensure tanks and cylinders are not damaged.

D. Ammonium Tanks.

Ammonium tanks must be well protected and closely monitored to ensure that all valves, fittings, connections, and gauges are in good condition and operate properly. An ammonia release in any significant quantity would cause an evacuation or shelter-in-place order; operations would stop because of serious harmful effects.

E. Chemical Stores.

Chemicals used or stored in 30-gallon carboys, 55-gallon drums, or other smaller containers should be in either a separate building or specific area dedicated to chemical storage. Access should be strictly controlled.

There should be no drains in the area. Chemical storage areas should have secondary containment, or spill response materials capable of containing the volume of the chemicals in storage in the event of a catastrophic spill.

F. Hazardous and Non-Hazardous Waste Storage.

The following govern hazardous and non-hazardous waste storage:

- Hazardous waste should be stored in the designated hazardous waste storage area.
- Segregated areas should be designated to store flammables, caustics, and toxic waste.
- All drums should be stored in an upright position with sealed lids and secure bung caps.
- All hazardous waste should be removed for off-site treatment/disposal within required timeframes based on EPA generator status (usually 90 or 180 days).

- Residual waste oils and non-hazardous waste should be collected and disposed of in accordance with federal, state, and local requirements.

12.6 General Spill Procedure

In the event of a spill the following general steps will be taken:

1. The trained initial responder should determine the source and nature of the spill.
2. Based on personal knowledge, technical data, and Safety Data Sheets (SDSs), responders should be provided, and use, the appropriate PPE.
3. If responders are unsure of the proper procedures, equipment, or general safety actions needed, they should not attempt to clean up the spill. Do not place responders or others in danger during an emergency situation.
4. Try to stop the spill at the source.
5. Contain the spill with absorbent material (e.g., booms) if possible.
6. Notify the site supervisor and OSH manager.
7. The site supervisor will notify the hazardous materials response team (on site team or local agencies such as the local fire department).
8. Spills must be reported to appropriate regulatory agencies and a spill report completed and forwarded to the BIA Regional Director, BIE Deputy Director, School Operations, and the IA Division of Safety and Risk Management (DSRM).

12.7 Engineering Controls, Work Practices, and PPE

IA will ensure that engineering controls, work practices, PPE, or a combination of these will be implemented in accordance with 29 CFR 1910, Subpart G and Subpart Z. Engineering controls and work practices will be instituted to reduce and maintain employee exposure to or below the permissible exposure limits, except to the extent that such controls and practices are not feasible. If the engineering controls and work practices do not reduce the employee's exposure to less than the PEL, then PPE will be required.

12.8 Training and Information

On HAZWOPER operations, employees, supervisors, and managers all require training before beginning work. Everyone working on HAZWOPER sites require periodic refresher training.

IA employees will not begin HAZWOPER activities until they have been trained to the level required by their job function and responsibility. Elements to be covered include the following:

- Names of personnel and alternates responsible for site safety and health.
- Safety, health, and other hazards present on the site.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards.
- Contents of the HAZWOPER Safety and Health Program.

Initial training requirements can be found on the OSHA webpage here: [1910.120 - Hazardous waste operations and emergency response. | Occupational Safety and Health Administration \(osha.gov\)](https://www.osha.gov/1910.120-hazardous-waste-operations-and-emergency-response)

12.9 Qualifications for Trainers and Trainees

IA HAZWOPER instructors will be qualified to teach the subject matter presented in the training. Instructors will have satisfactorily completed a training program for teaching the subjects they are expected to teach or have academic credentials and instructional experience necessary for teaching the subjects. Instructors will demonstrate competent instructional skills and knowledge of the applicable subject matter before training begins.

IA employees and supervisors that have successfully completed the training and field experience will be certified. Any person not trained and certified or otherwise does not meet the requirements for entering the site will be prohibited from engaging in hazardous waste operations.

Employees who are engaged in responding to emergency situations at hazardous waste cleanup sites will be trained in responding to expected emergencies.

Employees, managers, and supervisors will receive eight hours of refresher training annually (any critique of incidents that occurred in the previous year can serve as partial training).

Training includes any academic training or training that existing employees might have already received from actual hazardous waste site work experience.

Employees who can demonstrate that their work experience and/or training have resulted in equivalent credentials required for a 40-hour course will not be required to attend formal training. However, employees new to a site will require site specific training before site entry and their field supervised initially.

Definitions

Asbestos is a mineral silicate occurring naturally as a variously colored fiber. It is non-combustible, non-conducting, and resistant to deterioration and chemical attack. These properties have ensured widespread use in insulation, gaskets, coatings, plastics, brake linings, floor tile, roofing, and cementitious materials.

Asbestos-containing material is any material that contains more than 1% asbestos by weight. This means that any material containing 1% percent or less asbestos is considered a non-regulated ACM.

Asbestos survey is when a sample of any type of building material is collected with the intent of assessing asbestos content.

Competent person is an IA employee or subcontractor who has received training and is capable of identifying existing and predictable asbestos hazards in the workplace, and who can take prompt corrective measures to eliminate them.

Construction operations include demolition or salvage, removal or encapsulation, new construction or alteration, cleanup, maintenance operations, and/or transportation and disposal.

Friable Asbestos is most hazardous when it is friable or easily crumbled by hand, releasing fibers into the air. Sprayed-on asbestos insulation is highly friable. Asbestos floor tile is not. Asbestos-containing ceiling tiles, floor tiles, and shingles **will not release asbestos fibers** unless they are disturbed or damaged in some way. If an asbestos ceiling tile is drilled or broken, for example, it can release fibers into the air. If it is left disturbed, it will not.

Handwashing facility is a facility providing either a basin, container, or outlet with an adequate supply of potable water, soap and single-use towels.

Presumed asbestos-containing materials (PACM) include thermal system insulation, surfacing material, resilient flooring and associated mastic, and vinyl and asphalt roofing materials found in buildings constructed before 1981. Cementitious siding or shingles, or transite panels, along with the above-mentioned materials, are designated as PACM until rebutted.

Acronyms

ABPR	Asbestos Ban and Phase Out Rule
ACGIH	American Conference of Governmental Industrial Hygienists
ACM	Asbestos-containing material
AED	Automated External Defibrillation
AHERA	Asbestos Hazard Emergency Response Act
AIDS	Acquired Immunodeficiency Syndrome
ANSI	American National Standards Institute
BIA	Bureau of Indian Affairs
BEI	Biological Exposure Indices
BIE	Bureau of Indian Education
CDC	Centers for Disease Control
CDSO	Collateral Duty Safety Officer
CFM	Cubic feet per minute
CFR	Code of Federal Regulations
CPR	Cardiopulmonary Resuscitation
dB	Decibels
DOI	U.S. Department of the Interior
DOL	U.S. Department of Labor
DSRM	Division of Safety and Risk Management
ECOMP	Employees' Compensation Operations and Maintenance Portal
ECP	Exposure Control Plan
EMS	Emergency Medical Services
EPA	U.S. Environmental Protection Agency
FDA	U.S. Food and Drug Administration
GSA	General Services Administration
HAZMAT	Hazardous Materials
HAZWOPER	Hazardous Waste Operations and Emergency Response
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HEPA	High-Efficiency Particulate Air

HIV	Human Immunodeficiency Virus
HVAC	Heating, Ventilation, and Air Conditioning
IA	Indian Affairs
IDLH	Immediately Dangerous to Life or Health
IPM	Integrated Pest Management
ISEA	International Safety Equipment Association
JHA	Job Hazard Analysis
LEV	Local Exhaust Ventilation
MSD	Musculoskeletal Disorder
NEA	Negative Exposure Assessment
NIOSH	National Institute for Occupational Safety and Health
NPL	National Priority Site List
NRR	Noise Reduction Rating
NVLAP	National Voluntary Laboratory Accreditation Program
OEL	Occupational Exposure Limit
OIC	Official in Charge
OPIM	Other Potentially Infectious Material
OSH/OSHA	Occupational Safety and Health/Administration
PACM	Presumed asbestos-containing materials
PAPR	Powered air purifying respirator
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
PPM	Parts per million
RCRA	Resource Conservation and Recovery Act
REL	Recommended Exposure Limits
RICE	Rest, Ice, Compression, and Elevation
RSM	BIA Regional Safety Manager
SDS	Safety Data Sheet
SMIS	Safety Management Information System
SPM	BIE Safety Program Manager
STS	Standard Threshold Shift

TSI	Thermal System Insulation
TLV	Threshold Limit Value
TSD	Treatment, Storage, and Disposal
TWA	Time Weighted Average
WCC	Workers' Compensation Coordinator