



SAFETY & HEALTH MANUAL

ELLICOTTVILLE ENGINEERING DEPARTMENT

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References:

- (a)** Title 29 CFR 1960, “Basic Program Elements for Federal Employee Occupational Safety and Health (OSH) Programs and Related Matters”
- (b)** U.S. Coast Guard Safety and Environmental Health Manual – COMDTINST M5100.47B
- (c)** National Fire Protection Association (NFPA) 70; National Electrical Code
- (d)** Title 29 CFR 1910.331-335, “Electrical Safety-Related Work Practices”
- (e)** International Association of Classification Societies (IACS) – Confined Space Safe Practice
- (f)** Title 29 CFR 1910.146, “Permit Required for Confined Spaces”
- (g)** American National Standards Institute (ANSI) Z88.2-1992, American National Standard Practices for Respiratory Protection (NOTAL)
- (h)** Title 29 CFR 1910.134, “Respiratory Protection, Occupational Safety and Health Administration (OSHA)”
- (i)** Title 40 CFR 61, Subpart M, “Environmental Protection Agency (EPA) Asbestos Fiber Emission Regulations”
- (j)** 42 USC 7401, Clean Air Act
- (k)** OSHA 29 CFR 1910.1025 Lead (General Industry)
- (l)** OSHA 29 CFR 1926.62 Lead (Construction)
- (m)** HUD 24 CFR 35 Lead Safe Housing Rule

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CHAPTER 1 - INTRODUCTION

A. BACKGROUND:

The Ellicottville Engineering (EVL ENG) Department was officially formed in 2018 and consists of the following Town and Village of Ellicottville divisions: Town Highway, Village Public Works, Water, Sewer, and Building/Code Enforcement. All of these divisions are rolled up under one, “Ellicottville Engineering Department” umbrella aimed at providing a unified service for the residents of Ellicottville, NY. The vision and mission statements for the department are as follows:

Vision: The Ellicottville Engineering Department will present a united Town & Village organization dedicated to providing the best public works and engineering service in New York state.

Mission: Our mission is to make Ellicottville the prominent destination in New York state thru our **commitment** to the public, application of sound **engineering & construction doctrine, efficient** decision making, and constant pursuit of **improvement & innovation**.

B. SUMMARY & PURPOSE:

The EVL ENG Department routinely conducts construction, maintenance, and inspection operations that, by their very nature, have the potential to place its employees in unsafe conditions. While we cannot remove all risk from our daily operations, we must strive to reduce hazard exposure to acceptable levels for our employees. Our policy is to provide our personnel a safe and healthful workplace and to protect them from risk of death, injury, or illness. Employees at all levels within the department are responsible and accountable for their own safety, but also for the safety of their co-workers and the general public. To accomplish this, the EVL ENG Department will maintain an effective and comprehensive safety and health manual that is specifically tailored towards our Department’s activities.

C. SAFETY CULTURE:

The EVL ENG Department will maintain a “Just and Flexible” safety reporting culture. A just culture refers to an atmosphere of trust where people willingly and freely provide safety-related information without fear of reprisal. Clear lines exist and are understood between acceptable and unacceptable behavior. Personnel by their human nature make errors. Just culture recognizes this fact and encourages appropriate responses to these human errors. A flexible culture refers to the organization reconfiguring its hierarchy as necessary to adapt during high-tempo or extraordinary hazard exposure, and recognizing the hazard associated with normalized deviation. Safety is a team effort, and every member is responsible and accountable for identifying and reporting hazards and managing risk. These responsibilities cannot be delegated and must not be compromised.

Everybody within the Ellicottville Engineering Department has the Authority to report Hazards and “STOP WORK”

D. TRAINING PROGRAM:

The EVL ENG Department will make safety and safety training a top priority within all aspects and divisions of the department. Safety and safety training will be budgeted for each fiscal year to ensure that all of the department employees are caught up with the latest safety trends and rules/regulations throughout the construction industry. In addition, training will always be available for any employee that feels uncomfortable or feels that he/she needs the additional instruction in order to feel safe at the workplace. It will become a standard practice for the department to hold at least (2) formal, sit down training sessions with the entire department during the calendar year. The topics to be covered during these training sessions will vary and will cover the different subjects presented within this manual.

CHAPTER 2 – GENERAL SAFETY RULES

A. PURPOSE:

The EVL ENG Department's primary objectives are to ensure the safety and health of our employees and to protect our property. Our goal is to provide safe and healthful working conditions for all Department Employees. Safety rules have been developed with input from Supervision and Employees. These rules address behaviors and work practices that can lead to accidents and injuries, and each employee should become familiar with, and follow the General and Departmental Safety Rules. Supervisors must enforce Safe Work practices through strict adherence to the specified safety rules.

B. GENERAL RULES:

1. Communication

Communication of the safety rules will be accomplished by:

- Discussion during New Hire Orientation
- Published in the EVL ENG Standard Operating Procedure (SOP) Handbook
- Semi-Annual refresher trainings
- On-the-Spot correction and reinforcement
- Random "Tool-Box Talks" before and during daily activities

2. Additional General Safety Rules:

- Report all work injuries and illnesses immediately
- Report all Unsafe Acts or Unsafe Conditions to your Supervisor
- Use seat belts when on Company business in any vehicles
- Firearms, weapons, or explosives are not permitted on Company Property.
- Use, possession, sale or being under the influence of illegal drugs, misuse of prescription drugs and/or alcohol is not permitted.

- Only authorized and trained Employees may repair or adjust machinery and equipment. Lock and Tag Out Procedures must be followed before removing any machine guards or working on powered machinery and equipment. Replace all guards when the job is completed.
- Only qualified and trained Employees may work on or near Exposed Energized Electrical Parts or Electrical Equipment. Follow Electrical Safety Rules when working with electrically powered machinery and equipment.
- Only authorized and trained Employees may enter a posted Confined Space.
- Only authorized and trained Employees may dispense or use chemicals. It is your responsibility to know where MSDS's are located and that they are available for your use and review.
- Keep work areas clean and aisles clear. Do not block emergency equipment or exits.
- Wear and use the prescribed Personal Protective Safety Equipment. This includes foot protection, head protection, gloves, etc.
- Smoking is permitted only in the designated "Smoking Areas".

Failure to follow the above rules may cause serious injury and/or illness. Disciplinary Action, up to and including Termination, will be used to assure rule enforcement. Please use common sense and think before you act. If you are not sure how to complete a job or task safely or have any questions, ask your supervisor.

CHAPTER 3 – GENERAL HOUSEKEEPING & MATERIAL STORAGE

A. PURPOSE:

Attention to general cleanliness, storage, and housekeeping can prevent numerous accidents. This chapter covers items not discussed in other areas of the Safety & Health manual but is not intended to cover all specific housekeeping requirements. Good housekeeping efforts are a part of any good fire prevention and accident prevention program.

B. MANAGEMENT AND EMPLOYEE RESPONSIBILITY:

All EVL ENG Department employees share the responsibility for maintaining good housekeeping practice and following the established housekeeping procedures. The Town and Village Engineer and the Division Supervisors will be responsible for monitoring housekeeping as part of their facility safety inspection procedures, noting any hazards or areas of non-compliance, initiating clean-up procedures and providing follow-up. Management has the additional responsibility to provide disciplinary action when necessary to reinforce compliance with this program.

C. GENERAL RULES:

1. Smoking Policy

Smoking is not permitted inside buildings and/or within 50 feet of material storage. This includes all offices, rest rooms, locker rooms, production floor, storage areas, coolers, etc. Smoking is permitted outside in designated areas and in the Smoking Section of authorized break areas before work, after work and during breaks. To prevent fires and keep the grounds neat and orderly, all cigarette/cigar ashes and butts are to be disposed in the provided butt cans or ash-trays only.

2. Department Areas

i. Offices

Office areas are to be kept neat and orderly. The following general rules apply to prevent injuries and maintain a professional appearance.

- All aisles, emergency exits, fire extinguishers, etc., will be kept clear (a minimum of three feet of either side) of material storage (temporary and permanent) at all times.
- Storage areas will be maintained orderly at all times. When supplies are received, the supplies will be stored properly.
- Spills will be cleaned-up immediately and wastes disposed of properly.
- All waste receptacles will be lined with a plastic trash bag to avoid direct contact while handling.
- Keep file and desk drawers closed when not attended to avoid injuries. Open only one drawer at a time to prevent tipping of file cabinets.
- At the end of the business day, turn off all office equipment (area heaters, lamps, coffee-maker, PCs, etc.) and lights to save energy and prevent fires. All space heaters and window A/C units shall be unplugged at the end of the day to assure they have been turned-off.

ii. Rest Rooms, Locker Rooms, & Break Areas

Rest rooms, locker rooms, and break areas are provided as a convenience for all Employees. The following rules will apply:

- Employees are expected to clean-up after themselves as a common courtesy to fellow Employees.
- Flammable materials (fire works, explosives, gasoline, etc.) may not be stored in lockers or brought on company property.
- Personal food item will not be stored in lockers or cafeteria overnight.
- All waste receptacles will be lined with a plastic trash bag to avoid direct contact while handling and Custodial Employees will use rubber gloves and compaction bar when handling wastes.
- All refuse and waste materials will be placed in the recognized waste containers for disposal.

iii. Maintenance Areas

All aisles, emergency exits, fire extinguishers, etc., will be kept clear (a minimum of three feet of either side) of material storage (temporary and permanent) at all times. Storage Areas will be maintained orderly at all times:

- Pipe stock stored horizontally on racks and sorted by size
- Metal stock stored horizontally on racks and sorted by size

- Sheet metal stock stored vertically in racks and sorted by type
- All fittings, etc., stored in bins on shelves and sorted by type and use
- All flammables stored in OSHA-approved Fire Cabinets and self-closing cans where necessary
- Spills will be cleaned-up immediately by the person responsible and wastes disposed properly.
- All refuse and waste materials will be placed in the recognized waste containers for disposal.

iv. **Grounds**

The grounds surrounding the Engineering Building areas are an extension of the work place. Grounds that are kept neat and orderly show pride by the Department Employees.

The following general rules will apply:

- All trash will be discarded only in the waste containers provided.
- Park only in the designated assigned area.
- The Division Supervisors will be responsible for grounds keeping (mowing, trimming, etc.) as needed. They will also establish procedures for ice/snow removal, when necessary, prior to operations each day.

v. **Material Storage**

Proper storage procedures are required for dry, raw materials, finished product flammables, and compressed gases storage to prevent fires, keep exits and aisles clear and avoid injuries and illnesses. General rules for material storage are as follows:

- **Materials and Finished Products Storage**

- Materials may not be stored any closer than 18 inches to walls or sprinkler heads. A minimum of 3 feet side clearance will be maintained around doorways and emergency exits. Passageways and aisle will be properly marked and a minimum of six feet in width. Materials, fork lifts, pallet jacks, etc., may not be stored in aisles or passageways.
- Aisles and passageways will be kept clear of debris. All spills of materials will be immediately cleaned-up by the person responsible.
- All platforms and racks will have maximum load capacity displayed. The weight of stored material will not exceed the rated load capacity.

- **Flammable Storage**

- All flammables will be stored in OSHA-approved flammable storage cabinets or stored outside (at least 50 feet from any structure)
- Fuels, solvents and other flammables (not stored in original shipping containers) will be stored in OSHA-approved self-closing containers with flame arresters. Flammables may not be stored in open containers (open parts baths, etc.).
- Flammable storage areas will be kept dry and well ventilated. No storage of combustible materials, open flames or exposed electrical components are permitted in the flammable storage area.

- Flammable or combustible materials may not be stored in electrical rooms. Electrical rooms must be kept clean and dry at all times.
- **Compressed Gas Storage Safety**
- Gas Cylinder Shipment Receiving
- Inspect bottle for defects & proper marking/labels
- Ensure stamped date on bottle has not expired
- Inspect valve assembly and adapter thread area
- Ensure MSDS is on file or with shipment
- Follow MSDS requirements for storage
- Gas Cylinder Storage
- Cylinder cap securely in place when not in use.
- Marked with contents and if empty/full.
- Stored up-right and secured to a stationary structure in a shaded and well ventilated area.
- Cylinders not stored within 50 feet of exposed electrical components or combustible materials.
- Cylinders are protected from accidental rupture.
- Chemically reactive gases not stored within 50 feet of each other.
- Gas Cylinder Movement
- Must be secured to a cart or cylinder trolley
- Cap securely fastened
- Gas Cylinder Usage
- Inspect valve adapter threads.
- Inspect all fasteners, hoses & regulators prior to hooking up to cylinder.
- Use only for approved purposes.
- Use in up-right position.
- Fasten cylinder to structure or cart.
- Regulators must be of same rated pressure as cylinder
- Keep cylinder valve shut when not in use; don't depend on regulators

CHAPTER 4 – PERSONAL PROTECTIVE EQUIPMENT

A. PURPOSE:

The purpose of the Personal Protective Equipment (PPE) Program is to develop and implement the procedures for the identification, use, care and maintenance of PPE required to be used by employees for the prevention of illness and injury.

All employees are required to follow the minimum procedures outlined in this program. Any deviations from this program must be immediately brought to the attention of the Town and Village Engineer.

B. GENERAL RULES:

Appropriate PPE is required to be worn at all times when employees are exposed to hazards that cannot be eliminated through the use of preferred elimination, substitution, engineering or administrative controls.

The workplace will be evaluated and all uncontrolled hazards will be identified based on changes to the workforce and workplace operations. Assessments will include, but are not limited to, the following items:

- Torso and abdominal protection
- Eye and face protection
- Head protection
- Foot protection
- Leg protection
- Hand protection
- Hearing protection (Separate written program)
- Respiratory protection (Separate written program)
- Fall protection (Separate written program)

PPE appropriate for the identified hazards will be identified, purchased and provided to all employees exposed to those hazards. All PPE will be properly fit to each employee before relying on it as a protective measure.

Employees will be continually trained, formally and informally, on the types of PPE necessary for the workplace hazards and its limitations. Training will also include the proper way to wear, use and maintain the PPE.

1. Eye and Face Protection

Each affected employee will:

- Use appropriate eye and face protection equipment when exposed to hazards from flying objects or particles, molten metal, fumes, chemical liquids, gases, vapors, dusts, acids, caustics, and other potentially injurious chemical or physical hazards.
- Use appropriate eye protection equipment with filter lenses that have a shade number appropriate for the work being performed when exposed to an eye hazard from potentially injurious light radiation.
- When wearing prescription lenses while engaged in operations that involve eye hazards, wear eye protection that incorporates the prescription in its design, or wear eye protection that can be worn over the prescription lenses without disturbing the prescription lenses or the protective lenses.

2. Foot Protection

Each affected employee will wear protective footwear when working in areas where there is danger of objects falling on or rolling across the foot, piercing the sole, and where the feet are exposed to electrical or chemical hazards. Foot protection will comply with appropriate ANSI standards.

3. Hand and Body Protection

The Program Administrator will select and require employees to use appropriate hand protection when employees' hands are exposed to hazards from cuts, abrasions, punctures, chemical or thermal burns, harmful temperature extremes, vibration and skin absorption of harmful substances.

4. Head Protection

Each affected employee will wear appropriate protective head gear (hard hats, bump caps, etc.) when working in areas where there is a potential for injury to the head from falling objects, impact hazards, extreme temperatures or high UV levels.

5. Hearing Protection

The Program Administrator will select and require employees to wear appropriate hearing protection in environments where noise levels equal or exceed the OSHA Occupational Noise Exposure Standard (OSHA 29 CFR 1910.95) 8-hour time weighted average (TWA) of 85 dBA. See Hearing Protection Program for details.

6. Respiratory Protection

Each affected employee will wear respiratory protective equipment (respirators) when working in areas where respiratory hazards exist. All respirators will be in compliance with the OSHA 29 CFR 1910.134. See Respiratory Protection Program for details.

CHAPTER 5 – FIRE SAFETY

A. PURPOSE:

The EVL ENG Department Fire Safety Plan has been developed to work in conjunction with company emergency plans and other safety programs. This includes reviewing all new building construction and renovations to ensure compliance with applicable state, local, and national fire and life safety standards. Fire prevention measures reduce the incidence of fires by eliminating opportunities for ignition of flammable materials.

B. GENERAL RULES:

1. Responsibilities

Management

- Ensure all fire prevention methods are established and enforced
- Ensure fire suppression systems such as sprinklers and extinguishers are periodically inspected and maintained to a high degree of working order
- Train supervisors on how to use fire extinguishers
- Train employees on evacuation routes and procedures

Supervisors

- Closely monitor the use of flammable materials and liquids
- Train assigned employees in the safe storage, use and handling of flammable materials
- Ensure flammable material storage areas are properly maintained

Employees

- Use, store and transfer flammable materials in accordance with provided training
- Do not mix flammable materials
- Immediately report violations of the Fire Safety Program

2. Elimination of Ignition Sources

All nonessential ignition sources must be eliminated where flammable liquids are used or stored. The following is a list of some of the more common potential ignition sources:

- Open flames, such as cutting and welding torches, furnaces, matches, and heaters - these sources should be kept away from flammable liquids operations. Cutting or welding on flammable liquids equipment should not be performed unless the equipment has been properly emptied and purged with a neutral gas such as nitrogen.
- Chemical sources of ignition such as DC motors, switches, and circuit breakers - these sources should be eliminated where flammable liquids are handled or stored. Only approved explosion-proof devices should be used in these areas.
- Mechanical sparks - these sparks can be produced as a result of friction. Only non-sparking tools should be used in areas where flammable liquids are stored or handled.
- Static sparks - these sparks can be generated as a result of electron transfer between two contacting surfaces. The electrons can discharge in a small volume, raising the temperature to above the ignition temperature. Every effort should be made to eliminate the possibility of static sparks. Proper bonding and grounding procedures must be followed when flammable liquids are transferred or transported.

3. Flammable Gases

Generally, flammable gases pose the same type of fire hazards as flammable liquids and their vapors. Many of the safeguards for flammable liquids also apply to flammable gases, however, other properties such as toxicity, reactivity, and corrosivity also must be taken into account. In addition, a gas that is flammable could produce toxic combustion products.

4. Fire Extinguishers

A portable fire extinguisher is a "first aid" device and is very effective when used while the fire is small. The use of a fire extinguisher that matches the class of fire, by a person who is well trained, can save lives and property. Portable fire extinguishers must be installed in workplaces regardless of other fire fighting measures. The successful performance of a fire extinguisher in a fire situation largely depends on its proper selection, inspection, maintenance, and distribution.

Classification of Fires and Selection of Extinguishers

Fires are classified into four general categories depending on the type of material or fuel involved. The type of fire determines the type of extinguisher that should be used to extinguish it.

- **Class A** fires involve materials such as wood, paper, and cloth which produce glowing embers or char.
- **Class B** fires involve flammable gases, liquids, and greases, including gasoline and most hydrocarbon liquids which must be vaporized for combustion to occur.
- **Class C** fires involve fires in live electrical equipment or in materials near electrically powered equipment.
- **Class D** fires involve combustible metals, such as magnesium, zirconium, potassium, and sodium.

Extinguishers will be selected according to the potential fire hazard, the construction and occupancy of facilities, hazard to be protected, and other factors pertinent to the situation.

Location and Marking of Extinguishers

- Extinguishers will be conspicuously located and readily accessible for immediate use in the event of fire. They will be located along normal paths of travel and egress. Wall recesses and/or flush-mounted cabinets will be used as extinguisher locations whenever possible.
- Extinguishers will be clearly visible. In locations where visual obstruction cannot be completely avoided, directional arrows will be provided to indicate the location of extinguishers and the arrows will be marked with the extinguisher classification.
- If extinguishers intended for different classes of fire are located together, they will be conspicuously marked to ensure that the proper class extinguisher selection is made at the time of a fire. Extinguisher classification markings will be located on the front of the shell above or below the extinguisher nameplate. Markings will be of a size and form to be legible from a distance of 3 feet.

Condition

- Portable extinguishers will be maintained in a fully charged and operable condition. They will be kept in their designated locations at all times when not being used. When extinguishers are removed for maintenance or testing, a fully charged and operable replacement unit will be provided.

Mounting and Distribution of Extinguishers

- Extinguishers will be installed on hangers, brackets, in cabinets, or on shelves. Extinguishers having a gross weight not exceeding 40 pounds will be installed such that the top of the extinguisher is not more than 3-1/2 feet above the floor.
- Extinguishers mounted in cabinets or wall recesses or set on shelves will be placed so that the extinguisher operating instructions face outward. The location of such extinguishers will be made conspicuous by marking the cabinet or wall recess in a contrasting color which will distinguish it from the normal decor.
- Extinguishers must be distributed in such a way that the amount of time needed to travel to their location and back to the fire does not allow the fire to get out of control. OSHA requires that the travel distance for Class A and Class D extinguishers not exceed 75 feet. The maximum travel distance for Class B extinguishers is 50 feet because flammable liquid fires can get out of control faster than Class A fires. There is no maximum travel distance specified for Class C extinguishers, but they must be distributed on the basis of appropriate patterns for Class A and B hazards.

Inspection and Maintenance

- Once an extinguisher is selected, purchased, and installed, it is the responsibility of Safety Director to oversee the inspection, maintenance, and testing of fire extinguishers to ensure that they are in proper working condition and have not been tampered with or physically damaged.

5. Fire Safety Inspections / Housekeeping

EVL ENG Division Supervisors are responsible for conducting work site surveys that include observations of compliance with the Fire Safety Program. These surveys should include observations of work site safety and housekeeping issues and should specifically address proper storage of chemicals and supplies, unobstructed access to fire extinguishers, and emergency evacuation routes. Also, they should determine if an emergency evacuation plan is present in work areas and that personnel are familiar with the plan.

6. Emergency Exits

- Every exit will be clearly visible, or the route to it conspicuously identified in such a manner that every occupant of the building will readily know the direction of escape from any point. At no time will exits be blocked.
- Any doorway or passageway which is not an exit or access to an exit, but which may be mistaken for an exit, will be identified by a sign reading "Not An Exit" or a sign indicating its actual use (i.e., "Storeroom"). A readily visible sign will mark exits and accesses to exits. Each exit sign (other than internally illuminated signs) will be illuminated by a reliable light source providing not less than 5 foot-candles on the illuminated surface.

7. Emergencies Involving a Fire

Fire Alarms

In the event of a fire emergency, a fire alarm will sound for the building.

Evacuation Routes and Plans

- Each facility shall have an emergency evacuation plan. All emergency exits shall conform to NFPA standards.
- Should evacuation be necessary, go to the nearest exit or stairway and proceed to an area of refuge outside the building. Most stairways are fire resistant and present barriers to smoke if the doors are kept closed.
- Do not use elevators. Should the fire involve the control panel of the elevator or the electrical system of the building, power in the building may be cut and you could be trapped between floors. Also, the elevator shaft can become a flue, lending itself to the passage and accumulation of hot gases and smoke generated by the fire.

Emergency Coordinators/Supervisors

Emergency Coordinators/Supervisors will be responsible for verifying personnel have evacuated from their assigned areas.

8. Fire Emergency Procedures

If you discover a fire

1. Activate the nearest fire alarm.
2. Notify your Supervisor and other occupants.

Fight the fire ONLY if

1. The fire department has been notified of the fire, AND
2. The fire is small and confined to its area of origin, AND
3. You have a way out and can fight the fire with your back to the exit, AND
4. You have the proper extinguisher, in good working order, AND know how to use it.
5. If you're not sure of your ability or the fire extinguisher's capacity to contain the fire, leave the area.

If you hear a fire alarm

1. Evacuate the area. Close windows, turn off gas jets, and close doors as you leave.
2. Leave the building and move away from exits and out of the way of emergency operations.
3. Assemble in a designated area.
4. Report to the monitor so he/she can determine that all personnel have evacuated your area.
5. Remain outside until competent authority states that it is safe to re-enter.

Evacuation Routes

1. Learn at least two escape routes, and emergency exits from your area.
2. Never use an elevator as part of your escape route.
3. Learn to activate a fire alarm.
4. Learn to recognize alarm sounds.

CHAPTER 6 – ELECTRICAL SAFETY

A. PURPOSE:

The purpose of the EVL ENG Department's Electrical Safety Program is to establish work policies, practices, and procedures to train employees in basic electrical hazard recognition and safety work practices. This program applies to qualified and non-qualified employees who are exposed to electricity as part of their job.

B. GENERAL RULES:

1. Work Practices

- All electrical equipment will have the manufacturer's name, trademark or other descriptive marking which identifies the organization responsible for the product. The equipment will also have its operating voltage, current, wattage or other rating clearly marked on it.

- Trained employees will use lockout/tagout procedures on all electrical equipment while completing maintenance work. Lockout/tagout procedures are found in section “C” of this chapter. If the equipment cannot be deenergized because it would introduce an additional or increased hazard, or it is infeasible due to the design or its operational limitations (i.e. emergency alarm systems), EVL ENG Department will hire a qualified electrical contractor to perform the work. No work will be performed on energized equipment by EVL ENG Department employees.

2. Extension Cords and Power Strips

Employees must be aware of the hazards associated with the misuse of extension cords and power strips. All power strips must be UL listed and used according to the manufacture’s guidelines.

Choosing an Appropriate Extension Cord

- A variety of extension cords available for employee use. Employees will select an extension cord that can handle the electricity requirement for any connected tools or equipment. All employees will adhere to the following guidelines when choosing an appropriate extension cord.
 - **Lights and fans (1-13 amperage rating).** Employees may use a 25-100 foot long extension cord with 16 gauge wire, or a 150 foot cord with 14 gauge wire.
 - **Small electrical hand-held tools, such as drills and sanders (14-15 amperage rating).** May use a 25-100 foot long extension cord with 14 gauge wire, or a 150 foot cord with 12-10 gauge wire.
 - **Large electrical tools such as shop vacuums, circular saws, table saw and space heaters (16-20 amperage rating).** May use a 25-100 foot long extension cord with 12-10 gauge wire. Do not use an extension cord longer than 100 feet with large electrical tools.

* All extension cords used for construction or outdoor maintenance work will be equipped with, or connected to, a ground fault circuit interrupter (GFCI).

If an employee is unsure which size of extension cord he/she should use, contact a supervisor or the Program Administrator.

Safe Work Practices for Extension Cords and Power Strips

The following safe work practices will be followed at all times by all employees when using an extension cord or power strip.

- No employee will plug in or unplug a power strip or extension cord with wet hands.
- Power strips will only be used in office settings.
- Grounding prongs will never be removed from the end of any extension cord or power strip. No strip or cord with a missing grounding prong shall be plugged into outlets.
- All extension cords and power strips will be inspected before use. If any defects are found, the cord or strip will be removed from service.
- All power strips and extension cords will be tested using an ohm meter every 3 months.
- If and when extension cords or power strips are used, they will not be:
 - Run through holes in walls, ceilings or floors
 - Run through doorways or windows without appropriate protection

- Used in areas where vehicles, forklifts or other equipment could drive over the cord
- Fastened with staples or hung in a way that could damage the insulation
- Used for more than 30 days

If it is necessary to run an extension cord through a doorway (for example, work completed outdoors with no outlet), the cord will be protected using high contrast tape or coverings and will not be left out overnight. Employees must get approval from their supervisor before an extension cord can be used in this manner.

Repairing and Replacing Electrical Cords

If a cord is damaged, the following guidelines will be followed:

- Electrical shrink wrap will be used to repair the cord. One shrink wrap repair can be used per cord. The cord will be replaced if a second repair is needed.
- The electrical shrink wrap will cover no more than 12 inches of the cord.
- After the repair, the cord must retain its original flexibility and integrity.
- If the inner insulation is damaged, the cord must be replaced.
- Damaged cords used in wet areas shall be immediately replaced.

3. Guarding

All electrical systems must be guarded to prevent contact with live conductors. The following requirements will be adhered to at all times:

- All electrical distribution panels, breakers, disconnects, switches and junction boxes will be completely enclosed.
- Live parts to electrical equipment operating at 50 volts or more must be guarded to prevent contact and prevent damage.
- All electrical receptacles and cover plates will be kept intact and in good condition.
- All electrical panels will be easily accessible at all times and a minimum of three feet of clearance shall be maintained on all sides.

4. Tools and Ground Fault Circuit Interrupters

The following requirements shall be adhered to at all times:

- All electrical tools will be stored in a clean, dry place when not in use.
- Employees will not carry electrical tools by the cord or yank cords from the wall.
- If a tool is unintentionally deenergized due to a circuit breaker or GFCI, it must be removed from service until the cause of de-energization is discovered.
- All electrical tools will be tested using an ohm meter every 3 months.
- All tools will have grounding prongs. Any tool without a grounding prong will be removed from service.

Ground fault circuit interrupters (GFCIs) protect employees who use electrically-powered tools and equipment from electrical shocks, especially when working in wet environments. GFCIs are required for electrically-powered equipment and tools in the following conditions:

- When used at locations where employees are likely to contact water or conductive liquids, such as outdoors, bathrooms, kitchens or any other area with potential exposure to water
- When used at construction or renovation sites
- When used for portable lighting in wet or other conductive locations (such as inside boilers or tanks)

5. Working Near Power Lines

Both overhead and underground power lines present electrical hazards. The following procedures shall be adhered to when working near power lines.

- Remain at least 10 feet away from overhead power lines.
- If the voltage is greater than 50,000 volts, add 4 more inches of safe distance for each 10,000 volts beyond 50,000.
- When working around high voltage lines, ground all equipment that may become energized.
- Call Dig Safe NY 48 hours before any digging. Once underground power lines have been identified, add an additional 18 inch clearance on either side of the marking or flag. Do not dig in this clearance area. If it is required to dig within the clearance area, the EVL ENG Department will use an outside contractor to perform the work.

C. LOCKOUT / TAGOUT PROCEDURES:

Lockout/Tag-out procedures are used whenever an employee is required to remove a guard or other safety device, or is required to place any part of his or her body into an area on a piece of equipment where work is performed upon the material being processed (point of operation); or where an associated danger zone of any equipment, machinery or pressurized system exists. Lockout/Tag-out procedures must be used to isolate equipment, machines or pressurized systems from energy sources.

1. Energy Control Procedures

Preparing Equipment for Lockout/Tagout

Basic procedure to de-energize equipment

- 1) The Authorized Employee should review the machine-specific lockout/tagout procedure to identify all forms of hazardous energy.
- 2) Identify the area of work and the lockout/tagout restriction zone.
- 3) Identify the proper control point of each source of hazardous energy.
- 4) Obtain lock(s), tag(s), and locking and/or blocking devices.
- 5) Notify workers of intent to de-energize—affected employees must be notified by the Authorized Employee prior to the application of any lockout or tagout device.
- 6) Begin shutdown, de-energize and dissipate any residual energy (springs, hydraulic pressure, water pressure, steam, flywheels, gravity, etc.) by blocking, bleeding down or other appropriate means.
- 7) Apply lockout devices to each energy source. Once the lockout device has been applied, the key shall be removed and remains exclusively in the Authorized Employee's possession.
- 8) Where more than one Authorized Employee will be working on a machine or piece of equipment, each Authorized Employee must apply their own lock or tag to the energy -isolation device. The key for each lock must be in the possession of the employee who applied the lock.

- 9) Confirm the equipment has been de-energized by initiating a normal startup procedure. Ensure that no Authorized or Affected Employees are in the restricted area prior to attempting the restart of the equipment. Do not enter the machine until it is confirmed that all energy sources have been locked out. When verification is complete, return the machine to the neutral or OFF position.
- 10) Wear the appropriate PPE.
Begin work.

Restoring the equipment to normal operation when service is complete

Basic procedure to remove lockout/tagout devices and reenergize the equipment

1. Inspect the work area to ensure that all nonessential items, tools, etc., have been removed from the danger zone.
2. Check that all the guarding and safety controls have been properly replaced.
3. Notify Affected Employees and ensure that all personnel are in a safe location prior to reenergizing the equipment.
4. Remove locks, tags and blocking devices.
5. Reenergize the equipment/system according to the start-up procedures specific to each piece of equipment.
6. Confirm the system is operating properly and safely before returning control of the equipment back to any Affected Employees.
7. Remove and clean or dispose of PPE.
8. Check locks, tags and lockout devices for damage or cleaning needs. Replace as needed.

2. Non-Routine Removal of a Lockout/Tagout Device

When the Authorized Employee who applied the lock and any associated tags is not available to remove them, the devices may be removed by the Authorized Employee's Supervisor in accordance with the process described below:

1. The Authorized Employee's Supervisor(s) must verify that any Authorized Employee who applied lock(s) and associated tag(s) is not on duty and that their work is no longer in progress. All reasonable efforts will be made to contact the Authorized Employee(s) to discuss the planned removal of their lock(s) and determine if the Authorized Employee(s) have any safety concerns with removal of their lock(s).
2. An Authorized Employee/Supervisor returns the equipment to service and notifies the Affected Employees that service or maintenance is completed and the equipment is ready for use.
3. When the Authorized Employee(s) whose lock(s) were removed return to work, their Supervisor(s) will again notify them that their lock(s) and tag(s) were removed.

CHAPTER 7 – CONFINED SPACE ENTRY

A. PURPOSE:

The purpose of the Confined Space Program is to increase the safety of EVL ENG Department employees and onsite contractor(s) by establishing appropriate procedures for identifying, classifying and managing confined spaces in our operations and facilities.

The objective of this program is to protect personnel from injury upon entry into a confined space. Work will not begin in a confined space until the potential hazards have been identified, eliminated or minimized, and a proper classification of the space has been made. Employees will not enter a confined space until the requirements of this written program, have been implemented.

It is important to know the difference between a “**Permit Required Confined Space**” and a “**Non-Permit Required Confined Space**”:

Permit Required:

“A confined space that **does have**, with respect to atmospheric hazards, the ability to cause serious physical harm or death.”

Non-Permit Required:

“A confined space that **does not have**, with respect to atmospheric hazards, the ability to cause serious physical harm or death.”

All employees are required to follow the procedures outlined in this program. Any deviations from this program must be immediately brought to the attention of the Town and Village Engineer. This program will apply to all employees and onsite contractor(s) during maintenance, repair, cleaning, construction or other activities that take place in the confined space(s).

B. GENERAL RULES:

1. Responsibilities

Entry Supervisor/Leader. Entry Supervisors/Leaders are responsible for the following:

- Conducting an initial external visual inspection of the confined space entry point when possible
- Knowing the requirements of the Confined Space Program, including how to properly implement the duties of the Entrants, Attendants and Rescue Personnel
- Completing entry permits
- Determining entrance requirements
- Posting the permit in a conspicuous location near the entry point
- Determining the number of Attendants required for safe completion of the work
- Verifying that rescue services are available prior to and throughout the entry and that the means for summoning them are operable
- Verifying that all required preliminary actions have been taken prior to endorsing the permit and authorizing entry to begin
- Ensuring no additional responsibilities are given to the Attendant other than observing the Entrant(s) and their duties
- Ensuring that acceptable conditions are maintained for the duration of the entry

- Communicating the status and requirements of the entry to other Entry Supervisors/Leaders whenever the Entry Supervisor/Leader role is changed
- Terminating entry, assuring removal of personnel and equipment and revoking or canceling the permit when required

Entry Team - Attendant. Attendants are responsible for the following:

- Being stationed outside the point of entry/exit of the confined space to observe the permit-required confined space
- Remaining at the entry point and maintaining two-way communication with the Entrant(s) during entry until relieved by another Attendant, or until the entry is completed or terminated by the Entry Supervisor or Leader
- Providing standby assistance to Entrants entering the confined space
- Directing Entrants to exit the confined space when any irregularities are observed
- Initiating evacuation and emergency procedures
- Monitoring for any conditions or changes that could adversely affect the entry
- Preventing unauthorized entry

Entry Team - Entrant. Entrants are responsible for the following:

- Reading and obeying entry permit requirements
- Maintaining two-way communication with the Attendant
- Recognizing potential hazards that may be encountered during the entry
- Understanding the proper use and limitations of equipment for controlling these hazards
- Inspecting for hazards not identified by atmospheric monitoring during entry activities
- Responding to emergencies, including implementing methods for self-rescue or evacuation
- Recognizing symptoms and warning signs of exposure to potential hazards or prohibited conditions
- Notifying the Attendant of any symptoms of exposure, emergency or unacceptable condition in the confined space
- Exiting the confined space immediately if symptoms, warning signs or unacceptable conditions occur or if directed by the Attendant or Entry Supervisor/Leader
- Inspecting for hazards during entry activities

2. Hazard Controls

When personnel will be required to enter confined spaces, the EVL ENG Department will utilize hierarchy of hazard control techniques to first eliminate and then, if they cannot be eliminated, reduce hazards of confined spaces. The following order of precedence will be followed when eliminating or reducing confined space hazards:

- **Engineering Controls:** These are controls that eliminate or reduce the hazard through implementation of approved engineering practices.

- **Administrative Controls:** These are controls which eliminate or reduce the hazard through changes in work practices including, but not limited to, rotating workers, reducing the amount of worker exposure and housekeeping.
- **Personal Protective Equipment (PPE):** If the hazard cannot be eliminated or reduced to a safe level through engineering and/or administrative controls, PPE will be used. The Program Administrator will determine the appropriate PPE needed by all personnel entering the confined space, including rescue teams.

3. Permit-Required Confined Spaces

Entry Permits

A permit-required confined space entry permit process will be used to guide Entry Supervisors, Attendants and Entrants through a systematic evaluation of the permit-required confined space to be entered, and to establish appropriate entry conditions. Before each entry into a permit-required confined space, an entry permit will be completed by the Town and Village Engineer. The Entry Supervisor will then communicate the contents of the permit to all employees involved in the operation and post the permit conspicuously near the work location. A standard entry permit, located in **Appendix A**, will be used for all entries.

Permit Scope and Duration. A permit is only valid for one shift. For a permit to be renewed, the following conditions must be met before each reentry into the confined space:

- Atmospheric testing will be conducted and the results will be within acceptable limits. If atmospheric test results are not within acceptable limits, effective mitigation precautions to protect Entrants against the atmospheric hazards will be addressed on the permit, be operational and will mitigate the hazard to a level safe for entrance.
- The Program Administrator will verify that all mitigation precautions and other measures called for on the permit are still in effect and providing protection for the Entrants.
- Only operations or work *originally* approved on the *original* permit will be conducted in the confined space.

A new permit will be issued, or the original permit will be reissued if possible, whenever changing work conditions or work activities introduce new hazards into the confined space.

The Program Administrator will retain each canceled entry permit for at least two years to facilitate the review of the Confined Space Entry Program. Any problems encountered during an entry operation will be noted on the respective permit(s) so that appropriate revisions to the Program can be made.

The confined space entry permit will be completed in its entirety before any entry. Entry will be allowed only when all requirements of the permit are met and the permit has been reviewed and signed by the Entry Supervisor. The following conditions must be met prior to a standard entry:

- Affected personnel will be proficient in the duties that will be performed within the confined space.

- The internal atmosphere within the confined space will be tested by the Program Administrator with a calibrated, direct-reading instrument.
- Personnel will be provided with necessary PPE as determined by the Entry Supervisor.
- Atmospheric monitoring will take place during the entry. If a hazardous atmosphere is detected during entry:
 - Personnel within the confined space will be evacuated by the Attendant(s) or Entry Supervisor until the space can be evaluated by the Program Administrator to determine how the hazardous atmosphere developed.
 - Controls will be put in place to protect employees before reentry.
- Confined space hazards will be isolated from the space. Isolation is the protection against the release of active or stored energy and/or material into the space. Isolation will be achieved by the appropriate means as determined by the Program Administrator. Options will include:
 - Blanking or blinding
 - Misaligning or removing sections of lines, pipes or ducts
 - A double block and bleed system
 - Lockout or tagout of all sources of energy
 - Blocking or disconnecting all mechanical linkages

If isolation of the space is infeasible pre-entry, testing will be performed to the extent feasible before entry is authorized. If entry is authorized, entry conditions will be continuously monitored in the areas where authorized Entrants are working.

Opening a Confined Space

Any conditions making it unsafe to remove an entrance cover will be eliminated before the cover is removed. When entrance covers are removed, the opening will be promptly guarded by a railing, temporary cover or other temporary barrier that will prevent anyone from falling through or entering the opening. This barrier or cover will also protect each employee working in the space from foreign objects entering the space. If the opening is in an area with street or pedestrian traffic, barriers capable of diverting or deflecting such traffic will be erected.

The EVL ENG Department will implement necessary measures to prevent unauthorized entry into open confined spaces and will immediately take the following actions when unauthorized persons approach or enter a permit-required space while entry is underway:

1. Warn the unauthorized persons that they must stay away from the permit space
2. Advise the unauthorized persons that they must exit immediately if they have entered the permit space
3. Inform the authorized Entrant(s) and the Entry Supervisor(s) if unauthorized persons have entered the permit space

Atmospheric Testing. Before entry into a permit-required confined space, the Program Administrator will conduct testing for hazardous atmospheres. Atmospheric test data is required and will be done initially, with all existing ventilation systems shut down. Atmospheric testing is required for two distinct purposes:

1. Evaluation of the hazards of the space

2. Verification that acceptable conditions exist for entry into that space

The internal atmosphere will be tested with a calibrated, direct-reading instrument for oxygen, flammable gases and vapors, and potential toxic air contaminants—in that order. The monitor will be verified by a “bump” test prior to use. If a person must go into the space to obtain the needed data, then standard confined space entry procedures will be followed.

Acceptable Limits

The atmosphere of a confined space will be considered to be within acceptable limits when the following conditions are met and maintained:

- Oxygen: 19.5 percent to 23.5 percent
- Flammability: below 10 percent of the Lower Flammable Limit (LFL) for gases, vapors, mists or combustible dusts
- Toxicity: below the permissible exposure limit (PEL)/threshold limit value (TLV) or time-weighted average (TWA) of a substance

Forced Air Ventilation. When conditions accommodate continuous forced air ventilation as a remedy for atmospheric conditions, the following precautions will be followed:

- Employees will not enter the space until the forced air ventilation has eliminated any hazardous atmosphere
- Forced air ventilation will be directed so as to ventilate the immediate areas where an employee is or will be present within the space
- Continuous ventilation will be maintained until all employees have left the space
- Air supply or forced air ventilation will originate from a clean source

4. **Emergency Response, Evacuation, and Rescue**

All individuals entering a permit-required confined space will wear a full-body harness, and the harness will be attached at all times to an appropriate extraction tool allowing the individuals to be retrieved from the confined space at any time without requiring other individuals to enter the confined space. No individual will enter a confined space where an extraction/retrieval protocol has not been established, or when the extraction equipment is not available and used.

If it is determined that extraction/retrieval systems will increase the overall risk of entry or the equipment would not contribute to the rescue of the Entrant, EVL ENG Department employees will not enter the confined space. Full-body harnesses will have a retrieval line attached at the center of the back near shoulder level or above the head. If harnesses are not feasible or would create a greater hazard, EVL ENG Department employees will not enter the confined space. The retrieval line will be firmly fastened outside the space so that rescue can begin as soon as personnel are aware that retrieval is necessary. A mechanical device will be available to retrieve personnel from vertical confined spaces more than five feet deep.

CHAPTER 8 – RESPIRATORY PROTECTION

A. PURPOSE:

The purpose of the EVL ENG Department Respiratory Protection Program is to make sure that all employees, when exposed to respiratory hazards, are properly and adequately protected when using a respirator. The EVL ENG Department is committed to the safety of our employees by preventing atmospheric hazards through the use of engineering controls. In the event engineering controls are not feasible, or during the implementation of such controls, respiratory protection will be required.

All employees are required to follow the procedures outlined in this program. Any deviations from this program must be immediately brought to the attention of the Program Administrator.

B. GENERAL RULES:

1. Hazard Assessment

The workplace will be evaluated and each operation, process, or work area where airborne contaminants may be present in routine and non-routine operations or during an emergency will be identified and documented. Hazard Assessments are performed at least every five years or whenever new or potential hazards are introduced into the workplace from changes in operations, processes, materials or personnel. The hazard assessments include, but are not limited to, the following items:

- Identification and development of a list of hazardous substances used in the workplace, organized by department or work process.
- Review of work processes to determine where employees are potentially exposed to these respiratory hazards. The review will be conducted by surveying the workplace, reviewing process records and/or talking with employees and supervisors.
- Conducting exposure monitoring, when exposure cannot be determined by other means, to quantify employee exposures.
- If worker exposures have not been, or cannot be evaluated, they will be considered immediately dangerous to life and health and appropriate protections will be implemented.

2. Respirator Selection

The Program Administrator will determine which individuals require respiratory protection and which respirator(s) will be used. Respirators will be selected based on the hazards to which workers are exposed and in accordance with regulations, standards, and best practices.

- Respirators selected will meet the following standards and guidelines:
- Assigned Protection Factors (APFs) and calculated Maximum Use Concentrations (MUCs).
- Certified by the National Institute for Occupational Safety and Health (NIOSH) and used in accordance with the terms of that certification.
- Filters, cartridges, and canisters labeled with the appropriate NIOSH certification label. *The label must not be removed or defaced while the respirator is in use.*

Atmospheres immediately dangerous to life and health (IDLH)

For areas or environments deemed to have IDLH atmospheres, a full facepiece pressure demand supplied air respirator (SAR) with auxiliary self-contained breathing apparatus (SCBA) unit or a full facepiece pressure demand

SCBA with a minimum service life of 30 minutes is provided. Respirators used for escape only are NIOSH-certified for the atmosphere in which they will be used. Note: All oxygen deficient atmospheres (those with less than 19.5% oxygen) are considered IDLH.

Non-IDLH Atmospheres

For areas or environments that do not have IDLH atmospheres, respirators are selected that are appropriate for the chemical nature and/or physical form of the air contaminant present. Air-purifying respirators used for protection against gases and vapors are equipped with cartridges having end-of-service-life indicators (ESLIs) or are subject to a change-out schedule based on the atmospheric contaminant. For protection against particulates, air-purifying respirators are equipped with NIOSH-certified HEPA filters.

3. Cleaning, Maintenance, and Storage

Cleaning

Respirators are to be regularly cleaned and disinfected at the designated respirator cleaning station. Respirators issued for the exclusive use of an employee are to be cleaned as often as necessary. Respirators used in fit testing and training are cleaned and disinfected after each use. Atmosphere-supplying and emergency use respirators are to be cleaned and disinfected after each use.

The following procedures are to be used when cleaning and disinfecting respirators:

- Disassemble respirator, removing any filters, canisters or cartridges.
- Wash the facepiece and associated parts with warm water and the detergent supplied at the cleaning station. Do not use organic solvents.
- Rinse completely in clean warm water.
- Wipe the respirator with disinfectant wipes or solution to kill germs.
- Air dry in a clean area.
- Reassemble the respirator and replace any defective parts.
- Test the respirator to ensure that all components work properly.
- Place in a clean, dry plastic bag or other airtight container.

The Program Administrator will ensure an adequate supply of appropriate cleaning and disinfection materials are at the cleaning station. If supplies are low, employees should contact their supervisor, who will inform the Program Administrator.

Maintenance

Respirators are to be properly maintained at all times to ensure that they function properly and adequately protect the employee. Maintenance involves a thorough visual inspection for cleanliness and defects before each use and during cleaning. Worn or deteriorated parts will be replaced prior to use. No components will be replaced or repairs made beyond those recommended by the manufacturer.

The following items should be checked when inspecting respirators:

- Respirator function

- Tightness of connections
- Elastomeric parts: pliability and signs of deterioration
- Facepiece: cracks, tears or holes
- Facemask distortion
- Cracked or loose lenses/faceshield
- Valves: Residue or dirt
- Cracks or tears in valve material
- Headstraps: breaks or tears broken buckles
- Filters/Cartridges: approval designation intact, gaskets cracks or dents in housing

Air Supply Systems:

- Breathing air quality/grade and condition of supply hoses
- Proper hose connections
- Regulators and valves: settings correct and functioning properly

Respirators that are defective or have defective parts must be taken out of service immediately. If, during an inspection, an employee discovers a defect in a respirator, he/she is to bring the defect to the attention of his or her supervisor. **NO EMPLOYEE SHALL WEAR A DEFECTIVE RESPIRATOR.** Supervisors will give all defective respirators to the Program Administrator. The Program Administrator will decide whether to:

- Temporarily take the respirator out of service until it can be repaired
- Perform a simple fix
- Dispose of the respirator due to an irreparable problem or defect

When a respirator is taken out of service, the respirator will be tagged out of service, and the employee will be given a replacement of the same make, model and size. If the employee is not given a replacement of the same make, model and size, then the employee must be fit tested.

Storage

Respirators must be stored in a clean, dry area in accordance with the manufacturer’s recommendations and/or in such a fashion as to protect it from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture and deformation of the facepiece or exhalation valve.

CHAPTER 9 – FALL PROTECTION

A. PURPOSE:

The EVL ENG Department is committed to providing a safe and healthy work environment and to protecting employees by reducing the risk of injury or fatality when working at heights six feet or more above ground level. The EVL ENG Department believes that falls can be prevented by proper planning, providing the right fall protection equipment and training all workers to use the equipment safely.

This Elevated Fall Prevention Program applies to employees and contractors. All employees are required to follow the minimum procedures outlined in this program. Any deviations from this program must be immediately brought to the attention of the Town and Village Engineer.

B. GENERAL RULES:

All employees will be protected from falling when working on a surface that has an unprotected side, edge, etc. <6> feet or more above an adjacent lower level; when working from aerial lifts or other elevated work platforms; and when working above dangerous equipment.

Fall hazards will be evaluated by the Division Supervisors to determine the best method to protect the employee. When selecting what type of fall protection to use, the Program Administrator will consider the hierarchy of hazard control, which organizes risk control techniques from most- to least-effective (examples are show below in order of decreasing effectiveness and preference).

1. Elimination of the fall hazard by bringing the work down to safe ground level.
2. Passive fall protection systems, such as guard rails, that do not require active participation by the worker
3. Fall restraint that prevents a person from reaching a fall hazard
4. Fall arrest that utilizes equipment to stop a fall after it occurs
5. Administrative controls such as work practices or procedures to signal or warn a worker to avoid approaching a potential fall hazard

1. Fall Hazards

Leading Edges - Each worker working on or near a leading edge <6> feet or more above a lower level will be protected by guardrail systems, safety net systems or personal fall arrest systems.

Low-Slope Roofs - Workers on a low-slope (less than or equal to 4/12 pitch) roof that has one or more unprotected side or edge shall be protected from falling by one of the following:

- Guardrail system
- Safety net system
- Personal fall arrest system
- A combination of conventional fall protection system and warning line system
- A warning line system and a safety monitoring system (Note: *When engaged in roofing work on low-slope roofs 50 feet or less in width, the use of a safety monitoring system without a warning line system is permitted*)

Steep Roofs - Workers on a steep roof (greater than 4/12 pitch) that has one or more unprotected side or edge shall be protected from fall by one of the following:

- Guardrail systems with toeboards
- Safety net systems
- Personal fall arrest systems

Wall Openings - All wall openings 4 feet or more above an adjacent surface will be guarded. A rail, picket fence, half door or equivalent barrier will be placed across the wall opening. If the wall opening extends to the floor, a toe board at least four inches high shall be installed to prevent materials accidental falling from the edge.

All workers working on, at, above or near wall openings (including those with chutes attached), where the bottom edge of the wall opening is less than 39 inches above the walking /working surface, must be protected by a guardrail system, safety net system or personal fall arrest system.

Floor Openings - All floor holes two inches in diameter or more will be guarded by one of the following:

- A standard railing with toeboard on all exposed sides
- A covering of sufficient strength and construction to handle the heaviest load that could be placed on it
(*Note: While the cover is not in place, the floor hole must be constantly attended by someone or protected by a standard railing*)

Excavations - Excavations 6 feet or more deep shall be protected by a guardrail system, fence or barricade when the excavation cannot be readily seen because of plant growth or other visual barrier. Workers at the edge of a well, pit, shaft or similar excavation 6 feet or more deep will be protected from falling by a guardrail system, fence, barricade or cover.

Dangerous Equipment or Materials - When working at any height above dangerous equipment or materials, each worker will be protected from falling into or onto the dangerous equipment or materials by a guardrail system, equipment guards, safety net system or personal fall arrest system.

Loading docks - Loading docks will be protected by a guardrail system. The guardrail will have removable sections to provide access for loading vehicles but rails must remain in place when loading is not in progress.

Skylights - Skylights are considered an opening when present on a roof. A standard guardrail or skylight screens capable of supporting at least 200 pounds must be provided around the opening. Skylights constructed at least 42 inches above the roof deck with sides capable of supporting 200 pounds do not require additional protection.

Aerial Lifts and Self-Powered Work Platforms - Body harnesses must be worn with a lanyard, not to exceed 3 feet in length, or a self-retracting lifeline when working from all elevated mobile work platforms. The point of attachment must be the anchor point installed and designated by the equipment manufacturer. Personnel will not attach lanyards to adjacent poles, structures or equipment while they are working from the aerial lift. Personnel will not move an aerial lift while the boom is in an elevated working position and the operator is inside the lift platform. Scissor lifts and telescoping lifts that can only move vertically do not require the use of a harness and lanyard as long as the work platform is protected by a proper guardrail system.

2. Fall Protection Systems

Guardrail Systems

After eliminating the elevated work, guardrails are the preferred method for the protection of fall hazards. Typical locations that require guardrails include floor openings, wall openings, open-sided floors, platforms and runways.

All guardrail systems will meet the following criteria:

- Toprail is 42 inches, +/- 3 inches above the walking/working level.
- Midrail is located midway between the top rail and the walking/working level.
- Toprails and midrails will be constructed of materials at least one-quarter inch in thickness or diameter. If wire rope is used for toprails, it must be flagged with a high-visibility material at least every 6 feet and can have no more than 3" of deflection.
- The toprail must be capable of withstanding a force of 200 pounds when applied in any downward or outward direction.
- The midrail must withstand a force of 150 pounds applied in any downward or outward direction.
- Toeboards are required for all guardrails on elevated walking or working platforms where employees working below are exposed to falling objects.
- Toeboards must be 4 inches in height and must be securely fastened.
- The system will be smooth to prevent punctures, lacerations or snagging of clothing.
- The ends of the top rail should not overhang the terminal posts, except when such overhang does not present a projection hazard.
- When a hoisting area is needed, a chain, gate or removable guardrail section must be placed across the access opening when hoisting operations are not taking place.

Safety Nets

When safety nets are the appropriate option for fall protection, they will be installed as close as practicable under the walking/working surface on which employees are working, but in no case more than 30 feet below such level. Safety nets must meet the following criteria:

- Pass a 400-pound drop test or certified by employer or competent person before being used as a fall protection system, whenever relocated, after major repairs or at 6-month intervals if left in place
- Extend sufficiently from outer edge of the walking/working surface to catch a falling employee
- Have a maximum mesh size not exceed 6 inches by 6 inches
- Be inspected at least weekly for wear, deterioration and damage
- All objects must be removed from net by the end of the shift
- Have a 5000 pounds minimum breaking strength of border rope
- Have an unobstructed fall area

Personal Fall Arrest Systems

If a fall occurs, the employee must not be able to freefall more than 6 feet, nor contact a lower level. To ensure this, the Program Administrator will add the height of the worker, the lanyard length and an elongation length of 5.5 feet to determine the anchorage point. All personal fall arrest system components that are subjected to an impact load must be removed from service immediately. Personal fall arrest systems will be inspected prior to each use, and damaged or deteriorated components removed from service and destroyed.

There are three main components to a personal fall arrest system:

- Anchorage point
- Body harness
- Connecting devices

All personal fall arrest system components must meet the requirements of the ANSI Z359 Standards.

3. Ladders

All ladders will meet the following requirements:

- Rated greater than the weight of the worker and any tools or equipment carried by the worker
- Appropriate ladder style for the job (i.e. step ladders will not be used in a folded position, step ladders will be tall enough to perform work without standing on the top step, extension ladders will extend a minimum of three feet above the discharge point, etc.)
- Inspected prior to each use
- Metal ladders will not be used near electrical lines or sources
- All safety feet must be in place, secure and in sound condition

Ladders must be set up on a surface that is firm, flat and is not slippery. The top of extension ladders must be against a solid, fixed surface and extend at least three feet above the landing surface. Extension ladders will be set up using the 4-to-1 principal (base of the ladder placed at a distance from the wall that is equal to one fourth of the height that the ladder is extended). When employees are on extension ladders at heights of 20 feet or higher, either a second person must steady the ladder base or the top of the ladder must be effectively tied off to a sound anchor point.

CHAPTER 10 – EXCAVATION SAFETY

A. PURPOSE:

The purpose of the Excavation and Trenching Safety Program is to put in place work practices and procedures that will protect employees from hazards that may be found in or around excavations or trenches. It is the responsibility of each supervisor to implement and maintain the procedures and steps set forth in this program. Each employee involved with excavation and trenching work is responsible to comply with all applicable safety procedures and requirements of this program.

B. GENERAL RULES:

1. Access and Means of Egress

Stairs, ladders or ramps shall be provided where employees are required to enter trench excavations over 4 feet deep. The maximum distance of lateral travel (e.g., along the length of the trench) required to reach the means of egress shall not exceed 25 feet.

Structural ramps

- Structural ramps used solely by employees as a means of access and egress shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a person qualified in structural design and shall be constructed in accordance with the design.
- Ramps and runways constructed of two or more structural members shall have the structural members connected together to prevent movement or displacement.
- Structural members used for ramps and runways shall be of uniform thickness.
- Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a manner to prevent tripping.
- Structural ramps used in place of steps shall be provided with cleats or other surface treatments on the top surface to prevent slipping.

Ladders

- When portable ladders are used, the ladder side rails shall extend a minimum of 3 feet above the upper surface of the excavation.
- Ladders shall have nonconductive side rails if work will be performed near exposed energized equipment or systems.
- Two or more ladders, or a double-cleated ladder, will be provided where 25 or more employees will be conducting work in an excavation where ladders serve as the primary means of egress, or where ladders serve two-way traffic.
- Ladders will be inspected prior to use for signs of damage or defects. Damaged ladders will be removed from service and marked with “Do Not Use” until repaired.
- Ladders shall be used only on stable and level surfaces unless secured. Ladders placed in any location where they can be displaced by workplace activities or traffic shall be secured, or barricades shall be used to keep these activities away from the ladder.
- Non-self-supporting ladders shall be positioned so that the foot of the ladder is one-quarter of the working length away from the support.
- Employees shall not be allowed to carry any object or load while on the ladder that could cause them to lose their balance and fall.

2. Hazardous Atmospheres

The competent person will test the atmosphere in excavations over 4 feet deep if a hazardous atmosphere exists or could reasonably be expected to exist. A hazardous atmosphere could be expected, for example, in excavations in landfill areas, in excavations in areas where hazardous substances are stored nearby, or in excavations near or containing gas pipelines.

- Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or forced ventilation of the workspace.
- Forced ventilation or other effective means shall be used to prevent employee exposure to an atmosphere containing a flammable gas in excess of 10 percent of the lower flammability limit of the gas.
- When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, the supervisor will perform continuous air monitoring. The device used for atmospheric monitoring shall be equipped with an audible and visual alarm.
- Atmospheric testing will be performed using a properly calibrated direct reading gas monitor. Direct reading gas detector tubes or other acceptable means may also be used to test potentially toxic atmospheres.
- Each atmospheric testing instrument shall be calibrated on a schedule and in the manner recommended by the manufacturer.

Each atmospheric testing instrument will be field checked immediately prior to use to ensure that it is operating properly.

3. Protection from Hazards associated with Water Accumulation

- Employees shall not work in excavations that contain or are accumulating water unless precautions have been taken to protect employees against the hazards posed by water accumulation. The precautions taken could include, for example, special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of safety harnesses and lifelines.
- If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operation shall be monitored by a person trained in the use of the equipment.
- If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, or dikes, suitable means shall be used to prevent surface water from entering the excavation. Precautions shall also be taken to provide adequate drainage of the area adjacent to the excavation.
- The supervisor shall inform workers of the precautions or procedures that are to be followed if water accumulates or is accumulating in an excavation.

4. Stability of Adjacent Structures

- The division supervisor will determine if the excavation work could affect the stability of adjoining buildings, walls, sidewalks or other structures.
- Support systems (such as shoring, bracing, or underpinning) shall be used to assure the stability of structures and the protection of employees where excavation operations could affect the stability of adjoining buildings, walls, or other structures.
- Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted except when:
 - A support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure; or
 - The excavation is in stable rock; or
 - A registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity; or
 - A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.

5. Requirements for Protective Systems

Soil Classification

Every soil and rock deposit needs to be classified by a competent person as stable rock, type A, type B, or type C before excavation can begin. In a layered system, the system is classified according to its weakest layer. Any time the properties, factors, or conditions affecting the soil type change in any way, the area needs to be reevaluated and reclassified to reflect the changed circumstances.

- Stable rock is natural solid mineral matter.
- Type A soil is cohesive soil with an unconfined, compressive strength of 1.5 tons per square foot or greater. Examples of Type A soils are: clay, silty clay, sandy clay, clay loam, caliche, hardpan and, in some cases, silty loam and sandy clay loam. No soil is Type A if:
 - The soil is fissured.
 - The soil is subject to vibration from heavy traffic, pile driving, or similar effects.
 - The soil has been previously disturbed.
 - The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical or greater.
 - The material is subject to other factors that would require it to be classified as a less stable material.
- Type B soil is:

- Cohesive soil with an unconfined compressive strength greater than 0.5 tons per square foot, but
 - less than 1.5 tons per square foot.
 - Granular cohesionless soil including: angular gravel, silt, silt loam, sandy loam and, in some cases,
 - silty clay loam and sandy clay loam.
 - Previously disturbed soil except that which would otherwise be classed as Type C soil.
 - Soil that meets the unconfined compressible strength or cementation requirements for Type A, but
 - is fissured or subject to vibration.
 - Dry rock that is not stable.
 - Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical, but only if the material would otherwise be classified as Type B.
- Type C soil is:
 - Cohesive soil with an unconfined compressive strength of 0.5 tons per square foot or less.
 - Granular soil including gravel sand and loamy sand.
 - Submerged soil or soil from which water is freely seeping.
 - Submerged rock that is not stable.
 - Material in a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical or steeper.

Testing of Soil

Classification tests of soil shall be performed by a competent person using at least one visual test and one manual test.

- Visual tests provide qualitative information on the excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil taken as samples from the excavated material. To perform a visual test:
 - Observe samples of soil and estimate the range of particle sizes and their relative amounts. Soil that is primarily composed of fine-grained material is cohesive material.
 - Soil composed primarily of coarse-grained sand or gravel is granular material.
 - Observe soil as it is excavated. Soil that remains in clumps is cohesive and soil that breaks up easily is granular.
 - Observe the side of the opened excavation and the adjacent surface. Crack-like openings, tension cracks, and chunks of soil that spall off a vertical side could indicate fissured material. Small spalls are evidence of moving ground and are potentially hazardous.
 - Observe the surrounding area and the excavation area itself for existing utility and other underground structures, and to identify previously disturbed soil.
 - Observe the sides of the excavation for layered systems.
 - Observe the excavation area for evidence of surface water, water seeping from the sides of the excavation, or the level of the water table.

- Observe the excavation area for sources of vibration that may affect the stability of the excavation face.
- Manual tests provide quantitative as well as qualitative properties of soil. They provide more information in order to classify the soil properly. Some examples of manual tests include:
 - Plasticity
 - Dry strength
 - Thumb penetration
 - Other strength tests: pocket penetrometer, hand-operated shearvane
 - Drying test

6. Protective Support Systems

The excavation competent person shall determine the type of protection required from 29 CFR 1926.650 to 29 CFR 1926.652 subpart P

- Appendix A (Soil Classification) summarized on pages 5,6 & 7
- Appendix C (Timber Shoring for Trenches)
- Appendix D (Aluminum Hydraulic Shoring for Trenches)
- Appendix E (Alternatives to Timber Shoring)
- Appendix F (Selection of Protective Systems)
- The Trench Protective system for trenches 20 or more feet in depth must be designed and approved by a Registered Professional Engineer.

Sloping and Benching Systems

- A sloping system means a method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins.
- The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads. Use charts and tables to determine the angle of incline.
- The maximum allowable slope means the steepest incline of an excavation face that is acceptable for the most favorable site conditions as protection against cave-ins, and is expressed as the ratio of horizontal distance to vertical rise (H:V). This varies according to the soil type which can be classified by a competent person.
- The actual slope shall never be steeper than the maximum allowable slope. When there are signs of distress, the slope shall be cut back to an actual slope which is at least ½ horizontal to one vertical (1/2H:1V) less steep than the maximum allowable slope.
- A benching system means a method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near vertical surfaces between levels.
- The length of the vertical sides of a benching system and the maximum allowable slope required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads. Use charts and tables to determine the length of the sides and the maximum allowable slope.
- It is always better to over-compensate and make the angle flatter.

Shielding Systems

- A shield system means a pre-constructed structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields used in trenches are usually referred to as trench boxes or trench shields.
- Shields can be permanent structures or can be designed to be portable and moved along as work progresses.
- Shielding must extend above the ground level or the trench walls above the top of the box must be sloped.

Shoring Systems

- A shoring system means a structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.
- Shoring systems shall be installed from the top down and removed from the bottom up. Unless they are installed and removed from outside the trench.

CHAPTER 11 – ASBESTOS PROTECTION

A. PURPOSE:

The purpose of this program is to establish guidelines and procedures in the operations and maintenance of asbestos containing materials to protect all employees, contractors, visitors and vendors from potential health hazards of asbestos related diseases. The Program applies to routine work during which an employee might encounter asbestos as well as work undertaken to repair or remove asbestos-containing material.

B. GENERAL RULES:

- It is the policy of the Ellicottville Engineering Department that only qualified employees shall be involved in any asbestos repairs, maintenance or removal. All unqualified employees shall be protected from exposure to asbestos fibers by isolating and controlling access to all affected areas during asbestos work. All tasks involving the disturbance of asbestos containing material will be conducted only after appropriate work controls have been identified and implemented. A qualified supervisor shall be available at asbestos controlled work sites during all activities. Proper personal protective equipment, vacuums and hepa filters shall be used and properly maintained. If outside contractors are used, the company shall ensure all contractor employees have been properly trained and have been issued proper equipment and protective gear.
- When in doubt, treat all material as containing asbestos and comply with all applicable rules and regulations and protective measures.
- All Asbestos Containing Material (ACM) will be handled by certified and licensed asbestos abatement personnel. The friability of the ACM will dictate the type of removal/maintenance required.

- Employees who are uncertified and unlicensed will not handle any ACM >1%. This will include encapsulation projects, renovation/removal and/or demolition of any type of structure. This will prevent the potential for accidental exposure from the mishandling of any ACM.
- When an uncertified, unlicensed employee questions whether they may be handling suspect ACM, the employee will immediately contact their supervisor. The employee shall not resume working at the site until the area has been checked to verify the material is not ACM.
- Uncertified, unlicensed employees will not cross over a barrier/containment area where asbestos projects are in progress.
- Any employee who discovers ACM or suspect ACM in damaged or poor condition should report it to their supervisor so the identified material is repaired.

1. Definitions

Asbestos

Asbestos is a generic term describing a family of naturally occurring fibrous silicate minerals. As a group, the minerals are noncombustible, do not conduct heat or electricity, and are resistant to many chemicals. Although there are several other varieties that have been used commercially, the most common asbestos mineral types likely to be encountered in are chrysotile (white asbestos), amosite (brown asbestos), and crocidolite (blue asbestos).

Friable Asbestos

Friable asbestos material means finely divided asbestos or asbestos-containing material or any asbestos-containing material that can be crumbled, pulverized or powdered by hand pressure. Individual fibers in friable asbestos-containing material can potentially become airborne and can then present a health hazard. Three types of friable material commonly used in buildings are: sprayed fibrous fireproofing; decorative or acoustic texture coatings; thermal insulation.

Non-Friable Asbestos

Non-friable asbestos includes a range of products in which asbestos fiber is effectively bound in a solid matrix from which asbestos fiber cannot normally escape. Non-friable asbestos includes a variety of products including asbestos cement tiles and boards, and asbestos reinforced vinyl floor tiles. Cutting, braking, sanding, drilling of similar activities can release asbestos fiber from even non-friable asbestos materials.

2. Asbestos Work Categories

Category 1

Category 1 work includes the installation or removal of non-friable asbestos in which the asbestos fiber is locked in a binder such as cement, vinyl or asphalt which holds the material together.

Category 2

Category 2 work involves work with friable asbestos that is of short duration in situations which create low levels of airborne asbestos. Example of category 2 work includes enclosure of friable asbestos, application of tape or sealant to asbestos containing pipe insulation and minor removal of friable asbestos and minor installation, maintenance or repair work above false ceilings where sprayed asbestos fireproofing is present on beams.

Category 3

Category 3 work involves possible exposure to friable asbestos over long periods of time or work that generates high levels of asbestos. Included in category 3 work are removal projects where relatively large amounts of asbestos are removed from a building including removal of friable asbestos from structural material, cleaning or removal of heating or air handling equipment that has been insulated with asbestos. Also included in category 3 work are cutting or grinding of asbestos containing materials using power tools.

3. Hazards

It is the policy of the EVL ENG Department that only qualified employees shall be involved in any asbestos repairs, maintenance or removal. All unqualified employees shall be protected from exposure to asbestos fibers by isolating and controlling access to all affected areas during asbestos work. All tasks involving the disturbance of asbestos containing material will be conducted only after appropriate work controls have been identified and implemented. A qualified supervisor shall be available at asbestos controlled work sites during all activities. Proper personal protective equipment, vacuums and hepa filters shall be used and properly maintained. If outside contractors are used, the company shall ensure all contractor employees have been properly trained and have been issued proper equipment and protective gear.

4. Hazard Controls

Engineering Controls

Engineering controls include the use of enclosures such as monitoring equipment, glove bags, tenting, negative pressure work areas, HEPA filters, controlled vacuums, water misters and other equipment to ensure containment and clean-up of asbestos work areas. Engineering controls will be the first line of defense to safeguard against hazardous conditions.

Administrative Controls

Administrative controls are changes in work procedures such as written safety policies, rules, supervision, schedules, and training with the goal of reducing the duration, frequency, and severity of exposure to chemical hazards or situations. All qualified workers shall be issued proper personal protective equipment, such as respirators, disposable coveralls, gloves, etc. Written procedures and management authorizations are required for all work involving asbestos containing material.

5. Repair and Maintenance of ACM

Should an employee or a contractor encounter material which is not identified and is not listed in any asbestos inventory, and which might reasonably be expected to be asbestos, the person will stop any work which could create airborne asbestos and report the discovery to a supervisor. Where it is determined that friable asbestos-containing material is in a condition that could likely lead to inhalation exposure, the supervisor will immediately limit access to the location and initiate repairs, removal or encapsulation. Where there is reasonable doubt about the composition of a friable material, it will be treated as asbestos until testing demonstrates that asbestos is present at levels below 1%. Cleanup and repair of asbestos-containing material will only be carried out by the appropriate clean up procedure by employees or contractors who have been properly trained.

CHAPTER 12 – LEAD PROTECTION

A. PURPOSE:

The purpose of this program is to provide EVL ENG Department employees with the basic information for protecting themselves against potential overexposure to lead.

This program has been developed to ensure employees who may be exposed to lead in various forms are able to recognize the hazard and are provided with appropriate personal protection and medical monitoring. This program describes situations and activities that may expose employees to lead materials and the elements that will be used to control the exposure.

B. GENERAL RULES:

1. Definitions

Action Level

Employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30 ug/m³) calculated as an 8-hour time-weighted average (TWA).

Competent Person

One who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions, select appropriate control strategies and who has authorization to take prompt corrective measures to eliminate the hazard.

Lead

Metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.

Permissible Exposure Limit (PEL)

Established at 50 ug/m³ calculated as an 8-hour time weighted average (TWA).

2. Procedure

Exposure Limits

- Action Level

The Action Level is an employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms lead per cubic meter of air (30 ug/m³) calculated as an eight-hour time weighted average exposure (TWA). Employees who are exposed to lead at or above the action level for one or more days per year must be included in a medical monitoring program and also be included in a training program.

- Permissible Exposure Limit

The Permissible Exposure Limit (PEL) is an employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 50 micrograms lead per cubic meter of air (50 ug/m³) calculated as an eight-hour time weighted average exposure (TWA). Employees who are exposed to lead above the PEL for one or more days per year must be included in a medical monitoring program and also be included in a training program. Employees exposed over the PEL must also be provided with respiratory protection, protective clothing, and hygiene facilities.

Exposure Assessment

- The designated Competent Person will make the determination if the employee exposure to lead is above the action level of 30 ug/m³ averaged over an 8-hour day. The designated Competent Person will base this decision assuming that the employee is not wearing a respirator and will make this determination by monitoring the employee's exposure or by using objective data, which can demonstrate conclusively that no employee will be exposed to lead in excess of the action level.
- If it has been determined air monitoring must be conducted, then each employee and job title must be represented. Full shift sampling will be conducted on a day that represents each employee's regular, daily exposure to lead.

Method of Compliance

- The designated Competent Person will specify engineering and work practice controls to be implemented, including administrative controls, to reduce and maintain employee lead exposure to levels at or below the permissible exposure limit to the extent that such controls are feasible.
- Prior to any job activities where employee exposures may reach the PEL as an 8-hour TWA, the supervisor will develop and implement a written compliance program, which includes:
 - a. A description of each activity in which lead is emitted.
 - b. A description of the specific means that will be employed to achieve compliance and, where engineering controls are required engineering plans and studies used to determine methods selected for controlling exposure to lead.
 - c. A report of the technology considered in meeting the PEL.

- d. Air monitoring data, which documents the source of lead emissions.
 - e. A detailed schedule for implementation of the program, including documentation such as copies of purchase orders for equipment, construction contracts, etc.
 - f. A work practice program for protective work clothing and equipment, housekeeping, and hygiene facilities.
 - g. If applicable, an administrative control schedule.
 - h. A description of arrangements made among contractors on multi-contractor sites with respect to informing affected employees of potential exposure to lead.
- The designated Competent Person will make frequent and regular inspections of job sites, materials, and equipment to ensure the specified controls are implemented.
 - Written programs shall be revised and updated at least annually to reflect the current status of the program.

Respirators

- All employees who are exposed at or above the PEL for lead will have an assessment done to determine the need for a respirator. The respirator will meet all the requirements written in Chapter 7 of this manual.

Protective Work Clothing and Equipment

- Employees exposed to lead above the PEL as an 8-hour TWA, without regard to the use of a respirator, or if the employees are exposed to lead compounds such as lead arsenate or lead azide, which can cause skin and eye irritation will be provided with protective work clothing and equipment appropriate for the hazard. Protective work clothing will be provided in a clean and dry condition at least weekly, and daily if airborne exposures to lead are greater than 200 ug/m³. Appropriate protective work clothing and equipment can include:
 - a. Coveralls or similar full-body work clothing
 - b. Gloves
 - c. Hats
 - d. Shoes or disposable shoe covers
 - e. Face shields or vented goggles

- All protective clothing shall be removed at the end of the work shift in a specified change area.
- Contaminated protective clothing, which is to be cleaned, laundered, or disposed of, shall be placed in a closed container in the change area that prevents dispersion of lead outside the container.
- Containers of contaminated protected clothing and equipment will be labeled as follows:
 - Caution: Clothing contaminated with lead. Do not remove dust by blowing or shaking. Dispose of lead contaminated wash water in accordance with applicable local, state, or federal regulations.
- Employees are prohibited to remove lead from protective clothing or equipment by blowing, shaking, or any other means that disperses lead into the air.

Housekeeping

- All surfaces shall be maintained as free as practicable of accumulations of lead.
- Cleanup of floors and other surfaces where lead accumulates shall wherever possible, be cleaned by vacuuming or other methods that minimize the likelihood of lead becoming airborne.
- Shoveling, dry or wet sweeping, and brushing may be used only where vacuuming or other equally effective methods have been tried and found not to be effective. Where vacuuming methods are selected, the vacuums shall be equipped with HEPA filters and used and emptied in a manner, which minimizes the reentry of lead into the workplace.
- Compressed air shall not be used to remove lead from any surface unless the compressed air is used in conjunction with a ventilation system designed to capture the airborne dust created by the compressed air.

Hygiene Facilities and Practices

- Employees that are exposed to lead above the PEL, without regard to the use of respirators, shall not consume food or beverages, use tobacco products, and apply cosmetics except in approved designated areas. Employees must wash their hands and face before eating, drinking, smoking, or applying cosmetics.
- Clean change areas shall be provided with separate storage facilities for protective work clothing and equipment and for street clothes, which prevent cross-contamination.
- Employees are prohibited from leaving the workplace wearing any protective clothing or equipment that is required to be worn during the work shift.

3. Information and Training

- All employees who come in contact with lead shall be provided information and training as per this Lead Program.
- Employees who are subject to exposure to lead at or above the action level on any day or who are subject to exposure to lead compounds which may cause skin or eye irritation (e.g. lead arsenate, lead azide), shall be provided the following information:
 - Contents of the OSHA Lead Standard.
 - The specific nature of the operations, which could result in exposure to lead above the action level.
 - The purpose, proper selection, fitting, use, and limitations of respirators.
 - The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females and hazards to the fetus and additional precautions for employees who are pregnant)
 - The engineering controls and work practices associated with the employee's job assignment including training of employees to follow relevant good work practices.
 - The contents of any compliance plan in effect.
 - Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician.
 - The employee's right of access to records under OSHA 29 CFR 1910.1020.

APPENDIX A – CONFINED SPACE ENTRY PERMIT

Confined Space Permit

Confined space name: _____

Description of confined space: _____

Confined space location: _____

Date of entry: _____

Duration of permit: _____ Entry time: _____

Purpose of entry: _____

List all authorized entrants: _____

Means of identifying entrants inside the space: _____

Name of attendant(s): _____

Hazards within the space: _____

Hazard control techniques: _____

Atmospheric test results: _____

Communications procedures: _____

PPE provided: _____

Additional permits issued: _____

Rescue Service contact information: _____

Other information: _____

Acceptable Entry Conditions? **YES** **NO**

Name of entry supervisor: _____

Signed: _____

APPENDIX B – EMPLOYEE ACKNOWLEDGEMENT FORM

Date: _____

Employee Name: _____

1. I have read and understand the EVL ENG Department Safety and Health Manual, and I will abide by the above rules and regulations at all times.

Initials: _____

2. I understand that I have the right to report any potential hazards to my supervisor and “Stop Work” at any time I see an unsafe condition on the job site.

Initials: _____

3. I am committed to having a safe working environment within the EVL ENG Department, and I will always look out for my teammates within the Department with respect to their safety and my own.

Initials: _____

Signature: _____