Safety Guidelines

September 2018

Metropolitan Government of Nashville and Davidson County
Occupational Safety and Health Division, Human Resources

SAFETY MANUAL
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SAFETY POLICY STATEMENT

Safety program organization may be defined as a method employed by management to share and to assign responsibility for accident prevention and to ensure performance under that responsibility. A safety program is not something that is imposed on the organization. Safety must be built into every process and into every operation. It must be an integral part of the Metropolitan Government of Nashville and Davidson County (Metro) operations.

This manual provides general guidelines and standards to be followed by each department of Metro to implement and maintain an acceptable safety program. All Metro employees are expected to follow this safety program that satisfies these minimum standards.

The prevention of accidents and injuries is basically achieved through control of the working environment and control of people's actions. Only management can implement such control. A facility that has an effective safety program will have a working environment in which operations can be conducted economically, efficiently and safely. The Metropolitan Government of Nashville and Davidson County will not sacrifice safety for expediency.

Mayor

Director of Law

Occupational Safety Administrator

12/19/12
Date

HEALTH AND SAFETY POLICY GOALS

The Metropolitan Government of Nashville & Davidson County (Metro) is committed to the establishment and maintenance of a safe and healthy work environment and practices at each of its work locations as a measure to preclude the occurrence of harmful working conditions. The concentrated effort of management and personnel is required to assure success in this endeavor.

The Metro Occupational Safety Administrator, department Safety Coordinators and department supervisors will keep abreast of and disseminating information pertaining to current laws, regulations, and standards regarding the health and safety of Metro employees exposed to hazardous work conditions. The steps necessary to recognize, evaluate, and control those situations likely to produce exposure to hazardous work activities will be taken through the diligent review of this Safety Program at each work location. Safety training will be continually provided and will be administered and updated to assure the welfare of each affected employee. The management of each Department, the Metro Occupational Safety Administrator, and the Safety Coordinators for each department will be responsible for the response to questions and the prompt investigation of any complaints.

Metro employees are expected to accept personal responsibility for the health and safety of themselves, fellow workers, contractors, and visitors. This will be accomplished by complying with federal, state, and Metro health and safety programs, policies, and guidelines, including training programs, and abiding by established rules and procedures.

Any employee who fails to follow established health and safety programs, policies, and guidelines will be subject to disciplinary action in accordance with rules established by that Department and any Civil Service rules that may apply. Questions or violations shall be reported to supervisors and the department's Safety Coordinator for immediate follow-up.

POLICY GOALS

To reduce the risk to any employee, visitor or person residing or working near Metro work locations subjected to any unusual health or safety risk. To achieve this goal, Metro shall adhere to the following:

- Maintain ongoing programs at all levels and identify personal health and safety risks.
- Metro government shall see that all employees clearly understand all facets of the health and safety programs and policies that directly affect them and their duties.
- Make control and elimination of such risks a priority in all Metro financial and business plans and budgets. The Metro government shall provide the necessary funds to implement health and safety programs and policies.
- Control and reduce personal exposure to all known or clearly suspected occupational health and safety risks, and attempt to eliminate hazards as quickly as governmental regulations, technology and economic feasibility allow.
- Provide incentive programs to encourage employees to identify, control and eliminate occupational health and safety risks.
- Plan, design and construct all Metro work locations to provide the safest and healthiest working environment possible.
- Recognize that despite every effort Metro makes, the basic responsibility for employee health and safety rests with the individual. It is a condition of employment for all employees to conduct their work in as safe and healthy manner as possible.

ORGANIZATION AND RESPONSIBILITIES

ORGANIZATION

The Metropolitan Government of Nashville & Davidson County (Metro) Health and Safety Program is comprised of the Metro Occupational Safety Administrator, Mayor's Safety Advisory Board, Department Safety Coordinators, Department Directors, Department Supervisors, and all Metro employees.

RESPONSIBILITIES

Metro Occupational Safety Administrator

The Metro Occupational Safety Administrator is responsible for administering the City's Health and Safety Program in association with the Mayor, Department Directors, and Safety Coordinators. Responsibilities include:

- Assisting Department Safety Coordinators in all aspects of the Metro Safety Program
- Serve as a resource to department Safety Coordinators with providing health and safety training opportunities.
- Counseling and/or recommending retraining or disciplinary actions for those who violate health and safety programs or policies.
- Reviewing accident reports and discussing with the Departmental Safety Coordinators the appropriate actions to be taken.
- Visiting departments periodically to discuss health and safety concerns with personnel.
- Safety liaison with the Department of Law.
- Safety liaison with Tennessee OSHA.
- Help motivate employees to be aware of safety

Safety Coordinator

The Safety Coordinator administers the Health and Safety Program for their department and is responsible for ensuring all program elements are in place. They review job specific Health and Safety Plans with the Department Supervisor and are responsible for the management of on-site health and safety programs. The Safety Coordinator bears the responsibility for ensuring compliance with all site specific health and safety regulations.

Department Directors

The Department Director is ultimately responsible for the design, administration, and implementation of the work plans applicable to the department. The Department Director consults with the Safety Coordinator regarding all field operations for health and safety concerns, and must approve any alteration of the work plan as a result of health and safety concerns.

Department Supervisor

The Department Supervisor will:

- Ensure that there is complete safety in his or her area at all times
- Be on the alert for incidents of human error and mechanical failure
- Take the initiative to make corrections wherever he/she has such authority
- Report any condition or employee practice that is likely to cause an accident

The Department Supervisor must be convinced that accidents are caused; they don't just happen. An act of negligence, disregard for established rules or procedures, rushing projects, improperly guarded machinery, lack of or improper maintenance, all can cause an accident. The Department Supervisor must also be convinced that an accident does not affect the employee alone. Accidents cost money and have a direct impact on the City's ability to perform it's obligation to the citizens of Nashville & Davidson County. Accidents also affect production and directly reflect on the efficiency of the department. To make the program effective, every member of management shall ensure that:

1) Work is not assigned that is hazardous or located in a hazardous area until all steps have been taken to provide for the safety of the employee.
2) All employees have received proper job instruction and are familiar with pertinent safety and health rules and regulations.
3) Work areas are frequently examined to ascertain that the work environment is safe and that employees are working in a safe manner.
4) All safety and health deficiencies are corrected promptly and not repeated.
5) Accidents are investigated and corrective action is initiated where necessary.
6) Employees know they can red tag and lock out equipment that is not operating properly
7) Safety reports are promptly and completely filled out

Metro Personnel

All Metro personnel are required to comply with the Metropolitan Government of Nashville & Davidson County Health and Safety Program. Additional responsibilities

include the following:

- Immediately report health and safety violations to the Department Supervisor and Safety Coordinator.
- Be aware of their role in emergency response activities.
- Immediately report project related injuries and illnesses to Department Supervisor and Safety Coordinator.

Every employee has a specific role in our Safety Program. Each employee is expected to participate actively in the Program and observe all established precautionary measures.

Remember: A written safety/health program is only effective if it is put into place!

HEALTH AND SAFETY PROGRAM ENFORCEMENT

PURPOSE

Enforcement does not mean punishment. It simply means ensuring that all Metro employees follow safe work practices. Observation, inspections, and discipline are the main tools Management will use to ensure these practices are followed.

OBSERVATION

The Safety Coordinators, Directors, and Supervisors shall observe employees while performing work duties. Awareness of safe work practices for position responsibilities shall be reviewed during routine safety meetings.

INSPECTIONS

Routine inspections shall be performed to uncover problems that may exist with a procedure or piece of equipment. This will emphasize the importance of safety to personnel.

Random site visits by the Safety Coordinator and Metro Occupational Safety Administrator will help to assure compliance with Metro policies, procedures, and safety standards.

DISCIPLINE

Should any employee fail to follow safety rules, departments should initiate progressive disciplinary consistent with departmental practice and Civil Service Rules and Policies when they apply. The Metropolitan Government of Nashville & Davidson County should not let poor or dangerous habits get started.

ACCIDENT REPORTING AND INVESTIGATION

Metro's occupational injury program is a self-insured program. Metro's program is not workers' compensation and is not subject to workers' compensation regulatory requirements.

No payment shall be made when personal injuries were due to the employee's willful misconduct, intentional self-inflicted injury, intoxication, or willful failure/refusal to use a safety appliance or perform a duty required by law.

IOD: Injury Reporting Procedures

How to Report Cases
All injuries should be reported to Metro's third party administrator, Alternative Services Concepts (ASC) as soon as possible. Prompt reporting of cases is critical to proper program management. All injury reports should be reported to ASC within **24 hours of the employee advising the employer that he/she has sustained a work-related injury**.

Any cases that result in immediate lost time for the injured employee should be emailed / faxed / called into the ASC office *as soon as possible*, but no later than the required 24 hours.

Email: **metroclaims@ascrisk.com**
Fax: 615-515-4838
Phone: 615-360-2800

Please keep the following in mind when reporting a case:
1. Cases involving broken bones, burns, dismemberment and death should be reported immediately.
2. Complete a 101 form as soon as an injury is reported, and submit the form to ASC. The timeliness of this report will facilitate a proper investigation and commencement of benefits for compensable cases.
3. Communication between the employer and the ASC adjusters is crucial. Any factors that could impact the case should be brought to the adjusters' attention as soon as possible.
4. Send the completed/signed 101 form to:

Alternative Service Concepts
c/o Metro IOD Program
P. O. Box 291587
Nashville, TN 37229-1587

5. Once a case is received, it will be assigned to the appropriate adjuster. Assignment will be based on the severity of the case (report only, medical only, or lost time) as well as the expertise of the adjuster.

BACK SAFETY POLICY

Back pain and injuries are among the most common causes of work absenteeism and long-term disabilities. Hundreds of thousands of people suffer disabling back injuries on the job every year. In addition, about 80% of the population suffers from back pain at some time, often with serious pain and chronic problems

Perhaps the most important area of focus on the job is lifting, which is believed to account for up to half of all on-the-job back injuries. Improper lifting is considered a major cause of back injury and pain, and training in proper lifting techniques can go a long way toward keeping workers healthy and on the job.

Safe Lifting

A program to reduce back injuries and strain should begin by looking for ways to reduce the amount of lifting, both by limiting the number of lifting tasks and the weight and size of the loads that are lifted. You can reduce the need for lifting by:

- Locating and organizing the work area to eliminate lifting where possible
- Using mechanical equipment such as hoists, racks, hand trucks, dollies and forklifts to minimize the need for manual lifting
- Using boxes and containers of manageable size and weight

Of course, you cannot eliminate all lifting. But you can improve lifting safety by trying to assign physically fit workers to the most strenuous lifting tasks and training all workers how to lift correctly.

Also, keep in mind that people often overestimate their strength and physical condition. They do not like to say, “That’s too much for me.” When you assign employees to lifting jobs, do not encourage them to take on more than they can handle.

Unlike the legs and arms which can easily do extra work, the back is designed to carry only the weight of your body. When you lift an object the wrong way, you are asking your back to do too much. Sooner or later, something will give. The goal of proper lifting is to reduce the work the back has to do by making the arms and legs do the work.

First Step: Planning

Like most jobs, proper lifting starts with good planning. Here are some tips on what to do before picking up a load.

- Check for rough or jagged edges and slippery surfaces.
- Plan the route you will follow when carrying. A straight, flat, unobstructed route is the best choice, even if it is not the shortest.
- Remove any objects you could trip over.
- Look for places to stop and rest along the way.
- Make sure the unloading area is clear.
- Wear tight-fitting gloves for a better grip, and safety shoes with reinforced toes and non-skid soles.
- Lift a corner of the load to check its weight and stability. If it cannot be carried comfortably, get help.
- Check the size and shape of the load. Some loads are light, but too awkward for one person to carry or for the carrier to see over.

Lifting Correctly

Once the planning is done, it is time for the lift. To protect the back, follow this procedure:

- Stand close to the load with both feet firm on the floor and spread at about shoulder width, with the toes pointing out.
- Squat down close to the load, keeping your back straight and bending at the knees.
- Grip the load firmly with your hands, not just your fingers. Place your hands on diagonally opposite corners so that one hand pulls it toward you and one lifts.
- Bring the load as close as possible to your body. Keep your weight centered over your feet, arms and elbows tucked in to your sides, and your chin tucked in to your neck. Then lift gradually and smoothly, letting your legs do the work. With the back still straight, lift head and shoulders first while the legs push the body up smoothly.
- Once you are up, with a good grip on the load, make sure you can see where you are going. Move slowly with small steps and keep the load close to your body and no more than waist high.
- If you have to change direction, do not twist. Twisting is a major cause of injury. Change direction by moving your feet.

Unloading Properly

There is a proper way to unload, too. When you get to the planned unloading place, lower the object you are carrying slowly, bending your knees and letting your legs do the work. Make sure your

fingers do not get caught under the load. Place it carefully on the edge of the surface, then slide it into place.

Special Lifting Situations

Because improper lifting is such a common cause of injury, a great deal of research has been done on proper techniques for non-standard lifts as well as more "normal" ones.

Awkward shapes. Squat, with your feet spread, next to these objects. Then grip the top outside corner and bottom inside corner and follow standard lifting procedures.

Awkward locations. Get as close as possible to objects tucked in places that are difficult to reach. Then, with back straight, stomach muscles tight, and bending slightly forward at the hips, bend your knees, grip the object and use the leg, stomach and buttock muscles to lift.

Objects in high places. Be sure to have a sturdy ladder for these jobs; you will also often need a second person.

Before you lower something from a high shelf or other surface, push up on it to see how heavy and stable it is. If you can move it alone, slide it as close as possible to your body before you lift it. Then, gripping it firmly, slide it down.

If you want to place an object in a high place, first lift it waist high and rest the edge on a lower shelf or your hip. Then bend your knees and lift; straighten out once the object is lifted.

Two-person lift. The two lifters should be about the same height and one person should be responsible for saying when to move and where. At the signal, both lift and raise at the same time. Once the load is lifted, the two carriers should keep it at the same level and move together, then unload at the same time. Of course, both should follow the proper procedures for planning, lifting and unloading.

Material-handling equipment. The danger of back injury is reduced if you use material-handling equipment as an aid. The best technique is to keep a firm grip on the equipment, with the load close to your body. With back straight and knees bent, lean in the direction you are going and let your legs and body, not your back, do the work. You will get more power if you push instead of pull.

Here are a few other points about proper lifting that are worth emphasizing:

*Break a large load into several small ones whenever possible.
*Push heavy objects instead of pulling them.
*Use a bar for leverage when moving a heavy object.
*Do not lift something heavy above your waist. Even a light load should not be lifted above your shoulders. If you have to place it any higher, use a ladder.
*Be careful of loose clothing that could get in your way.
*Warm up with gentle bends or stretches before you lift.
*Keep the work area neat and uncluttered to prevent tripping or falling hazards.

*Do not overdo it. Get help, mechanical or human, when you need it.

Avoiding Back Strain

Lifting is not the only activity that causes back injuries. Most people put unnecessary strain on their backs in a variety of everyday ways. Many are unconscious habits that can, once they are noticed, be changed. Help your workers to avoid back strain by learning the following good habits.

Weight Control-excess weight, especially pot bellies, puts constant strain on the back. That is just one more reason to watch what and how much you eat.

Posture-poor posture is a major cause of back strain. When you slouch forward, the ligaments, rather than the muscles, are forced to do the work of supporting the body. This puts pressure on the vertebrae.

Sitting straight keeps the spine in balanced alignment. The best posture is to sit close to the desk or table, with the back resting against the chair back. The feet should be on the floor with the knees slightly higher than the hips. When reading, hold the pages upright to maintain good posture. If you have to sit for long periods, shift positions and get up and move around periodically.

Standing straight, with head up, chin tucked in, buttocks tucked under so your spine is in its natural curve. Again, shift positions frequently.

Hold the telephone so it is not cradled in the neck. The easiest position is to keep the elbow on a surface for support.

Drive with your back straight against the seat and knees bent, higher than hips.

Sleep on a firm mattress, preferably on your side, with knees bent, or on your back with a pillow under the knees.

Shovel by lifting with your legs. Keep hands far apart, knees bent, back straight.

Do not jump from platforms or other short heights. The shock can hurt your back. Use a ladder.

Exercise-it strengthens the back, reduces stress and increases flexibility. However, consult a doctor before starting an exercise program.

Limit bending and twisting actions. Place objects on tables or other surfaces rather than the floor so you do not have to bend and lift.

Do not ignore back pain or injury. It is difficult to judge the severity of back pain or injury, and medical attention is important. It is best to avoid moving a person with a back injury until medical help arrives. For back pain, see a doctor; some people get relief from back pain from other types of trained, licensed specialists such as chiropractors, physical therapists or acupuncturists.

Preventing Back Injuries Checklist

Plan Before Lifting

*Check for rough or jagged edges and slippery surfaces
*Plan route; straight, flat and unobstructed is best even if it is longer
*Remove tripping hazards from route
*Check route for resting places and be sure unloading area is clear
*Wear tight gloves and safety shoes with reinforced toes and nonskid soles
*Lift Corner of load to check weight and stability; get help if needed

Lift Correctly

*Stand close to load with feet firm on floor and at shoulder width, toes pointing out
*Squat close to load, with back straight and knees bent
*Grip load firmly with hands, not just fingers
*Place hands on diagonally opposite corners so one hand pulls toward you and one lifts
*Bring load as close as possible to body
*Keep weight centered over feet, arms and elbows tucked in to sides, chin tucked in
*Lift gradually and smoothly, head and shoulders first
*Keep your back straight, letting legs push body up smoothly

Carry Correctly

*Keep good grip on load and eyes on route
*Move slowly with small steps
*Keep load close to body, no more than waist high
*Change direction by moving feet, not twisting

Unload Properly

*At unloading spot, lower object slowly
*Bend knees; let legs do work
*Do not catch fingers under load
*Place load carefully on surface edge, then slide it into place

Minimize Lifting Strains

*Use mechanical equipment when possible
*Do not take on more than you can carry
*Break a large load into several small ones
*Push, do not pull, heavy objects
*Do not lift heavy objects above waist
*Warm up with gentle bends or stretches before you lift

Special Situation Lifting Techniques

*Awkward shapes-squat, feet spread, next to object, grip top outside corner and bottom inside corner and follow standard lifting procedures.

*Awkward locations-get as close as possible to object; with back straight, stomach muscles tight, bending slightly forward at hips, bend knees, grip object and use leg, stomach and buttock muscles to lift.

*High places-use a sturdy ladder and helper. To remove object, push on it to check weight and stability, slide object as close as possible to body, grip firmly and slide down. To place object, lift it waist high and rest edge on lower shelf or hip, bend knees and lift; straighten out once the object is lifted.

*Two-person lift-work with person of about same height, with one responsible for signals. At signal, lift and raise together, keep load at same level and move together to carry and unload, using correct lifting techniques.

*Material-handling equipment-keep firm grip on equipment, with load close to body. Keep back straight and knees bent, lean in the direction you are going; let legs and body do work and push rather than pull.

Avoid Back Strain

*Keep weight down

*Exercise (after consulting doctor)

*Sit straight, back against chair back, feet on floor

*Stand straight, head up, chin tucked in, buttocks tucked under

*Whether sitting or standing, shift positions regularly

*Do not cradle telephone in neck

*Try not to bend or twist

*Drive with back straight against seat, knees bent

*Sleep on firm mattress, preferably on side with knees bent or on back with pillow under knees

*Shovel with hands far apart, knees bent, back straight, lift with legs

*Do not jump from platforms

*Inform your supervisor immediately if you experience back pain while performing your job

COMPRESSED GASSES

The specific hazards that gas pressure systems present to Metropolitan Government employees, property, and the public must be considered in the design, installation, and use of these systems. Such hazards include mechanical injury, toxicity, fire, explosion, and suffocation. This guideline outlines policies and required procedures for mitigating hazards that occur with installation, operation, and maintenance of pressure systems.

RECOGNITION AND RISK ASSESSMENT

A compressed gas is a gas that is stored and used at pressures greater than nominal atmospheric pressure (15 psi at sea level). Compressed gases are supplied in cylinders or through piping systems.

All pressure systems, including compressed gas systems, should be designed, fabricated, installed, tested, inspected, and operated in compliance with national codes and national consensus standards. Pressure system piping design, installation, and testing should meet the requirements of the Pressure Piping Code, American National Standards Institute (ANSI) B31 series and the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Sections I through XI. More information can be obtained from the Handbook of Compressed Gases, Matheson Gas Data Book and the National Fire Codes and Standards.

Only personnel who are trained and familiar with pressure systems, including compressed gas pressure systems should design, fabricate, install, operate, inspect, test, and/or maintain pressure systems.

PREVENTION AND PROTECTION PROGRAM

Safe Handling Procedures for Transporting Compressed Gas Cylinders

- Before moving, be certain all cylinder valves are closed, the regulator removed, and the protective cap installed.
- When possible, use a hand truck for moving single cylinders. Do not drag or slide containers.
- Take care not to drop cylinders or permit them to strike each other or other surfaces violently.

- Never use protective cap as a lifting point for moving a cylinder from one vertical position to another.

- When transporting by truck, make sure cylinders are well secured to prevent bumping. Do not transport in a closed vehicle.

Safe Handling Rules - Pipes, Tubes, and Hoses

- Use metal pipe and tubing with a maximum allowable working pressure (MAWP) rated at or above system MAWP.

- Secure pipes and tubes to a firm foundation.

- Use flexible tubing or hose only when metal piping and tubing cannot be used.

- Keep hose lengths as short as possible.

- Chain hose ends (not fittings) together or substantially anchor the ends to prevent whipping if the hose or hose fitting fails.

- If a run of hose or other flexible material must be used, it must be secured to the ground or to other fixed surfaces to minimize whipping in the event of a break. Special fittings are available for this purpose.

- Avoid sharp hose bends; follow hose manufacture's recommendations.

- PVC and other brittle materials must not be used in a pressurized gas system.

Safe Handling Rules - Gauges

The bourdon tube in a pressure gauge is a typical point of failure. The tube can fail when a gauge is new or after an indeterminate number of cycles. When the tube fails, the sudden burst of high pressure can blow the gauge face, hands, or cover into the faces of operators and passers-by.

A safety-type gauge should be selected when available and the requisitions for such gauges should specify a) safety types; b) full-size blowout backs; c) integral sides and front design to protect the operator in event of failure; and d) either plastic or double-laminated safety glass gauge face cover.

Nonsafety-type gauge shall be replaced or have a gauge guard installed. The guard shall have

appropriate standoffs and shall be made of at least 3/8 inch-thick polycarbonate or 5/8 inch acrylic plastic. It shall be undamaged and free of gripper marks, or any other stress risers.

Safe Handling Rules - Installing a Regulator

- Be certain to obtain the proper regulator for the specific gas cylinder being used.
- Visually inspect the cylinder valve and regulator to make certain they are free of foreign material.
- A pressure manifold from a gas cylinder to a closed pressure system must contain a vent valve, a fill valve, and a relief device unless these features are integral parts of the pressure system.
- A regulator is required if the operating pressure of the system is less than the pressure of a filled bottle.
- A gauge is required unless the system is provided with a gauge indicating system pressure.
- Whenever possible, a proper two-stage regulator should be used for efficiency and safety. Specialty gas and regulator supplier catalogs are good references for regulator selection.
- Incompatible gases must not be connected to a common purge manifold.
- Never use a regulator for oxygen service unless it is clearly specified and marked for oxygen use.
- Turn the delivery pressure adjusting "tee" counterclockwise until it turns freely.
- Install the regulator on the cylinder valve. Open the cylinder valve slowly until cylinder pressure registers on the regulator.
- With the flow control valve at the outlet of the regulator closed, turn the delivery pressure adjusting "tee" clockwise until the desired pressure is read.
- To remove the regulator, be certain that the cylinder valve is tightly closed.

Safe Handling for Opening a Gas Cylinder

- Open compressed gas cylinders slightly at first, then all the way.
- Stand to one side and look away from the regulator and gauge face when opening the

cylinder valve. Valve outlets should be pointed away from yourself and others.

- On cylinders equipped with hand valves use only your hands to open the cylinder valve; never use a hammer or wrench. If the cylinder will not open with hand pressure, have it returned to the supplier.

Safe Handling Procedures for Storing Cylinders of Compressed Gas

- Valve protection caps should be in place when compressed gas cylinders are transported, moved or stored.

- Cylinder valves should be closed when work is finished, and when cylinders are emptied or are moved.

- Compressed gas cylinders should be secured (chained or strapped) in an upright position at all times, except if necessary for short periods of time when cylinders are actually being hoisted or carried.

- Cylinders should be kept at a safe distance or shielded from welding or cutting operations. Cylinders should be placed where they cannot become part of an electrical circuit.

- Cylinders should not be taken into confined spaces, except for SCBAs or airline supplied air respirator (SAR) emergency egress cylinders.

- Protect cylinders against the possibility of being struck by large passing or falling objects.

- Store cylinders in dry, well-ventilated areas. If practicable, the area should be resistant to fire.

- Keep storage area temperature below 125° F.

- Store cylinders away from heat sources and combustible materials.

- Protect cylinders stored in the open from the weather, dampness, and direct sunlight. Protect cylinders from corrosion; never store cylinders directly on the ground.

General Requirements for Safe Handling of Compressed Gas Cylinders in General Use

- Do not use containers not bearing a legible label identifying the contents.

- Keep caps on cylinders at all times except when the cylinder is in use.

- Do not place containers where they might become part of an electrical circuit.

- Use the proper regulator for a particular gas.
- If a leaking cylinder cannot be simply remedied, close the valve, tag, and remove to the outdoors or a well-ventilated location.
- Discontinue use of high-pressure cylinders when the pressure approaches 30 psig, and then it is to be clearly marked EMPTY.

SPECIAL HANDLING PROCEDURES FOR SPECIAL GASES

Oxygen

Oxygen containers, valves, regulators, hose and other oxygen apparatus should be kept free from oil or grease and should not be handled with oily hands, oily gloves, or with greasy equipment.

Oxygen and fuel gas regulators should be in proper working order while in use.

Oxygen containers in storage should be separated from flammable-gas containers or combustible materials (especially oil or grease) by a minimum distance of 20 feet.

Oxygen and acetylene (or other fuel gas) cylinders in storage should be separated from each other by 20 feet or by a five-foot high barrier with a one-half hour fire-resistance rating.

Acetylene

Keep acetylene away from any open flame or sources of heat as well as other combustible materials. Acetylene can explode with extreme violence if ignited.

Acetylene must never be used at more than 15 psig, since it may spontaneously decompose with explosive force. Note the red warning area on acetylene regulators.

Never use unalloyed copper pipe or fittings on acetylene systems. Fittings with more than 65% copper can react to form explosive, shock sensitive acetylides.

Always store and use acetylene cylinders in an upright position in order to avoid separation of the acetylene/acetone solution.

CONFINED SPACES

OVERVIEW: The purpose of this program is to ensure the safety of personnel required to enter and conduct work in confined spaces. The program contained herein describes reasonable and necessary policies and procedures for any and all facilities, departments, and individuals who are associated with confined space entry operations.

OBJECTIVE: The goal of the Metropolitan Government of Nashville and Davidson County is to provide its employees with the safest work environment possible. The purpose of this program is to protect all Metropolitan Government personnel at operations where entering and working in confined spaces has been, and will continue to be, an integral part of daily activity. This program is based on the OSHA Confined Spaces Standard, Title 29 Code of Federal Regulations 1910.146.

DOES THIS PROGRAM APPLY TO YOUR DEPARTMENT?

If you answer "YES" to any of the following questions, you need have a Confined Space program in place for your work site.

a) Are your employees required to work in a space that is not primarily designed or intended for human occupancy?
O YES O NO

b) Are the employees required to enter an area that can only be accessed by a ladder or only has one entry point?
O YES O NO

c) Are the employees required to enter ditches and trenches where access or egress is limited?
O YES O NO

e) Will the employee be required to enter any of the following? Manholes, exhaust ducts, boilers, sub-cellars, culverts, silos, vats, hoppers, utility vaults, tanks, sewers, pipes, access shafts, truck or rail tank cars, aircraft wings.
O YES O NO

If you need assistance in determining whether the program applies to you, contact the Metro Occupational Safety Administrator.

IF THIS PROGRAM APPLIES TO YOUR DEPARTMENT, WHAT DOES IT INVOLVE?

- Identifying Confined Spaces
- Identifying Confined Space Hazards
- Initiating a Confined Space Entry Program
- Responsibilities and Training
- References & Authority
- Glossary of Terms

IDENTIFYING CONFINED SPACES: Recognition is an important aspect of making a safe entry into a confined space. Not all confined spaces will be considered permit-required confined spaces and being able to identify the difference between the two is important. To clarify what constitutes a Confined Space, the following definition will be used.

Confined Space is any space that has the following characteristics:

- It is large enough or so configured that an employee can bodily enter and perform assigned work.

- It has limited or restricted means for entry or exit.

  Confined-space openings are limited primarily by size and location. Openings may be small in size and may be difficult to move through easily. However, in some cases openings may be very large; for example, open-topped spaces such as pits or excavations. Entrance and exit may be required from top, bottom, or side. In some cases, having to access the work area by a fixed ladder may constitute limited or restricted entry or exit. Size or location may make rescue efforts difficult.

- Is not designed for continuous employee occupancy.

  Most confined spaces are not designed for employees to enter and work on a routine basis. They may be designed to store a product, enclose materials and processes, or transport products or substances. Because they are not designed for continuous occupancy, frequently they will not have good ventilation or lighting. Therefore, occasional employee entry for inspection, maintenance, repair, cleanup, or similar tasks can be difficult and dangerous. The danger associated with entry may come from chemical or physical hazards within the space.

A Non-Permit Confined Space is a confined space that does not contain, nor has the potential to contain, any hazard capable of causing death or serious physical harm (with respect to atmospheric hazards). Examples of non-permit required confined spaces might include the interiors of HVAC units, certain air plenums and pipe chases, attics, walk-in freezers or refrigerators, and some building crawl spaces.

A Permit-Required Confined Space (permit space) is a confined space that is potentially hazardous. A permit-required confined space has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere.
- Contains a material that has the potential for engulfing an entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly-converging walls or by a floor that slopes downward and tapers to a smaller cross-section; or
- Contains any other recognized serious safety or health hazard. Examples of serious safety or health hazards might include:
    - Fall hazards
    - Unguarded machinery
    - Extreme heat or cold
    - Steam pipes or chemical lines
    - Hazardous noise levels
    - Electrical hazards
    - Presence of asbestos
    - Potentially hazardous levels of dust (such as might occur at the Feed Mill)

Because of the lack of ventilation in most confined spaces, they will have the potential for a hazardous atmosphere. Therefore, they must be designated "permit-required," and the procedures for making entry into a permit-required space must be followed. Examples of permit-required confined spaces at Metro include sewers, electrical vaults, sump pits, certain mechanical rooms, some excavations, and other similar enclosures.

Any space that is accessed by lifting a manhole cover shall be considered a permit-required confined space. Additionally, some roofs, access tunnel, storage facilities, and equipment access areas may be designed permit-required confined spaces even though they do not technically meet the definition (i.e., they may not really have limited or restricted means of entry or exit). These areas shall be clearly marked as permit-required spaces.

Department heads are directly responsible for ensuring the safety of their employees in regards to confined spaces. It is their responsibility to evaluate potentially hazardous spaces within their facilities and areas to ensure that the proper precautions are taken for safety. This includes clearly marking permit-required confined spaces, training employees, and ensuring proper entry procedures are followed. These responsibilities may be delegated to another competent person provided he/she is qualified.

Department heads are responsible for ensuring their employees are properly trained to do the jobs they are sent to do. This includes recognition of confined spaces and proper procedures for making entry into permit-required confined

spaces whenever necessary. No employee shall be sent on a job that potentially involves work in a confined space unless they have been properly trained in confined space entry procedures.

It may be determined that a space presents no real danger for employees. However, it is recommended that all spaces be considered potentially dangerous until they have been evaluated and tested.

Prior to an employee's use of a respiratory protection device, they shall complete the OSHA Respiratory Medical Evaluation Questionnaire (CFR 1910.134(e)(4)(i) and the mandated Medical Evaluation.

IDENTIFYING CONFINED SPACE HAZARDS: Once a space has been identified as confined, the hazards that may be present within the confined space must be identified. Confined-space hazards can be grouped into the following categories:

- Oxygen-deficient atmospheres;
- flammable atmospheres;
- toxic atmospheres, and;
- mechanical and physical hazards.

Every confined space must be evaluated for these four types of hazards. The three types of atmospheric hazards are often the most difficult to identify since they might not be detected without the assistance of a gas monitor.

1) *Oxygen-Deficient Atmospheres*

The normal atmosphere contains between 20.8% and 21% oxygen and 79% nitrogen. An atmosphere containing less than 19.5% oxygen shall be considered oxygen-deficient. Oxygen enriched atmosphere contains more than 22%. The oxygen level inside a confined space may be decreased as the result of either consumption or displacement. The "LEL" (lower explosion level) reading should be 0%.

There are a number of processes that consume oxygen in a confined space. Oxygen is consumed during combustion of flammable materials, as in welding, cutting, or brazing. A more subtle consumption of oxygen occurs during bacterial action, as in the fermentation process. Oxygen can also be consumed during chemical reactions such as in the formation of rust on the exposed surfaces of a confined space. The number of people working in a confined space and the amount of physical activity can also influence oxygen consumption. Oxygen levels can also be reduced as the result of oxygen displacement by other gases.

2) *Flammable Atmospheres*

Flammable atmospheres are generally the result of *flammable gases*, vapors, dust mixed in certain concentrations with air, or an oxygen-enriched atmosphere.

Oxygen-enriched atmospheres are those atmospheres that contain an oxygen concentration greater than 22%. An oxygen-enriched atmosphere will cause flammable materials such as clothing and hair to burn violently when ignited.

Combustible gases or vapors can accumulate within a confined space when there is inadequate ventilation. Gases that are heavier than air will accumulate in the lower levels of a confined space. Therefore, it is especially important that atmospheric tests be conducted near the bottom of all confined spaces.

The work being conducted in a confined space can generate a flammable atmosphere. Work such as spray-painting, coating, or the use of flammable solvents for cleaning can result in the formation of an explosive atmosphere. Welding or cutting with oxyacetylene equipment can also be the cause of an explosion in a confined space and shall not be allowed without a hot work permit. Oxygen and acetylene hoses may have small leaks in them that could generate an explosive atmosphere and, therefore, should be removed when not in use. The atmosphere shall be tested continuously while any *hot work* is being conducted within the confined space.

3) *Toxic atmospheres* may be present within a confined space as the result of one or more of the following:

a. The Product Stored in the Confined Space

When a product is stored in a confined space, the product can be absorbed by the walls and give off toxic vapors when removed or when cleaning the residual material. The product can also produce toxic vapors that will remain in the atmosphere due to poor ventilation.

b. The Work Being Conducted in the Confined Space

Toxic atmospheres can be generated as the result of work being conducted inside the confined space. Examples of such work include: Welding or brazing with metals capable of producing toxic vapors, painting, scraping, sanding, etc. Many of the solvents used for cleaning and/or degreasing produce highly toxic vapors.

c. Areas Adjacent to the Confined Space

Toxic fumes produced by processes near the confined space may enter and accumulate in the confined space. For example, if the confined space is lower than the adjacent area and the toxic fume is heavier than air, the toxic fume may "settle" into the confined space.

4) Mechanical and Physical Hazards

Problems such as rotating or moving mechanical parts or energy sources can create hazards within a confined space. All rotating or moving equipment such as pumps, process lines, electrical sources, etc., within a confined space must be identified.

Physical factors such as heat, cold, noise, vibration, and fatigue can contribute to accidents. These factors must be evaluated for all confined spaces.

Excavations could present the possibility of engulfment. Employees shall be protected from cave-ins by sloping, benching, or shoring systems when the depth of the excavation is more than four feet, in accordance with the OSHA Standard for the Protection of Employees in Excavations 29 CFR 1926.652. In some circumstances, air monitoring may also be required.

CONFINED SPACE ENTRY PROGRAM:

Identifying All Confined Spaces

- All confined spaces located within a facility or under the facility's control should be identified. Once the space has been identified as Confined, the Department Head shall determine if a permit is required.

- All employees shall be made aware of these confined spaces through training or instruction provided by supervisors or their designated representatives.

Preventing Unauthorized Entry

- All employees shall be instructed by supervisors or their designated representatives that entry into a confined space is prohibited without an authorized permit.

- Supervisors or their designated representatives shall instruct all employees to list their names on the authorized permit before they will be allowed to enter a confined space.

The Permit System

- When a confined space must be entered, a permit shall be completed and authorized by department heads, supervisors, or their designated representatives prior to entry of the confined space. This permit shall serve as certification that the space is safe for entry.

- The permit shall contain the date, the location of the space, and the signature of the person providing the certification.

- A permit shall not be authorized until all conditions of the permit have been met. The permit to be used by Metro personnel can be found in Appendix A.

Planning the Entry The first step towards conducting a safe confined-space entry is to plan the entry. This will allow for the identification of all hazards, and for the determination of all equipment necessary, to complete the project.

➲ Gathering General Data

- Identify the confined space. Give the name or location of the confined space.
- Give the reason for entering the confined space. Be specific. Also, identify if hot work will be done.
- Identify the contents of the confined space. This refers to any chemicals or other materials and energy that are usually present in the confined space.

➲ Identifying the Hazards

NOTE: Atmospheric testing shall be conducted prior to entering permit-required confined spaces. It is recommended that the entry supervisor conduct these tests; however, any competent person certified in confined space entry may do so.

- The entry supervisor will determine the oxygen content and record this on the entry permit.
- The entry supervisor will determine flammable gas content and record this on the entry permit.
- The entry supervisor will determine levels of H_2S and Carbon Monoxide and record this on the entry permit.
- If a toxic substance is determined to be in the confined space during testing by the entry supervisor, the Department head or their designee shall be contacted to assist in obtaining a Material Safety Data Sheet or other chemical information to determine what type of personal protective equipment is required, the potential health effects, the Permissible Exposure Limits, and any other information needed to safely conduct the work.
- Entry supervisors will determine mechanical and physical hazards. They should list all items and energy that will require lockout/tagout, blanking and bleeding, disconnecting, or securing. Physical hazards should also be listed.

➲ Ventilation of the Confined Space

- Indicate whether mechanical or natural ventilation will be used. Describe the procedures to be used.

  NOTE: If mechanical ventilation is to be used, the exhaust must be pointed away from personnel or ignition sources. Also, mechanical ventilators should be bonded to the confined space.

- Isolating the Confined Space
    - Describe the procedures for disconnecting equipment or lockout and tagout. All mechanical, electrical, or heat-producing equipment should be disconnected or locked and tagged out. This would also include any pumps that pull fluid from, or pump fluid into, the confined space.
- Purging/Cleaning the Confined Space
    - Indicate if the confined space will be purged. Purging with inert gas is not recommended. If the space must be purged, describe the procedures.
    - Indicate the type of cleaning methods to be used. If chemical cleaners are to be used, name the type and describe the procedures. The MSDS for the chemical should be consulted prior to use.

        NOTE: When introducing a chemical into a confined space, the compatibility of that chemical with the contents of the confined space must be checked.

        NOTE: If steam is to be used, the hose should be bonded to the confined space.
- Placement of Warning Signs
    - Indicate if warning signs or barriers will be needed to prevent unauthorized entry or to protect workers from external hazards. If the confined space will be left open and unattended for any length of time, warning signs and barriers such as barricades and/or caution tape will be required.
- Identifying All Personnel & Equipment
    - List all employees that will be required to prepare the confined space and complete the work inside the space.
    - List all equipment that will be necessary to complete the project.

Conducting Pre-Entry Training: Once the entry has been planned, department heads or their designated representatives must train all employees who will be involved in the entry. The training should be conducted no earlier than one day before entry is to be made.

The following outline should be used for the training:

- Identify the confined space and the reason(s) for entry.
- Identify work detail
    - Assign each employee the job(s) he/she is to perform in the entry project (entrant, standby person, etc.).

- If an employee is required to use a piece of equipment, be sure that he/she is capable of using the equipment properly.

- Inform all personnel that no one is to enter the confined space unless the attendant is present at the work site.

➲ Inform entrants of all known or suspected hazards

- Inform personnel of any access or exit problems.

- Inform personnel of all equipment that must be locked out or tagged out.

- Inform personnel of the contents of the confined space.

- Inform personnel of all atmospheric levels that must be maintained before entering and while working in the confined space.

If a toxic atmosphere or substance is present or could become present, the following additional training must be completed:

- If respiratory protection is not going to be used, inform personnel of the maximum permissible exposure level (PEL) that can exist within the confined space, and the method used to monitor PEL.

- Inform personnel of the potential health effects of exposure to the toxic atmosphere or substance.

- Inform personnel of the signs and symptoms of exposure to the toxic fume.

- Inform personnel of the personal protective equipment (PPE) that they will be required to wear.

- If entrants are unaware of the proper use of the PPE, they must be trained in the proper use of this equipment.

- Persons should not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. A local physician shall determine what health and physical conditions are pertinent. The respirator user's medical status should be reviewed periodically (annually).

- Identify isolation (lockout/tagout) procedures

- Identify purging and/or ventilation procedures.

- Identify all equipment needed.

- Determine necessary personal protective equipment

- Establish communication and inform personnel of the type of communication they are to use.

- Pre-plan rescue procedures
- Inform personnel of the steps to be taken to place the confined space back into service.

Preparing The Confined Space For Entry: Once the entry has been planned and personnel have been trained, the next step is to prepare the confined space for entry. The following nine steps are to be followed when preparing the confined space for entry:

1) Place warning signs or barriers around the confined space to prevent unauthorized entry as necessary.

2) Place all tools, safety equipment, monitoring equipment, etc., near the confined space.

3) Isolate all mechanical and/or electrical hazards as necessary.

4) Purge/ventilate the confined space as necessary.

5) Test the atmosphere using an appropriate gas monitor.

   - If oxygen content is less than 19.5% or greater than 21.5%, perform additional ventilation. Then shut off ventilation equipment and re-test the oxygen content.
   - If oxygen content is between 19.5% and 21.5%, continue entry preparation.

6) Test for flammable gases.

   - If the meter reading is less than 10% of the lower explosive limit (LEL), continue entry preparations.
   - If the meter reading is above 10% of the LEL, continue ventilation of the confined space. Then shut off the ventilation and have the atmosphere re-tested.
   - If the meter reading is still above 10% of the LEL, the confined space must be cleaned before entry is permitted. If the confined space must be entered for cleaning purposes, the procedures outlined in Item 9 of this section must be followed.

7) Test for toxics (If a toxic atmosphere is present, no person should be permitted to enter the confined space at a level exceeding the Permissible Exposure Limit without proper Personal Protective Equipment.

8) Assemble all personnel involved and review rescue procedures. The entry supervisor will then add any needed information, then complete and sign the permit.

9) Notify the Department Head or supervisor that entry is commencing.

Utilizing Safety Equipment: A Confine Space Entry Kit, must be immediately available at all confined space entry sites requiring a safety watch/ monitor:

- *Lime/Orange Vest- worn by safety watch/ monitor at all times
- *Radio
- *LEL/ Oxygen
- *SCBA
- *Approved flashlight
- *5-min. escape SCBA for each worker (dependent on entry circumstances.
- *50' Ft. chemical resistant rope

Where practical, all personnel entering a confined space should be equipped with a retrieval line secured at one end to the entrant by a full-body harness with its other end secured to a tripod lifting hoist.

Confined Space Cleaning Procedures: If cleaning must be conducted in a confined space to achieve acceptable atmospheric conditions, the following procedures must be followed:

- All entrants must be equipped with the safety equipment designated.
- All entrants must be equipped with an SCBA.
- No spark-producing tools will be allowed for use.

Rescue Procedures: In the event of an emergency, the attendant should:

- Immediately summon the Fire Department by radio or telephone. (Dial 911)
- Attempt to remove the victim by use of the retrieval line from outside the confined space if this can be accomplished without creating further hazard for the entrant or the attendant.
- If the attendant is able to remove the victim with the retrieval line, he/she should administer aid within the limits of his/her training until emergency medical services (EMS) arrive.
- If the attendant is unable to remove the victim by using the retrieval line, he or she must wait for help to arrive. **The attendant(s) is not to enter the confined space for any reason.**
- Give EMS personnel any information they request.

PERSONNEL RESPONSIBILITIES AND TRAINING: Everyone involved in a confined-space entry project has certain responsibilities and requires a certain amount of training. It is very important that every individual is familiar with his/her responsibilities. This section outlines the responsibilities and training requirements of each individual involved in a project.

Department Heads:

- ➲ Provide resources to effectively implement this program through the department.
- ➲ Establish systems to ensure departmental compliance associated with confined spaces entry program.
- ➲ Ensure that training for confined space entry is available to all affected employees.

Responsibilities of the Safety Coordinator:

- ➲ Assisting Supervisors with the identification of confined spaces.
- ➲ Providing training as set forth in the program.
- ➲ Labeling Permit-Required Confined Spaces.

Responsibilities and Training Requirements of Supervisors:

- Identifying confined spaces within facilities or areas under their control.
- Identifying hazards within a confined space under their control.
- Documenting that all training requirements for a specific confined space entry have been met by signing the pre-entry authorization space on the entry permit.

Responsibilities and Training Requirements of Entry Supervisors:

- Ensuring that the required atmospheric tests are performed at the confined space and results recorded on the permit prior to entry authorization.
- Obtaining and maintaining all equipment necessary to complete the confined-space entry project.
- Authorize entry by signing the Entry Authorization space on the entry permit after all conditions for a safe entry have been met.
- Terminating the entry and canceling the permit when:
    - Entry operations covered by the entry permit have been completed.
    - A condition that is not allowed under the entry permit arises in or near the permit space.
- Upon completion of the Entry Permit supervisors shall retain each cancel entry permit for at least one (1) year to facilitate the review of the Permit-Required Confine Space Program
- Determining, whenever responsibility for a permit space entry operation is transferred, and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

Responsibilities and Training Requirements of Authorized Entrants: The person(s) authorized to enter a confined space shall be responsible for and receive training in the following:

- The knowledge of hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure.
- Proper use of equipment, which includes:
    - Atmospheric testing and monitoring equipment.
    - Ventilating equipment needed to obtain acceptable entry conditions.

- Communication equipment necessary to maintain contact with the attendant.
- Personal protective equipment as needed.
- Lighting equipment as needed.
- Barriers and shields as needed.
- Equipment, such as ladders, needed for safe ingress and egress.
- Rescue and emergency equipment as needed.
- Any other equipment necessary for safe entry into and rescue from permit spaces.

➲ Communication with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space if required.

➲ Alert the attendant (standby person) whenever the entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or detects a prohibited condition.

➲ Exiting the permit space as quickly as possible whenever:

- An order to evacuate has been given by the attendant or the entry supervisor;
- The entrant recognizes any warning sign or symptom of exposure to a dangerous situation;
- The entrant detects a prohibited condition; or
- An evacuation alarm is activated.

Responsibilities and Training Requirements of Attendants: Persons authorized to perform duties as attendant shall be responsible for and receive training in the following:

➲ Knowing the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of exposure.

➲ Awareness of possible behavioral effects of hazard exposure in authorized entrants.

➲ Continuously maintaining an accurate count of authorized entrants in the permit space and ensuring that the means used to identify authorized entrants accurately identifies who is in the permit space.

- Remains outside the permit space during entry operations until relieved by another attendant.

- Attempting non-entry rescue if proper equipment is in place and the rescue attempt will not present further hazards to the entrant or attendant.

- Communicating with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space when conditions warrant.

- Monitoring activities inside and outside the space to determine if it is safe for entrants to remain in the space and ordering the authorized entrants to evacuate the permit space immediately under unsafe conditions.

RESULTS MEASUREMENT: To determine whether your department is in compliance with Metro's Confined Space Entry Program and OHSA regulation 29 CFR.1910.146, fill out the **Entering Confined Space Checklist** below. If you need assistance to bring your department into compliance, contact the Metro Occupational Safety Administrator.

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REFERENCES & AUTHORITY

1. Title 29 of the Code of Federal Regulations Part 1910.146 - Permit-Required Confined Spaces. U.S. Government Printing Office.

2. National Safety Council Data Sheet 1-704-85 - Confined Space Entry Control System for R&D Operations, National Safety News.

3. N.I.O.S.H. Training and Resource Manual - Safety and Health in Confined Workspaces for the Construction Industry.

4. N.I.O.S.H. 87-113 - A Guide to Safety in Confined Spaces.

5. Title 29 of the Code of Federal Regulations Part 1926.652 - Requirements for Protective Systems.

6. Title 29 of the Code of Federal Regulations Part 1910.150 - The Control of Hazardous Energy.

7. Title 29 of the Code of Federal Regulations Part 1910.134 - Respiratory Protection.

GLOSSARY OF TERMS

a. Attendant - A person designated by the department head in charge of entry to remain outside the confined space and to be in constant communication with the personnel working inside the confined space.

b. Authorized Entrant - A person who is approved or assigned by the department head in charge of the entry to perform a specific type of duty or duties or to be at a specific location at the job site.

c. Bonding - The joining of two or more items with an electrical conductor so that all ends joined have the same electrical charge or potential.

d. Confined Space - (see page 4).

e. Entry - The action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

f. Entry Permit - The written or printed document that is provided by the employer to allow and control entry into a permit space and that contains the information specified in this program.

g. Entry Supervisor - Department supervisor or the designated representative (such as the foreman or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this program.

h. Note: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this program for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of entry operation.

i. Hazardous Atmosphere - An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of 10% of its lower flammable limit (LFL).

- Airborne combustible dust at a concentration that meets or exceeds its LFL.

  NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less.

- Atmospheric oxygen concentration below 19.5% or above 23.5%.

- Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of 29 CFR 1910 and that could result in employee exposure in excess of its dose or permissible exposure limit. (SEE NOTE BELOW)

  NOTE: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

- Any other atmospheric condition that is immediately dangerous to life or health.

  NOTE: For air contaminants for which TOSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Hazard Communication Standard, section 1910.1200, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

j. Hot Work - Any work involving burning, welding or similar fire-producing operations. Also, any work that produces a source of ignition, such as grinding, drilling, or heating.

k. Hot Work Permit - The employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

l. Immediately Dangerous to Life or Health - An atmosphere that poses an immediate threat of loss of life: May result in irreversible or immediate severe health effects; may result in eye damage/irritation; or other condition that could impair escape from a confined space.

m. Lower Explosive Limit (LEL) - The minimum concentration of a combustible gas or vapor in air that will ignite if an ignition source is introduced.

n. Non-Permit Required Confined Space - (see page 4)

o. Oxygen-Deficient Atmosphere - An atmosphere that contains an oxygen concentration of less than 19.5% by volume.

p. Oxygen-Enriched Atmosphere - An atmosphere that contains an oxygen concentration greater than 22% by volume.

q. PPE - Personal Protective Equipment: Any devices or clothing worn by the worker to protect against hazards in the environment. Examples are respirators, gloves, and chemical splash goggles.

r. PEL - Permissible Exposure Level: - Concentration of a substance to which an individual may be exposed repeatedly without adverse effect.

s. Permit Required Confined Space - (see page 2)

t. Purging - The removal of gases or vapors from a confined space by the process of displacement.

u. Standby Person - A person designated by the department head in charge of entry to remain outside the confined space and to be in constant communication with the personnel working inside the confined space.

APPENDIX A

CONFINED SPACE ENTRY PERMIT

This permit must be completed prior to entry into the confined space. Entry cannot be performed if any boxes are marked "No." This permit is valid <u>for only 8 hours only</u>.

Date of entry: _____ Time of Entry: _____
Location: _____ Type of space:_____
Equipment to be worked on: _____
Work to be performed: _____
Anticipated time needed to complete work:_____
Anticipated Harzards:_____
Entry personnel: _____
Attendants:_____

				Acceptable conditions
1.	**Atmospheric checks**:	Oxygen	_____% O_2	19.5 % to 23.5 %
		Explosive	_____% L.F.L.	‹10% L.E.L./L.F.L.
		Toxic	_____ppm	0-35 ppm Carbon Monoxide
				0-10 ppm Hydrogen Sulfide

Atmospheric Tester's Initials:_____ Time:_____

2.	Isolation of pumps/lines:	**N/A**	**Yes**	**No**
	Pumps or lines blocked, blinked, or disconnected	( )	( )	( )
3.	Ventilation:	**N/A**	**Yes**	**No**
	Mechanical	( )	( )	( )
	Natural ventilation only	( )	( )	( )
4.	Hot work permit required	( )	( )	( )

5. Atmospheric checks **after** isolation and ventilation, if applicable:
Oxygen: _____% O_2
Explosive: _____% L.E.L
Toxic: _____PPM

6. Communication procedures:_____
7. Lockout procedures, if applicable: _____

8.	Entrant(s), attendant(s), and rescue personnel (if applicable) have successfully completed required training.		**Yes** ( )	**No** ( )
9.	**Equipment:**	**N/A**	**Yes**	**No**
	Direct reading sampling device which is properly calibrated	( )	( )	( )
	Safety harnesses and lifelines for entrants and attendants	( )	( )	( )
	Mechanical retrieval/hosting equipment	( )	( )	( )
	Communication equipment	( )	( )	( )
	SCBA or Type C air line respirator	( )	( )	( )
	Personal protective equipment and clothing	( )	( )	( )
	Electrical equipment/Lighting/Non sparking Tools	( )	( )	( )
	Traffic barriers/entrance covers	( )	( )	( )

I have reviewed the work authorized by this permit and the information pertaining to each item. Safety procedures have been received and are understood by all personnel.

Entry Supervisor: _____Date: _____

APPENDIX B

Pre-Entry Planning Worksheet

ENTERING CONFINDED SPACE CHECKLIST

___ Are confined spaces thoroughly emptied of any corrosive or hazardous substances, such as acids or caustics before entry?

___ Are all lines to a confined space containing inert, toxic, flammable or corrosive materials valve off and blanked or disconnected and separated before entry?

___ Is either natural or mechanical ventilation provided prior to confined space entry?

___Are appropriate atmospheric test performed to check for oxygen deficiency, toxic substances and explosive concentrations in the confined space before entry?

___ Is adequate light provided for the work to be performed in the confined space?

___ Is there an assigned safety standby employee outside of the confined space, when required, whose sole responsibility is to watch the work in progress and render assistance if necessary?

___ Is the standby employee prohibited from entering the confined space with out a lifeline and respiratory equipment?

___ Is all the electrical equipment used in the confined space grounded and insulated, or equipped with ground fault protection?

___ If the employee will be using oxygen consuming equipment such as torches, furnaces, etc. in a confined space, is sufficient air provided to assure combustion without reducing the oxygen concentration below 19.5 % by volume?

___ Whenever combustion type equipment is used in a confined space, are provisions made to ensure the exhaust gasses are vented outside of the enclosure?

___ Is each confined space checked for decaying vegetation or animal matter which may produce methane?

CONFINED SPACE ENTRY PERMIT

This permit must be completed prior to entry into the confined space. Entry cannot be performed if any boxes are marked "No." This permit is valid for only 8 hours only.

Date of entry: _____ Time of Entry: _____
Location: _____ Type of space:_____
Equipment to be worked on: _____
Work to be performed: _____
Anticipated time needed to complete work:_____
Anticipated Harzards:_____
Entry personnel: _____
Attendants:_____

				Acceptable conditions
1.	**Atmospheric checks**:	Oxygen	_____% O_2	19.5 % to 23.5 %
		Explosive	_____% L.F.L.	‹10% L.E.L./L.F.L.
		Toxic	_____ppm	0-35 ppm Carbon Monoxide
				0-10 ppm Hydrogen Sulfide

Atmospheric Tester's Initials:_____ Time:_____

		N/A	**Yes**	**No**
2.	Isolation of pumps/lines:			
	Pumps or lines blocked, blinked, or disconnected	( )	( )	( )
3.	Ventilation:	**N/A**	**Yes**	**No**
	Mechanical	( )	( )	( )
	Natural ventilation only	( )	( )	( )
4.	Hot work permit required	( )	( )	( )

5. Atmospheric checks **after** isolation and ventilation, if applicable:
- Oxygen: _____% O_2
- Explosive: _____% L.E.L
- Toxic: _____PPM

6. Communication procedures:_____
7. Lockout procedures, if applicable: _____

8.	Entrant(s), attendant(s), and rescue personnel (if applicable) have successfully completed required training.		**Yes** ( )	**No** ( )
9.	**Equipment:**	**N/A**	**Yes**	**No**
	Direct reading sampling device which is properly calibrated	( )	( )	( )
	Safety harnesses and lifelines for entrants and attendants	( )	( )	( )
	Mechanical retrieval/hosting equipment	( )	( )	( )
	Communication equipment	( )	( )	( )
	SCBA or Type C air line respirator	( )	( )	( )
	Personal protective equipment and clothing	( )	( )	( )
	Electrical equipment/Lighting/Non sparking Tools	( )	( )	( )
	Traffic barriers/entrance covers	( )	( )	( )

I have reviewed the work authorized by this permit and the information pertaining to each item. Safety procedures have been received and are understood by all personnel.

Entry Supervisor: _____Date: _____

EMERGENCY ACTION PLAN

OVERVIEW: The Emergency Action Plan equips departments with the resources needed to respond effectively to emergencies.

OBJECTIVE: The objective of the Metro Government Emergency Action Plan is to protect employees and Metropolitan Government property in the event of fire or other emergency. This program is based on the Occupational Safety and Health Administration's (OSHA) Emergency Action Plan Standard, 29 CFR 1910.38.

DOES THIS PROGRAM APPLY TO YOUR DEPARTMENT? All departments shall have an Emergency Action Plan. If a department has more than ten employees, the plan must be in writing. The following plan should be used as a **guide** to help your department comply with the OSHA rules laid out in 29 CFR 1910.38.

WHAT DOES IT INVOLVE? Each department will be responsible for the implementation and administration of this program. Following each fire drill, responsible management shall evaluate the drill for effectiveness and weaknesses in the plan, and shall implement changes to improve it. Copies of this written program should be placed in the same location as departmental safety information. The master copy will be in the office of the Metro Occupational Safety Administrator.

The Emergency Action Plan will contain the following elements:

- Procedure to report fires (and other emergencies).
- Methods of informing employees of emergencies (distinctive alarms).
- Assignments & responsibilities of personnel will take a leadership role in an emergency.
- Evacuation Routes & Evacuation Procedures
- Methods to secure property & equipment
- Drills
- Procedure to account for all employees after evacuation is complete
- Location and use of Fire Extinguishers
- Training & plan evaluation

PLAN IMPLEMENTATION

Informing Metro Employees of Fires and Emergency Situations: In the event of a fire or emergency situation, supervisors shall ensure that all employees are notified as soon as possible using the building alarm system (which includes both audible and visual alarms 24 hours a day).

- If a fire or emergency situation occurs after normal business hours, departmental supervisors and/or management shall contact all employees not on shift of future work status, depending on the nature of the situation.

Emergency Contact Information: Each department shall maintain a list of all employees' personal emergency contact information and shall keep the list in a designated area for easy access in the event of an emergency.

Evacuation Routes: The following procedures represent acceptable guidelines for ensuring the safe and orderly evacuation of building occupants.

- Emergency evacuation escape route plans (see Appendix A) are to be posted throughout Metro facilities.
- In the event that a fire/emergency alarm is sounded or instructions for evacuation are given, all employees (except those noted in the *Securing Property and Equipment* section of this plan) shall immediately exit the building(s) at the nearest exits as shown in the escape route plans, and shall meet as soon as possible in a designated area. Employees with offices shall close the doors (unlocked) as they exit the area.
- Mobility impaired employees and their assigned assistants will gather at a designated area within the building to ensure safe evacuation in the pre-determined fashion.

Emergency Situations: Under no circumstances shall an employee attempt to fight a fire that has passed the incipient stage (that which can be put out with a fire extinguisher), nor shall any employee attempt to enter a burning building to conduct search and rescue. These actions shall be left to emergency services professionals who have the necessary training, equipment, and experience (such as the fire department or emergency medical professionals). Untrained individuals may endanger themselves and/or those they are trying to rescue.

Securing Property and Equipment: In the event that evacuation of the premises is necessary, some items may need to be secured to prevent further detriment to the facility and personnel on hand (such as securing confidential/irreplaceable records, or shutting down equipment to prevent release of hazardous materials). Only those individuals may remain in the building for the prescribed amount of time to secure the property and equipment to which they have been assigned.

- ➲ All individuals remaining behind to shut down critical systems or utilities shall be capable of recognizing when to abandon the operation or task.
- ➲ Once the property and/or equipment has been secured, or the situation becomes too dangerous to remain, those individuals shall exit the building by the nearest escape route as soon as possible and meet the remainder of the employees at the designated assembly area.

Accounting for Employees/Visitors After Evacuation: Once an evacuation has occurred, each employee is responsible for reporting to the appropriate supervisor or employee in lead position so an accurate head count can be made.

Re-entry: Once the building has been evacuated, no one shall re-enter the building for any reason, except for designated and properly trained rescue personnel (such as fire department or emergency medical professionals). Untrained individuals may endanger themselves and/or those they are trying to rescue.

- ➲ All employees shall remain at the designated assembly area until the fire department or other emergency response agency notifies building occupants that either:

  - The building is safe for re-entry, in which case personnel shall return to their workstations; or
  - The building is not safe, in which case personnel shall be instructed by their supervisors on how/when to vacate the premises.

Sheltering in Place: In the event that chemical, biological, or radiological contaminants are released into the environment, authorities may determine that is safer to remain indoors rather than to evacuate employees. The responding personnel shall announce Shelter in Place status by public address system or other means of immediate notification available at worksite.

- ➲ If there are customers, clients, or visitors in the building, they shall be advised to stay in the building for their safety.
- ➲ Unless there is an imminent threat, employees, customers, clients, and visitors may call their emergency contacts to let them know where they are and that they are safe.
- ➲ The recording for voice mail or automated attendant shall be changed to indicate that the facility is closed, and that staff and visitors will be remaining in the building until authorities advise that it is safe to leave.
- ➲ Designated personnel shall quickly lock exterior doors and close windows, air vents, and fireplace dampers. Building occupants familiar with the building's mechanical systems shall turn off, seal, or disable all fans, heating and air conditioning systems, and clothes dryers, especially those systems that automatically provide for exchange of inside air with outside air. If there is a danger of explosion, close the window shades, blinds, or curtains.

- ➲ All employees, customers, and visitors shall move immediately to the shelter in place location(s) within the building.
- ➲ Supervisors or employees in lead positions shall write down the names of everyone in the room, and call the designated emergency contact outside of the building to report who is in the room, and their affiliations with Metro (employee, visitor, client, customer).

TRAINING & PLAN EVALUATION All employees shall receive instruction on the Emergency Action Plan as part of their new employee orientation upon hire or:

- ➲ when there are any changes to the plan and/or facility;
- ➲ when an employee's responsibilities change; and
- ➲ annually as refresher training.

Items to be reviewed during the training include:

- o who will be in authority and will make decisions related to evacuation, oversee emergency procedures, coordinate with outside emergency services, and direct shutdown of operations;
- o the types of emergencies that may occur;
- o fire extinguisher locations, usage, and limitations;
- o how employees will be notified of an emergency;
- o individual responsibilities;
- o escape routes and procedures;
- o emergency shut-down procedures;
- o procedures for accounting for employees and visitors;
- o sheltering in place;
- o severe weather procedures;
- o Emergency Action Plan availability;
- o proper housekeeping; and
- o fire prevention practices.

Fire/Evacuation Drills Fire/Evacuation drills shall be conducted at least annually, and shall be conducted in coordination with local police and fire departments. Additional drills shall be conducted if physical properties of the business change, processes change, or as otherwise deemed necessary.

Training Records Departmental supervisors shall document all training pertaining to this plan and shall maintain records with other safety data.

Plan Evaluation To determine whether your department is in compliance with Metro's Emergency Action Plan and OHSA regulation 29 CFR.1910.38, fill out the **Emergency Action Plan Checklist** (see Appendix A.) If you need assistance to bring your department into compliance, contact the Metro Safety Administrator at 862-8400.

GLOSSARY OF TERMS

1) **Metro employee**. Any faculty, staff, or employee who receives compensation from Metro for his/her employment.
2) **Incipient stage fire**. A fire in the initial or beginning stage that can be controlled by using a portable fire extinguisher and that does not require using protective equipment.
3) **Area of rescue assistance**. Designated areas of protection on floors of a building above ground level where individuals who physically cannot use the stairways for evacuation are to wait for rescue assistance. In the buildings made of concrete blocks these are two (2) hour fire partition. If a building is fully sprinkled any point in the building is an area of refuge.
4) **Designated personnel**. Metro employees who have received annual training on the proper use of portable fire extinguishers and have taken on additional responsibilities involving the evacuation of the facility.

PLAN EVALUATION

Appendix A

Emergency Action Plan Checklist

[Courtesy of the Occupational Safety and Health Administration (OSHA)]

General Issues		
☐	Does the plan consider all natural or man-made emergencies that could disrupt your workplace?	Common sources of emergencies identified in emergency action plans include - fires, explosions, floods, hurricanes, tornadoes, toxic material releases, radiological and biological accidents, civil disturbances, and workplace violence.
☐	Does the plan consider all potential internal sources of emergencies that could disrupt your workplace?	Conduct a hazard assessment of the workplace to identify any physical or chemical hazards that may exist and could cause an emergency.
☐	Does the plan consider the impact of these internal and external emergencies on the workplace's operations and is the response tailored to the workplace?	Brainstorm worst-case scenarios asking yourself what you would do and what would be the likely impact on your operation and device appropriate responses.
☐	Does the plan contain a list of key personnel with contact information as well as contact information for local emergency responders, agencies and contractors?	Keep your list of key contacts current and make provisions for an emergency communications system such as a cellular phone, a portable radio unit, or other means so that contact with local law enforcement, the fire department, and others can be swift.
☐	Does the plan contain the names, titles, departments, and telephone numbers of individuals to contact for additional information or an explanation of duties and responsibilities under the plan?	List names and contact information for individuals responsible for implementation of the plan.
☐	Does the plan address how rescue operations will be performed?	Unless you are a large employer handling hazardous materials and processes or have employees regularly working in hazardous situations, you will probably choose to rely on local public resources, such as the fire department, who are trained, equipped, and certified to conduct rescues. Make sure any external department or agency identified in your plan is prepared to respond as outlined in your plan. Untrained individuals may endanger themselves and those they are trying to rescue.
☐	Does the plan address how medical assistance will be provided?	Most small employers do not have a formal internal medical program and make arrangements with medical clinics or facilities close by to handle emergency cases and provide medical and first aid services to their employees. If an infirmary, clinic, or hospital is not close to your workplace, ensure that onsite person(s) have adequate training in first aid. The American Red Cross, some insurance providers, local safety councils, fire departments, or other resources may be able to provide this training. Treatment of a serious injury should begin within 3 to 4 minutes of the accident. Consult with a physician to order appropriate first-aid supplies for emergencies. Establish a relationship with a local ambulance service so transportation is readily available for emergencies.
☐	Does the plan identify how or where personal information on employees can be obtained in an emergency?	In the event of an emergency, it could be important to have ready access to important personal information about your employees. This includes their home telephone numbers, the names and telephone numbers of their next of kin, and medical information.

Evacuation Policy and Procedure		
☐	Does the plan identify the conditions under which an evacuation would be necessary?	The plan should identify the different types of situations that will require an evacuation of the workplace. This might include a fire, earthquake, or chemical spill. The extent of evacuation may be different for different types of hazards.
☐	Does the plan identify a clear chain of command and designate a person authorized to order an evacuation or shutdown of operations?	It is common practice to select a responsible individual to lead and coordinate your emergency plan and evacuation. It is critical that employees know who the coordinator is and understand that this person has the authority to make decisions during emergencies. The coordinator should be responsible for assessing the situation to determine whether an emergency exists requiring activation of the emergency procedures, overseeing emergency procedures, notifying and coordinating with outside emergency services, and directing shutdown of utilities or plant operations if necessary.
☐	Does the plan address the types of actions expected of different employees for the various types of potential emergencies?	The plan may specify different actions for employees depending on the emergency. For example, employers may want to have employees assemble in one area of the workplace if it is threatened by a tornado or earthquake but evacuate to an exterior location during a fire.
☐	Does the plan designate who, if anyone, will stay to shut down critical operations during an evacuation?	You may want to include in your plan locations where utilities (such as electrical and gas utilities) can be shut down for all or part of the facility. All individuals remaining behind to shut down critical systems or utilities must be capable of recognizing when to abandon the operation or task and evacuate themselves.
☐	Does the plan outline specific evacuation routes and exits and are these posted in the workplace where they are easily accessible to all employees?	Most employers create maps from floor diagrams with arrows that designate the exit route assignments. These maps should include locations of exits, assembly points and equipment (such as fire extinguishers, first aid kits, spill kits) that may be needed in an emergency. Exit routes should be clearly marked and well lit, wide enough to accommodate the number of evacuating personnel, unobstructed and clear of debris at all times, and unlikely to expose evacuating personnel to additional hazards.
☐	Does the plan address procedures for assisting people during evacuations, particularly those with disabilities or who do not speak English?	Many employers designate individuals as evacuation wardens to help move employees from danger to safe areas during an emergency. Generally, one warden for every 20 employees should be adequate, and the appropriate number of wardens should be available at all times during working hours. Wardens may be responsible for checking offices and bathrooms before being the last person to exit an area as well as ensuring that fire doors are closed when exiting. Employees designated to assist in emergency evacuation procedures should be trained in the complete workplace layout and various alternative escape routes. Employees designated to assist in emergencies should be made aware of employees with special needs (who may require extra assistance during an evacuation), how to use the buddy system, and any hazardous areas to avoid during an emergency evacuation.
☐	Does the plan identify one or more assembly areas (as necessary for different types of emergencies) where employees will gather and a method for accounting for all employees?	Accounting for all employees following an evacuation is critical. Confusion in the assembly areas can lead to delays in rescuing anyone trapped in the building, or unnecessary and dangerous search-and-rescue operations. To ensure the fastest, most accurate accounting of your employees, consider taking a head count after the evacuation. The names and last known locations of anyone not accounted for should be passed on to the official in charge.
☐	Does the plan address how visitors will be assisted in evacuation and accounted for?	Some employers have all visitors and contractors sign in when entering the workplace. The hosts and/or area wardens, if established, are often tasked with assisting these individuals evacuate safely.

Reporting Emergencies and Alerting Employees in an Emergency		
☐	Does the plan identify a preferred method for reporting fires and other emergencies?	Dialing 911 is a common method for reporting emergencies if external responders are utilized. Internal numbers may be used. Internal numbers are sometimes connected to intercom systems so that coded announcements may be made. In some cases employees are requested to activate manual pull stations or other alarm systems.
☐	Does the plan describe the method to be used to alert employees, including disabled workers, to evacuate or take other action?	Make sure alarms are distinctive and recognized by all employees as a signal to evacuate the work area or perform other actions identified in your plan. Sequences of horn blows or different types of alarms (bells, horns, etc.) can be used to signal different responses or actions from employees. Consider making available an emergency communications system, such as a public address system, for broadcasting emergency information to employees. Ideally alarms will be able to be heard, seen, or otherwise perceived by everyone in the workplace including those that may be blind or deaf. Otherwise floor wardens or others must be tasked with ensuring all employees are notified. You might want to consider providing an auxiliary power supply in the event of an electrical failure.

Employee Training and Drills		
☐	Does the plan identify how and when employees will be trained so that they understand the types of emergencies that may occur, their responsibilities, and actions as outlined in the plan?	Training should be offered to employees when you develop your initial plan and when new employees are hired. Employees should be retrained when your plan changes due to a change in the layout or design of the facility, when new equipment, hazardous materials, or processes are introduced that affect evacuation routes, or when new types of hazards are introduced that require special actions. General training for your employees should address the following: • individual roles and responsibilities; • threats, hazards, and protective actions; • notification, warning, and communications procedures; • emergency response procedures; • evacuation, shelter, and accountability procedures; • location and use of common emergency equipment; and • emergency shutdown procedures. You may also need to provide additional training to your employees (i.e. first aid procedures, portable fire extinguisher use, etc.) depending on the responsibilities allocated employees in your plan.
☐	Does the plan address how and when retraining will be conducted?	If training is not reinforced it will be forgotten. Consider retraining employees annually.
☐	Does the plan address if and how often drills will be conducted?	Once you have reviewed your emergency action plan with your employees and everyone has had the proper training, it is a good idea to hold practice drills as often as necessary to keep employees prepared. Include outside resources such as fire and police departments when possible. After each drill, gather management and employees to evaluate the effectiveness of the drill. Identify the strengths and weaknesses of your plan and work to improve it.

EXCAVATION/TRENCHING PROGRAM

The purpose of this guideline is to ensure compliance with the OSHA Excavation Standard 29 CFR 1926- Subpart "P" and the Safety Program and Training requirements of 29 CFR 1926 - Subpart "C".

GENERAL:

Several hundred people die and ten times that many are injured every year in trenches. Trenching is the most hazardous construction work in America today. Strict adherence to 29 CFR 1926- Subpart "F" is essential to ensure workers safety. A competent person will never allow workers to be exposed to unsafe trench conditions, no matter how short the exposure will be!

DUTIES OF DEPARTMENTS THAT EXCAVATE:

1. Will maintain a copy of 29 CFR 1926- Subpart "P" and have a comprehensive knowledge of OSHA's Excavation Standards. In addition, competent persons shall have a general knowledge of all applicable construction standards.

2. Conduct pre-job site review to develop a job plan that ensures a safe, efficient job process. A competent person will evaluate difficult sloping and shoring problems prior to commencing the work.

3. Perform inspections of equipment and trench conditions at the start of each shift or as needed by changing conditions.

4. Competent person has the duty and responsibility to remove all employees from hazardous condition and effect all changes necessary to ensure safety.

5. Categorize soil conditions and conduct visual and manual tests to determine stability of soil and surrounding trench conditions. NOTE: If visual and manual tests are not performed, soils shall be classified as type "C".

6. Maintain on-site records of protection systems.

7. Determine the appropriate protection system to be used and oversee installation.

8. Verify that a competent person designs ramps and walkways for employee use in accordance with OSHA standards.

9. Competent person shall verify proper design of structural equipment ramps and walkways, or shall contact an registered professional engineer (RPE) to design structural equipment ramps and walkways.

10. Hold tailgate safety meetings with all crew members prior to trenching and shoring operations. Subsequent meeting shall be held as conditions warrant.

11. A competent person shall be on-site at all times during excavation/trenching operations.

12. Assure that appropriate emergency rescue equipment is available to meet existing or potential conditions.

13. Monitor use of water removal equipment.

14. Test for oxygen presence and air quality in excavations as necessary. Competent persons shall be qualified in identifying confined/hazardous spaces due to the presence of flammable/combustible gases, toxics, oxygen deficiency and oxygen enriched environments.

15. Competent person shall consult with RPE for trenches over 20', specially designed shoring bracing or underpinning or when excavation endangers nearby structures.

NOTE: Competent persons shall ensure that all trenches are properly classified, sloped, or shored in accordance with the appendices of 29 CFR 1926- Subpart "P", or in accordance with manufactures tabulated data. Furthermore, competent persons shall consult with a RPE obtaining written guidance whenever the work exceeds 20 feet in depth, or the work will require control measures not specified in the standard.

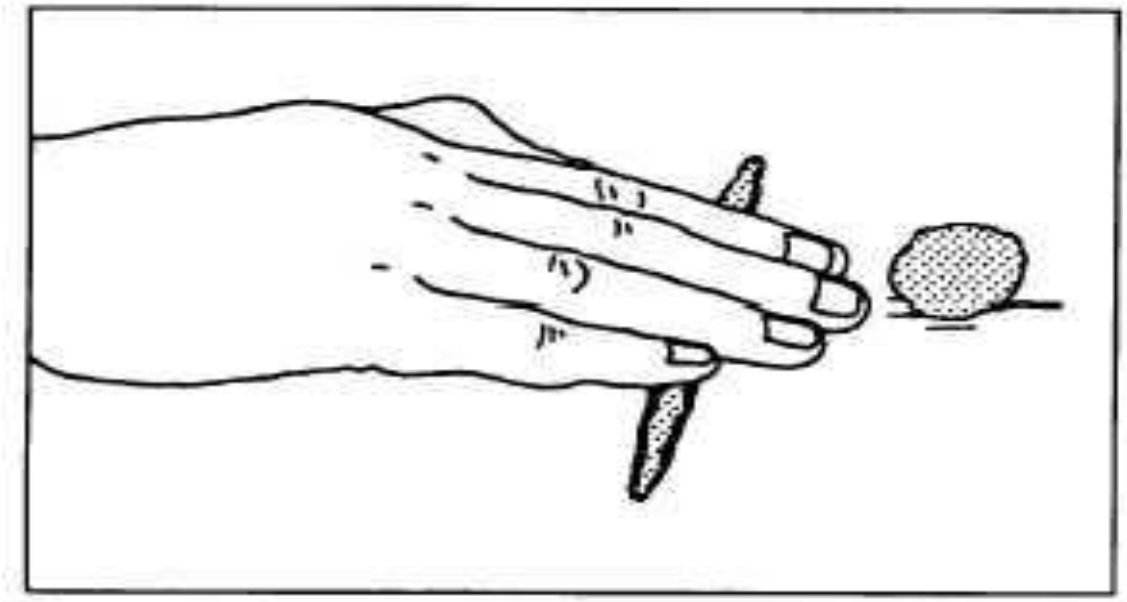
STEPS FOR DETERMINING SOILS CLASSIFICATION:

1. Visually inspect spoil pile and trench for indication of cohesive or granular soils. If soil appears to be cohesive, conduct plasticity test. If soils are cohesive classify soils by thumb penetration, shear vane, or pocket penetrometer. If soils do not pass plasticity test, classify granular soils by sedimentation test. NOTE: Other visual and manual tests are authorized in appendix A to 29 CFR 1926- Subpart "P".

2. Determine if soil is cohesive (plasticity test). The following provides a couple of examples for cohesive soil testing:

A. Roll or Thread test: Mold a moist or wet sample of soil into a ball and attempt to roll it into threads as thin as 1/8" in diameter. Cohesive material can be successfully rolled into threads without crumbling. For example, if at least a two inch length of 1/8" in diameter thread can be held on one end without tearing the soil is cohesive.

NOTE: Only use material passing a No.40 sieve.



ROLL OR THREAD TEST

B. Ribbon Test: Form a roll of moist soil about 1/2" to 3/4" in diameter. Cohesive material can be successfully rolled into 1/2" to 3/4" ribbon without crumbling. For example, if at least 3" to 5" in length can be held on one end without tearing the soil is cohesive.

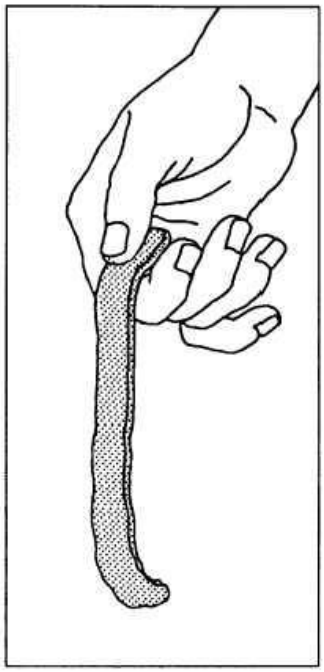


Figure 1 - Ribbon Test

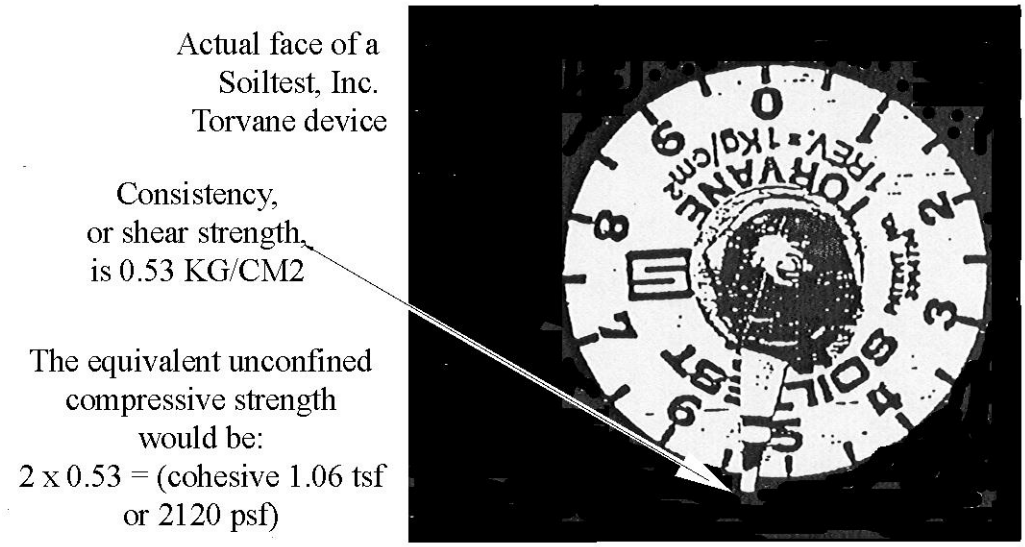
NOTE : Only use material passing a No. 40 sieve.

3. If plasticity test(s) proves that soils have cohesive qualities, determine the type of soil (A,B,C by using the following test methods:

NOTE: Soil testing equipment shall be used in accordance with manufactures specifications.

A. Thumb penetration (cohesive soils only):
Type "A": 1/4" or less
Type "B": 1/4" to 1"
Type "C": 1" or more

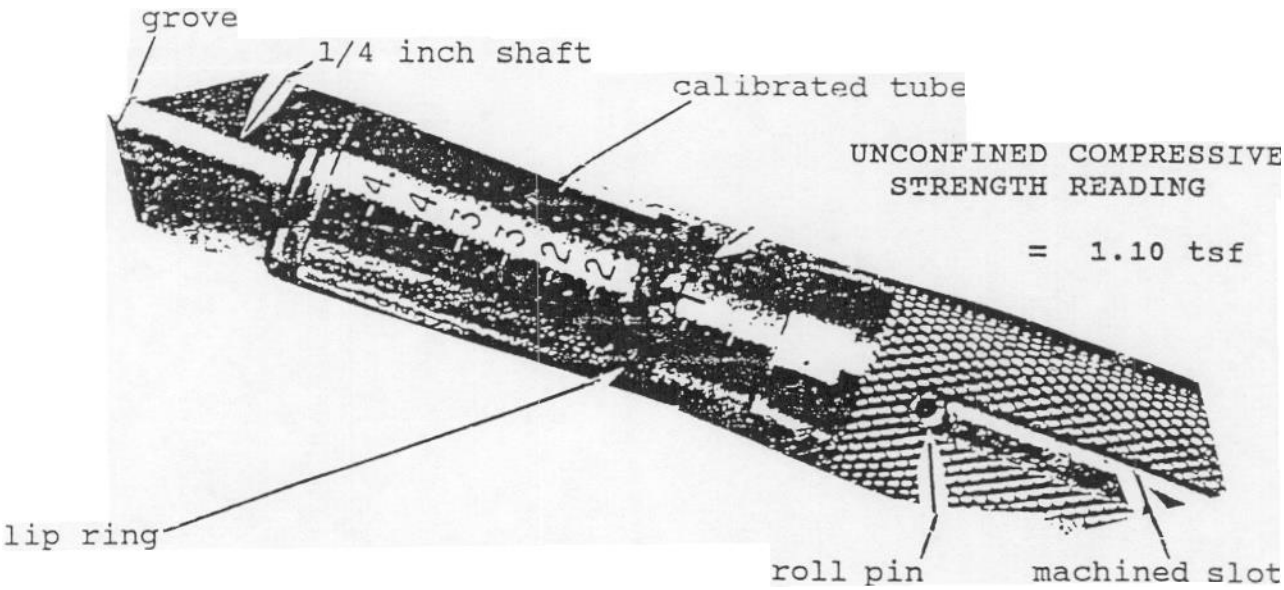
B. Determining Shear Strength (cohesive soils only): By using a hand held vane shear device, the soil condition for cohesive soils can be determined. The following provides an example of the application of the vane shear:



NOTE: This example illustrates a Type "B" soil condition.

C. Determining unconfined compressive strength (cohesive soils only): By using a hand held pocket penetrometer, the soil condition for cohesive soils can be determined. The following provides an example of the application of the pocket penetrometer:

PHOTOGRAPH OF A SOILTEST, INC. POCKET PENETROMETER:



NOTE: Pocket penetrometer is only pushed into the soil until the grove line on the 1/4" shaft penetrates the soil.

4. If soil does not have cohesive qualities (granular soils), use the sedimentation test to determine if soils are a type "B" or "C" soil.

SEDIMENTATION TEST

A. The Sedimentation Test is the hydrometer analysis adapted for field use. Larger particles are the first to settle out of a soil-water suspension. It is used to determine the amount of sand in a sample taken in the field and is used only on soils that are obviously sands or very sandy. To run the sedimentation test, a representative sample of the soil is taken from the spoil pile. Great care must be taken to insure that the sample represents the soil in the trench or excavation; otherwise the test will not be accurate.

B. The soil sample, after the gravel is removed, needs to be large enough to fill a glass jar to a depth of approximately 1-1/2". The soil is placed in a tall straight-sided glass jar so that there is at least 5" of water on top of the soil. The jar should have a flat bottom and must be at least 61/2" inches tall (olive jars work well) .

C. The gravel may be removed by spreading a representative sample of the soil on a flat surface and hand picking the gravel, or by using a number 10 sieve or a piece of 1/8" hardware cloth. The 1/8" hardware cloth will pass some of the smaller gravel particles; they will need to be hand picked. All cohesive aggregations must be broken up so that all particles fall as individuals in the soil water suspension. Use clean water for the test. Place the lid on the jar and thoroughly shake the mixture. After the particles have been completely dispersed and the suspension is uniform,

set the jar down and give it slight twist. The larger particles will begin to settle out immediately. The twist levels out the largest particles so that a level surface is generated. All of the sand will have settled out 30 seconds after you set the jar down. Make a mark on the side of the jar. File folder labels work well for marking because they stick well to a damp jar.

D. The particles will continue to settle out of the suspension until nearly clear water remains above the layered soil. Most of the silt will have settled out in an hour. Make a second mark. Seldom is it necessary to wait over an hour. This test is good only for those soils that have a very high percentage of sands. The soil must be thoroughly dispersed because any small clods of silt and clay remaining unbroken up will act like sand.

E. All soil material below the first mark is sand. The material between the lines is silt and most of the clay. Allowing for the thickness of the glass jar bottom, determine the total height of the soil and the height of the sand. Divide the height of the sand by the total height of the soil and multiply by 100; the result will be the percentage of sand in the sample.

F. If the silt-clay mixture settles out rather quickly, mostly silt is indicated. If the suspended solids above the sand settle out slowly, mostly clay is indicated.

G. Recall that if silt is the primary fine material present, the soil can be called a loamy sand, even though it has only 70% sand by this test. If clay is the primary fine material, there must be 85% sand to call the material a loamy sand.

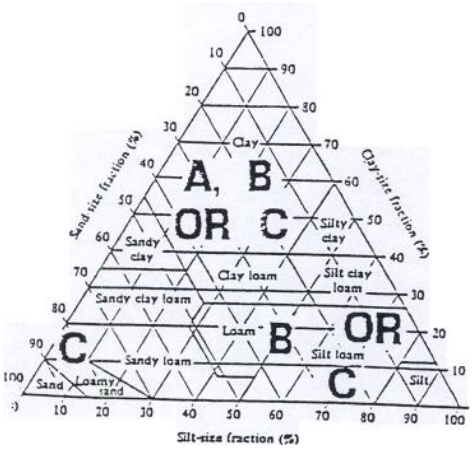
4. Textural Classification -Percentages of sand, silt, and clay. The following chart will aid in soil classification:

TEXTURAL NAME (SOIL CLASS)	**OSHA SOIL TYPE**	**RANGE IN PERCENT**		
		SAND	**SILT**	**CLAY**
SAND	**C**	85-100	0-15	0-10
LOAMY SAND	**C**	70-90	0-30	0-15
SANDY LOAM	**B**	43-80	0-50	0-20
LOAM	**B**	23-52	28-50	7-27
SILT LOAM	**B**	0-50	50-80	0-27
SILT	**B**	0-20	80-100	0-12
SAND CLA Y LOAM	*****	45-80	0-28	20-35
CLAY LOAM	*****	20-45	15-53	27-40
SILTY CLAY LOAM	*****	0-20	40-73	27-40
SANDY CLAY	*****	45-65	0-20	35-55
SILTY CLAY	*****	0-20	40-60	40-60
CLAY	*****	0-45	0-40	40-100

* **DENOTES: A, B, OR** C **DEPENDING UPON UNCONFINED COMPRESSION STRENGTH AND VISUAL INSPECTION OF TRENCH/EXCAVATION.**

The following provides the above information in a graphical geometric form:

CLAY



SAND SILT

NOTE: As a general rule of thumb, you can classify 80% sand or greater as a type "C" soil.

COMPETENT PERSON DOCUMENTATION:

Competent person shall maintain the Daily Inspection Checklist for each trench/excavation. The documentation shall include Job Site Description; Trench/Excavation Inspection Comments; Employee & Public Safety Inspection; Protection System Selected; Soil Conditions; and Construction Design and Comments.

TRAINING:

Competent persons for trenching and excavation work shall be trained in the following objectives:

1. DEFINE SELECTED TERMINOLOGY: Competent persons shall be knowledgeable in the following terms:

- Support system
- Trench
- Excavation
- Registered Professional Engineer (RPE)
- Trench shield/box
- Sloping
- Hydraulic shoring
- Protective system
- Uprights
- Failure

2. IDENTIFY DUTIES OF “COMPETENT PERSON" USING DAILY INSPECTION CHECKLIST: Competent persons shall be knowledgeable in the elements of the Daily Inspection Checklist to identify duties.

3. DOCUMENT TRENCHES/EXCAVATIONS USING THE DAILY INSPECTION CHECKLIST: Competent persons shall be trained to complete the checklist identifying the Job Site Description; Trench/Excavation Inspection Comments; Employee & Public Safety Inspection; Protection System Selected; Soil Conditions; and Construction Design and Comments.

4. DEFINE SELECTED SOIL TERMINOLOGY: Competent person shall be able to identify the following soil conditions:

- Fissures
- Granular
- Saturated
- Clay
- Multiple soil types
- Moist soil
- Caliche
- Cohesive
- Plastic

5. HANDS-ON SOIL TESTING: Competent person training shall include hands on soil classification. Competent person training shall require competent person candidate to classify cohesive (clay) soil (commercial clay or play dough may be used as a substitute), and granular soils.

6. INTERPRET DESCRIPTIONS OF SOIL CONDITIONS AND IDENTIFY TYPES REQUIRING SHORING: Competent persons shall be able to identify conditions that will effect soil classifications, such as: fissures, vibration, previous excavations, blasting, above water table, rock above soil layers, layers tilting in at 4:1 slope or steeper, water freely seeping from side of trench, etc.

7. IDENTIFY CAUSES OF TRENCH CAVE-INS: Competent person shall be able to identify cause of trench cave-in, such as: inadequate support systems, inadequate sloping, surcharge loading, etc.

8. IDENTIFY HYDRAULIC SHORING REQUIREMENTS: Competent person shall be knowledgeable in the manufacturer’s tabulated data, as well as the application of Appendix D to Subpart p (29 CFR 1926). Competent persons shall be able to identify proper installation techniques and limitation of hydraulic shoring, depending upon the depth and soil type. Competent person shall know:

- Maximum horizontal distances between shores,
- Distance from the top cylinder to soil’s top edge,
- Maximum trench width and depth allowed without consulting an RPE,
- Thickness of Finn Form Sheeting for Type "B" soil,

- Number of inches the Finn Form Sheeting should extend above the vertical side of a compound trench and,
- The amount the sheeting may be raised from the bottom of the trench, provided the first cylinder is not higher than 4' from the trench floor to the middle of the first cylinder.

9. IDENTIFY TECHNICAL CHANGES IN SLOPING AND BENCHING SPECIFICATION AND RECOGNIZE SLOPING REQUIREMENTS: Competent person shall be able to identify the slope required for the following soil classifications:

- A - short term - less than 24 hours
- A - long term
- B - long term
- C - long term

In addition, competent persons shall be able to determine when benching is authorized for cohesive soils only.

10. IDENTIFY SAFETY REQUIREMENTS FOR USING A TRENCH SHIELD: Competent person shall be able to identify when end plates are required, how to safely stack shield sections, access and egress requirements, shield construction requirements, material handling requirements (tag line, sling safety, etc.}, and lateral support requirements.

11. IDENTIFY SAFETY REQUIREMENTS FOR A TRENCH WITH SURFACE ENCUMBRANCES: Competent person shall be able to identify appropriate methods in bracing or removing surface encumbrances, including when such bracing should be designed by an RPE.

At the completion of the above training, competent person candidates will demonstrate their proficiency under the supervision of competent company officials prior to being designated as a "competent person" for trenching and excavation work.

TRENCHING/EXCAVATION
DAILY INSPECTION CHECKLIST

COMPETENT PERSON: _____ DATE:

USE ONE OR MORE OF THE FOLLOWING: a " check mark" to indicate yes, comment codes listed below, or fill in blank with applicable information or description.

COMMENT CODES

SOIL TYPE:	ROCK, STABLE ROCK, "A" "B" "C"
HYDROSTATIC CONDITIONS:	(M} MOIST (D} DRY (R) RAINSTORM (SA} SATURATED (PS) PARTIAL SATURATION

JOB SITE DESCRIPTION

Location: _____ Area Congested:
Right-Of-Way And Clearance Ok:
Trench/Excavation Depth: _____ Length:
Location Of Underground Utilities Verified: _____ Date:
Location Of Underground Utilities Marked: _____ Date:
Crossing Trench/Excavation: Lines: _____ Road/ Alley:
Parallel To Trench/ Lines: _____ Road / Alley: _____ Building(S):
Excavation:
Pole Bracing: _____ Overhead Lines: _____ Structural Bracing:
Open Date/Time: _____ Job #:
Registered Professional Engineer: _____ Reason:

TRENCH/EXCAVATION INSPECTION COMMENTS

Soil Type: _____ Times Inspected:
Describe Any Changing Conditions, Plans, Or Shoring Equipment Damage In Space Below:

EMPLOYEE & PUBLIC SAFETY INSPECTIONS

Ladders: _____ Ramp For Employees: _____ Ramp For Equipment:
Emergency Equipment: _____ Air Quality Testing: _____ Water Removal :
Lighted Barricades: _____ Barricade Tape: _____ Cones: _____ Fencing:
Flaggers: _____ Weekend Protection: _____ Steel Plating:
Spoil Pile/Other Material Effectively Removed:

PROTECTION SYSTEM SELECTED

Hydraulic Shores (Size): _____ Sheeting Thickness: _____ No.:
Horizontal Walers (Size): _____ Timber Shores:
Slope: ½:1 _____ ¾:1 _____ 1:1 _____ 1 ½:1
Benching: _____ Unsupported Wall Height:

SOIL CONDITION -SOIL TYPE

NOTE: If one manual & visual test for each is not done, soil must be classified as Type "C".

MANUAL TESTS :

COHESIVE SOILS - RECORD RESULTS:

GRANULAR SOILS - RECORD RESULTS:

VISUAL TESTS:

FISSURES -TRENCH SIDE (CRACKS OR SPALLS):
FISSURES -TOP OF TRENCH (CRACKS OR OPENINGS):
SOIL LAYERS SLOPE INTO TRENCH 4:1 OR STEEPER:
ROCK LAYER ABOVE SOIL LAYER
SEEPAGE INTO TRENCH FROM SIDES _____, SURFACE _____, BOTTOM
VIBRATION SOURCES THAT MAY EFFECT TRENCH STABILITY.
PRIOR OF EXISTING EXCAVATION CROSSING TRENCH: ____ PARALLEL

ADDITIONAL COMMENTS/NOTES:

EXPOSURE CONTROL PLAN

OVERVIEW: The purpose of this program is to eliminate or minimize occupational exposure to the Hepatitis B Virus (HBV), Human Immunodeficiency Virus (HIV) and other pathogens that employees may encounter in their workplace. The program components follow the OSHA Bloodborne Pathogens Standard, Title 29 Code of Federal Regulations 1910.1030; and TOSHA Chapter 0800-1-10, Sharps Injury Prevention. Each department is expected to adapt this Exposure Control Program to the needs of their employees.

OSHA determined that employees face a significant health risk as the result of occupational exposure to blood and other potentially infectious materials (OPIM) because they may contain bloodborne pathogens. These pathogens include but are not limited to HBV, which causes hepatitis B; HIV, which causes acquired immunodeficiency syndrome (AIDS); hepatitis C virus; human T-lymphotrophic virus Type 1; and pathogens causing malaria, syphilis, babesiosis, brucellosis, leptospirosis, arboviral infections, relapsing fever, Creutzfeldt-Jakob disease, and viral hemorrhagic fever. The agency further concludes that these hazards can be minimized or eliminated by using a combination of engineering and work practice controls, personal protective clothing and equipment, training, medical surveillance, hepatitis B vaccination, signs and labels, and other provisions.

OBJECTIVE: To protect employees who work in occupations where there is a risk of exposure to blood or other potentially infectious materials.

DOES THIS PROGRAM APPLY TO THE EMPLOYEES IN MY DEPARTMENT? The Bloodborne Pathogens Program applies to any employee who could **reasonably** be expected to be exposed to skin, eye, mucous membrane, blood or other potentially infectious human fluids during the performance of their job and whose position description specifically describes the duties involving an occupational exposure.

Each department must determine which, if any, employees have a reasonable risk of occupational exposure to bloodborne pathogens. The answers to the questions below will help a department identify those employees with a risk. **If the answer to ANY of these questions is "Yes" for a worker, that worker is considered to be at occupational risk of contracting bloodborne pathogens**.

Employees are at occupational risk if their job description requires or if they ever:

(a) Handle human blood products, such as whole blood, plasma, serum, platelets, or white cells? ○ YES ○ NO

(b) Handle human body fluids such as semen, cerebrospinal fluid, vaginal secretions, joint fluid, pleural fluid, peritoneal fluid, pericardial fluid, or amniotic fluid? O YES O NO

(c) Work with animals, such as primates that are infected with hepatitis B or other bloodborne pathogens OR perform tasks where such animals are housed?
O YES O NO

(d) Handle unfixed human tissue or organs? (Tissues and organs soaked in chemical preservatives such as alcohol or formaldehyde are "fixed")
O YES O NO

(e) Work with HIV, hepatitis B or C virus or other bloodborne pathogens or with preparations, such as liquid solutions or powders containing the these pathogens?
O YES O NO

(f) Handle blood, blood products, body fluids or unfixed tissues or organs of animals infected with the HIV, hepatitis B or C virus or other bloodborne pathogens?
O YES O NO

(g) Handle sharp instruments such as knives, needles, scalpels, or scissors which have been used by others working with human blood or other potentially infectious materials to include human organs, tissue or body fluids OR used by others working with similar body parts and fluids from animals infected with the hepatitis B virus or other bloodborne pathogens?
O YES O NO

(h) Enter areas where other individuals work with human or animal blood, body fluid, tissues or organs which are infected with the HIV, hepatitis B or C virus or other bloodborne pathogens AND perform tasks where any of the aforementioned body substances may come into contact with the worker's unbroken skin, broken skin, or mucous membranes?
O YES O NO

(i) Perform tasks which may potentially result in the workers exposed skin or mucous membranes coming in contact with human or animal blood, body fluids, organs, or tissues which are infected with the HIV, hepatitis B or C virus or other bloodborne pathogens?
O YES O NO

(j) Are a designated first aid responder REQUIRED to perform first aid as part of their job description?
O YES O NO

IF YES, WHAT DOES THE DEPARTMENT NEED TO DO?

Departments shall implement the following elements:

- Training
- Use of *Standard Precautions*
- Implementation of *Engineering Controls*
- Implementation of Work Practice Controls
- Use of *Personal Protective Equipment*
- Appropriate Housekeeping Procedures
- Communicate hazards with labels and signs
- Maintain appropriate records
- Process for Post Exposure Incident Evaluation
- Vaccination Program
- Compliance Measurement

Training: All employees who are at occupational risk of exposure to bloodborne pathogens shall be trained so that they know:

- the potential risks of bloodborne, airborne, and waterborne diseases
- recognition of tasks that may involve exposure to potentially infectious materials
- methods that minimize exposure to bloodborne pathogens,
- procedures for safe handling and disposal of sharp instruments,
- appropriate use of Personal Protective Equipment
- requirements of the State of Tennessee, Sharps Injury Prevention Standard 0800-1-10
- proper procedures for disposal of contaminated materials
- Information about Hepatitis vaccinations, including their safety and effectiveness.
- Contents of OSHA Standard 29 CFR 1910.1030.
- the difference between occupational exposure and an exposure incident and proper procedures to be followed for each

Training will occur for employees who are at occupational risk of exposure to bloodborne pathogens when:

- when they are initially assigned to tasks with the potential for exposure,
- annually to keep their knowledge "up-to-date,"
- any time an employee's work practices deviate from the requirements of the bloodborne program,
- when new or modified tasks and procedures are implemented which affect the occupational exposure of employees
- when employees' jobs are revised in ways that result in new exposures to bloodborne pathogens
- any time Metro establishes new functional positions that will have exposure to bloodborne pathogens

Standard Precautions will be observed by all employees in order to prevent contact with blood or Other Potentially Infectious Material (OPIM). All blood or OPIM will be considered infectious regardless of the perceived status of the source individual. Simply stated, employees should consider all encounters with body fluids as potentially hazardous.

Engineering Controls shall be utilized to eliminate or minimize exposure to all employees. Engineering Controls are procedures that isolate or remove the bloodborne pathogens hazard from the workplace (e.g., sharps disposal containers, self-sheathing needles). The following controls shall be used:

- Hand washing facilities (or antiseptic hand cleaners and towels or antiseptic towelettes) shall be readily accessible to all employees who have the potential for exposure
- Containers for contaminated reusable sharps, specimen containers and secondary containers shall be provided and have the following characteristics (29 CFR 1910.1030 (d4) (iii) (A)):
    - Closeable
    - Puncture-resistant
    - Color-coded or labeled with a biohazard warning label
    - Leak-proof on the sides and bottom
    - All sharps containers will be inspected by the department and will be maintained or replaced as needed to prevent overfilling.
- Available sharps injury protection devices as listed with the State of Tennessee, TOSHA, will be used whenever feasible.
    - A list of engineered sharps injury protection devices in use will be maintained by the Department as part of this program.
- Departments shall periodically (not less than yearly) review IOD reports, Safety Committee activities and new device information to identify the need for changes in engineering controls

Work Practice Controls: The following practices shall be required:

- Employees wash their hands immediately, or as soon as feasible, after removal of potentially contaminated gloves or other personal protective equipment.
- Following any contact of body areas with blood or any other infectious materials, employees wash their hands and any other exposed skin with soap and water as soon as possible. They also flush exposed mucous membranes with water for at least 20 seconds.
- Eating, drinking, smoking, applying cosmetics or lip balm and handling contact lenses is prohibited in work areas where there is potential for exposure to bloodborne pathogens.
- Food and drink is not kept in refrigerators, freezers, on countertops or in other storage areas where blood or other potentially infectious materials are present.
- Mouth pipetting/suctioning of blood or other infectious materials is prohibited.

Personal Protective Equipment (PPE) is the employees' "last line of defense" against bloodborne pathogens. PPE is designed to protect employees from serious workplace injuries or illnesses resulting from contact with blood, bodily fluid, chemical, or other workplace hazards. Departments will provide their employees PPE needed to help protect them from bloodborne pathogen exposure at no cost to the employee. This equipment includes, but is not limited to:

- Gloves
- Safety Glasses
- Goggles
- Face Shields/Masks
- Gowns
- Respirators (e.g. SCBA and N95 for TB or SARS)
- Hypoallergenic gloves, glove liners, and similar alternatives for employees who are allergic to the gloves.

Employees should be trained regarding the location and use of the appropriate PPE for their job classifications and specific tasks they perform. Additional training will be provided, when necessary, if an employee is assigned a new position or new job functions are added to their job description.

To ensure that personal protective equipment is not contaminated and is in the appropriate condition to protect employees from potential exposure, the following practices shall be used:

- Periodic inspection of all personal protective equipment and repair or replacement as needed to maintain its effectiveness.
- Reusable personal protective equipment is cleaned, laundered, and decontaminated as needed.
- Single-use personal protective equipment (or equipment that cannot, for whatever reason, be decontaminated) is disposed of in containers provided in departments which have employees with occupational exposure.

The following work practices shall be implemented to ensure the effectiveness of PPE:

- Remove garments penetrated by blood or other infectious materials immediately, or as soon as feasible in such a way that avoids contact with the outer surface.
- Remove all potentially contaminated personal protective equipment prior to leaving a work area.
- Gloves must be worn when it is reasonably anticipated that there may be contact with blood or other potentially infectious materials.
- Disposable gloves must be replaced as soon as practical after contamination or if they are torn, punctured, or otherwise lose their ability to function as an "exposure barrier." Never wash or decontaminate disposable gloves.
- Utility Gloves may be decontaminated for reuse if their integrity is not compromised. Discard utility gloves if they show signs of cracking, peeling, tearing or deterioration.
- Masks and eye protection must be used whenever splashes or sprays may

generate droplets.

➲ Employees must wear protective clothing whenever potential exposure to the body is anticipated.

➲ Employee must wash hands as soon as possible after removing gloves or other PPE.

➲ Make disposable CPR micro shields available in the glove compartment of Metro vehicles used by employees covered by Bloodborne Pathogen program. These are to be used to protect the person administering CPR from salivary transmission of infectious diseases, respiratory secretions and potential regurgitation.

➲ Dispose of PPE in appropriate containers.

➲ Laundering non PPE garments that are contaminated at home is prohibited by the standard. Departments must address the cleaning and decontamination of such garments in their department plans.

Housekeeping (maintaining affected work areas in a clean and sanitary condition) is an important part of the Bloodborne Pathogens Standard Program and includes the following procedures:

➲ Clean and decontaminate all equipment and surfaces after contact with blood or other potentially infectious materials such as:

- After the completion of medical procedures
- When surfaces are overtly contaminated as soon as feasible
- After any spill of blood or infectious materials.
- At the end of the work shift, if the surface may have been contaminated during that shift.

➲ Remove and replace protective coverings such as plastic trash bags, aluminum foil, or absorbent paper as soon as it is feasible when overtly contaminated or at the end of the work shift, if they may have been contaminated during the shift.

➲ Inspect, clean and decontaminate all trash containers, pails, bins and other receptacles intended for use routinely as soon as possible if visibly contaminated.

➲ Pick up potentially contaminated broken glassware using mechanical means such as dustpan and brush, tongs or forceps.

➲ Use the following procedures when handling regulated waste (liquid or semi-liquid blood or other potentially infectious materials, contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed, items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling, contaminated sharps and pathological or microbiological)

- Discard or "bag" in containers that are:
  - Closeable and puncture-resistant if the discarded materials have the potential to penetrate the container.
  - Leak-proof if the potential for fluid spill or leakage exists
  - Red in color and labeled with the appropriate biohazard warning label.
- Waste containers are maintained upright, routinely replaced and not allowed to overfill. They must be leak-proof, closable, constructed to hold all contents and appropriately labeled.

- Contaminated laundry is handled as little as possible and is not stored or rinsed where it is used. Place contaminated laundry in leak- proof labeled or color coded containers before transport.
- When employees move containers of regulated waste from one area to another the containers are immediately closed and placed inside an appropriate secondary container if leakage is possible from the first container.

Communicate hazards with Bio Hazard Labels and Signs and red "color-coded" containers. The following items shall be labeled:

- Containers of regulated waste
- Refrigerators/freezers containing blood or other potentially infectious materials
- Sharps disposable containers
- Other containers used to store, transport or ship blood and other infectious materials
- Laundry bags and containers
- Contaminated equipment

Labels must include the international legend for bio-hazard. They must be fluorescent orange or orange red and they must be affixed in such a manner that prevents loss or unintentional removal.

Each department shall maintain appropriate records in accordance to 29 CFR 1910.1020. (e.g. Vaccination and Training)

A Vaccination Program provides protection to employees from Hepatitis B infections. Employees who have been determined to be at high risk shall be entitled to receive the Hepatitis B series.

Vaccinations are available, at no cost, to employees who have been determined to be in a high risk occupation. The vaccination program consists of a series of three inoculations over a six-month period that are performed under the supervision of a physician.

If an employee declines to accept the Hepatitis B vaccination, the department must obtain a signed copy of the Refusal Form (see Attachment A) from the employee and place this form in the employee's permanent health record.

Process for Post-Exposure Incident Evaluation An *Exposure Incident* means an incident where an employee has a specific eye, mouth, other mucous membrane or non-intact skin contact with blood or other potentially infectious materials that results from the performance of their duties. If any Metro employee is involved in an exposure incident, there are three things that the department should do:

1. Investigate the circumstances surrounding the exposure incident and complete an **Exposure Incident Form** (see example Attachment B). This form should accompany the employee to the examining medical facility. The supervisor/department should also complete and forward the standard **Metro Record of Occupational Injury /Illness Form - 101** to Metro Government's claims administrator Alternative Service Concepts.

2. Ensure that medical consultation and treatment (if required) is available to the employee as expeditiously as possible.

3. Metro Government's claims administrator Alternative Service Concepts will obtain all necessary medical reports from the physician conducting the post-exposure evaluation, including the Physicians Written Opinion for Post-Exposure Evaluation (Form 401).

As with all information in these areas, it is important to keep the information in these medical records confidential. Metro shall not disclose or report this information to anyone without the affected employee's written consent (except as required by law).

Once these procedures have been completed, an appointment is made with a qualified healthcare professional to discuss the employee's medical status. This includes an evaluation of any reported illnesses, as well as any recommended treatment.

Compliance Measurement If your department has employees that fall under the Bloodborne Pathogen standard, please inspect your job site or facility annually using the **Bloodborne Pathogens Exposure Plan Checklist** (see attachment C)**.** This should help ensure that your facility remains in compliance. If you need assistance to bring your department into compliance, contact the Safety and Risk Management Office at 862-6341.

RESPONSIBILITIES:

Department Heads

- Provide resources to effectively implement this program through the department.
- Establish systems to ensure departmental compliance associated with the Exposure Control Plan.
- Ensure that information regarding training and information on the Exposure Control Plan is available to employees.

Safety Coordinator / Designated Exposure Control Officer

- The Exposure Control Plan shall be reviewed and updated at least annually and whenever necessary to reflect new or modified tasks and procedures which affect occupational exposure and to reflect new or revised employee positions with occupational exposure. 1910.1030(c)(1)(iv)
  The review and update of such plans shall also:
  - Reflect changes in technology that eliminate or reduce exposure to bloodborne pathogens; and
  - Document annually consideration and implementation of appropriate commercially available and effective safer medical devices designed to eliminate or minimize occupational exposure.
- Review operations with supervisors to determine with which bloodborne pathogens or OPIM employees under their supervision may come in contact.
- Follow-up to ensure supervisors are carrying out prescribed Exposure Control requirements.
- Maintain a current list of all job categories that identified as possible exposure risks.
- Periodically review work areas for compliance with policy.
- Provide training to employees on the Exposure Control Plan to the employees that may potentially be at risk of exposure;

Supervisors

- Ensure that there is compliance with the program throughout the group supervised.
- Notify the Safety Coordinator of any operating changes affecting the employee's risk of exposure.
- Identify all jobs that of a reasonable risk of exposure to bloodborne pathogens or OPIM and list them.
- Periodically inspect engineering controls and personnel protective equipment.
- Make routine surveys of the work area to ensure safe practices are being followed.
- Ensure employee access to a current copy of the Exposure Control Plan.

Employees

- Learn and apply Metro's Exposure Control guidelines and procedures.
- Use personal protective equipment as required by Metro's procedures and policies.
- Inform your supervisor of :
  1. Any exposure that may possibly be related to bloodborne, airborne, and waterborne diseases or OPIM;
  2. Missing labels on containers;
  3. Malfunctioning safety equipment.
- Use approved labels on the containers. Do not remove existing labels.

- Use only approved containers for sharps instruments and waste materials.
- Know the location of emergency equipment, e.g., first aid supplies, emergency eye wash, showers, etc.
- Know your role in emergency procedures.
- Report unsafe conditions.
- Suggest improvements.

Metro Occupational Safety Administrator

At least once per year, the Metro Occupational Safety Administrator will review and update, if applicable, the Exposure Control Guidelines. The evaluation will be done with the assistance of department Safety Coordinators. The review and/or update will consist of the following elements:

- Assessment of applicable regulations
- Written program guidelines
- Designated employee accountability

Attachment A

Hepatitis B Declination Form

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

Employee signature: _____

Date:_____

Attachment B

Exposure Incident Form

In the event of an exposure incident, two forms must be completed: (1) *the Metro Record of Occupational Injury /Illness Form -101*, and (2) the information on this form. The information provided below is intended to assist in evaluating the control methods used and to prevent future employee exposures.

*Name of Person*_____*Department*_____

*Incident Date*_____*Time*_____

Report prepared by:_____

Incident: Mark in each column, as appropriate

Incident:	*Injury type:*	*Body Part Injured:*
❑Cut:	❑Abrasion	❑Eye
❑Exposure:	❑Laceration	❑Hand/Finger
❑Body Fluids	❑Puncture	❑Arm
❑Infectious Material		❑Mucous Membrane
❑Airborne		
❑Other_____	❑Other_____	❑Other_____

Description of incident:

Protective equipment used:

❑Gloves	❑Protective Sleeves	❑Other
❑Goggles	❑Lab Coat	
❑Face Mask/shield	❑Gown	

Seen by:

- ❑ Emergency Treatment Center
- ❑ No Medical Treatment sought
- ❑ Other

What changes need to be made to prevent reoccurrence?

Attachment C

Bloodborne Pathogen Exposure Plan Checklist

Section I: General Information

1. Name of Principle Investigator or Supervisor

2. Location & Department

3. Procedures and Tasks Involving Human Blood or Other Infectious Material

☐	a. Preparing, dissecting, cutting, or otherwise handling human tissue.
☐	b. Handling tubes or other containers of human blood fluid or tissue.
☐	c. Cleaning up spills of human blood or other body fluids.
☐	d. Basic first aid with human blood or fluid exposure.
☐	e. Performing cardiopulmonary resuscitation (CPR).
☐	f. Injections into humans.

4. Job Classifications with Occupational Exposure

Job Classification	All Employees Have Exposure	Some Employees Have Exposure
a.	☐	☐
b.	☐	☐
c.	☐	☐
d.	☐	☐
e.	☐	☐
f.	☐	☐
g. Other Title :	☐	☐

Section II. Sharps Management

1. List Special Sharps Procedures Currently Being Used

Procedure	Mechanical Devices Used (needles, blades, microscope slides, etc.)	Self-sheathing needles	Retractable	Decontaminate	Other
		☐	☐	☐	☐
		☐	☐	☐	☐
		☐	☐	☐	☐
		☐	☐	☐	☐
		☐	☐	☐	☐

Section III. Equipment Decontamination

1. List Instructions and Schedule for Decontaminating and Maintaining Equipment

Equipment	Decontamination Instructions	Date to be Checked	Date Checked

Section IV. Personal Protective Equipment (PPE)

1. List how PPEs are used, decontaminated and disposed.

Type of Personal Protective Equipment	Tasks Requiring Use	Disposal Instructions	Decontamination Instructions
Disposable Gloves			
Utility Gloves			
Laboratory Coats			
Safety Glasses			
Aprons or gowns			
Face Shields and Masks			
Other			

Fall Protection

This guide specifies the procedures and training for the safety of all Metro Nashville employees while working on elevated surfaces and ladders. This guide applies to all Metro employees that perform any duties on an elevated work surface where there is a fall hazard of 6 feet or more to a lower level.

1. Guideline Description

The purpose of this guide is to specify procedures and training for the safety of Metro Government employees while working on elevated surfaces and ladders. Affected employees who work at heights of six (6) feet or greater are required to attend training on fall protection. Additionally, those employees working on aerial platforms, scissors lifts or other elevated platform equipment must receive training on the use of such equipment.

2. Scope

This guide applies to all Metro employees that perform any duties on an elevated work surface where there is a fall hazard of 6 feet or more to a lower level. Employees will not be allowed to perform any duties that require the employee to get closer than 6 feet to an unprotected edge, platform, walkway, or utilize elevated equipment unless the employee is properly secured from falling.

Exceptions: Employees may work without fall protection:

- At the working sides of loading docks
- At the exposed perimeters of theater stages
- When using portable ladders up to 60 feet in length
- When working on scaffolds and aerial lifts up to 6 feet in height
- When working on the edge of an excavation up to 6 feet in depth
- If an employee is on a low slope roof for inspection or observation purposes only.

Additionally, this guide shall apply to all employees in order to minimize slips, trips and falls on the same elevation. All employees shall control fall hazards in their work area by maintaining good housekeeping and shall report conditions that may lead to slips, trips and falls to the appropriate maintenance unit.

Contractors working onsite are required to comply with all applicable OSHA workplace safety regulations and shall have their own fall protection program. Contractor’s safety programs shall be available for review upon request.

3. Definitions

Aerial lift device: Equipment such as powered platforms, vehicle-mounted elevated and rotating work platforms, extensible boom platforms, aerial ladders, articulating boom platforms, vertical towers and powered industrial truck platforms.

Anchor point: A secure point of attachment for lifelines, lanyards or deceleration (grabbing) devices.

Body harness (also referred as Full-body harness): An interconnected set of straps that may be secured about a person in a manner that distributes the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with a means for attaching the harness to other components of a personal fall arrest system.

Deceleration device: Any mechanism, such as a rope, grabbing device, rip-stitch lanyard, specially woven lanyard or automatic self-retracting lifeline/lanyard, which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limits the energy imposed on an employee during fall arrest.

Deceleration distance: The additional vertical distance a falling person travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which a deceleration device begins to operate.

Designated area: A space which has a perimeter barrier erected to warn employees when they approach an unprotected side or edge, and serves also to designate an area where work may be performed without additional fall protection.

Fixed ladder: A ladder, including an individual rung ladder, which is permanently attached to a structure, building, or equipment.

Guardrail: A barrier at least 42 inches high erected to prevent personnel from falling from working levels more than 30 inches above the floor, ground, or other working areas of a building.

Hole: A void or gap 2 inches or more in its least dimension in a floor, roof, or other walking/working surface.

Ladder: A device typically used to gain access to a different elevation consisting of two or more structural members crossed by rungs, steps, or cleats.

Lanyard: A flexible line of rope or strap that generally has a connector at each end for connecting the body harness to a deceleration device, lifeline or anchor point.

Lifeline: A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline). This serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Low Slope Roof: A roof having a slope of less than or equal to 4 in 12 (vertical to horizontal). A roof with approximately a 19.5 degree slope or less.

Lower Levels: Those areas or surfaces to which an employee can fall. Such areas include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits tanks, material, water, equipment, structures, or portions thereof.

Opening: A gap or void 30 inches or more high and 18 inches or more wide in a wall or partition, through which personnel can fall to a lower level.

Positioning device system: A body harness system rigged to allow an employee to be supported on an elevated vertical surface such as a wall and work with both hands free while leaning.

Personal fall arrest system: A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, and body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

Restraint line: A device, which is attached between the employee and an anchorage to prevent the employee from walking or falling off an elevated surface.

Roof: Exterior surface on the top of a building.

Rope grab (grabbing device): A deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest a fall.

Scaffold: Any temporary elevated or suspended platform, and its supporting structures, used for supporting employees or materials or both.

Self-retracting lifeline/lanyard: A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under minimal tension during normal movement and which, after onset of a fall, automatically locks the drum and arrests the fall (usually within two feet or less).

Standard railing: A vertical barrier erected along exposed edges of a floor opening, wall opening, ramp, platform, or runway to prevent falls of persons.

Snap hook: A connector consisting of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to

receive an object and, when released automatically closes to retain the object. Only locking snap hooks are permitted at UCI.

Toe board: A low protective barrier that prevents material and equipment from falling to lower levels and which protects personnel from falling.

Tie-Off: A procedure of connecting directly or indirectly to an anchorage point.

Unprotected sides and edges: Any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or guardrail system at least 42 inches high.

Vertical Lifeline: A component consisting of a vertically hanging flexible line for connection to an anchor point at one end that serves as a means for connecting other components of a personal fall arrest system to the anchor point.

Walking/working surface: Any surface, whether horizontal or vertical, on which an employee walks or works including, but not limited to floors, roofs, ramps, bridges and, runways.

Work area: That portion of a walking/working surface where job duties are being performed.

4. Responsibilities

Managers and Supervisors

- Responsible for ensuring that all requirements listed in the written guidelines for fall protection are met
- Responsible for ensuring new and existing employees receive fall protection training as applicable to their job duties.
- **Responsible for conducting periodic visits to elevated work locations.**

Employees whose duties involve work activities at elevated locations are required to comply with the rules of operations and accepted safety practices outlined within this written guideline.

5. Program Components

5.1 The following work situations are covered by Metro's guidelines for fall protection:

Ladders - fixed, free standing, temporary, or roll away type

Elevating Personal Platforms – scaffolds, aerial platforms, scissors lifts, forklift-mounted platforms, cherry pickers, etc.

Elevated Surfaces – roofs (closer than 6 feet to the edge), catwalks, skylights, boilers, chillers, etc.

Vertical Opening - ground level entry into excavations, trenches, holes, pits, vessels, and other confined spaces.

5.2 Fall protection is required whenever work is performed in an area 6 feet above its surroundings and can generally be provided through the use of fall protection systems including:

Guardrails - Standard guardrails consist of a top rail, located 42 inches above the floor, and a mid-rail. Screens and mesh may be used to replace the mid-rail, so long as they extend from the top rail to the floor.

Personal Fall Arresting Systems - Components of a personal fall arresting system include a body harness, lanyard, lifeline, connector, and an anchorage point capable of supporting at least 5000 pounds.

Positioning Device Systems - Positioning device systems consist of a body belt or harness rigged to allow work on a vertical surface, such as a wall, with both hands free.

Warning Line Systems - Warning line systems are made up of lines or ropes installed around a work area on a roof. These act as a barrier to prevent those working on the roof from approaching it edges.

Covers - Covers are fastened over holes in the working surface to prevent falls.

Where it can be clearly demonstrated that the use of these systems is infeasible or creates a greater hazard, alternative fall protection measures may be implemented.

5.3 Following are guidelines for affected Metro employees using specific equipment:

5.3.1 Employees who work on ladders with a working height of 6 feet or more shall be knowledgeable of the following:

- How to inspect ladders for visible defects
- How to use ladders properly
- Additional information on ladder safety can be found in the Ladder Safety Program.

5.3.2 Employees who use personal fall arresting systems to control fall hazards in their work area shall be knowledgeable of the following:

- The application limits of the equipment
- The proper hook-up, anchoring and tie-off techniques including determination of elongation and deceleration distance
- Methods of use, inspection, and storage of equipment
- Personal fall arrest components including harnesses and lanyards shall be inspected prior to each use for mildew, wear, damage and other deterioration. Defective components shall be removed from service.
- Fall arrest systems including harnesses shall be inspected at least twice each year or according to manufacturers' recommendations. The date of the most current semi-annual inspection shall be recorded on an inspection tag which shall be attached to the harness. In addition, records shall be kept and maintained showing date of purchase, dates when attachments were renewed, and dates when the entire harness assembly was inspected and by whom.

5.3.3 Employees who use aerial lifts shall be knowledgeable of the following:

- The manufacturer's operating instructions
- Pre-start inspection of the lift
- Inspection of the work area for dangerous conditions such as uneven surfaces, overhead obstructions such as power lines, or other hazards
- Load capacities of the equipment
- How to safely move the equipment
- How to prevent falls and use appropriate fall protection personal protective equipment
- Minimum safe approach distances to energized power lines

5.3.4 All affected employees who work on scaffolds shall be knowledgeable of the following:

- The nature of any electrical hazards, fall hazards, and falling object hazards in the work area
- The correct procedures for dealing with electrical hazards and for erecting, maintaining, and dissembling the fall protection systems and falling object protection systems being used
- The proper use of the scaffold, and the proper handling of materials on the scaffold
- The maximum intended load and the load carrying capacities of the scaffolds

5.3.5 All affected employees should be aware of guidelines to minimize slips, trips and falls on the same elevation of walking/working surfaces.

- To prevent slipping, tripping and falling, all work environments including passageways, storerooms, and service areas must be kept clean, orderly and in a sanitary condition
- The floor of every work area will be maintained in a clean and, so far as possible, dry condition
- Where wet processes are used, drainage will be maintained and false floors, platforms, mats, or other dry standing places are provided where

6. Reporting Requirements

Constant awareness of and respect for fall protection procedures and compliance with all applicable Metro safety rules is mandatory.

Supervisors may issue warnings and implement disciplinary actions up to and including termination for failure to follow the guidelines of this program.

Employees shall report any safety concerns to their supervisor.

7. Training Requirements and Competency Assessment

Under no circumstances will any affected employee work in areas of high fall hazards, perform work requiring fall protection devices, or use fall protection devices until he/she has attended training in fall protection. This includes all new employees regardless of previous experience.

The training program provided shall include classroom instruction and operational training on specific fall hazards.

Employees will require retraining under any of the following conditions:

- Changes in the workplace render previous training obsolete
- Changes in the types of fall protection systems or equipment to be used render previous training obsolete
- Inadequacies in an employee's knowledge of use of fall protection systems or equipment or observed behavior indicate that the employee has not retained the required training

8. Information and External References

29 CFR 1926 Subpart M – Fall Protection

American National Standards Institute (ANSI), Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components (ANSI Z359.1-1992)

Fire Prevention Plan

OVERVIEW: The purpose of this program is to prevent or minimize the possibility of a fire emergency. The program is based on the OSHA Fire Prevention Standard, Title 29 code of Federal Regulations 1910.39.

OBJECTIVE: To protect Metro employees and property from the dangers associated with fire.

DOES THIS PROGRAM APPLY TO THE EMPLOYEES IN YOUR DEPARTMENT? OSHA requires that all employers with ten (10) or more employees have a fire prevention plan in writing, kept in the work place, and be made available to employees for review. If you still need assistance in determining whether this program applies to you, contact the Metro Occupational Safety Administrator.

IF YES, WHAT DOES YOUR DEPARTMENT NEED TO DO?

Each Department must have a written fire prevention plan at each facility. The fire prevention plan must contain the following elements:

- A list of major workplace fire hazards.
- Implement the use of the Hot Work Permit System and Fire Sprinkler Tag System.
- Procedures to control accumulations of flammable and combustible waste.
- Designate the name or job title of the personnel responsible for maintenance of fire and emergency equipment.
- Designate the name or job title of the personnel responsible for control of fuel hazards and for maintaining equipment to prevent or control sources of ignition or fires.
- Training on all aspects of the Fire Prevention Plan.

MAJOR WORKPLACE FIRE HAZARDS: Major workplace fire hazards are listed below, along with their proper handling and storage procedures. Use this chart to start a list of fire hazards particular to your facility or work area.

Workplace Fire Hazards	Handling and Storage Procedures
Fuel	Fuels may be handled and stored in workplaces only according to TOSHA and NFPA Standards.
Piped natural gas	Natural gas piping is installed in accordance with TOSHA, NFPA Standards.
Flammable liquids	Flammable liquids may be used and stored in workplaces

	only according to TOSHA and NFPA standards.
Flammable gases	Flammable gases may be used and stored in workplaces only according to TOSHA and NFPA standards.
Open Flames Smoking Hot work (e.g., welding, soldering, cutting, braising, heating metal, etc.) Electrical equipment & circuit panels	Open flames (like candles) in work place areas and offices are a source of ignition. Open flames can also contribute to indoor air pollution. Confine smoking to designated areas. Metro distributes fire safety precautions and permits for hot work. Keep all combustible storage 36 inches away from electrical panels and any possible ignition source. Avoid overloading electric outlets or using extension cords on a long term basis.

USE OF A FIRE SPRINKLER TAG SYSTEM & HOT WORK PERMIT SYSTEM

Fire Sprinkler Tag System: The purpose of the Fire Sprinkler Tag System is to ensure that if the fire sprinkler system is impaired, and a control valve has to be closed, there is a tag placed on the valve that notes:

- when the valve was closed;
- when it is to be re-opened
- who closed the valve; and
- why the valve was closed.

Example: Fire Sprinkler Tag

Metro's property insurer, F.M. Global provides free copies of their Red Tag Permit system along with brochures that explain how to implement the system and access to on-line training For copies of the Red Tag Permit system please contact the Metro Occupational Safety Administrator

Hot Work Permit System: Hot work consists of any operation that produces flames, sparks or heat. Cutting, welding, brazing, and grinding are all examples of "hot work" that would require the use of a hot work permit system.

Because combustible products ignite from hot work in just about any setting, offices, storage, maintenance and repair, it is critical that each Metro department enforce strict guidelines and follow every precaution to reduce the risks

associated with this type of work. A hot work permit system allows each department head and facility manager to control the activities of personnel performing the work before, during, and after the job is complete.

In order to properly implement a hot work program it must be in writing and distributed to all personnel involved in the hot work process, including contractors. All personnel should receive training on how to follow the hot work precautions.

The hot work permit must contain the following information:

- Name of the person completing the work
- Name of the company or department that employee is employed by
- Location of the building and floor
- The nature of the job
- A signature line for the operations supervisor or fire safety supervisor, ensuring that all of the required precautions have been taken to prevent fire. This will act as authorization that permission has been given to begin the work.

The following required precautions should be included on the hot work permit form:

- Available sprinklers, hose streams, and fire extinguishers are in service and operable.
- Hot Work equipment is in good repair

Requirements within 35 feet (11 meters) of work*:*

- Flammable liquids, dust, lint and oily deposits are removed
- Explosive atmosphere in area is eliminated
- Floors are swept clean.
- Combustible floors are wet down, and covered with damp or fire-resistive sheets.
- Other combustibles are removed when possible. Otherwise, fire-resistive tarpaulins or metal shields are used.
  All wall and floor openings are covered.
- Fire resistive tarpaulins are suspended beneath work.

Work on walls or ceilings*:*

- Construction is noncombustible and without combustible covering or insulation.
- Combustibles on other side of walls are moved away.

Work on enclosed equipment*:*

- Enclosed equipment is cleaned of all combustibles.
- Containers have been purged of flammable liquids/vapors

Fire Watch/Hot work area monitoring*:*

- Fire Watch will be provided during and for at least 30 minutes after work, including any breaks
- Fire Watch is supplied with suitable fire extinguishers and fire fighting equipment.
  Fire Watch is trained in the use of fire extinguishing equipment and in sounding emergency alarm.

For a sample hot work permit see Attachment A or contact the Metro Occupational Safety Administrator for a copy of the hot work permit system provided by Metro's property insurer.

FIRE PREVENTION RESPONSIBILITIES OF DEPARTMENTAL PERSONNEL

Use this form as a guide to designate personnel or departmental position that will assume the following responsibilities.

Personnel Responsibilities		**1st Shift**	**2nd Shift**
A. Person in Charge of Shift	Regular		
	Alternate		
B. Name of Sprinkler Control Person	Regular		
	Alternate		
C. Name of Employee Responsible for Calling Fire Service	Regular		
	Alternate		
D. Name of Person in charge of maintaining the Sprinkler system	Regular		
	Alternate		
E. Personnel responsible for the control of possible fuel hazards.	Regular		
	Alternate		

RESPONSIBILITIES FOR THE FIRE PREVENTION PROGRAM

Department Heads:

- ➲ Provide resources to effectively implement this program through the department.
- ➲ Establish systems to ensure departmental compliance associated with the Fire Prevention Plan.
- ➲ Ensure that information regarding training and information on the Fire Prevention Plan is available to employees.

Safety Coordinator:

- ➲ Follow-up to ensure supervisors are carrying out prescribed Fire Prevention requirements.
- ➲ Maintain a current list of all job categories and personnel that have been assigned certain responsibilities for fire prevention.
- ➲ Periodically review work areas for compliance with policy.
- ➲ Provide training to employees on the Fire Prevention Plan to the employees that may potentially be at risk of exposure

Supervisors

- ➲ Ensure that there is compliance with the program throughout the group supervised.
- ➲ Notify the Safety Coordinator of any operating changes affecting the employee's risk or responsibilities.
- ➲ Make routine surveys of the work area to ensure safe practices are being followed.

Employees

- ➲ Learn and apply Metro's Fire Prevention Plan.
- ➲ Know the location of emergency equipment
- ➲ Know your role in emergency procedures.
- ➲ Report unsafe conditions.
- ➲ Suggest improvements

RESULTS MEASUREMENT

Please inspect your job site or facility annually using the **Flammable & Combustible Material Checklist** (see Attachment B**).** This should help ensure that your facility remains in compliance. If you need assistance to bring your department into compliance, contact the Metro Occupational Safety Administrator.

Attachment A

HOT WORK PERMIT

This Hot Work Permit is required for any temporary operation involving open flames or producing heat and/or sparks. This includes, but is not limited to:

Brazing, Cutting, Grinding, Soldering, Torch-Applied Roofing and Welding.

AN APPROVED PERMIT MUST BE DISPLAYED ON THE JOB SITE.

INSTRUCTIONS: Complete ***ALL*** information and post at the job site.

HOT WORK BEING DONE BY (check one):

- □ METRO EMPLOYEE
- □ CONTRACTOR _____

CONTACT PHONE NUMBER: _____

DATE WORK WILL BE DONE: _____

LOCATION/BUILDING AND FLOOR: _____

NAME OF PERSON DOING WORK: _____

Required precautions checklist

- Available sprinklers, hose streams, and fire extinguishers are in service and operable.
- Hot Work equipment is in good repair

Requirements within 35 feet (11 meters) of work:

- Flammable liquids, dust, lint and oily deposits are removed
- Explosive atmosphere in area is eliminated
- Floors are swept clean.
- Combustible floors are wet down, and covered with damp or fire-resistive sheets.
- Other combustibles are removed when possible. Otherwise, fire-resistive tarpaulins or metal shields are used.
  All wall and floor openings are covered.
- Fire resistive tarpaulins are suspended beneath work.

Work on walls or ceilings:

- Construction is noncombustible and without combustible covering or insulation.
- Combustibles on other side of walls are moved away.

Work on enclosed equipment:

- Enclosed equipment is cleaned of all combustibles.
- Containers have been purged of flammable liquids/vapors.

Fire Watch/Hot work area monitoring:

- Fire Watch will be provided during and for at least 3 hours after work is completed.
- Fire Watch is supplied with suitable fire extinguishers and fire fighting equipment.
- Fire Watch is trained in the use of fire extinguishing equipment and in sounding emergency alarm.

Attachment B

FLAMMABLE AND COMBUSTIBLE MATERIALS CHECKLIST

Use the following check list to ensure your work area is free of fire hazards.

- □ Are combustible scrap, debris and waste materials (oily rags, etc.) stored in covered metal receptacles and promptly removed from the worksite?
- □ Is proper storage practiced to minimize the risk of fire, including spontaneous combustion?
- □ Are approved containers and tanks used to store and handle flammable and combustible liquids?
- □ Are all flammable liquids kept in closed containers when not in use (e.g., parts cleaning tanks, pans, etc.)?
- □ Is liquefied petroleum gas stored, handled and used in accordance with safe practices and standards?
- □ Are "NO SMOKING" signs posted on liquid petroleum gas tanks and in areas where flammable or combustible materials are used or stored?
- □ Are all solvent wastes and flammable liquids kept in fire-resistant, covered containers until they are removed from the worksite?
- □ Are fuel gas cylinders and oxygen cylinders separated by distance and fire-resistant barriers while in storage?
- □ Are appropriate fire extinguishers mounted within 75 feet (22.86 meters) of outside areas containing flammable liquids and within 10 feet (3.048 meters) of any inside storage area for such materials?
- □ Are extinguishers free from obstructions or blockage?
- □ Are all extinguishers serviced, maintained and tagged at intervals not to exceed one year?
- □ Are all extinguishers fully charged and in their designated places?
- □ Where sprinkler systems are permanently installed, are the nozzle heads so directed or arranged that water will not be sprayed into operating electrical switchboards and equipment?
- □ Are all spills of flammable or combustible liquids cleaned up promptly?

FIRST AID/AED-CPR POLICY

This guide is developed in accordance with provisions as outlined in OSHA standard 29 CFR 1910.151 (First Aid Standard).

This guide establishes training and operational procedures that will be followed to ensure prompt and knowledgeable treatment of injured employees, which will prevent minor injuries from becoming severe.

The OSHA First Aid standard (29 CFR 1910.151) requires trained first-aid providers at all workplaces of any size if there is no "infirmary, clinic, or hospital in near proximity to the workplace which is used for the treatment of all injured employees." While the standards do not prescribe a number of minutes, OSHA has long interpreted the term "near proximity" to mean that emergency care must be available within no more than 3-4 minutes from the workplace. OSHA recognizes that a somewhat longer response time of up to 15 minutes may be reasonable in workplaces, such as offices, where the possibility of such serious work-related injuries is more remote.

In addition to first-aid requirements of 29 CFR 1910.151, several OSHA standards also require training in cardiopulmonary resuscitation (CPR) because sudden cardiac arrest from asphyxiation, electrocution, or exertion may occur. CPR may keep the victim alive until EMS arrives to provide the next level of medical care.

The OSHA standards requiring CPR training are:

1910.146 Permit-required Confined Spaces
1910.266 Appendix B: Logging Operations – First-Aid and CPR Training
1910.269 Electric Power Generation, Transmission, and Distribution

Responsibilities

The following responsibilities apply to various levels within Metro:

Department Director will:

- Require the full application and integration of this guide into daily operations, as applicable, in all areas of responsibility and with all direct reports.
- Assess managers and supervisors on their ability to apply this guide in their areas of responsibility.

Department Safety Coordinators will administer all aspects of this guide to include:

- Maintaining and updating a written program if required.
- Coordinating necessary training for all affected employees.
- Providing necessary technical assistance to managers and supervisors.

- Periodically assessing the effectiveness of this program and its implementation in all affected areas of the department.

Managers and supervisors will:

- Know how this guide applies to their areas, and know which employees are trained to be first responders and when they require retraining.
- Decide where it is necessary and appropriate to place first aid kits in their areas and ensure that the kits are restocked after use.
- Integrate and enforce the provisions of this guide in their areas of responsibility.
- Periodically audit the effectiveness of this guide in their areas of responsibility.
- Coordinate training for all affected employees, including those that will become first responders.
- Provide appropriate coaching and corrective action when necessary to ensure this guide is fully integrated.

All affected employees will:

- Seek care when injured and report all work-related injuries to their supervisor. If hosting a guest, the employee will similarly report a guest injury.
- Follow all training, instructions and directives relative to this guide.
- Seek clarification whenever there are questions concerning the application of this guide into daily operations.

If a co-worker is trained in first aid, it is permissible to provide care using the nearest first aid kit. If untrained or uncomfortable providing care, co-workers should help locate another first responder on the premises. Co-workers may consider assisting the injured employee in getting transportation, seeking help or notifying management. When in doubt, co-workers should contact supervisors, first responders and emergency medical care.

First Aid Supplies

First aid supplies should be monitored and restocked on a periodic basis. Department Safety Coordinators will be responsible for choosing types and amounts of first-aid supplies and maintaining those supplies. The supplies will be adequate and will reflect the most common injuries in the facility. Typical first aid kits are equipped with gauze, bandages, large and small Band-Aids, scissors, pocket face mask, rubber gloves and other materials required to stop bleeding and cover wounded areas. First aid cabinets or kits will be maintained in accessible places. They will be regularly stocked and monitored to ensure availability in the event of an emergency.

Fire blankets should be placed in those areas where the potential of fire and explosion exist. All employees will be made aware of these locations.

For the protection of any injured person or persons, and to avoid the potential for personal or administrative liability, the following first aid guidelines are in effect for the Metropolitan Government of Nashville & Davidson County.

- In no case shall ointments, salves, disinfectants or oral medicine be rendered except on advice of a physician.

- Staff that require over-the-counter or prescription medication shall provide for and administer their own medication.

- In no case shall any person or persons render first aid to a degree above that for which they are trained and certified.

Medical Emergency

In the event of a medical emergency, the following actions will be taken:

- Specifically identify a person to initiate the 911 notification system (Do Not shout "someone call 911")
- Evaluate scene safety – if there is any concern, all personnel should stay at a safe distance away from the scene
- Do not move the ill/injured person (unless s/he is in danger from their surroundings)
- Avoid all contact with blood and other bodily fluids
- Never attempt to provide first aid unless you are trained and equipped to do so
- A calm employee may stay with the ill/injured person to provide comfort
- The supervisor will assign at least two employees to wait for the EMS responders at the parking lot entrance and guide the responders to the scene of the emergency
- All uninvolved personnel should clear the area
- If there has been any blood or bodily fluid release, trained personnel will clean and sanitize the area after the emergency phase has concluded

Transportation by Car

There may be cases in which injured employees needing professional medical attention can be transported to the hospital or medical facility by car. However, in other cases, transportation by ambulance may be necessary. If there is any doubt about the appropriate mode of transportation, an employee must call an ambulance. The following are some examples of conditions that necessitate an ambulance:

Employee is unconscious or in shock
Hemorrhaging
Severe abdominal cramps and/or vomiting
An apparent fracture
Other symptoms of internal injury

AED-CPR

With recent advances in technology, automated external defibrillators (AEDs) are now widely available, safe, effective, portable, and easy to use. They provide the critical and necessary treatment for sudden cardiac arrest (SCA) caused by ventricular fibrillation, the uncoordinated beating of the heart leading to collapse and death. Using AEDs as soon as possible after sudden cardiac arrest, within 3-4 minutes, can lead to a 60% survival rate. CPR is of value because it supports the circulation and ventilation of the victim until an electric shock delivered by an AED can restore the fibrillating heart to normal.

All worksites are potential candidates for AED programs because of the possibility of SCA and the need for timely defibrillation. Each workplace should assess its own requirements for an AED program as part of its first-aid response.

A number of issues should be considered in setting up a worksite AED program: physician oversight; compliance with the Tennessee AED Law; coordination with local EMS; a quality assurance program; and a periodic review, among others.

All Metro departments that provide AEDs must be do so in accordance with the Tennessee AED Law – Tennessee Code Title 68, Ch. 140 Part 7.

The provisions of 68-140-704 – 68-140-710, shall only apply to situations involving emergency use of an AED and in no case shall it apply where there is a duty to provide care.

Program for use of AEDs. (68-140-704)

In order for an entity to use or allow the use of an automated external defibrillator, the entity shall:

(1) Establish a program for the use of an AED that includes a written plan that complies with subdivisions (2)-(6) and the rules adopted by the department of health. The plan must specify:
(A) Where the AED will be placed;
(B) The individuals who are authorized to operate the AED;
(C) How the AED will be coordinated with an emergency medical service providing services in the area where the AED is located;
(D) The maintenance and testing that will be performed on the AED;
(E) Records that will be kept by the program;
(F) Reports that will be made of AED use;
(G) Other matters as specified by the department; and
(H) A plan of action for proper usage of the AED;

(2) Adhere to the written plan required by subdivision (1);

(3) Ensure that before using the AED, expected users receive appropriate training approved by the department in cardiopulmonary resuscitation and the proper use of an AED;

(4) Maintain, test, and operate the AED according to the manufacturer's guidelines and maintain written records of all maintenance and testing performed on the AED;

(5) Each time an AED is used for an individual in cardiac arrest, require that an emergency medical service is summoned to provide assistance as soon as possible and that the AED use is reported to the supervising physician or the person designated by the physician and to the department as required by the written plan; and

(6) Before allowing any use of an AED, provide to the emergency communications district or the primary provider of emergency medical services where the defibrillator is located:
(A) A copy of the plan prepared pursuant to this section; and
(B) Written notice, in a format prescribed by department rules, stating:
(i) That an AED program is established by the entity;
(ii) Where the AED is located; and
(iii) How the use of the AED is to be coordinated with the local emergency medical service system.

Recordkeeping

Some medical emergency procedures may be considered "medical treatment" for OSHA recordkeeping purposes. The OSHA Recording and Reporting Occupational Injuries and Illnesses regulation (29 CFR 1904) requires that if any procedure considered to be medical treatment is performed on an employee with an occupational injury or illness, then the injury or illness will be regarded as recordable on the OSHA 300 Log.

Each injury or illness that requires the administration of first aid by a first responder will be fully documented and investigated so as to prevent future incidents of a similar nature.

TENNESSEE AED LAW

Tennessee Code Annotated

68-140-701. Legislative intent.

It is the intent of the general assembly that an automated external defibrillator (AED) may be used in accordance with the provisions of § 68-140-703 for the purpose of saving the life of another person in cardiac arrest.

68-140-702. Part definitions.

As used in this part, unless the context otherwise requires:

(1) "AED" or "defibrillator" means an automated external defibrillator; and

(2) "Automated external defibrillator (AED)" means a medical device heart monitor and defibrillator that:

(A) Has received approval of its premarket notification, filed pursuant to 21 U.S.C. §360(R), from the United States Food and Drug Administration;

(B) Is capable of recognizing the presence or absence of ventricular fibrillation or rapid ventricular tachycardia, and is capable of determining, without intervention by an operator, whether defibrillation should be performed; and

(C) Upon determining that defibrillation should be performed, automatically charges and requests delivery of an electrical impulse to an individual's heart.

68-140-703. Use of AED devices – Training – Maintenance – Registration encouraged.

In order to ensure public health and safety:

(1) A person or entity who acquires an automated external defibrillator (AED) shall ensure that:
(A) Expected defibrillator users receive American Heart Association CPR and AED or an equivalent nationally recognized course in defibrillator use and cardiopulmonary resuscitation;
(B) The defibrillator is maintained and tested according to the manufacturer's operational guidelines; and
(C) Any person who renders emergency care or treatment on a person in cardiac arrest by using an AED activates the emergency medical services system as soon as possible.

(2) Any person or entity who acquires an AED shall, within a reasonable time after the placement of an AED, register the existence and location of the defibrillator with the emergency communications district or the ambulance dispatch center of the primary provider of the emergency medical services where the AED is to be located.

68-140-704. Program for use of AEDs.

In order for an entity to use or allow the use of an automated external defibrillator, the entity shall:

(1) Establish a program for the use of an AED that includes a written plan that complies with subdivisions (2)-(6) and the rules adopted by the department of health. The plan must specify:
(A) Where the AED will be placed;
(B) The individuals who are authorized to operate the AED;
(C) How the AED will be coordinated with an emergency medical service providing services in the area where the AED is located;
(D) The maintenance and testing that will be performed on the AED;
(E) Records that will be kept by the program;
(F) Reports that will be made of AED use;
(G) Other matters as specified by the department; and
(H) A plan of action for proper usage of the AED;

(2) Adhere to the written plan required by subdivision (1);

(3) Ensure that before using the AED, expected users receive appropriate training approved by the department in cardiopulmonary resuscitation and the proper use of an AED;

(4) Maintain, test, and operate the AED according to the manufacturer's guidelines and maintain written records of all maintenance and testing performed on the AED;

(5) Each time an AED is used for an individual in cardiac arrest, require that an emergency medical service is summoned to provide assistance as soon as possible and that the AED use is reported to the supervising physician or the person designated by the physician and to the department as required by the written plan; and

(6) Before allowing any use of an AED, provide to the emergency communications district or the primary provider of emergency medical services where the defibrillator is located:

(A) A copy of the plan prepared pursuant to this section; and

(B) Written notice, in a format prescribed by department rules, stating:

(i) That an AED program is established by the entity;

(ii) Where the AED is located; and

(iii) How the use of the AED is to be coordinated with the local emergency medical service system.

68-140-705. Rules relating to AEDs – Adoption – Scope and contents.

The department of health shall adopt rules specifying the following:

(1) The contents of the written notice required by § 68-140-704;

(2) Reporting requirements for each use of an AED;

(3) The contents of a plan prepared in accordance with § 68-140-704 and requirements applicable to the subject matter of the plan;

(4) Training requirements in cardiopulmonary resuscitation and AED use that are consistent with the scientific guidelines of the American Heart Association for any individual authorized by an AED program plan to use an AED;

(5) Requirements for medical supervision of an AED program;

(6) Performance requirements for an AED in order for the AED to be used in an AED program; and

(7) A list of the AED training programs approved by the department.

68-140-706. Limitation on liability of entity responsible for program.

The entity responsible for the AED program shall not be liable for any civil liability for any personal injury that results from an act or omission that does not amount to willful or wanton misconduct or gross negligence if the applicable provisions and program established under § 68-140-704 and the rules adopted by the department pursuant to § 68-140-705 have been met by the entity and have been followed by the individuals using the AED.

68-140-707. Limitation on liability of trainers.

An individual providing training to others in an approved program on the use of an AED shall be held harmless by the employer of the trainer for damages caused by training that was negligent.

68-140-708. Training and demonstration of competence in CPR and use of AED.

For purposes of §§ 68-140-704 – 68-140-710, expected AED users shall complete training and demonstrate competence in CPR and the use of an AED through a course of instruction approved by the Tennessee emergency medical services board.

68-140-709. Applicability of §§ 68-140-702, 68-140-704 – 68-140-709.

The provisions of §§ 68-140-704 – 68-140-710, shall only apply to situations involving emergency use of an AED and in no case shall it apply where there is a duty to provide care. Nor shall it apply where a doctor has prescribed use of an AED for a patient's use in the patient's private home.

68-140-710. [Transferred]

Hand Tool / Portable Power Tools / Chainsaws

The purpose of these guidelines is to promote the safe use of, and to reduce the likelihood of injuries involving the use of hand or power tools. These requirements apply to all Metro departments and their employees where the use of hand or power tools are in use or will be used. This will most notably apply to employees involved in industrial, maintenance, construction and manual labor positions.

HAND TOOLS

1) Employees shall use only approved tools and equipment that are in safe condition. The Supervisor shall be notified if proper and safe tools or equipment are not available.

2) Hand tools and similar equipment shall be inspected frequently and maintained in safe condition. Those that are found to be unsafe shall be removed from service, tagged, and not used again until repaired.

3) Tools and equipment shall not be misused by unsafe practices, such as substituting a screwdriver for a hammer or chisel, or substituting a knife for a screwdriver or chisel.

4) Impact tools, such as chisels, drills, hammers, and wedges with mushroomed heads shall not be used until they have been reconditioned. Pneumatic tool bits shall be used only in pneumatic tools and shall not be used as hand tools.

5) Hammers, axes, shovels, and similar tools shall not be used if the handles are loose, cracked, splintered, or taped.

6) Defective wrenches, such as open-end and adjustable wrenches with sprung jaws, or pipe wrenches with dull teeth shall not be used. Shims shall not be used to make a wrench fit. Adjustable wrenches shall be kept properly adjusted while being used.

7) Pipe, or other extensions, should not be used on a wrench handle to increase the leverage unless the wrench is specifically designed for use of such extension.

8) Metal rules, metal tape lines, or tape lines containing wires shall not be used near energized electric conductors or equipment.

9) Sharp-edged or pointed tools shall be kept sharp. A sharp tool is safer and more efficient than a dull one.

10) Files, or other tools with pointed tangs, shall be equipped with suitable handles.

11) Chisels, drills, pipes, etc. should be held with suitable holders or tongs (not with hands) while being struck with a hammer by another employee.

12) When using a screwdriver, knife, or other tool, employees shall place themselves in such a position that they will avoid injury if the tool slips.

13) Tools and material shall not be thrown from one employee to another, nor from one location to another. A suitable container should be used for raising or lowering small equipment or tools between different elevations.

14) Tools shall not be placed on ladders, stairs, balconies, or other elevated places from which they might create a stumbling hazard or become dislodged and fall.

15) Only non-sparking tools shall be used in locations where sources of ignition may cause a fire or explosion.

16) When axes or scythes are used on a slope, the employee using these tools should be below or down slope from the work area. A safe distance shall be maintained between employees engaged in hand-cutting work.

PORTABLE POWER TOOLS

1) Employees shall be instructed in the proper use and care of power tools, equipment, and machinery before using by their supervisor.

2) When power-operated tools are designed to accommodate guards, they shall be equipped with such guards when in use. Guards shall be regularly inspected and maintained in safe working condition.

3) Power tools shall be inspected, tested, and determined to be in a safe operating condition prior to use.

4) Power-activated tools shall be operated only by qualified personnel.

5) Personal protective equipment shall be worn, as required, when using hand tools and portable power tools.

6) The following rules shall be observed when operating an electric drill:

    a. The employee shall adequately secure the work by using a clamp, jig, or vise, and shall not hold small work in his or her hands.
    b. Employees shall not sweep away chips with their bare hands.
    c. The need for adequate eye protection shall be considered whenever a drill is in use, especially when the work is near head level or overhead.
    d. Employees shall be sure that the chuck key or drift has been removed from the chuck before a drill is started.

7) The following rules shall be observed when using portable electric cords:
    a. Electric cords shall be maintained in safe condition. Worn or defective plugs shall be repaired or replaced.
    b. Electric cords shall be disconnected by pulling on the plug and not the cord.
    c. Extension cord hand lamps used in an explosive -type dust or gaseous atmosphere shall be of the explosion-proof type.
    d. Extension cord hand lamps shall be of the molded composition type or other type approved for the purpose. Brass-shell, paper-lined lamp holders shall not be used. Hand lamps shall be equipped with a handle and a substantial guard over the bulb. Metallic bulb guards shall be grounded.
    e. When a portable hand lamp is used near energized electrical equipment or circuits, special precautions shall be taken to prevent accidental electrical contact.
    f. Extension cords used with portable electric tools and appliances shall be of the three-wire grounding type.

8) Portable electric tools, equipment, and appliances shall meet one or more of the following requirements:
    a. The exposed noncurrent-carrying metal parts of portable or plug-connected equipment which may become energized shall be grounded.
    b. Be of the approved double-insulated type and be conspicuously marked as such.
    c. Be completely self-contained battery-operated.

9) Impact wrenches shall be provided with a locking device for retaining the socket.

10) Pressure shall be shut off and exhausted from the line before disconnecting the line from any pneumatic tools or connection.

11) Air hoses, pipes, valves, filters, and other fittings shall be pressure-rated by the manufacturer and this pressure shall not be exceeded. Defective hose shall be removed from service.

12) Only approved hydraulic fluid power tools shall be used.

13) Manufacturer's safe operating pressures for hydraulic hoses, valves, pipes, filters, and other fittings shall not be exceeded.

14) All hydraulic or pneumatic tools which are used on or around energized lines or equipment shall have non-conducting hoses having adequate strength for the normal operating pressures.

CHAIN SAWS

1) Only qualified, properly trained employees shall operate chain saws.

2) When starting a chain saw, it shall be placed on or against a solid support. The saw bumper shall be against the tree or limb before starting a cut. To prevent accidents, stand with your weight evenly distributed on both feet. Hold saw firmly with both hands. The proper grip will protect you if the saw kicks.

3) Always stop engine and pull the spark plug wire off before working on the saw.

4) Never set a saw down while the blade is engaged.

5) Never refuel while the engine is running. Always move away from fueling spot before starting the engine. Do not smoke while refueling.

6) Prepare immediate cutting area by cleaning out undergrowth likely to interfere with operator or saw.

7) Remove dead material, which could cause a fire, from cutting area.

8) Chain saws shall not be operated above shoulder level.

9) Keep all bystanders away from the work area.

10) Other workers should remain within hailing distance in case you need help.

11) Select a clear path of safe retreat when felling trees.

12) Employees must wear hard hats as well as eye and ear protection. Employees must not wear jewelry, scarfs or loose-fitting clothing. Suitable shoes (safety-toe shoes are recommended) shall be worn. Open-toe shoes, tennis shoes, etc. do not give adequate protection and must not be worn.

HAZARD COMMUNICATION (The Right to Know)

OVERVIEW: Hazardous chemicals may be found in any workplace. To protect employees the Metropolitan Government has established this program to provide identification and information on hazardous chemicals to affected employees.

The program is to ensure that the hazards of all chemicals in the workplace are classified, and that information concerning the classified hazards is transmitted to employers and employees. The requirements of OSHA 1910.1200 are intended to be consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS), Revision 3. The transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, safety data sheets and employee training.

OBJECTIVE: To protect the health and safety of employees by providing information to employees about the dangers of hazardous chemicals and properly identifying and labeling hazardous substances.

DOES THIS APPLY TO THE EMPLOYEES IN YOUR DEPARTMENT? The Hazard Communication Program (HazCom) applies to all Metro operations where employees may be exposed to hazardous substances under normal working conditions or in an emergency. Each department must determine which, if any, employees may be exposed to hazardous substances. The answers to the questions below will help a department identify those employees. **If ANY of these questions is "Yes" for a worker, that worker is considered to be at occupational risk.**

Does the employee ever:

(a) Use potentially hazardous chemicals (this includes even common chemicals such as oil, solvents, paints, alcohol, acetone, etc.)?

○ YES ○ NO

(b) Supervise those who use potentially hazardous chemicals?

○ YES ○ NO

(c) Use oil from a single container or reservoir in quantities greater than 55 gallons?

O YES O NO

(d) Use hydrofluoric acid?

O YES O NO

(e) Use a respirator?

O YES O NO

(f) Ship or prepare to ship potentially hazardous chemicals?

O YES O NO

IF YES, WHAT DOES YOUR DEPARTMENT NEED TO DO?

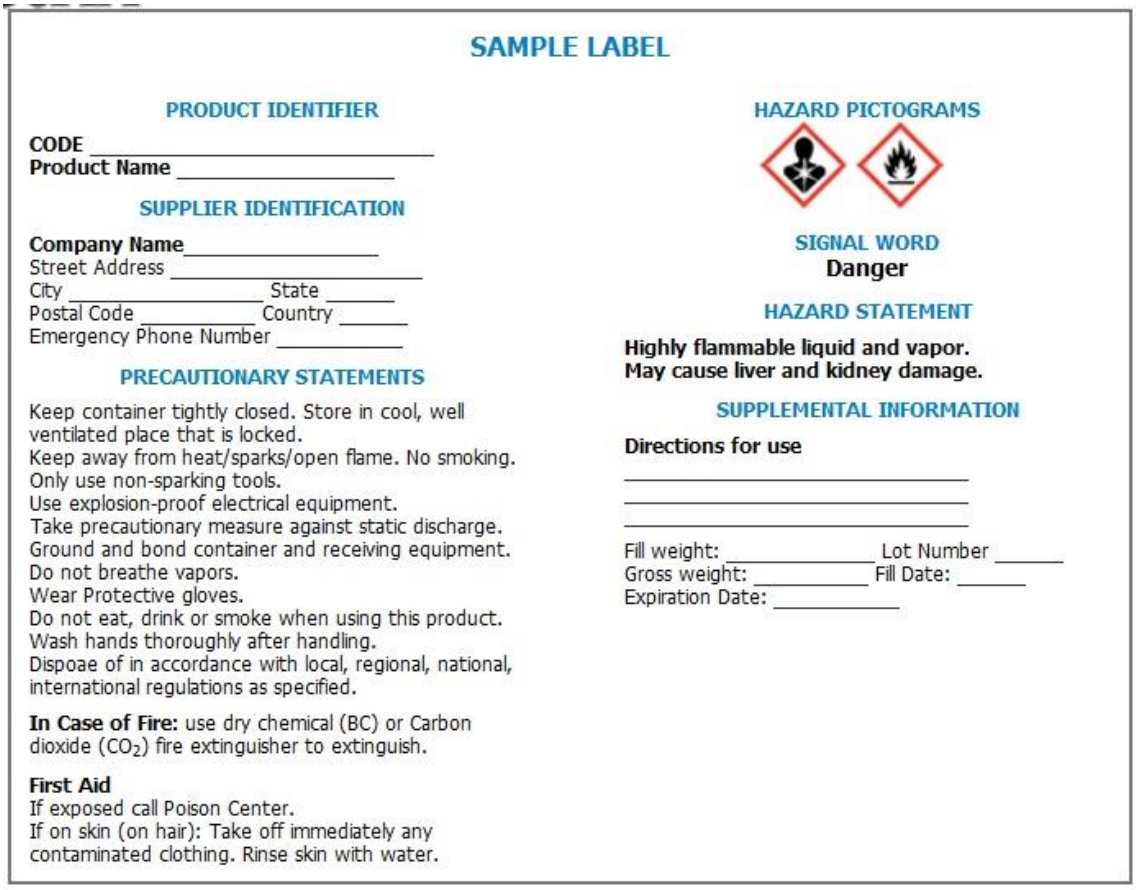
If the Hazard Communication program applies to the employees in your department, you should:

- ➲ Compile and maintain inventory of hazardous chemicals in department's workplaces.
- ➲ Label containers of hazardous chemicals in workplaces.
- ➲ Maintain Safety Data Sheets and ensure that they are accessible to employees and others who may be in the department.
- ➲ Train employees on the hazardous chemical program.
- ➲ Prepare plans to deal with hazardous chemical emergencies.

HAZARDOUS CHEMICALS INVENTORY: Each department with chemicals in the workplace shall be responsible for the identification, storage, and handling of all chemicals it uses. The Department Safety Coordinator will prepare and maintain an inventory of all hazardous chemicals used by the department in its usual work practices and update the inventory as new chemicals are obtained. This inventory will be in alphabetical order. A master list of these chemicals with an SDS for each chemical will be maintained and updated by the departments. A Hazardous Chemical List and Index of SDS form is located in the appendix section of this section.

CONTAINER LABELING: **All original and secondary** containers of hazardous materials shall be clearly labeled so that the contents of the container can be read. The labels on containers of hazardous chemicals shall not be removed or defaced. The information on the label must contain the proper information and be consistent with the information contained in the appropriate MSDS. OSHA has updated the requirements for labeling of hazardous chemicals under its Hazard Communication Standard (HCS). As of June 1, 2015, all labels will be required to

have pictograms, a signal word, hazard and precautionary statements, the product identifier, and supplier identification. A sample revised HCS label, identifying the required label elements, is shown below. Supplemental information can also be provided on the label as needed.



SAMPLE LABEL

PRODUCT IDENTIFIER

CODE _____
Product Name _____

SUPPLIER IDENTIFICATION

Company Name_____
Street Address _____
City _____ State _____
Postal Code _____ Country _____
Emergency Phone Number _____

PRECAUTIONARY STATEMENTS

Keep container tightly closed. Store in cool, well ventilated place that is locked.
Keep away from heat/sparks/open flame. No smoking.
Only use non-sparking tools.
Use explosion-proof electrical equipment.
Take precautionary measure against static discharge.
Ground and bond container and receiving equipment.
Do not breathe vapors.
Wear Protective gloves.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
Dispoae of in accordance with local, regional, national, international regulations as specified.

In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO_2) fire extinguisher to extinguish.

First Aid
If exposed call Poison Center.
If on skin (on hair): Take off immediately any contaminated clothing. Rinse skin with water.

HAZARD PICTOGRAMS

SIGNAL WORD
Danger

HAZARD STATEMENT

Highly flammable liquid and vapor.
May cause liver and kidney damage.

SUPPLEMENTAL INFORMATION

Directions for use

_____
_____
_____

Fill weight: _____ Lot Number _____
Gross weight: _____ Fill Date: _____
Expiration Date: _____

MAINTAIN SAFETY DATA SHEETS (SDS): The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs) (formerly known as Material Safety Data Sheets or MSDSs) to communicate the hazards of hazardous chemical products. As of June 1, 2015, the HCS will require new SDSs to be in a uniform format, and include the section numbers, the headings, and associated information under the headings below:

Section 1, Identification includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

Section 2, Hazard(s) identification includes all hazards regarding the chemical; required label elements.

Section 3, Composition/information on ingredients includes information on chemical ingredients; trade secret claims.

Section 4, First-aid measures includes important symptoms/ effects, acute, delayed; required treatment.

Section 5, Fire-fighting measures lists suitable extinguishing techniques, equipment; chemical hazards from fire.

Section 6, Accidental release measures lists emergency procedures; protective equipment; proper methods of containment and cleanup.

Section 7, Handling and storage lists precautions for safe handling and storage, including incompatibilities.

Section 8, Exposure controls/personal protection lists OSHA's Permissible Exposure Limits (PELs); Threshold Limit Values (TLVs); appropriate engineering controls; personal protective equipment (PPE).

Section 9, Physical and chemical properties lists the chemical's characteristics.

Section 10, Stability and reactivity lists chemical stability and possibility of hazardous reactions.

Section 11, Toxicological information includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

Section 12, Ecological information

Section 13, Disposal considerations

Section 14, Transport information

Section 15, Regulatory information

Section 16, Other information, includes the date of preparation or last revision.

An SDS provides specific hazard and precautionary information on the hazardous chemical listed. Departments shall maintain copies of the most current Safety Data Sheets (SDS) supplied by the chemical manufacturer or distributor for each substance on the department's "Hazardous Chemicals Inventory." Departments shall ensure that Safety Data Sheets will be accessible to all employees, their representatives, and contractors for viewing or copying during normal work hours at designated locations or in the Safety Coordinator's workspace. Safety Data Sheets may be stored on computer hard drive, CD or diskette.

If additional information is needed or if a manufacturer or distributor does not automatically provide a complete SDS with the chemical purchased, the department shall contact the chemical manufacturer or distributor If the manufacturer or distributor still fails to provide the SDS, the department Safety Coordinator shall report the failure to the Occupational Safety Division of the Human Resources Department, who shall notify the Tennessee Occupational Safety and Health Administration concerning the lack of a legally required SDS.

The Department shall review Safety Data Sheets (SDS) for completeness. If a Safety Data Sheet is missing or is incomplete, a new Safety Data Sheet will be obtained from the manufacturer before the chemical is put into use. The material will not be used until a proper Safety Data Sheet has been supplied to the department.

The Department shall review all incoming Safety Data Sheets for new and relevant health and safety information. The Department shall be responsible for communicating new information within 30 days of receipt of new or revised SDS's to all employees affected by the usage of a new chemical. This information should indicate any change in risks to health and safety and measures necessary for employees to protect themselves.

TRAINING: The department shall provide their employees with documented training on hazardous substances to which they may be exposed upon initial assignment, annually, upon reassignment and whenever a new substance is introduced into the work area. Training content shall be reviewed each year and updated as necessary additional content on new hazards. When new products are introduced into the work environment, employees will receive the chemical Safety Data Sheets and training associated with the chemical, before it is used. When employees are required to perform hazardous non-routine tasks, a special training session will be conducted to inform them of the hazardous chemicals that they may be exposed to and the proper precautions to protect themselves. Training will include the following:

- Information on any operations in their work area where hazardous substances are present,
- Summary of the Hazard Communications Standard 29 CFR 1910.1200 and the department's written program and its location.
- Information on the physical and health effects of hazardous chemicals in the workplace,
- Methods that can be used to detect the presence or release of hazardous substances in the workplace (e.g., smell, appearance, monitor alarms);
- Measures employees can take to protect themselves from the hazardous chemicals in their workplaces including proper hygiene practices, personal protective equipment and emergency procedures;

- ➲ Emergency and first aid measures to be taken if an employee is exposed to a hazardous substance,
- ➲ Explanation of Department's hazardous chemical inventory, how to read and interpret the information on SDSs, where SDSs are located in the department, and how to obtain additional information on hazardous chemicals. The training should emphasize the fact that employees have the right to receive or have their personal physician receive information contain in SDS, and that no discriminatory action may be taken against them if they exercise this right.
- ➲ Requirement for container labels.

CONTRACTOR'S EMPLOYEES: Departments will advise outside contractors of any chemical hazards that they might encounter in the normal course of their work on the department's premises, the labeling system in use, the protective measures to be taken, and the safe handling procedures to be used. The Department will notify these individuals of the location and availability of the Safety Data Sheets.

In addition, every contractor bringing chemicals onto the department's property must have the chemical approved by the department and provide appropriate hazard information in regard to the substances, including the SDS, labels, and precautionary measures to be taken in working with these chemicals.

VENDORS shall furnish all Safety Sheets (SDS) with each order of chemicals delivered to The Metropolitan Government of Nashville and Davidson County. Containers shall be affixed with labels that meet the labeling requirements of 29 CFR 1910.1200 upon delivery. If labels cannot be affixed prior to delivery, the vendor shall supply the appropriate labels for Metro personnel to place on the containers. Shipments that show damage/leak/or spill are to be refused.

RECORDKEEPING: All SDS's will be kept for a period of 3 years after the substance has been discontinued. If an employee has been exposed to a hazardous chemical, an SDS on that chemical shall be added to the employee's permanent medical record.

EMERGENCY PLANS: Each department shall prepare an emergency response plan that includes specified locations for first aid supplies and assignment of responsibilities in the event of an emergency. Information on the emergency response plan shall be included in hazard communication training. This plan shall be reviewed and updated annually.

HAZARD REPORTING

When any employee observes a hazardous condition that may cause injury, property damage, or interferes with Metropolitan Government services, he or she shall immediately report it to the Supervisor. In an emergency, the employee shall guard or isolate the hazard.

RESPONSIBILITIES:

Department Heads

- Provide resources to effectively implement this program.
- Establish systems to ensure departmental compliance associated with chemicals to which they may potentially be exposed.
- Ensure that SDS's for all hazardous chemicals in the worksite are available to employees.
- Assign responsibility for (1) evaluating labels on incoming containers to verify they are labeled properly and (2) ensuring that the department has received a SDS for each chemical that comes into the department.

Safety Coordinator

- Review operations with supervisors to determine with which chemicals employees under their supervision may come in contact.
- Follow-up to ensure supervisors are carrying out prescribed Hazard Communication Program requirements.
- Maintain a current chemical inventory list of all hazardous chemicals in a central location.
- Periodically review work areas for compliance with policy.
- Provide training to employees on the hazardous materials associated with chemicals to which the employees may potentially be exposed;

Supervisors

- Ensure that there is compliance with the program throughout the group supervised.
- Notify the department's Safety Coordinator of any operating changes affecting the hazardous materials being used.
- Identify all jobs requiring the use of hazardous chemicals and list those chemicals.
- Periodically inspect engineering controls and personal protective equipment.
- Make routine surveys of the work area to ensure safe practices are being followed.
- Ensure that all containers of hazardous materials are properly labeled.
- Ensure employee access to a current SDS for each hazardous substance used in the workplace.

Employees

- Learn and apply department's Hazard Communication Policy and Procedures.
- Use personal protective equipment as required by the department's procedures and policies.
- Inform your supervisor of :
    1. Any symptoms of over-exposure that may possibly be related to hazardous chemicals;
    2. Missing labels on containers;

3. Malfunctioning safety equipment.

- ➲ Use approved labels on the containers. Do not remove existing labels.
- ➲ Review hazardous chemical Safety Data Sheets (SDS) for chemicals in your workplace.
- ➲ Use only approved containers for hazardous materials.
- ➲ Know the location of emergency equipment, e.g., first aid supplies, emergency eye wash, showers, etc.
- ➲ Know your role in emergency procedures.
- ➲ Report unsafe conditions.
- ➲ Suggest improvements.

Occupational Safety Division At least once per year, the Occupational Safety Division of the Human Resources Department will review and update, if applicable, the basic Hazard Communication Program. The evaluation will be done with the assistance of department Safety Coordinators. The update will consist of the following elements:

- ➲ Assessment of applicable regulations
- ➲ Written program
- ➲ Designated employee accountability
- ➲ Hazard assessment

RESULTS MEASUREMENT: To determine whether your department is in compliance with Metro's Hazard Communication Program and OHSA regulation 29 DFR.1910.1200, fill out the **Hazard Communication Checklist** below. If you need assistance to bring your department into compliance, contact the Occupational Safety Division of the Human Resources Department at 862-6640.

Hazard Self Inspection Checklist

A. Communication of Program

		Circle One		
1.	Has a written hazard communication program been developed, implemented, and maintained at the worksites in your department?	Yes	No	N/A
2.	Has a list of known hazardous chemicals at your facility been prepared and a copy sent to the Occupational Safety Division of the Human Resources Department?	Yes	No	N/A
3.	Have methods been developed to inform employees of the hazards of non-routine tasks such as emergency response or equipment repair?	Yes	No	N/A
4.	Does department communicate hazards to outside contractors or vendors who may be exposed to hazardous chemicals at your worksite?	Yes	No	N/A

B. Container Labels

5. Are all containers of hazardous chemicals in the workplace labeled, tagged, or marked with the following information?

• pictograms,	Yes	No	N/A
• a signal word,	Yes	No	N/A
• hazard and precautionary statements,	Yes	No	N/A
• the product identifier, and	Yes	No	N/A
• supplier identification	Yes	No	N/A

The following hazardous chemicals are exempt from this labeling requirement, although subject to other labeling requirements: pesticides, foods, food additives, color additives, drugs, cosmetics, medical devices, alcoholic beverages, consumer products, hazardous waste, tobacco products, and wood products.

6. Is removal or defacing of labels on incoming containers of hazardous chemicals prohibited? Yes No N/A

7. Are labels or other forms of warnings legible, in English, and prominently displayed? Yes No N/A

C. Safety Data Sheets

8. Are safety data sheets on hand for each hazardous chemical used and identified on the hazardous chemicals list? Yes No N/A

9. If a hazardous chemical is delivered without a safety data sheet, does the department obtain one from the chemical manufacturer or distributor before the chemical is used? Yes No N/A

10. Are safety data sheets for the hazardous chemicals maintained in a central location and made readily accessible to employees? Yes No N/A

D. Information and Training

11. Is information and training on hazardous chemicals in the worksite provided on initial assignment and whenever new physical hazards or health hazards are introduced into the work area? Yes No N/A

12. Does the information and training include the requirements of OSHA standard (29CFR 1910.1200), as well as the following?
    - The operations at the worksite where hazardous chemicals are present Yes No N/A
    - The location and availability of the written hazard communication program, including the list of hazardous chemicals and safety data sheets Yes No N/A

13. Does the training provided include information about the following?

- Methods to detect the presence or release of a hazardous chemicals in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc) Yes No N/A
- The physical hazards and health hazards of the chemicals in the work area Yes No N/A
- The measures employees can take to protect themselves from these hazards, including procedures the employer has implemented to protect employees from exposures to hazardous chemicals (appropriate work practices, emergency procedures, and personal protective equipment) Yes No N/A
- The details of the hazard communication program developed by the employer, including explanations of the labeling system, safety data sheets, and how employees can obtain and use the appropriate hazard information. Yes No N/A

HAZARDOUS SUBSTANCE INVENTORY

Manufacturer	Product Name	Quantity	MSDS Yes/No	Work Area Where Chemical Used

Completed By: _____Date: _____

Hearing Conservation Program

A. Purpose

To protect employees of the Metropolitan Government of Nashville & Davidson County from noise hazards and to establish a procedure for the selection, use, care and maintenance of hearing protection.

B. Definitions

Action level. An 8 hour time weighted average noise level of 85 dBA or, equivalently, a noise dose of 50 percent, at which affected employees shall be provided hearing protection and placed in an audiometric testing program.

Area monitoring. Measuring noise levels with a sound level meter at different locations in the workplace and at different times during the work shift sufficient to make reliable estimates of employee noise exposures.

Audiogram. A chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.

Continuous noise. Noise that is relatively constant for a long period of time (e.g., fan or motor).

dBA. Sound level in decibels read on the Ascale of a sound level meter. The Ascale discriminates against the low frequencies of an acoustic signal.

Decibel (dB). A dimensionless unit related to the logarithm of the ratio of a measured quantity to a reference quantity. It is commonly used to describe levels of sound power, sound pressure, electric voltage, electric power, etc.

Hertz (Hz). Unit of measurement of frequency numerically equal to cycles per second (cps); I Hz = 1 cps.

Impulse noise. Noise that is characterized by a sharp rise in sound pressure level to a high peak followed by a rapid decay (e.g., sledgehammer or gunshot).

Intermittent noise. Noise that ceases or subsides between events (e.g., aircraft flyovers).

Noise dosimeter (audiodosimeter). A device, usually worn by an employee, that integrates a function of sound pressure over a period of time in such a manner that it directly indicates the accumulated exposure (dose).

Personal monitoring. Measuring employee noise exposure with a noise dosimeter mounted on the employee and the dosimeter microphone positioned near the employee's ear.

Qualified audiometric technician. A technician who has been certified by the Council for Accreditation in Occupational Hearing Conservation, or one who has satisfactorily demonstrated competence in administering audiometric examinations, obtaining valid audiograms, and properly using, maintaining, and checking calibration and proper functioning of the audiometers being used. The audiometric technician must be responsible to an audiologist, otolaryngologist, or physician.

Sound pressure level. The level, in decibels, that is 20 times the common logarithm of the ratio of the square of a measured sound pressure to the square of the reference sound pressure of 20 micronewtons per square meter (uN/m2).

Sound power level. The level, in decibels, that is 10 times the common logarithm of the ratio of a given power to a reference power.

Sound level. The weighted sound pressure level obtained by the use of the A, B, or C frequency weighting networks of a sound level meter.

Timeweighted average (TWA) sound level. That sound level which, if constant over an 8hour exposure, would result in the same noise dose as is measured.

C. Responsibilities

The department Director where hearing protection is needed will be responsible for the implementation of the Hearing Conservation Program. The department head and department Safety Coordinator may develop a written Hearing Conservation Program specific to their department.

Department heads shall ensure that hearing protectors are available to employees in the Hearing Conservation Program, that employees are trained in their use and care, and that they are worn. The department head will also ensure that affected employees receive audiometric evaluations annually and all documentation is completed. Department heads shall be responsible for ensuring that a record of the audiometric evaluation is kept in the affected employee’s personnel file.

The Metro Occupational Safety Administrator will provide guidance and consultation to the department heads on matters pertaining to the Hearing

Conservation Program. The department Safety Coordinator will coordinate with the department heads to provide training, audiometric testing, noise monitoring and hazard investigation. The Metro Occupational Safety Administrator will conduct evaluations of the Hearing Conservation Program to ensure the program is properly implemented. The Metro Occupational Safety Administrator will regularly consult with employees required to use hearing protection to assess employees' views on program effectiveness and to identify problems.

D. Procurement

When purchasing new equipment, a noise level specification of 85dBA or less should be included in the Invitation to Bid.

E. Employee Training

Employees who are in the Hearing Conservation Program shall receive training at least annually in the effects of noise; the purpose, advantages, and disadvantages of various types of hearing protectors; the selection, fitting, and care of protectors; and the purpose and procedures of audiometric testing.

F. Procedure

Department heads shall identify high noise areas and request noise monitoring to be performed by Safety Coordinators assigned to that department or obtain noise monitoring services from an outside source.

Occupational noise exposure levels shall be monitored in a manner that will identify employees who are exposed to levels equal to or greater than:

1. The 90 dBA, 8hour TWA (or 100 per cent dose) PEL, and/or

2. The 85 dBA, 8hour TWA (or 50 per cent dose) action level.

The exposure measurements shall include all continuous, intermittent, and impulsive noise ranging from 80 to 140 dB and must be representative of the occupational exposure. Although area monitoring is permitted, personal monitoring is preferred. It can be accomplished best by using noise dosimeters (audiodosimeters) to determine 8hour TWA exposures. Employees shall be permitted to observe monitoring procedures and shall be notified of the results.

When monitoring reveals that the 8hour TWA exposure level is:

1. Less than 85 dBA (or 50 per cent dose); no further action is required.

2. Equal to or greater than the action level, 85 dBA (or 50 percent dose), the employee(s) affected shall be provided hearing protection and placed in an audiometric testing program.

3. Equal to or greater than the Permissible Exposure Limit, 90 dBA (or 100 per cent dose), the employee(s) affected shall be provided hearing protection (mandatory use) and placed in an audiometric testing program, and feasible administrative and/or engineering controls shall be utilized to reduce the noise to acceptable levels.

G. Audiometric Testing

Audiometric tests shall be pure tone, air conduction, hearing threshold examinations, with test frequencies including, as a minimum, 500, 1000, 2000, 3000, 4000, and 6000 Hz. Tests of each frequency shall be run separately for each ear. Details of testing equipment and procedures are contained in the OSHA standard, 29CFR1910.95.

H. Hearing Protection

Hearing protectors shall be made available to all employees in the Hearing Conservation Program. They shall be worn by employees who are exposed to noise equal to or greater than the action level and by employees who have incurred standard threshold shifts either earplugs that are inserted in the ear canal or ear muffs that cover the external ear may be worn provided that they supply the required noise attenuation. The method to be used in estimating the adequacy of hearing protector attenuation is contained in the OSHA standard, 29CFR1910.95, Appendix B.

I. Record Keeping

Noise exposure measurement records shall be retained in the department Safety Coordinator’s office for no less than 2 years. Audiometric test records shall be retained in the employee's medical file for the duration of the affected employee's employment. The audiometric record shall include:

1. Name and job classification of the employee.

2. Date of the audiogram.

3. Examiner's name

4. Date of the last acoustic or exhaustive calibration of the audiometer.

5. Employee's most recent noise exposure assessment.

6. Date of the last hearing conservation training and the name of the person conducting the training.

All acoustic and audiometric records of individual employees shall be provided upon request to that individual employee or former employee, representatives designated by the employee, and OSHA.

LADDERS AND SCAFFOLDS

This guideline is intended to prescribe rules and establish minimum requirements for the care, and use of the common types of ladders, in order to insure safety under normal conditions of usage. This policy applies to use of all ladders and scaffolds. Construction type activities that require scaffolding shall comply with the requirements of 29 CFR Part 1926.450 to 1926.454 and 1910.28 as promulgated by the Occupational Safety and Health Administration (OSHA).

LADDERS

a. Ladder Specifications:

1) Ladders, scaffolds, shall be inspected at frequent intervals and shall be properly maintained. Damaged defective ladders shall be removed from service.

2) Portable ladders made of metal, fiberglass, epoxy, or other synthetic material shall equal or exceed the strength requirement of approved wood ladders.

3) Wood ladders should be given a suitable protective coating, such as clear varnish, shellac, or linseed oil. Metallic paint or other electrically conductive coating shall not be used on wood ladders. A paint which hides the grain shall not be used because it hinders detection of defects. Identification markings may be painted or branded on ladder rails.

4) Portable ladders for general use shall be equipped with approved safety feet. Portable straight ladders shall be equipped with a top tie-off rope before being used. When using portable ladders, they shall be securely placed (which may include being held by another employee at the bottom or by tying off at the bottom) to prevent slipping. The tops of ladders shall be tied off whenever practicable.

5) Wood ladders shall not be stored outdoors or in areas subject to excessing heat or dampness.

b. Ladder Use:

3) Ladders placed near doorways, in passageways, or in driveways shall be protected by barricades or guards against being struck by doors or traffic.

They shall not be left unattended. Ladders shall be removed when not in use or attended.

4) The base of a portable ladder should be placed about 1/4 of its working length from a wall or support. The feet shall be placed on a substantial base to prevent sinking or shifting. The side rails shall extend, at least, 36 inches above the landing. When this is not practicable, grab rails, which provide a secure grip for an employee moving to or from the point of access, shall be installed.

5) To prevent collapse of extension ladders, the minimum overlap of each section shall be:

a) Three (3) feet on ladders up to and including 36 feet

b) Four (4) feet on ladders over 36 feet, up to and including 48 feet.

c) Five (5) feet on ladders over 48 feet, up to and including 60 feet.

Extension ladders should be equipped with positive stops which will insure the overlap specified above. Extension ladders should be adjusted from the base before using.

6) When ladders with metal parts (including metal reinforcing of the rungs) or metal scaffolds are being used in the vicinity of energized electrical equipment, precautions shall be taken to prevent the metal parts from contacting the energized equipment.

7) When using ladders, employees shall:

a) Use the correct size ladder for the job. Do not splice two ladders together.

b) Place the ladder as close to the work as practicable to prevent over-reaching.

c) Be sure that a stepladder is fully opened before using.

d) Face the ladder, use both hands, and use each rung when going up or down the ladder.

e) Not climb higher than the third rung from the top on straight or extension ladders or the second tread from the top on ordinary stepladders.

8) Personnel, tools and material shall be removed from portable ladders or manually propelled mobile scaffolds before they are moved.

9) Only one person should be on a ladder at one time.

10) Ladders shall not be used in a horizontal position as platforms, runways, or scaffolds unless they have been designated for such use.

11) Ladders carried on vehicles shall be adequately supported and secured.

SCAFFOLDS

1) Scaffolds shall be sound material, securely fastened, and be capable of supporting four times the combined weight of men and materials without failure.

2) Wood materials used in scaffolds shall be approved for scaffolding. Planking should be not less than 10 inches wide and 2 inches thick (full dimension) and shall not extend beyond the outer supports more than 12 inches nor less than 6 inches, and shall be overlapped a minimum of 18 inches, unless securely fastened down. These special grade lumber materials are not to be used for other purposes. They shall be properly stored and maintained. These materials shall not be painted, but may be given a suitable protective coating, such as clear varnish or linseed oil. The edges of scaffold boards may be painted or marked for identification.

3) Guard rails, midrails, and toe boards shall be installed on open sides and ends of scaffolds which are 10 feet or more in height, and on scaffolds immediately adjacent to excavations, deep water, machinery, or other sources of danger. Screens shall be installed, as required, between the toe board and guard rail, where persons work or pass under the scaffold.

HAZARDOUS ENGERGY (LOCKOUT/TAGOUT)

The purpose of this program is to establish procedures for affixing appropriate lockout or tagout devices to energy-isolating devices, and to otherwise disable machines or equipment to prevent unexpected energization, start-up or release of stored energy in order to prevent injury to employees. The program is based on OSHA Standard 29 CFR 1910.147 The Control of Hazardous Energy.

The objective of this guideline is to protect all Metro employees that may have to service, maintain, or utilize machinery or equipment that is subject to the unexpected energizing, start up, or release of stored energy.

DOES THIS PROGRAM APPLY TO MY DEPARTMENT? The OSHA Lockout/Tagout standard applies when employees are exposed to electrical and or hazardous energy while servicing and maintaining equipment and machinery. Other employees, such as management employees, need to receive awareness training on lockout/tagout and the prohibition against removing lockout locks and tags from energy isolating devices or attempting to operate locked out equipment.

IF YES, WHAT DOES THE DEPARTMENT NEED TO DO? OSHA requires that affected Departments must establish an energy-control program to ensure that employees isolate machines from their energy sources and render them inoperative before any employee service or maintains them. The Energy Control Program must:

- Establish written procedures for removing the energy supply from machines.
- Identify appropriate lockout/ tagout devices.
- Address concerns regarding stored energy;
- Provide training on the energy control program
- Allow for the annual review and updating of the program

ESTABLISHING THE LOCKOUT/TAGOUT PROGRAM: A department supervisor may authorize the use of this program by any and all facilities, and individuals associated with the control of hazardous energy. Department Directors will implement the program and ensure that the personnel under their supervision are trained in accordance with the procedures established herein. This responsibility may be delegated to another person or persons within the department providing it is done so in writing and the designated person is qualified and competent. This person will authorize employees to implement the locking and tagging system procedure.

An employee, who has been authorized by the department head, or their designee, shall lock or implement a tagout system procedure on machines or equipment to

perform servicing or maintenance; or on a machine that the unexpected energization or start up of the machine or equipment, or release of stored energy could cause injury.

Identifying Appropriate Lockout/Tagout Devices: Each department utilizing the Metro program for the control of hazardous energy shall establish and document site specific procedures for energy isolation. Specialized lockout devices shall be obtained and kept within the department for its use.

If an energy-isolating device is capable of being locked out, the authorized employee shall utilize lockout, unless the department head or their designee can demonstrate that utilization of a tagout system will provide full employee protection. When a tagout device is used on an energy-isolating device which is capable of being locked out, the device shall be attached at the same location that the lockout device would have been attached.

Lockout devices used for the implementation of this program shall be accompanied by a standard tag as suggested by the illustration in Figure 1. These devices shall be used for no other purpose than lockout, and shall be substantial enough to prevent removal without the use of excessive force or unusual techniques. Tagout devices, including their means of attachment, shall be of a non-reusable type, attachable by hand, self locking and non-releasable with a minimum unlocking strength of no les than 50 pounds and having the general design and basic characteristics of being at the least equivalent to a one-piece, all environment tolerant nylon cable tie.

Figure 1

The Department's Safety Coordinator or his/her designated representative shall conduct periodic inspections of the energy control program at least annually to

ensure that the procedures and the requirements of 29 CFR 1910.147 are being followed.

Implementation: The lockout system shall be performed only by authorized employees. Affected employees shall be notified by the department head, or their designee, of the application and removal of lockout or tagout devices. Notification shall be given before the controls are applied, after they are removed from the machine or equipment.

The established procedure for the application of energy control shall cover the following elements and actions and shall be done in the following sequence:

1. Preparation for shutdown: Before an authorized or affected employee turns off a machine or piece of equipment, they shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.

2. Machine or equipment shutdown: An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of equipment de-energization.

3. Machine or equipment isolation: All energy- isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).

4. Lockout or tagout device application: Lockout or tagout devices shall be affixed to each energy-isolating device by authorized employees. Lockout devices, where used, shall be affixed in a manner that will hold the energy in a "safe" or "off" position. Tagout devices, where used, shall be affixed in such a manner as will clearly indicate that the operation or movement of energy- isolating devices from the "safe" or "off" position is prohibited.

   Where tagout devices are used with energy-isolating designed with the capability of being locked, the tag shall be fastened at the point at which the lock would have been attached.

   Where a tag cannot be affixed directly to the energy –isolating device, the tag shall be located as close as possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device:

5. Stored Energy: Following the application of lockout or tagout devices to energy-isolating devices, all potentially hazardous stored energy shall be rendered safe. If there is a possibility of re-accumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.

6. Verification of Isolation: Prior to starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation and de- energization of the machine or equipment has been accomplished.

7. Release from Lockout or Tagout: Before lockout or tagout devices are removed and energy is restored to the machine or equipment, procedures shall be followed and actions taken by the authorized employee(s) to ensure the following:
   - ➲ The Machine or Equipment: The work area shall be inspected to ensure that nonessential items have been removed and that machine or equipment components are operationally intact.
   - ➲ Employees: The work area shall be checked to ensure that all employees have been safely positioned or removed. Before lockout or tagout devices are removed and before machines or equipment are energized, affected employees shall be notified.

8. Lockout or Tagout Device Removal: Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device.

Exception: When the authorized employee who applied the lockout or tagout device (installer) is not available to remove it, that device may be removed under the direction of the installer's immediate supervisor. Specific training and procedures for such removal shall be provided by each department involved in lockout or tagout operations. The procedures and training shall be documented. The documentation shall demonstrate that safety equivalent to the original process of having only the installer remove the device is maintained. The specific procedure shall include at least the following elements:

- ➲ Verification by the immediate supervisor that the employee who applied the device is not at the facility,
- ➲ Making all reasonable efforts to contact the authorized employee to inform them that his/her lockout or tagout device has been removed, and
- ➲ Ensuring that the authorized employee has this knowledge before they resume work at the facility

9. Testing or Positioning of machines, equipment, or components thereof: In situations where lockout or tagout devices must be temporarily removed from the energy- isolating device and the machine or equipment energized to test or position the equipment or component thereof, the following sequence of actions shall be followed:

- ➲ Clear the machine or equipment of tools and materials.
- ➲ Remove employees from the machine or equipment area.
- ➲ Remove the lockout or tagout devices.
- ➲ Energize and proceed with testing or positioning.
- ➲ De-energize all systems and reapply energy control measures to continue the servicing and/or maintenance.

10. Outside Personnel (contractors, etc.): Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this program, the designated Metro representative of the department securing the service and the outside employer shall inform each other of their respective lockout or tagout procedures. The designated Metro representative shall ensure that his/her personnel understand and comply with restrictions and prohibitions of the outside employer's energy control procedures. If the outside employer has no documented lockout or tagout procedures, they shall ensure that their personnel understand and comply with the procedures established in this program.

11. Group Lockout or Tagout: When servicing and/or maintenance is performed by a crew or department, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device. This shall be accomplished by:

- ➲ The application of a multi-lock accepting device by the primary authorized employee to the energy- isolating device.
- ➲ The primary authorized employee attaching his/her lock to the multi-accepting device.
- ➲ Each authorized employee shall affix a personal lockout or tagout device to the multi-lock accepting device when they begin work, and shall remove those devices when they stop working on the machine or equipment being serviced or maintained.
- ➲ The primary authorized employee removing his/her lock and the multi-lock accepting device when all service or maintenance has been completed.

12. Shift or Personnel Changes: To insure the orderly transfer of lockout or tagout devices between off-going and on-coming employees and minimize exposure to hazards from unexpected energization, start-up of the machine or equipment, or release of stored energy, these procedures shall be followed:

- ➲ The on-coming personnel shall notify the off-going personnel that they are ready to begin work on the machine or equipment.
- ➲ All lockout and/or tagout devices attached to the machine or equipment by the off-going personnel shall be removed and immediately replaced with like devices by the on-coming authorized personnel.
- ➲ The primary authorized employee shall insure that all pertinent co-ordination between off-going and on-coming personnel has been completed before the on-coming authorized personnel begin work on the machine or equipment and that all necessary energy has been rendered safe.

TRAINING: The department Director or their designee are required to provide **annual training** to ensure that the purpose and function of the energy control program are understood by affected employees. Through training, employees will be required to posses the knowledge and skills required for safe application, usage, and removal of energy controls.

Training shall include the following:

- ➲ Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type of magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.
- ➲ Each affected employee shall be instructed in the purpose and use of the energy control procedure.
- ➲ All other employees whose work operations are or may be in the area where energy control procedures may be utilized, shall be instructed about the procedure, and the prohibition relation to attempts to restart or e-energize machines or equipment which are locked-out or tagged-out.

When tagout systems are used, employees shall also be trained in the following limitation of tags:

- ➲ Tags are essentially warning devices affixed to energy-isolating devices, and do not provide the physical restraint on those devices that is provided by lockout.
- ➲ When a tag is attached to an energy-isolating means, it is not to be removed without the authorization of the authorized person responsible for it, and it is never to be bypassed ignored, or otherwise defeated.
- ➲ Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.
- ➲ Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.
- ➲ Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the work place.
- ➲ Tags must be securely attached to energy-isolating devices so that they can not be inadvertently or accidentally detached during use.

Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment, or process that presents a new hazard, or when there is a change in energy control procedures. Retraining shall establish employee proficiency and introduce new or revised control methods and procedures as necessary. Each department shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training. For more information on training see the OSHA website:
Lockout-Tagout Interactive Training Program

GLOSSARY OF TERMS

- Affected Employee: An employee whose job requires them to operate or use a machine or piece of equipment on which servicing is being performed under lockout or tagout, or whose job requires them to work in an area in which such servicing or maintenance is being performed.

- Authorized Employee: A person who locks or implements a tagout system procedure on machines or equipment to perform the servicing or maintenance on that machine or equipment. An authorized employee and an affected employee may be the same person when the affected employee's duties also include performing the maintenance or service on a machine or piece of equipment which must be locked, or a tagout system implemented.

- Energy Source: Any source of electrical, mechanical, hydrolic, pneumatic, chemical, thermal, or other energy.

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

- Lockout Device: A device that utilizes a positive means, such as a lock, to hold an energy-isolating device in the safe position and prevent the energizing of a machine or piece of equipment.

- Normal Production Operations: The utilization of a machine or piece of equipment to perform its intended production function.

- Primary Authorization Employee: The authorized employee who has been vested with responsibility for a set number or employees performing service or maintenance on machines or equipment subject to lockout or tagout procedures.

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

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

RESPONSIBILITIES FOR LOCK OUT TAG OUT PROGRAM

Department Heads

- ➲ Provide resources to effectively implement this program through the department.
- ➲ Establish systems to ensure departmental compliance associated with the lockout tagout program.
- ➲ Ensure that training on lockout tagout procedures are available to supervisors and employees.

Safety Coordinator

- Develop, revise, and annually review the departmental safety rules and regulations as it pertains to the department's lockout tagout program.
- Provide training to supervisory personnel, or direct them to training that will allow them to properly train and supervise their employees.
- Implement a departmental self- safety inspection and documentation of the use of the lockout tagout program.
- Review operations with supervisors to determine with which employees are considered Affected Employees under this program.
- Follow-up to ensure supervisors are carrying out prescribed Lockout Tagout requirements.
- Periodically review work areas for compliance with policy.

Supervisors

- Ensure that there is compliance with the program throughout the group supervised.
- Notify the Safety Coordinator of any operating changes affecting the use or need for a lockout tagout program.
- Identify all departmental jobs requiring the maintenance or servicing of equipment.
- Make routine surveys of the work area to ensure safe practices are being followed.
- Ensure that lockout and tagout devices are available to affected employees.

Employees

- Learn and apply Metro's Lockout Tagout Policy and Procedures.
- Inform your supervisor of:
  1. Any situations that may possibly result in injury due to stored energy.
  2. Missing lockout devices or tags;
  3. Malfunctioning safety equipment.
- Know the location of emergency equipment, e.g., first aid supplies, emergency eye wash, showers, etc.
- Know your role in emergency procedures.
- Report unsafe conditions.
- Suggest improvements.

The Occupational Safety Division At least once per year, the Occupational Safety Division of the Human Resources Department will review and update, if applicable, the Hazardous Energy Program. The evaluation will be done with the assistance of department Safety Coordinators. The update will consist of the following elements:

- Assessment of applicable regulations
- Written program
- Designated employee accountability.

RESULTS MEASUREMENT: To determine whether your department is in compliance with Metro's Hazardous Energy Program and OHSA regulation 29 DFR.1910.147, fill out the **Lockout Tagout Compliance Checklist** below. If you need assistance to bring your department into compliance, contact the Occupational Safety Division Office at 862-6640.

Lockout/Tagout Compliance Checklist

Department/Facility:_____

Date:_____ ***Contact Person*: _____**

***Phone Number*:_____**

1. Equipment, machinery and personnel:	**Yes**	**NO**
A list of equipment and machines that needs to be locked out has been developed.		
All new machinery has the ability to accept a lockout device		
Specific written procedures are developed and used for each piece of equipment.		
A list of all authorized employees has been developed.		
A list of all affected employees has been developed.		
2. Energy Control Program:		
A written Energy Control Program has been developed.		
Does the written program state the methods of compliance?		
Does it include steps for shut down, isolating, blocking and securing energy?		
Does it include steps for placement, removal, and transfer of lockout/ tagout devices?		
Are there requirements for testing to verify effectiveness of the lockout/ tagout program?		
Are lockout/tagout devices are provided? (locks, hasps, tags, etc.).		
Lockout devices are singularly identified, durable, standardized, substantial and employee identifiable?		
Lockout devices are used only for energy control?		

A tagout system is used only if a isolating device cannot be locked out?		
Tagout devices warn against hazardous conditions such as Do Not Start, Do not Open		
Energy isolation is performed ONLY by authorized employees.		
Affected employees are notified before and after lockout/tagout.		
Group lockout/tagout procedures are used when needed.		
Information about each others' lockout program is exchanged with contractors.		
3. Training requirements:		
Are Authorized employees trained in the recognition of energy sources, type and magnitude of energy and methods and procedures necessary for isolation and control?		
Are Affected employees trained in the purpose and use of energy control procedures?		
Are other employees instructed on the locked or tagged out procedures?		
Training on the lockout tagout program takes place annually.		
Are employees retrained when there is a change in job, assignment, equipment, process, procedure or the result of an inspection?		

SAFE ROADS PROGRAM

OVERVIEW: Employees do not intend to have vehicular accidents, but they happen. When these accidents occur, employees and others may be injured, and property may be damaged or destroyed.

OBJECTIVE: To eliminate or reduce injuries and loss of property from vehicle accidents.

DOES THIS PROGRAM APPLY TO THE EMPLOYEES IN YOUR DEPARTMENT? Yes. Departments may use this model program or develop their own program, but every department has a responsibility to reduce or eliminate vehicle accidents. Any program implemented should adhere to the provisions of the General Services Use and Assignment Administrative Order, 07-09.

WHAT DOES YOUR DEPARTMENT NEED TO DO TO MAKE ROADS SAFE?

Expect Safe Driving:

Your department should communicate its expectation that each employee will drive safely. The policy statement below is one way to send this message:

> *[Name of department]* requires all employees who operate vehicles on the Metropolitan Government's business to drive safely. To ensure that our department's vehicles are used safely, the [Name of department] has implemented a *Safe Roads* program. The emphasis of this program is on the prevention of vehicle accidents. If an employee fails to maintain an acceptable driving record, whether due to on the job or off the job driving, that failure may be grounds for remedial training, restriction of job driving duties, reassignment, demotion, suspension or termination.

Determine Causes For Your Department's Vehicle Accidents:

Departments must understand what caused their vehicle accidents. Departments may contact the Law Department to request a report on their auto liability claims history. This report will give your department a good start towards understanding accident causes.

When loss histories are examined, look for answers to the following questions:

- ⇨ What causes (for example, backing) appear frequently?

- ⇨ Are there any common factors such as time of day, length of the experience of the driver?
- ⇨ Which drivers have had multiple accidents?
- ⇨ Did mechanical problems contribute to accidents? If yes, were there problems that could have been identified by a pre-trip inspection? Were problems missed during routine maintenance? Were the vehicles not taken for their scheduled routine maintenance?

Attachment B in the Appendix of this chapter is a check list of other factors that can contribute to an accident. It is a good practice to consider these causes as well. Once you have determined the root causes, determine what steps can be taken to eliminate them. The Occupational Safety Administrator is available to provide your department with assistance with this analysis and recommendations for remedial actions.

Set Goals for Accident Prevention:

Accidents are not an unavoidable cost of doing business. They can be prevented. An important part of your department's *Safe Road* program is to set clear, achievable goals. For example, set a goal to reduce the number of rear end accidents in the next fiscal year. If your department is small and does not have many accidents, set a goal that there will be NO vehicle accidents in the coming fiscal year. Communicate these goals to employees. Keep them updated on the department's progress toward meeting the goals. Celebrate successes and redouble efforts in areas where satisfactory progress is not being made.

Hire Drivers with an Acceptable Driving Records who can Meet the Physical Requirements of the Position:

An effective way to reduce vehicle accidents is to hire drivers with acceptable driving records. Check the motor vehicle record (MVR) and driver's license of an applicant before selecting them for a position that requires driving. If a valid driver's license is a requirement of the position to be filled, the recruitment announcement should include a statement that any offer will be contingent upon proof of a valid driver's license for the class of vehicle(s) to be operated and an acceptable driving record.

Civil Service employees that operate heavy equipment and other motorized vehicles on a regular basis are required to have a pre-employment physical to certify the applicant's physical ability to do the job with or without reasonable accommodations. Make sure that the physical requirements of the driving the vehicle are included in the job description and provided to the physician conducting the pre-employment physical.

Valid Driver's License: Tennessee residents must possess at least a Class D driver's license. A driver's license should not include any restriction other than corrective lenses in accordance with Tennessee Department of Safety (1340-1-13-.20). The following driver licenses and permits are NOT acceptable:

- Identification (ID Only)
- Class PD (Learner Permit)
- Class H (Hardship)

Acceptable Driving Record: Before deciding to interview an applicant, review the applicant's driving record. The table below contains a model scoring sheet that can be used as a tool to measure an applicant's driving record.

Type of Violation	Points per Violation	Violations in Past 3 Years	Total Violation Points in Past 3 Years
Operation of a defective vehicle	2		
Failure to Signal	2		
Failure to Yield	2		
Traffic Signal Offenses	2		
Improper Lane Change or Turn	2		
Illegal Passing	2		
Failure to Yield Right of Way	2		
Speeding (1-9 MPH over the posted speed limit)	2		
Speeding (10-20 MPH over the posted speed limit	3		
Speeding (21-30 MPH over the posted speed limit)	4		
Driving under suspended License	2		
Reckless Driving	4		
Refusal to Take Breathalyzer Test	5		
DWI/DUI	5		

Accident Type	Points per Accident	Accidents in Past 3 Years	Total Accident Points in Past 3 Years
Accident, Non Contributory	1		
Accident, Contributory	4		
Hit and Run	5		
Total Points (Violations and Accidents)			

After your department determines an applicant's total points, compare that number to the benchmark the department established for an acceptable driver. Recommended benchmarks are:

0 to 1 Point	Desirable Driving Record
2-3 Points	Marginal, but Acceptable
4 Points	Questionable
5 or More Points	Unacceptable

Benchmarks should be established before the recruitment process and used consistently for all positions that require driving.

Verify that Current Drivers Have Acceptable Driving Records

The driving records of employees who operate vehicles on Metro business to transport "clients," drive long distances, or drive frequently should be reviewed at least once every two years. A check every year is preferable.

Review Accidents:

Departments need to review vehicle accidents to determine the root causes of incidents. This information is needed to eliminate or minimize the causes.

Review board members should:

- Represent both supervisory and staff level employees.
- Personally have had no more than one vehicle accident during the past three years.
- Have completed Metro's defensive driver training class within the past three years.

To be effective the review board should carefully consider pertinent facts about the accident before recommending remedial training or discipline. Sources of the facts are:

- Statements or interviews with the driver, passenger(s), and any other involved parties.

- Police report.
- Any additional facts gathered by the Claims Division of the Law Department.

Before initiating a review process, a department should develop a policy to govern review accidents and a standard for remedial training and/or discipline that is used for all employees. Attachment B in the Appendix is a sample Accident Review Policy.

RESPONSIBILITIES FOR SAFE ROAD PROGRAM

Department Head: Overall responsibility for the safe operation of the department's vehicles. Communicate the importance of safe driving to the department's mission. Incorporate employees' driving record in their performance evaluations. Require new employees to have acceptable driving records. Review current employees' motor vehicle records and take appropriate actions if they are not satisfactory. Ensure that vehicles have the appropriate inspections and maintenance. Place instructions for what to do in the event of an accident in all department vehicles. (See Attachment D in Appendix.)

Safety Coordinator: Investigate vehicle accidents. Collect, analyze and distribute information on accidents. Propose loss control measures. Prepare driver safety communications for distribution to employees.

Supervisors: Ensure that drivers receive defensive driving training. Investigate vehicle accidents and implement corrective action for their causes. Make changes in driving assignments based on driving records. Consider loss control during driver performance reviews.

Drivers:

- ❒ Possess a valid Tennessee driver's license.
- ❒ Complete defensive driving course when hired and periodically thereafter in accordance with the National Safety Council guidelines.
- ❒ Check vehicle for maintenance issues or obvious safety hazards before driving.
- ❒ Report restrictions or limitations on driving privileges.
- ❒ Do not permit any unauthorized person to drive the vehicle.
- ❒ Use available restraint devices and require all occupants to do so.
- ❒ Know and follow all applicable traffic laws, ordinances, regulations, and use defensive driving practices at all times.
- ❒ Take regular breaks when traveling more than three hours at a stretch. Take more frequent breaks if driving at night.

- ❒ Assume all responsibilities for fines or traffic violations associated with the use of a Metro vehicle, rental, or private vehicle on official Metro business.
- ❒ Do not drive impaired, under the influence of drugs (prescription or non-prescription) or alcohol.
- ❒ Turn off the ignition, remove the keys, engage parking brake, and lock the vehicle when you are out of sight of the vehicle, even briefly.
- ❒ Drive the vehicle at speeds appropriate for road conditions, and in any case no higher than speed limits.
- ❒ Immediately report all incidents (collisions, vehicle damage, traffic citations) to supervisor or designee and as required by law.

How Safe Are Your Roads?

Implementing this Safe Road Program is an effective method to reduce the accidents and injuries that result from vehicle incidents. The measures below are objective measures of how well your department's Safe Road Program is functioning:

- ❒ Number of accidents per million miles driven per fiscal year
- ❒ Liability costs per vehicle in department per fiscal year
- ❒ Average liability cost per vehicle accident per fiscal year

If you would like assistance in developing these measures and comparing them against Metro's average, contact The Occupational Safety Administrator.

Attachment A – MODEL ACCIDENT REVIEW POLICY

The following attachment is a model plan that Departments can chose to adopt as their accident plan. Departments should determine whether accidents are preventable or non-preventable after a review of the pertinent facts from the driver's accident report, police reports, the supervisor's vehicle accident investigation report and, if applicable, Law Department's accident investigation report. Preventability should be determined on the basis of whether the driver took all ***reasonable*** defensive measures to prevent the accident. ***Reasonable*** should not be interpreted so strictly that drivers feel Metro's expectations are too high or so loosely that driver errors are overlooked, resulting in no corrective action. The illegal or unexpected actions of the other drivers should be considered, but do not automatically make the accident non-preventable. A good defensive driver prevents accidents in spite of the incorrect actions of others and/or adverse conditions. Preventability is not to be confused with a legal finding of fault. A driver may not be "at fault" legally, but may have been able to prevent the accident.

When a vehicle accident occurs, the department shall determine the cause of the accident as one of the following:

A. Non-preventable (The driver did all that could be reasonably expected to avoid the accident and in no significant way contributed to it.)

B. Preventable, with Mitigating Circumstances (The accident was preventable but there were factors other than driver error which contributed materially to the accident).

C. Preventable. An accident is preventable if the driver could have reasonably taken other actions that would have avoided the accident. The Accident Review Resource Guide (Attachment C in the Appendix) provides guidance to the preventability of accidents.

D. Preventable with Aggravating Circumstances (The accident resulted from willful wrongdoing, disregard for life and property or unauthorized use of a Metro vehicle.).

The following disciplinary actions should be recommended based on the board's finding of the cause of the accident:

(A) No Disciplinary Action. The accident is determined to be Non-preventable.

(B) No Disciplinary Action. The accident is determined to be Preventable, with Mitigating Circumstances.

(C) If the accident is determined to be Preventable, the employee will be charged points as follows:

- 1 point for each "Preventable" accident within a three year period from the date of accident.
- 1 additional point for each "Preventable" accident within a three-year period that resulted in more than $2,500 combined property and bodily injury damages.

Based on the total of points, the following disciplinary actions should be recommended:

No Discipline	-	0 Points
Oral Reprimand, verbal counseling and review of defensive driving rules	-	1 Point
Written Reprimand, review of defensive driving Rules, optional defensive driving course	-	2 Points
1 Working Day Suspension and/or mandatory defensive driving course and formal probation	-	3 Points
3 Working Day Suspension and/or loss of driving privileges	-	4 Points
5 Working Day Suspension and loss of driving privileges	-	5 Points

10 Working Day Suspension and loss of driving privileges	-	6 Points
Termination	-	7 Points

(D) Suspension, Demotion or Dismissal. The accident is determined to be Preventable with Aggravating Circumstances.

(E) In addition, the department may require the following:

(1) Physical and/or psychiatric examination

(2) Driver testing

(3) Appropriate driving class

(4) Other appropriate remedial action.

Employees have the right to file appeals in accordance with the applicable provisions of the Civil Service Rules.

Attachment B – VEHICLE ACCIDENT ISSUE CHECKLIST

Driver error is involved in most accidents, but other factors can contribute to driver error. The following is a list of other factors that can contribute to accidents.

Check if Root Cause	Check if Contributing Factor	Issues that Can Lead to an Accident
		Metro's policies and expectations for safe driving were not clearly communicated and enforced to the employee.
		Driver had not had proper training on the vehicle he was operating.
		Drivers in the department are not held accountable for their driving.
		Driver had not completed Defensive Driving Course.
		Driver was using vehicle to attend to personal business.
		Driver did not have adequate time to complete his daily assignment, including travel time.
		Driver has an unacceptable driving record.
		Vehicle had maintenance problems
		Driver was asked to complete a task for which the vehicle was not appropriate.
		Driver was performing tasks that were not in the job description.
		Employee had made a mechanical modification to the vehicle.
		Spotter did not assist the driver to back up safely.
		Vehicle had not had its preventative maintenance on a regular basis.
		Driver did not perform a pre-trip safety check.
		Driver and/or passengers did not use seatbelts.
		Driver was distracted by cell phone, eating, falling clip board, computer, etc.
		Driver was not fit to drive the vehicle physically and/or mentally.
		Driver's route included areas that did not have sufficient clearance for the size of the vehicle.

Attachment C - INCIDENT REVIEW RESOURCE GUIDE

This guide provides information on the types of accidents that may be reasonably considered to be preventable.

(A) Vehicle Struck in Rear by Other Vehicle

a. Non-preventable if:

i. Driver's vehicle was legally and properly parked.

ii. Driver was proceeding in own lane of traffic at a safe and lawful speed.

iii. Driver was stopped in traffic due to existing conditions or was stopped in compliance with traffic sign or signal or the directions of a police officer of other person.

iv. Driver was in proper lane, stopped and waiting to make turn.

(B) Vehicle Struck While Parked

a. Non-preventable if:

i. Driver was properly parked in a location where parking was permitted.

ii. Vehicle was protected by emergency warning devices as required by federal and state regulations, or if driver was in process of setting out or retrieving signals.

(C) Accidents at Intersections

a. Preventable if:

i. Driver failed to control speed so that he could stop within available sight distance.

ii. Driver failed to check cross-traffic and wait for it to clear before entering intersection.

iii. Driver pulled out from side street in the face of oncoming traffic.

iv. Driver collided with person, vehicle or object while making right or left turn.

v. Driver, going straight through an intersection, collided with another vehicle making a turn.

(D) Vehicle Strikes Other Vehicle in Rear

a. Preventable if:

i. Driver failed to maintain safe following distance and keep vehicle under control.

ii. Driver failed to stay alert to traffic conditions and note slow-down of traffic ahead.

iii. Driver failed to ascertain whether vehicle ahead was moving slowly or driver failed to stop slowing down for any reason when required.

iv. Driver misjudged rate at which vehicle was overtaking vehicle ahead.

v. Driver came too close to car ahead before pulling out to pass.

vi. Driver failed to wait for car ahead to move into the clear before starting up.

vii. Driver failed to leave sufficient room for passing vehicle to get safely back in line.

(E) Sideswipe and Head-On Collisions

a. Preventable if:

i. Driver was not entirely in the proper lane of travel.

ii. Driver did not pull to the right and slow down and stop for vehicle encroaching on own lane of travel when such action could have been taken without additional danger.

(F) Vehicle Struck in Rear by Other Vehicle

a. Preventable if:

i. Driver was passing slower traffic near intersection and had to make sudden stop.

ii. Driver made sudden stop to park, load or unload.

iii. Driver's vehicle was improperly parked.

iv. Driver rolled back into vehicle behind.

(G) Backing Accidents

a. Preventable if:
    i. Driver backed vehicle, causing accident, when such backing could have been avoided.
    ii. Driver failed to get out of vehicle and check proposed path of backward travel.
    iii. Driver failed to use a "spotter" if driver was in a position where the mirrors failed to show the hazard.

(H) Accidents Involving Train

a. Preventable if:
    i. Driver attempted to cross tracks directly ahead of oncoming train.
    ii. Driver ran into side of train.
    iii. Driver stopped on or parked too close to train tracks.

(I) Accidents That Occur While Passing

a. Preventable if:
    i. Driver passed when view of road ahead was obstructed by hill, curve, vegetation, traffic, adverse weather conditions, etc.
    ii. Driver attempted to pass in the face of closely approaching traffic.
    iii. Driver failed to warn the driver of the vehicle being passed.
    iv. Driver failed to signal change of lanes.
    v. Driver pulled out in front of other traffic overtaking from rear.
    vi. Driver cut-in short while returning to right lane.

(J) Accidents That Occur While Being Passed

a. Preventable if:
    i. Driver failed to stay in own lane, or hold or reduce speed to permit safe passing.

(K) Accidents That Occur While Entering Traffic Stream

a. Preventable if:
    i. Driver failed to signal when pulling out from curb.
    ii. Driver failed to check traffic before pulling out from curb.

iii. Driver failed to look back to check traffic if driver was in position where mirrors did not show traffic conditions.
iv. Driver attempted to pull out in a manner, which forces other vehicles(s) to change speed or direction.
v. Driver failed to make full stop before entering from side street, alley or driveway.
vi. Driver failed to make full stop before crossing sidewalk.
vii. Driver failed to yield right of way to approaching traffic.

(L) Pedestrian Accidents

a. Preventable if:
   i. Driver did not reduce speed in area of heavy pedestrian traffic.
   ii. Driver was not prepared to stop.
   iii. Driver failed to yield right of way to pedestrian.

(M) Accidents Related to Mechanical Defects

a. Preventable if:
   i. Defect was of a type which driver should have detected in pre-trip inspection of vehicle.
   ii. Defect was a type which driver should have detected during the normal operation of the vehicle.

(N) All Types of Accidents

a. Preventable if:
   i. Driver was not operating at a speed consistent with the existing conditions of the road, weather, and traffic.
   ii. Driver failed to control speed so that vehicle could stop within assured clear distance.
   iii. Driver misjudged available clearance.
   iv. Driver failed to yield right of way to avoid accident.
   v. Driver failed to accurately observe existing conditions and drive in accordance with those conditions.
   vi. Driver failed to yield right of way to avoid an accident.
   vii. Driver was inattentive.

viii. Driver was under the influence of alcohol or drugs.

ix. Driver was in violation of Metro operating rules, the regulations of any federal or state regulatory agency or any applicable traffic laws or ordinances.

Attachment D – LANGUAGE FOR GLOVEBOX

What I Do In Case of Accident?

- Stop immediately.
- Take precautions to prevent further accidents.
- Call Police/Medical Help if Needed.
- Render reasonable assistance to injured persons.
- Follow accident departmental procedures for accidents.
- Do not admit negligence or liability.
- Do not attempt to settle, regardless of how minor the accident.
- Exchange names, addresses, license # and insurance information with driver of other vehicle.
- Get name, address and home # of injured persons and witnesses, if possible.
- Get as much information as possible:
    - Witnesses
    - Information on owner of car (may be different than driver)
    - Circumstances of the accident while it is still fresh in your mind
- Take a photograph of scene of accident if possible.
- Report accident to your supervisor.

Statement of the Metropolitan Government's Insurance

The Metropolitan Government of Nashville and Davison County, is a metropolitan form of government as set out under the Governmental Tort Liability Act in TCA 29-20-101, et seq., and as such has its liability limits defined by law. The Metro Government of Nashville and Davidson County carries no insurance; however, it is self-insured in an adequately funded Self-Insurance Program, up to the limits as set out in the statute. To file a claim, call the Claims Division of the Metro Law Department, 862-6341.

WELDING SAFETY

Careful training and strict attention to safety procedures when welding are essential if workers are to stay safe. Welding equipment manufacturers generally provide specific warnings and instructions that should be read and understood by everyone who uses the equipment. OSHA makes a specific point of listing a supervisor's responsibilities in ensuring welding safety in 29 CFR 1910.253. These include, but are not limited to, being "responsible for the safe handling of the cutting or welding equipment and the safe use of the cutting or welding process." The following guidelines are to assist with this requirement.

Protective Equipment

Eye and face protection are as important to a welding process as the tools themselves. Welders are at risk for burns, heat radiation and flying bits of hot molten metal. The proper protective equipment can limit these risks substantially. OSHA requires gas welders to wear impact-resistant and heat-resistant goggles or other eye protection. Nonflammable welding helmets are recommended for many operations. For arc welders, OSHA recommends wearing helmets and eye protection designed to resist heat, fire, impact and electricity.

Since the flames and hot metal from both arc and gas welding give off infrared or heat rays, workers need eye coverings that protect them from long-term exposure, which can lead to cataracts. Safety goggles are available in a wide range of different lens shades, each of which provides protection against the specific infrared hazards of different kinds of welding jobs.

Arc welding also creates ultraviolet rays that can burn eyes and skin-much like a very bad sunburn. Again, instructions from the manufacturer and your safety coordinator should be your guide to selecting the right safety goggles or glasses for the job. It is a good idea to wear a face shield over the glasses for extra protection.

Body Protection

Welders should also wear clothing that will protect them against burns from hot sparks or metal. Very hot work calls for protective leather aprons, leggings and sleeves. Street clothes are acceptable for some welding jobs, if you follow these precautions:

- Wear long-sleeved shirts-Arc welders should wear clothing made of heavy material to protect against ultraviolet rays.
- Keep collars and cuffs buttoned.
- Do not wear clothes with cuffs or open pockets that could catch sparks.
- Wear high shoes, and keep pant legs over them to keep sparks out.
- Wear flame-resistant head covers.
- Wear clean clothes-grease or oil spots could be flammable.
- Do not wear flammable hair preparations.

For Arc welders, special dry welder's gloves are a must to protect against shock to the hands or electrocution.

Some welding jobs also call for wearing respirators to protect against inhaling fumes and gases. There are special welding respirators available. Follow the instructions of the welding equipment manufacturers, material safety data sheets (MSDSs) for any gas or materials used in a welding operation, and your safety division in choosing the correct respirator.

Fire Hazards

The flames and sparks created in the welding process make fire its greatest hazard. Welding sparks have been known to travel as much as 35 feet. The spatter-hot metal created by the process can bounce on the floor or fall through openings.

Whether you use arc or gas welders, always follow these precautions:

- Remove flammables from the area before beginning the job.
- Use a combustible-gas indicator to determine if flammable vapors or gases are present in an area where you plan to weld.
- Try to restrict welding operations to separate special rooms with fire-resistant floors.
- If you must weld in a room with a wood floor, wet the floor or cover it with a fire-resistant shield.
- Cover with a fireproof blanket any flammables that cannot be removed.
- Close or cover any ducts that could carry sparks to combustible items in other areas.
- Keep the welding area free of trash or debris that could catch fire.
- Keep fire extinguishers nearby. Check them regularly and make sure they are in good working order and that workers know how to use them.
- Assign a fire-watcher to welding jobs.

If you are using gas welders, take these additional steps to prevent fires:

- Keep cylinders away from sparks and spatter.
- Do not run over gas hoses.
- Do not use oxygen to blow away dust. It increases the likelihood of combustion if any ignition source-even static electricity-is present.
- Use proper lubricants, not grease or oil, on the connections of compressed-oxygen cylinders.
- Do not smoke!

Keep in mind that the gases used for welding, acetylene, butane, natural gas, propane, propylene-are not only flammable, they are also potentially explosive. Before you start a job, check the MSDS for the gas you are using.

Fumes and Gases

Another welding hazard is fumes and gases. The fumes are actually microscopic metal particles that are suspended in the air. Fluxes, plating, dirt, oil and other substances can also create fumes and

gases when they are heated by the welding process.

To avoid respiratory problems and lung damage from inhaling these airborne substances, follow instructions for selecting and using respiratory protection. In addition, keep these safety procedures in mind:

- Use local ventilation, such as an exhaust system.
- Place fans to the side so fumes will blow away from you.
- Do not get too close to the arc on an arc welder.
- Leave the area immediately and get medical attention if you feel sick or uncomfortable.

Arc welder Handling and Storage

Arc welders are electric, so you must also follow the rules of electrical safety to avoid shock or electrocution. Keep these precautions in mind:

- Turn off power before touching electric parts.
- Ground the object you are welding with a separate electrical connection.
- Use the correct cable size.
- Make sure cable insulation is not worn or frayed.
- Do not wear metal jewelry; it could become an electricity conductor.
- Do not weld in the rain; moisture carries electricity.

Confined Spaces: Welding in confined spaces brings additional risks to welding operations. Confined spaces, any place that is hard to get in or out of and with poor natural ventilation, call for extreme attention to safety to counter the hazards of fire, explosion, lack of oxygen and dangerous levels of toxic gases and fumes. Carefully train anyone who will be assigned to weld in a confined space according to OSHA regulations (29 CFR 1910.146) and permit only trained, authorized workers to enter these spaces-with a permit and an attendant and supervisor in place. In addition, be sure workers keep welding machines and gas cylinders outside the space. They should also shut off equipment when welding operation stops, such as for lunch or overnight.

Welding Safety Checklist

Do Welders?

1. Understand welding hazards?
2. Read and follow equipment manufacturers' instructions?
3. Use impact-and heat-resistant eye and face coverings?
4. Wear helmets or goggles that protect against infrared rays?
5. Wear clothing that covers skin to prevent burns?
6. Wear leather aprons, leggings and sleeves for very hot work?
7. Avoid cuffs, pockets or low shoes that could catch sparks?
8. Wear flame-resistant head covers?
9. Wear dry welder's gloves for arc welding?
10. Use respirators to prevent inhaling dangerous fumes and gases?

Are welding operations performed:

1. After areas are tested for presence of flammables?
2. In areas free of combustible trash or debris?
3. After items that could be tripped over are removed?
4. In areas where smoking is strictly prohibited?
5. With adequate ventilation, and fans blowing fumes away from workers?
6. With working fire extinguishers and possibly an assigned fire-watcher?

Are Gas Cylinders:

1. Checked for label instructions before use?
2. Checked regularly for leaks?
3. Kept away from heat and flammable items?
4. Turned off when not in use?
5. Moved and handled to prevent dropping or rolling?
6. Stored upright and properly secured, in a separate, dry, ventilated, fireproof room?

WORK ZONE TRAFFIC CONTROL PROGRAM

PURPOSE

The Metropolitan Government of Nashville & Davidson County recognizes the importance of providing safety to our employees as well as the public, while conducting work on the Nashville roadways. The purpose of this program will be to provide orderly and predictable movement of all traffic, motorized and non-motorized, throughout the city and to provide such guidance and warnings as are needed to insure the safe and uniformed operation of individual elements of the traffic stream.

These guidelines are applicable to traffic control for street and highway construction, maintenance, utility, and incident management operations.

RESPONSIBILITY AND TRAINING

All appropriate employees shall be trained in the safety significance of the Work Zone Traffic Control Program. This training shall be documented in accordance with the Training Procedure.

Employees shall be re-trained periodically. In addition, training shall be conducted whenever it is discovered that any employees are deviating from the established guidelines.

It is the responsibility of the Director of each Metro Department as well as the Safety Coordinator for that department to ensure that all requirements of these guidelines are followed and carried out.

The *Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)*, shall be used to supplement these guidelines.
http://mutcd.fhwa.dot.gov/

PEDESTRIAN AND WORKER SAFETY

Pedestrian Safety Considerations

- Pedestrians should not be led into direct conflicts with work site vehicles, equipment or operations.

- Pedestrians should not be led into direct conflicts with mainline traffic moving through or around the work site.
- Pedestrians should be provided with a safe, convenient travel path that replicates as nearly as possible the most desirable characteristics of sidewalks and footpaths.

Worker Safety Considerations

- Worker Clothing - Workers exposed to traffic shall wear a traffic safety vest. If work is performed at night or in inclement weather, such as rain, fog, sleet, snow, etc., the vest shall possess reflective qualities.

  Federal Regulation 23 CFR 634
  All workers within the right-of-way of a federal-aid highway who are exposed either to traffic (vehicles using the highway for purposes of travel) or to construction equipment within the work are shall wear high-visibility apparel.

  The Federal Highway Administration has determined that Class II Vests complying with ANSI/ISEA 107, 2004, or 2006 and Public Safety Vests complying with ANSI/ISEA 207, 2006 meet the intent of this rule.

  Minimum Requirements
  - Use of fluorescent background material
  - Fluorescent may be yellow-green, orange-red, or red
  - Retroreflective material arranged for 360 visibility
  - Garments should be labeled as compliant with ANSI/ISEA 107-2004 or ANSI/ISEA 207-2006

  NFPA Requirements
  NFPA 1500, 2007
  8.7.10* When members are operating at a traffic incident and their assignment places them in potential conflict with motor vehicle traffic, they shall wear a garment with fluorescent and retro-reflective material visible from all directions.

  A.8.7.10 Members that operate on roadway incidents should be provided with vests or garments that ensure proper reflectivity such as a highly retro-reflective vest (strong yellow, green, and orange).

  NFPA 1901, 2009 (Proposed addition to required equipment list)
  One traffic vest for each seating position, each vest to comply with

ANSI/ISEA 207, Standard for High-Visibility Public Safety Vests, and have a five-point break away feature that includes two at the shoulders, two at the sides and one at the front.

- Barriers - Barriers shall be placed along the work area.

- Speed Reduction - In highly vulnerable situations, consideration shall be given to reducing the speed of traffic through the use of flaggers, police and regulatory speed zoning.

- Use of Police - In situations, such as "on call" status, where a job requires the undivided attention of the employees, Police may be used in traffic control.

- Special Devices - Special warning devices such as directional arrows are to be used with care. Directional arrows are only to be used on four lane type roads.

- Public Information - Improved driver performance may be realized through a well-prepared and complete public relations effort that covers the nature of the work, the time and duration of its execution, and its anticipated effects upon traffic and possible alternate routes.

- Road Closure - If alternate routes are available to handle detoured traffic, the road may be closed temporarily during times of greatest worker hazard, which, in addition to offering maximum worker safety, may facilitate quicker project completion and thus further reduce worker vulnerability.

- **In the event that a road is to be closed, the Police Department as well as the Fire Department shall be notified of the road closing**.

- If the road closed is a state highway, the Department of Transportation shall be notified prior to the road closing. They can be contacted at 615-350-4233.

TEMPORARY TRAFFIC CONTROL ZONE COMPONENTS

Advanced Warning Area: In the Advanced Warning Area, drivers are informed of what to expect. The Advanced Warning Area may vary from a single sign or flashing light to a series of signs in advance of the temporary traffic control zone transition area.

Transition Area: When redirection of the driver's normal path is required, traffic must be channelized from the normal path to a new path. This redirection is intended to occur at the beginning of the Transition Area.

Activity Area: The Activity Area is an area of roadway where the work takes place. It is composed of the work-space and the traffic space, and may contain one or more buffer spaces.

Termination Area: The Termination Area is used to return traffic to the normal traffic path. For normal daytime maintenance, the ***END ROAD WORK*** sign is optional.

SIGNS

- In the interest of versatility, all signs shall be either re-flectorized with a material that has a smooth, sealed outer surface, or illuminated to show approximately the same shape and color day and night.

- Signs shall be placed in positions where they will convey their messages most effectively and placement must therefore be accommodated to roadway design and alignment. Signs shall be so placed that the driver will have adequate time for response. As a general rule signs shall be located on the right-hand side of the street or roadway.

- Ensure that blind-spots are not created in the positioning of signs.

- When work is completed, all necessary signs shall be removed. They are not to be left up overnight. For example, if a "Flagger Ahead" sign is placed in a work zone, it shall be removed whenever the flagging has been discontinued.

- Signs on fixed supports are usually mounted on a single post, although those wider than 36 inches or larger than 10 square feet in area should generally be mounted on two posts. Signs mounted on portable supports are suitable for temporary conditions. All such installations shall be so constructed to minimize damage upon impact.

- Advanced warning signs will be placed, regardless of the duration of the job. If the road must be channelized, a flagger will be used.

CHANNELIZING DEVICES

Function

The function of channelizing devices are to warn and alert drivers of hazards created by construction or maintenance activities in or near the traveled way, to protect workers in the work zone, and to guide and direct drivers and pedestrians safely past the hazards. Channelizing devices include, but are not limited to, cones, vertical panels, drums, barricades, and barriers.

Channelization

These are devices placed on the roadway to keep traffic out of a closed lane. They should be spaced in accordance with the extent and type of activity, the speed limit of the roadway, and the vertical and horizontal alignment of the roadway.

Metro Nashville recognizes the importance of channelizing devices and has selected cones and drums as their primary form of channelization. In the event of extended construction and maintenance, barricades may be used, in this event, refer to the MUTCD.

Channelization Spacing

Channelization devices shall be spaced according to the mile per hour (MPH) rating of that particular roadway. For example, if the MPH of a roadway is 35, the channelization devices shall be spaced 35 feet apart. **This spacing is not to exceed 40 feet. Any MPH over 40 stays consistent in spacing.**

Cones

- Constructed of a material that is able to withstand impact without damage to themselves or to vehicles.

- Minimum height is 18 inches.

Nighttime work: Height of cone shall be 28 inches, and possess two white bands. The bands shall be made of a reflectorized material and be 6 inches and 4 inches wide respectively. The 6-inch band shall be 3 inches from the top of the cone. The 4-inch band is to be placed 2 inches below the 6-inch band.

Drums

- Drums used for traffic warning or channelization shall be approximately 36 inches in height and a minimum of 18 inches in diameter.
- The markings on the drums shall be horizontal, circumferential, orange and white reflectorized stripes four to eight inches wide, using material that has a smooth, sealed outer surface which will display the same approximate size, shape, and color day and night.
- There shall be at least two orange and two white stripes on each drum.
- If there are non-reflectorized spaces between the horizontal orange and white stripes, they shall be no more than two inches wide.

TAPER LENGTHS

This is the single most important element within the system of traffic control devices. The **taper length** refers to the area where a reduction in pavement width is involved. There are two types of tapers, the merging taper and the shifting taper.

Merging Taper

- This taper is used to close a lane on a multilane roadway and to direct traffic in the closed lane to merge into the adjacent lane. The taper should be long enough so that drivers of vehicles approaching side by side have sufficient length in which to adjust their respective speeds and merge into a single lane before the end of the transition.

Shifting Taper

- This taper is used to move traffic into a different travel path when a merge is not required.

- Close discretion should be given when setting up the taper. A brief period of observing driver performances will generally provide some clear indications of the adequacy of the taper length. For example, if severe brake applications are observed, an increased taper may be necessary.

FLAGGING

Since flaggers are responsible for human safety and make the greatest number of public contacts of all construction personnel, it is important that qualified personnel be selected.

- The flagger shall wear a traffic safety vest at all times while flagging. If flagging is to be performed during nighttime hours or during inclement weather (rain, snow, sleet, rain, etc.) the traffic safety vest shall possess reflectorized material.

- The flagger shall be provided a stop/slow paddle in which to control the on-coming traffic. **Note:** The actual flag is only to be used in emergency situations.

FLAGGING PROCEDURES

Signaling With a Stop/Slow Paddle

- To STOP Traffic: The flagger shall face traffic and extend the STOP sign paddle in a stationary position with the arm extended horizontally away from the body. The free arm is raised with the palm toward approaching traffic.
- When it is Safe for Traffic to Proceed: The flagger shall face traffic with the SLOW sign paddle held in a stationary position with the arm extended horizontally away from the body. The flagger motions traffic ahead with the free hand.

- When it is Desired to Alert of Slow Traffic: The flagger shall face traffic with the SLOW sign paddle held in a stationary position with the arm extended horizontally away from the body.

Signaling With a Flag

- To Stop Traffic: The flagger shall face traffic and extend the flag horizontally across the traffic lane in a stationary position so that the full area of the flag is visible hanging below the staff. For greater emphasis, the free arm may be raised with the palm toward approaching traffic.

- To Alert or Slow Traffic: Where it is desired to alert or slow traffic by means of flagging, the flagger shall face traffic and slowly wave the flag in a sweeping motion of the extended arm from the shoulder level to straight down without raising the arm above a horizontal position.

Communication

- Where the distance between two flaggers is short enough for the two to have a clear visibility of each other, verbal communication or the use of signals can be used to control the flow of traffic.

- Where visibility is obstructed, the means of communication shall be maintained using radios or field telephones.
- Whenever flagging is being performed a sign indicating this shall be provided prior to the location of the flagger.

- If work is discontinued, for example, during lunch, the flagger sign shall be removed to avoid any unwanted confusion to the public. Once flagging continues, the flagging sign shall be placed back in its original position. Note: The flagger sign is only to be removed if traffic can proceed in its original fashion.