



Health & Safety
Manual

MANAGEMENT COMMITMENT AND FOREWARD

Management Commitment.

Two words that are used in almost every sentence concerning safety. Yet, without commitment from all levels of management there can be little or no loss control program. It is executive management that sets the general direction and objectives of the program. From this direction the next level of management, generally department/division directors, creates the program for their department(s) that coincides with the overall program. The next level of management, supervisors, is the ones that take the written statement, goals and objectives, and wishes and desires of the upper management and turn them into reality in the workplace.

A form of management commitment is to lead by action, not just words alone. This proactive approach in developing and implementing loss control and risk management programs promote employee welfare and financial stability. These programs also aid in preventing and mitigating risks and their subsequent losses, which brings us to a well managed Loss Control and Risk Management Program.

It is the commitment of the City of Marion management to provide a safe and healthful workplace for our employees.

ORGANIZATIONAL POLICY STATEMENT

The purpose of the loss control program is to establish a system to promote the safety and health of every employee. The goal, as an employer, is to provide the safest possible working conditions for employees and, as a service organization, to provide a safe environment for the public using our services. The executive management fully supports all efforts that will provide safe working conditions for employees and/or safe living conditions for citizens.

City of Marion holds in high regard the safety, welfare and health of its employees. Furthermore, the KMIT believes that most accidents can be prevented. In recognition of this, City of Marion will constantly work toward:

The maintenance of safe and healthful working conditions for employees;

Consistent adherence to proper operating practices and procedures designed to prevent injury, illness, property damage and liabilities including proper preventive maintenance techniques;

Conscientious observance of federal, state and city safety regulations; and

Lawful, safe, efficient and courteous operation of all motorized vehicles, both street and off-road, by all employees during their employment. Employees will adhere to the Motor Fleet Policy as well as the Kansas Motor Vehicle Codes for the correct operation of their vehicle.

It is our desire to provide a safe working environment and keep injuries to the absolute minimum or eliminate injuries altogether, thus protecting our most valuable asset, our employees. The loss control objective is to focus attention on production and thereby contribute significantly to the efficiency of an operation. One of the most important contributions an employee can provide to the organization is performance of all tasks in the safest possible manner. Safety increases productivity and thereby contributes to the overall objectives of the organization. When incorporated with other management efforts, loss control techniques have an effect upon the reduction of personnel injuries, property damage and work interruptions. By placing constant emphasis on the refinement of operational procedures, employee awareness and safe working conditions, it is possible to eventually eliminate the cause and effect of losses.

GOVERNING BODY ADOPTION STATEMENT

The governing body for City of Marion realizes that employees are one of our most valuable assets. In order to protect our employees, our property, and ultimately our financial stability, this organization fully supports the loss prevention efforts of the executive management. Realizing that the management is fully aware of all pertinent and applicable federal, state, local statues, laws, rules, regulations or ordinances, the authority for development, implementation, monitoring, and revision of the loss control program is placed with the executive management.

SIGNATURE: _____

TITLE: Mayor _____

DATE: _____

ADMINISTRATION/ MANAGEMENT ADOPTION STATEMENT

There is a wide diversity of operations within organizations. Managers are given latitude in formulating and implementing alternative methods when necessary as long as the intent of the loss control program is not compromised.

The responsibility for the development, implementation and administrations of the loss control program is assigned to the loss control coordinator. The loss control coordinator will use recognized standards when promulgating safety standards, policies or procedures. The loss control coordinator also has the authority to stop all operations that are immediately dangerous to the life or health of either the employees or the general public. This authority will remain in effect until appropriate officials have been notified. The operation will be allowed to continue after the conditions have been corrected.

It is the intent of the executive management, by way of this signature, to enter into an agreement to support all facets of the loss control program.

SIGNATURE: _____

TITLE: City Administrator _____

DATE: _____

EMPLOYEE STATEMENT OF AGREEMENT AND UNDERSTANDING

I understand that this handbook is a general guide and that the provisions of this handbook do not constitute an employment agreement (contract) or a guarantee to continue employment. I further understand that this organization reserves the right to change the provisions of this handbook at any time.

I understand and agree that, if hired, my employment is for no definite period and may, regardless of the date of payment of my wage and salary, be terminated at any time without prior notice.

I also understand and agree to abide by all recognized Federal and State safety rules, regulations, and laws as well as company safety policies, rules or procedures. Failure to do so may be grounds for discipline up to and including termination.

EMPLOYEE SIGNATURE: _____

DATE: _____

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LOSS CONTROL PROGRAM ADMINISTRATION



City Council/City Administration - Set overall goals and objectives for program. Gives direction to administration. Members include all elected & appointed officials.

Safety Committee - Review all injuries and accidents. Reviews and suggest recommendations for changes in processes, procedures, training etc. They also perform monthly safety surveys and conducts monthly safety training. Members include a representative from each municipal department.

Each department appoints a Safety Committee Member to perform the following duties as a minimum.

1. Identify safety needs - equipment.
2. Identify training needs, both safety and general.
3. Conduct safety meetings.
4. Perform worksite inspections.
5. Perform safety procedure compliance audits.
6. Perform personal protective equipment (PPE) audits.
7. Accept hazard reports and report to safety director.
8. Assist in investigating accidents as necessary.

The Safety Officer directs the overall activities of the loss control program. The Coordinator participates in the City Council/City Administration meetings and accepts direction from that group. The Safety Officer is the facilitator for the Safety committee. This committee may be called upon to conduct post accident review or other activities to improve and insure a safe & productive workplace.

ACCIDENT INVESTIGATION

Objective

To determine what went wrong in the workplace that resulted in an accident, or near miss, so that effective corrective action can be taken to prevent recurrence.

Responsibilities

The Safety Committee member of the department in which the incident, illness or near miss occurred shall assure a complete and thorough accident investigation is conducted. Copies of this report should be sent to the City Clerk for processing and follow-up.

The Safety Officer needs to review the report to assure completeness and accuracy and maintain a copy in a central accident file.

City management should maintain a copy of any accident report in the employees personnel file.

The Safety Officer can assist the committee member in incident investigation as required.

Employees must immediately report all occupational incidents, illness and near misses to their immediate supervisor WITHIN 24 HOURS...

The Safety Officer needs to assure the proper notification of authorities per Federal, State, and Local regulations.

Procedures

Provide for first aid to be administered.

Go to the scene of the accident at once.

Talk with injured person, if possible. Talk to witnesses. Stress getting the facts, not placing blame or responsibility. Ask open-ended questions. Listen for clues in the conversations around you. Unsolicited comments often have merit.

Encourage people to give their ideas for preventing a similar accident.

Study possible causes - unsafe conditions, unsafe practices.

Confer with interested persons about possible solutions.

Write your accident report give a complete, accurate account of the accident. Do not offer opinions.

Follow-up to make sure conditions are corrected. If they cannot be corrected immediately, report this to your supervisor.

PUBLICIZE corrective action taken so that all may benefit from the experience.

Completing the Investigation Report

Once the investigation process is complete and the facts are known, preparing the report should not be difficult. Refer to Accident Investigation Report

Report Questions

One through 16 are self-explanatory but are important for administrative and follow-up reasons. The name of the treating physician and clinic/hospital address may not be immediately known by the supervisor investigating the accident, and can be completed later.

The same holds true for Question 16. However, this information is important as the starting point for the City's Occupational Injury Management Program.

Injury

(17) ACCIDENT TYPE

This explains the type of incident being investigated, i.e., fall from ladder, stepped on nail, electrical shock, struck by a vehicle, fire, lifting materials, etc.

(18) SOURCE

This describes the object or substance inflicting the injury or otherwise involved in the incident. Some examples are power tools, an icy floor, shredder, shear, electrical wiring, etc.

(19) NATURE OF INJURY

This identifies the kind of injury resulting from the accident, such as an electrical burn, concussion, back strain, asphyxiation, etc.

(20) PART OF BODY INJURY - SELF-EXPLANATORY

Property Damage

(21) Describe what was damaged as a result of the accident (or near miss), i.e., backhoe, power tool, building, maintenance vehicle, etc.

(22) NATURE OF DAMAGE

This deals with the extent of the damaged property such as a crushed fender, backhoe rollover, destroyed tool, broken ladder, conveyor collapse, etc.

(23) SOURCE - OBJECT INFLECTING DAMAGE

The source of the accident could be such things as a faulty electrical system, an excavation cave-in resulting in an injury, a disrepair ladder, a snow covered parking lot.

(24) ESTIMATED COST OF REPAIR - SELF-EXPLANATORY

Description

(25) Describe in complete detail what happened, the activity the worker was involved in, who else was involved and ask open ended investigative questions such as where - when - why - how.

(26) CAUSE

This is the most critical question in the investigation because it identifies the act or condition requiring change that will control recurrence of like accidents. The investigator needs to get beyond just the employee involved; evaluate all of the management operational controls that could be responsible for the accident.

SPECIAL NOTATION: DO NOT STATE THAT THE ACCIDENT WAS A RESULT OF EMPLOYEE CARELESSNESS! SPECIFICALLY DEFINE THE UNSAFE ACT OR CONDITION INVOLVED THAT MAY AT FIRST APPEAR TO BE CARELESSNESS, I.E.,

DISTRACTION, NOISE STRESS, HEAT, COLD, OR OTHER NATURAL AND UNNATURAL FACTORS.

Evaluation

(27) SEVERITY POTENTIAL

The investigating (INSERT TITLE/NAME) should be able to determine the accident severity based on the facts of the case. For example, the injury or death severity potential for a 10 foot trench collapse in sandy soil is much greater (major), than a 4 foot trench collapse in clay.

(28) RECURRENCE POTENTIAL

The experience of the (INSERT TITLE/NAME), crew and nature of the work will help determine the possibility of like accidents happening sometime in the future. The (INSERT TITLE/NAME) needs to evaluate the failure possibilities of the management control systems in place at the time of the accident.

(29) HAVE SIMILAR ACCIDENT(S) OCCURRED BEFORE?

This directly relates to Question 28. If similar accidents did in fact take place in the past, it strongly indicates that some management system, some device or control measure failed.

(30) REASONS FOR RECURRENCE - FULLY DESCRIBE WHAT FAILED AND WHY.

Correction

(31) Based on the information developed through Questions 27, 28, 29 and 30, clearly define steps that must be taken to prevent similar accidents in the future. That is, permanently fix the problem.

Follow-up

- (32) Based on the severity potential (Question 27), state when follow-up to suggested corrective action (Question 31) must be taken.

For example, if the severity potential for a like accident is major (Question 27) or the recurrence potential is frequent (Question 28), then obviously the follow-up to corrective action should be immediate.

Safety Officer should review the accident investigation report for completeness and accuracy, initial and date the report, and forward it to the safety coordinator for further processing as necessary.

ACCIDENT INVESTIGATION REPORT

IDENTIFICATION

- 1. City _____ 2. Department _____
- 3. Date of Accident _____ 4. TIME _____ a.m. p.m. 5. Date Reported _____
- 6. Name of Injured _____ 7. Age _____
- 8. Job Title _____ 9. Experience _____ (yrs. /months)
- 10. Sex M F 11. SSN _____
- 12. On Premises 13. Off Premises
- 14. Employee Death Y N
- 15. Person treating injury (Physician/Hospital named and address)

- 16. Did the injury result in Lost Time? _____ Change in Duties? _____

INJURY

- 17. Accident Type _____
- 18. Source - The Object or substance inflicting injury _____
- 19. Nature of Injury _____
- 20. Part of Body _____

PROPERTY DAMAGE

- 21. What damaged _____

22. Nature of damage _____

23. Source - Object inflicting damage _____

24. Estimated cost of repair _____

DESCRIPTION (describe what happened - who was involved - where - when - why - how)

25. _____

CAUSE (identify unsafe acts or conditions - Contributory Factors - Base Cause - lack of control)

26. _____

EVALUATION

27. Severity potential Major Serious ” Minor ”

28. Recurrence potential Frequent” Occasional ” Rare ”

29. Have similar accident(s) occurred before? _____

30. Reasons for recurrence _____

CORRECTION (describe steps taken to prevent future accidents)

31. _____

FOLLOW-UP (post a copy of the report for follow-up)

32. Immediate [] 7 days [] 30 days [] 60 days []

Activity (list actions taken and dates)



**CONFINED SPACE ENTRY SAFETY PROCEDURE
(Permit-Required Confined Space Entry)**

Purpose

The purpose of this procedure is to establish minimum standards for identification and classification of confined spaces and entry into those confined spaces.

Scope

This procedure applies to all personnel who are required to work in or near any confined space. This procedure is to be used by employees of City of Marion to enter permit-required confined spaces. For the purposes of this procedure,

Confined Space is defined as any space that:

Is large enough and so configured that an employee can bodily enter and perform assigned work; and

Has limited or restricted means for entry or exit; and is not designed for continuous employee occupancy.

Confined spaces include, but are not limited to, storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults and manholes, pipelines and open top spaces more than four (4) feet in depth such as pits, tubs, vaults, and vessels.

NOTE: The following areas are covered by OSHA 1926.800 Sub-part S: Tunnels and shafts, caissons, cofferdams and compressed air work places.

Permit-required confined spaces are defined as any confined space that:

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 which slopes downward and tapers to a smaller cross-section; or

Contains any other recognized serious safety or health hazard.

Non-permit confined spaces are defined as any space that does not contain any of the hazards listed above in the definition for a permit-required confined space. Control of atmospheric hazards through forced air ventilation does not constitute elimination of the hazards.

ANSI Z117.1 is the applicable standard for confined spaces in construction. Certain provisions of OSHA 1910.119 and 1910.146 will apply to contractors in a general industry facility.

Other Definitions

Entry means 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.

Other definitions required for this procedure can be found in OSHA Standard 1910.146(b) and 1926.21(b) (6).

Identification of Confined Spaces

The preceding definitions were used to identify the confined spaces within control of City of Marion. Locations identified as confined spaces can be found in Attachment 1 of this procedure. The flow chart in appendix A of 1910.146 (copy attached) was used to determine appropriate procedures for each of confined spaces listed in Attachment 1.

Those spaces identified as permit-required confined spaces have been posted with the following warning **"DANGER-PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER."** These signs will remain in place at all times.

A permit-required confined space will only be reclassified as a non-permit space if there is no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space. The permit space will be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.

When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrant, City of Marion shall reevaluate that space and, if necessary, reclassify it as a permit-required confined space.

Whenever a confined space is permanently reclassified as a non-permit or permit confined space it will be recorded in the confined space listing found in Attachment 1 and the previous entry of this confined space will be lined out. When a confined space is temporally reclassified as a non-permit or permit-required confined space it will be recorded in the temporary confined space listing found in Attachment 2.

Pre-Entry Procedures

An entry permit (Attachment 6) will be obtained to evaluate the hazards of the permit space and the means, procedures, and practices necessary for a safe entry.

Implement the measures necessary to prevent unauthorized entry.

When entrance covers are removed, the opening will be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.

Before an employee enters the space, the internal atmosphere will be tested (entrants or their authorized representatives will be offered the opportunity to witness the tests), with a calibrated direct-reading instrument, for the following conditions in the order given:

Oxygen content

Flammable gases and vapors, and

Potential toxic air contaminants

All readings will be recorded and posted at the confined space for the length of the entry.

If no hazardous atmosphere was detected, one is not anticipated, and all non-atmospheric hazards are controlled in the confined space then the alternate entry procedures will be utilized. However, if a hazardous atmosphere was detected, one is anticipated, or a non-atmospheric hazard exists in the confined space then the following entry procedures will be implemented.

Entry Procedures

The entry supervisor identified on the permit shall review and sign the entry permit to authorize entry.

The completed permit shall be made available at the time of entry to all authorized entrants, by posting it at the entry portal or by any other equally effective means; so that the entrants can confirm that pre-entry preparations have been completed.

The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit.

The entry supervisor shall terminate entry and cancel the entry permit when:

The entry operations covered by the entry permit have been completed; or

A condition that is not allowed under the entry permit arises in or near the permit space.

The following equipment will be provided at no cost to employees, maintained, and ensured that employees use it properly:

Testing and monitoring equipment.

Ventilating equipment needed to obtain acceptable entry conditions.

Communications equipment.

Personal protective equipment insofar as feasible engineering and work practice controls do not adequately protect employees.

Lighting equipment needed to enable employees to see well enough to work safely and to exit the space quickly in an emergency.

Barriers and shields.

Equipment, such as ladders, needed for safe ingress and egress by authorized entrants.

Rescue and emergency equipment, except to the extent that the equipment is provided by rescue services.

Any other equipment necessary for safe entry into and rescue from permit spaces.

The atmosphere within the space will be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

There will be at least one attendant outside the permit space into which entry is authorized for the duration of entry operations.

Note: Attendants may be assigned to monitor more than one permit space provided their duties can be effectively performed for each permit space that is monitored. Likewise, attendants may be stationed at any location outside the permit space to be monitored as long as their duties can be effectively performed for each permit space that is monitored.

All employees who are to have active roles in the entry operation will be designated, their duties identified, and proper training provided.

If an emergency arises the rescue procedures in Attachment 5 will be followed.

Each employee who enters a confined space will use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, or above the entrant's head. Wristlets may be used in lieu of the chest or full body harness if the employer can demonstrate that the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of wristlets is the safest and most effective alternative. The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 (1.52m) feet deep.

When employees are working simultaneously as with other authorized entrants in a permit space, constant communication will be kept between the parties.

When entry is complete all covers will be replaced, and guard rails, temporary covers, or other temporary barriers to prevent an accidental fall through the opening will be removed.

Measures necessary to prevent unauthorized entry will be verified and reinstalled if found to be inferior.

The entry permit will be returned to the entry supervisor. The entry supervisor will file the entry permit for a period of one year. These entry permits will be used on an annual basis to evaluate the effectiveness of the system.

Alternate Entry Procedures

The following entry procedures apply to a permit confined space that has all of the potential hazards (engulfment, burns and heat stress, fire and fumes, etc.) controlled. For these procedures atmospheric hazards may be controlled by the use of mechanical ventilation. The entry permit detailing the hazards and controls will be signed by an authorized person and posted at the confined space for the entire length of entry.

There may be no hazardous atmosphere within the space whenever any employee is inside the space.

Continuous forced air ventilation shall be used, as follows:

An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.

The forced air ventilation will be so directed as to ventilate the immediate areas where an employee is or will be present within the space and will continue until all employees have left the space.

The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.

The atmosphere within the space will be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

Hazards and controls will be reevaluated when the confined space is left unattended, during personnel changes, breaks, or if conditions, such as weather, warrant.

If a hazardous atmosphere is detected during entry:

Each employee will leave the space immediately.

The space shall be evaluated to determine how the hazardous atmosphere developed; and

Measures will be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.

Training will be given to all affected employees on at least an annual basis and will cover the topics listed in Attachment 4.

The entry permit will be filed for a period of one year. These entry permits will be used on an annual basis to evaluate the effectiveness of the system.

Duties of Authorized Entrants

Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure and sign permit indicating they were offered opportunity to witness testing of space.

Properly use equipment required to enter the confined space.

Communicate 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.

Alert the attendant whenever:

The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.

The entrant detects a prohibited condition.

Exit from the permit space as quickly as possible whenever:

An order to evacuate is 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.

The evacuation alarm (**Describe evacuation alarm here**) is activated.

Duties of Attendants

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

Be aware of possible behavioral effects of hazard exposure in authorized entrants.

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

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

Note: When the employer's permit entry program allows attendant entry for rescue, attendants may enter a permit space to attempt a rescue if they have been trained and equipped for rescue operations and if they have been relieved by another attendant.

Communicate with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space.

Monitor activities inside and outside the space to determine if it is safe for entrants to remain in the space and order the authorized entrants to evacuate the permit space immediately under any of the following conditions:

If the attendant detects a prohibited condition.

If the attendant detects the behavioral effects of hazard exposure in an authorized entrant.

If the attendant detects a situation outside the space that could endanger the authorized entrants.

If the attendant cannot effectively and safely perform all the duties.

Summon rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards.

Take the following actions when unauthorized persons approach or enter a permit space while entry is underway:

Warn the unauthorized persons that they must stay away from the permit space.

Advise the unauthorized persons that they must exit immediately if they have entered the permit space.

Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.

Perform non-entry rescues as specified by the procedure in Attachment 5.

Perform no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

Duties of Entry Supervisors

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

Check that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.

Terminate the entry and cancel the permit as required.

Verify that rescue services are available and that the means for summoning them are operable.

Remove unauthorized individuals who enter or who attempt to enter the permit space during entry operations.

Determine, 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.

Contractors

When City of Marion has employees of another employer working in or around any confined spaces the following procedures will be followed:

Contractors working on-site will be informed of all spaces requiring confined space entry permits.

If contractors are hired to perform work in confined spaces, they will be trained on the exposures of that confined space.

A copy of the Contractors Confined Space Entry program will be obtained and should meet the requirements set forth in this program.

Note: It is the responsibility of the contractor to determine the safe entry requirements of any confined space that their employees will be entering. It is also the responsibility of the contractor to ensure that their confined space program meets all of OSHA's current requirements.

A copy of this program will be given to contractors to inform them of the precautions and procedures that City of Marion has taken to protect employees in or near permit spaces where the contractor personnel will be working.

When employees of City of Marion are working simultaneously as authorized entrants in a permit space with an outside contractor, constant communication will be kept between the parties.

Copies of all confined space entry permits issued by contractors working in confined spaces under the control of City of Marion will be kept for a period of one year.

A closing meeting with the contractor will be held to document any hazards confronted or created in the permit space during entry operations.

Attachment 1
Confined Spaces Listing

Log #	Confined Space Name	Location	Date	Possible Hazards	Classification	Signature

Attachment 2
Temporary Confined Spaces Listing

Log #	Confined Space Name	Location	Date	Reason for Reclassification	Classification	Signature	Expiration Date

Attachment 4
Training Agenda

1. The identification and evaluation of permit-required confined spaces.
2. Method of obtaining a permit.
3. Explain how to calibrate and use atmospheric testing equipment.
4. Explain how to set up required ventilation.
5. Demonstrate how to use SCBA's to enter oxygen deficient or unknown atmospheres. (Check with supplier for training, maintenance, and fit testing).
6. Explain the acceptable ranges for oxygen, flammable and toxic chemicals.
7. Explain the rescue provision to retrieve an employee.
8. Have the rescuers take first aid and CPR training.
9. Show employees how to wear the safety harness.
10. Review types of hazards and causes of fatalities in a confined space.
11. Demonstrate communication methods/devices.
12. Contractor/Operator interfacing.

Attachment 5
Rescue Procedures

1. Call for help (**insert telephone number or other means of summoning trained and properly equipped rescue team**).
2. Attempt rescue (using entrant retrieval system) without entering the space.
3. Employee(s) entering for rescue shall be provided with and wear a self-contained breathing apparatus, life line, harness, and other necessary equipment before entering the confined space.
4. Upon reaching the injured entrant, assess injury and the nature of the accident.
5. Administer first aid (if conditions allow) and prepare the injured entrant victim for extrication.
6. Remove injured entrant with care.
7. There must always be an attendant (top person, person outside confined space monitoring entrants, etc.) even during rescue attempts.
8. Transport any applicable MSDS (should be at confined space) to the medical facility with the injured entrant.

Confined Space Entry Permit

Permit Space to be Entered:	
Purpose of Entry:	

Date of Entry:	
Date of Expiration:	

ENTRANTS

Authorized Entrants:		

ATTENDANTS

Current Attendants:		

SUPERVISORS

Current Entry Supervisor:		Time:	
		Time:	

Alternate Entry Procedures Authorized by:	
Entry Supervisor who Authorized Entry:	

Signature (Only one box should be signed)

HAZARDS AND CONTROLS

Record hazards of the permit space to be entered				Check or list the measures used to isolate the permit space and to eliminate or control permit space hazards before entry				
Hazard	Yes	No	N/A	Control	Yes	No	N/A	
Lack of Oxygen				Purge-Flush and Vent				
Combustible Gases				Ventilation				
Combustible Vapors				Lockout/Tag Out				
Combustible Dusts				Inerting				
Toxic Gases				Blanking, Blocking, Bleeding				
Toxic Vapors				External Barricades				
Chemical Contact				Confined Space Signs				
Electrical Hazards				Other				
Mechanical Exposure								
Temperature								
Engulfment								
Entrapment								
Others								

Confined Space Entry Permit
SAFETY EQUIPMENT SUPPLIED TO EMPLOYEES

Equipment	Yes	No	Equipment	Yes	No
Safety Harness with Attached Life Lines			Communications Equipment		
Respirator and type			Foot Protection		
			Protective Clothing		
Hard Hat			Ventilator		
Eye Protection			Resuscitator		
Hand Protection			Ear Protection		
Gas Tester with Alarms			Other		

ATMOSPHERIC TESTS

GAS	PERMISSIBLE ENTRY LEVEL	YES	NO	INSTRUMENT USED	ACTUAL READING	TESTED BY
1. Oxygen	19.5% to 23.5%					
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

TESTING INSTRUMENTS

Calibrated direct-reading instruments used to test confined space atmosphere:

- | | |
|----------------------------|----------------------------|
| 1. Name_____ | Name_____ |
| Make_____ | Make_____ |
| Serial No._____ | Serial No._____ |
| Last Calibration Date_____ | Last Calibration Date_____ |

RESCUE AND EMERGENCY SERVICES

1. Contacts in the event of an emergency include name and telephone number.

Name _____
Number _____

Name _____
Number _____

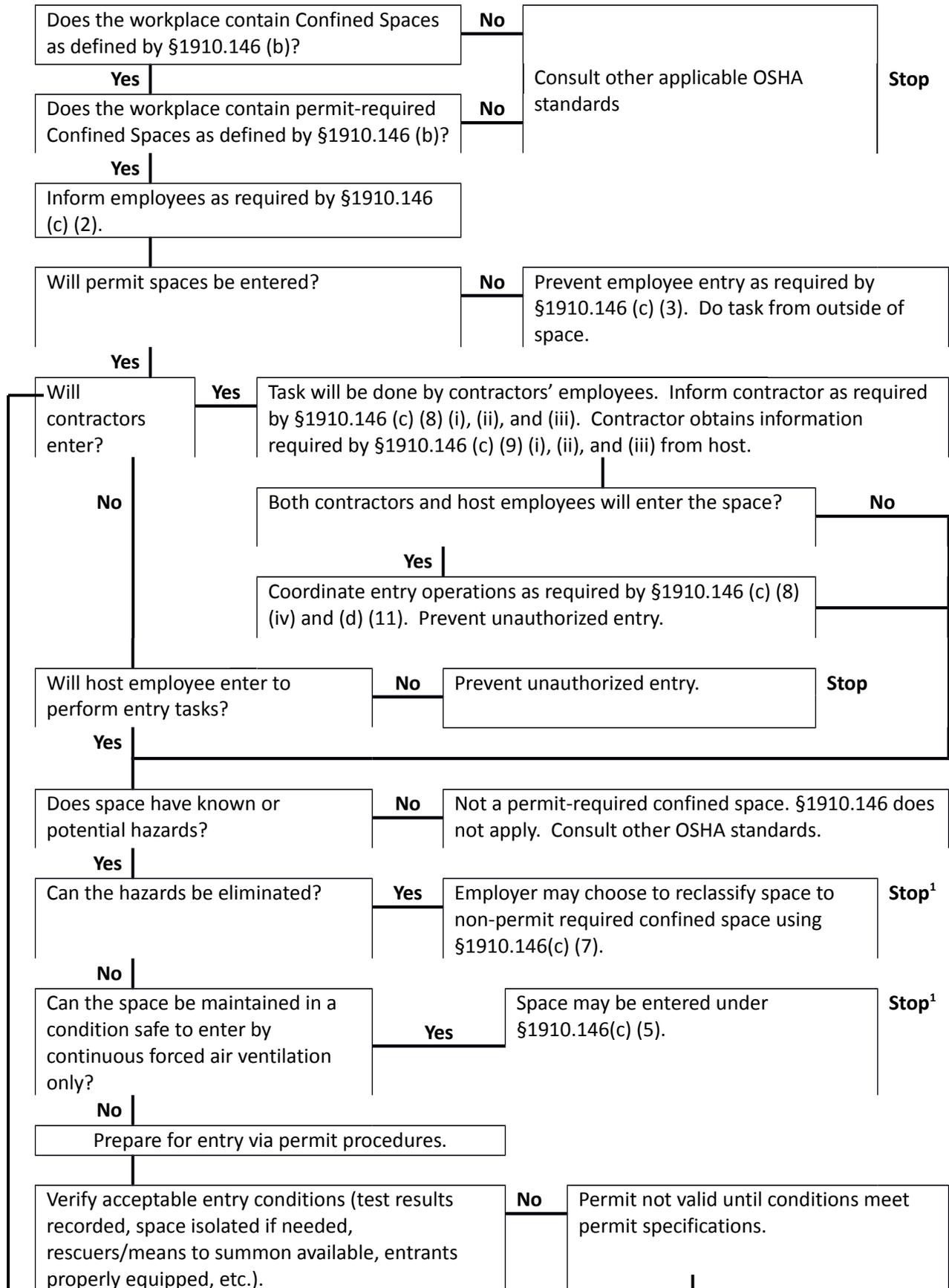
2. Rescue Equipment available:

_____ Oxygen
_____ Resuscitator - Inhalator
_____ First Aid Equipment
_____ De-Fibrillator
_____ Additional rescue equipment available:

_____ Chest/full body harness
_____ Retrieval line properly installed
_____ Wristlets when it is the safest and most effective alternative

--	--	--

Permit Required Confined Space Decision Flow Chart



1 Spaces may have to be evacuated and re-evaluated if hazards arise during entry.
Title 29 Code of Federal Regulations 1910.146, Appendix A.

Procedures for Atmospheric Testing in Confined Spaces¹

Atmospheric testing is required for two distinct purposes: evaluation of the hazards of the permit space and verification that acceptable conditions exist for entry into that space.

- 1) Evaluation Testing. The atmosphere of a confined space should be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or arise, so that appropriate permit entry procedures can be developed and acceptable entry conditions stipulated for that space. Evaluation and interpretation of these data, and development of the entry procedure, should be done by, or reviewed by, a technically qualified professional (e.g., OSHA consultation service, or certified industrial hygienist, registered safety engineer, certified safety professional, certified marine chemist, etc.) based on evaluation of all serious hazards.
- 2) Verification testing. The atmosphere of a permit space which may contain a hazardous atmosphere should be tested for residues of all contaminants identified by evaluation testing using permit specified equipment to determine that residual concentrations at the same time of testing and entry are within the range of acceptable entry conditions. Results of testing (i.e., actual concentrations, etc.) should be recorded on the permit in the space provided adjacent to the stipulated acceptable entry condition.
- 3) Duration of testing. Measurement of values for each atmospheric parameter should be made for at least the minimum response time of the test instrument specified by the manufacturer.
- 4) Testing stratified atmospheres. When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope should be tested a distance of approximately four feet (1.22 m) in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress should be slowed to accommodate the sampling speed and detector response.
- 5) Order of testing. A test for oxygen is performed first because most combustible gas meters are oxygen dependent and will not provide reliable readings in an oxygen deficient atmosphere. Combustible gases are tested for next because the threat of fire or explosion is both more immediate and more life threatening, in most cases, than exposure to toxic gases and vapors. If tests for toxic gases and vapors are necessary, they are performed last.

¹Title 29 Code of Federal Regulations 1910.146, Appendix B.

General Information

This program was created to comply with the "Right to Know" regulations of the Occupational Safety and Health Administration.

Objectives

To safeguard our employees' health by providing a guide for compliance.

To provide our employees with the necessary information concerning health and physical hazards of the chemical materials in use at our workplace and/or job site.

To comply with Federal OSHA Regulation 29 CFR (1926 & 1910).

Scope

Listing of the chemical materials which will be handled, used, or stored on job site location or city property.

Assure that appropriate identifying labels are on containers of hazardous chemicals being used and handled.

Material Safety Data Sheets (MSDS's) will be required and procured for all hazardous chemicals which employees of this city will encounter, and the master MSDS's will be available at the city headquarters office, and a copy will be available (where designated) (in plant or job site) for those chemicals to which employees could be exposed.

Employees will be trained to recognize and interpret labels, warnings, color coding, and signs affixed to containers that they might handle, in order to avoid and/or minimize potential hazards.

Material Safety Data Sheets (MSDS)

(INSERT TITLE/NAME) will be responsible for obtaining and maintaining the data sheets system for the city.

(INSERT TITLE/NAME) will review data sheets for new significant health/safety information. This person will see that any new information is passed on to the affected (locations or workplace).

RESPIRATORY PROTECTION POLICY AND PROGRAM

Introduction

This program and the accompanying procedures are intended for the respiratory protection of employees that could be exposed to atmospheres contaminated with concentrations of harmful dusts, fogs, fumes, mists, gases, smokes, sprays, vapors, etc. as well as oxygen deficient atmospheres.

Policy

It is the policy of City of Marion to provide breathing atmospheres at the work place with sufficient oxygen (19.5% or more, but less than 23.5%) and free from harmful contaminants. When such contaminants are present and employees may be exposed or when the oxygen level is deficient, City of Marion will provide appropriate respiratory equipment to protect the health and welfare of these employees. Employees will be trained in proper selection, use, fit testing and maintenance of the respiratory equipment in accordance with the manufacturer's specifications and in the recognition and evaluation of harmful atmospheres. Employees will not be allowed to work in areas where the exposure exceeds ten (10) times the permissible exposure limit (PEL, TWA, etc.), if ventilation (which will be used in all cases where an exposure exists) or other action will not reduce the exposure to at least this level, no employee will be allowed in the area with or without a respirator.

Scope

This program shall apply to all employees. It is the responsibility of all supervisory personnel to enforce this program and of each employee to adhere to these requirements.

Sub-contractors that work for City of Marion will have their own respiratory protection program and adhere to its requirements. Their program must meet or exceed the requirements of this program; otherwise the sub-contractor will adhere to the requirements of this program.

Respirators shall be selected on the basis of the hazard to which the employee will be exposed and must be NIOSH certified for that hazard. This determination will be based on the requirements stated in the chemical's Material Safety Data Sheet (MSDS) and upon any exposures exceeding the allowable exposure limits (PEL's, TWA's, STEL's and CEILINGS) or oxygen deficiency and in accordance with the respirator manufacturer's specifications.

Prerequisites

Instructions shall be made on the nature of the hazards involved, necessary precautions to take, and the use and limitations of protective and emergency equipment.

The following shall be completed before the selection of the respirator:

A Job Hazard Analysis (JHA) for each job classification to determine the exposures to the employee during routine work and during emergency work, including a determination of the atmospheric hazards to which the employee will be exposed.

Determination of the amount of oxygen present.

Determination of other protective equipment (PPE assessment) that will be necessary.

Determination of what rescue gear and equipment will be necessary.

Responsibilities

Corporate Safety Manager, Coordinator, or Specialist:

Is the designated Respiratory Protection Program Administrator.

Completes the Respiratory Job Hazard Analysis (JHA) for each job classification.

Reviews all of the program facets annually for deficiencies.

Supervises the entire program.

Helps determine the worksite exposures.

Provides technical assistance in determining the need for respirators, the selection of the appropriate types of respirators and fit testing.

Confidentially administers the medical questionnaire to the employee and provides them with the guidelines on how to fill it out and how to forward it to the city doctor.

Project Manager or Supervisor:

Incorporates known and suspected respiratory hazards into the Pre-Job Hazard Analysis.

Provides surveillance of the work area conditions for possible hazards.

Insures that all program facets are fully implemented.

Recommends changes in the program as specific project needs dictate.

Monitors employee compliance visually and verbally. Employee disciplinary procedures will be taken when warranted.

Jobsite Supervisor or Safety Person:

- Insures all facets of the program are fully implemented.
- Maintains all applicable respirator use records in the safety files.
- Inspects the respirators periodically for cleanliness and maintenance.
- Performs training for the employees using the respirators.

Employees:

- Shall be a part of the medical evaluation process and complete the medical questionnaire.
- Understand and comply with the program and follow the directives of the Supervisor.
- Maintain their assigned respirator in good condition.
- Report, immediately, any malfunction of their assigned respirator.
- Properly inspect, clean, sanitize and store their assigned respirator.

Procedures

These general procedures shall apply to all employees that are assigned a respirator.

General requirements:

The respirator need only be worn when engineering controls fail or are inadequate to prevent harmful exposures. Some of these controls include fume exhaust hoods and smoke or dust ejector fans. Also, any other mechanical means that remove harmful contaminants or would provide enough oxygen to prevent an oxygen deficient atmosphere. The atmosphere must be tested prior to working in it by detector tubes or detection instruments to determine if there is an exposure and monitored continuously to be sure an exposure does not occur.

Respirators shall be worn only by those individuals that have been medically evaluated by a licensed physician and determined to be physically able to work in such equipment.

Respirators shall be worn only by individuals who have been instructed, fit tested and trained in the proper selection and use of respirators.

Individuals shall be satisfactorily fit tested (prior to initial use and annually thereafter) for the type of respirator that they are assigned. If it is determined that they shall be assigned a respirator of each of the different types, then they shall be fit tested in each type. These types

being: dust and vapor particulate respirators, air purifying respirators (APRs, including HEPA [high efficiency particulate arresting] filters) and air supplied respirators (both hood type and self contained breathing apparatus, SCBA).

Individuals assigned a respirator shall be clean shaven in the seal regions of the respirator. This is so that the hair does not interfere with the proper seal of the respirator or the respirator exhaust valve.

No individual with facial hair in the seal regions shall be fit tested.

Glasses with ear pieces cannot be worn under the respirator as the ear piece (temple) will interfere with the respirator seal. Special attachments for prescription lens can be obtained for those employees that need to wear glasses in full face respirators.

Respirator selection:

The respirator will be selected to protect against the possible harmful exposure that is determined to be in the workplace and according to the requirements of the chemical MSDS. They shall be NIOSH certified for the specific hazard or hazards with the appropriate N (not oil resistant), R (oil resistant) or P (oil proof) rating per 42 CFR 84.

The possible harmful exposure that calls for a respirator may be any of these hazards: 1. Oxygen deficiency, 2. Particulate contaminants, 3. Gaseous contaminants, and 4. Atmospheres that are Immediately Dangerous to Life and Health (IDLH).

The level of contaminant concentration or oxygen deficiency shall be monitored to obtain data for the proper selection of respirators.

Respirators are categorized by their type and the agent or means that they use to remove harmful contaminants.

Air purifying respirators (APRs, N, R or P rated) can be:

Particulate removing filter respirators that remove dusts and other particulates.

Chemical cartridge type that remove chemicals, organic or inorganic vapors or mists. The type of cartridge used must be determined to protect against the known hazard. The cartridge will be identified and marked for chemicals from which the employee can be protected.

All of the APRs will have definite time use (end of service life indicators, ESLI) restrictions, as specified by the manufacturer (may only be written or a color change in the respirator, etc.). No APR respirator without an ESLI specified by the manufacturer will be purchased or used.

Supplied air respirators:

Respirators that are supplied with breathing air from a regulated air bottle system, a breathing air compressor or have their own self contained bottle (Self Contained Breathing Apparatus).

IDLH atmospheres (which are not to be entered) not only require respiratory protection but additional procedures that are aligned with those procedures used in confined space entry. These procedures would include:

- Standby personnel,
- Communications between standby personnel and workers,
- Rescue procedures,
- Rescue retrieval equipment, and
- Rescue personnel with air supplied respiratory protection.

Medical surveillance

Prior to wearing any type of respirator, the employee will complete a confidential medical evaluation questionnaire (Appendix E of this program, OSHA 1910.134 Appendix C), Part A and those portions of Part B specified by the PLHCP, regarding their medical and physical condition. A licensed physician (or other qualified licensed health care professional, PLHCP) will review the questionnaire and the supplemental information (type and weight of respirator, duration and frequency of use, expected physical work, other PPE to be worn and temperature and humidity extremes that may be encountered) we provide. The employee that gives a positive response to any of the first eight questions, in Part A. Section 2, shall have a follow-up medical examination and consultation. The PLHCP will forward a summary (medical determination) of the medical evaluation results to????? And provide any further recommendations about the employee's medical and physical condition which will be filed with the other required exposure and medical records (1910.1020).

Respirator fit testing:

All assigned respirators will be fit tested prior to initial use and annually thereafter.

All respirators including positive pressure models shall be fit tested in the negative mode with the same make, model, style, and size assigned to the employee.

The respirator shall pass a qualitative fit test. This fit test will follow the OSHA accepted fit testing protocol (Appendix A, OSHA 1910.134), including the comfort and adequacy assessments.

The fit test exercise regimen will be followed. These exercises (one minute each) will include:

- Normal breathing,
- Deep breathing,
- Turning head side to side,
- Moving head up and down,
- Talking,
- Bending over, and
- Normal breathing again.

Fit test agents that can be used include:

- Isoamyl Acetate (banana oil),
- Saccharin (a sweet taste agent),
- Bitrex TM (a bitter taste agent),

Respirator training:

Effective training shall be provided to the employee prior to using a respirator. This training shall be documented, understandable, and recur annually. The training will include:

- Why the respirator is necessary,
- Their limitations, and capabilities,
- How improper fit, usage, or maintenance compromises protection,
- How to inspect, use, put on and remove, and check the seals of the respirator,
- Procedures for cleaning, sanitizing, and storage using the manufacturer's specifications,
- How to recognize signs and symptoms of problems of wearing a respirator, and
- City policy and procedures.

Retraining shall be provided annually, when changes in the workplace require different respirators, or inadequacies appear in the employee's knowledge or use of the respirator indicating employee skills or understanding has not been retained.

Respirator maintenance and care:

Cleaning and disinfecting - The employee shall receive a respirator that is clean, sanitary, and in good working order. The respirator shall be maintained in the following manner:

Each employee that is issued their own respirator shall clean and disinfect the respirator as often as necessary (usually before and after use) to maintain it clean.

Respirators worn by more than one employee shall be cleaned and disinfected before and after each use by the employee using it.

All other respirators shall be cleaned and disinfected before and after each use by the employee using it.

Storage:

All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, damaging chemicals and in accordance with the manufacturer's instructions (copy stored with respirator).

They shall be packed to prevent deformation of the face piece and exhalation valve. Respirators shall be kept accessible to the work area where harmful exposures may occur.

Storage containers shall be clearly marked that it is a respirator and if they are emergency escape-only equipment, container shall be so marked.

Respirator inspection and repairs:

All respirators shall be inspected routinely before each use and during cleaning.

Emergency escape-only respirators shall be inspected monthly in accordance with manufacturer's recommendations (copy stored with respirator).

The inspection routine shall include the following:

Respirator function,

Tightness of connections,

The respirator seal surface,

The condition of the face piece, head straps, valves, connecting tube, cartridges, canisters, and filters, and

Elastomeric parts for pliability and signs of deterioration.

Repairs shall be made if the respirator fails an inspection or whenever damage is noticeable.

Repairs shall be made only by appropriate persons trained and qualified to perform repairs.

Breathing air quality and use:

Breathing air shall at least meet the ANSI (G-7.1-1989) requirements for Grade "D" breathing air. It shall have at least 19.5% and not over 23.5% oxygen, not over 5 milligrams per cubic meter of oil, not over 10 parts per million carbon monoxide, not over 1,000 parts per million carbon dioxide, and no noticeable odor.

The supplier of breathing air cylinders will provide a certificate of analysis indicating that they contain Grade "D" breathing air or better. The certificate will be kept on file, readily accessible.

A properly maintained and calibrated carbon monoxide alarm will be provided for compressor supplied breathing air. In addition, the compressor will be properly located and maintained in accordance with the manufacturer's instructions and the breathing air will be tested at least monthly (with results kept on file) to assure that it is at least Grade "D" breathing air.

Recordkeeping:

Records (written summaries or determinations, etc. from the PLHCP) of all medical evaluations (the evaluations will be kept by the reviewing physician or health care professional) will be maintained for each employee and remain confidential in the same manner as other medical records required by OSHA 1910.1020.

Records of respirator assignment (Appendix A) will be maintained.

Employee training records will be maintained (Appendix B).

A record of the qualitative fit test (Appendix C), including name of employee tested, date of test, make, model, style and size of respirator tested, and the pass or fail results will be maintained.

Program evaluation.

Continual (and at least an in depth annual) evaluations of this respiratory program will be performed to ensure that the current program has been implemented and that the employees are using respirators appropriately selected for the hazards to which they may be exposed. Employees required to use respirators will be consulted in order to assess their views of the program's effectiveness and identify problems. Some specific items to be assessed are: respirator fit, respirator selection in regard to employee hazard exposure, proper respirator use based on workplace conditions and proper respirator maintenance. Corrective action will be taken on any deficiency in the program. See Appendix F of this program.

Appendices

- Appendix A - Respirator Assignment Record Form
- Appendix B - Respirator Training Program Form
- Appendix C - Qualitative Fit Test Form and Fit Test Options Per OSHA CPL 2-0.120
- Appendix D - Copy of Appendix D of OSHA 1910.134
- Appendix E - Copy of Medical Evaluation Questionnaire (Appendix C of OSHA 1910.134)
- Appendix F - Program Evaluation and Checklist
- Appendix G - Annual Follow Up Medical Questionnaire



**APPENDIX A
RESPIRATOR ASSIGNMENT RECORD**

MODEL _____ NAME _____

FILTER _____ EMPLOYEE # _____

DATE _____ DEPARTMENT _____

To be used for what operation _____

Employee has been instructed on proper use of the above respirator. _____

Supervisor Initials _____

I have been given instructions in the use of the above respirator and have also read the guidelines pertaining to my respirator.

(Signature of User)

Be sure to attach a copy of the manufacturer's instructions for care, maintenance and fit testing for the assigned respirator to each of the assignment records. If you sign this record be sure the copy is attached and placed in the container with your assigned respirator.



**APPENDIX B
RESPIRATOR TRAINING PROGRAM**

This is to certify that I have been:

1. Informed of the Respiratory Protection Program.
2. Informed of the responsibilities of personnel designated by this program.
3. Trained in the use of the specific respirator assigned to me.
4. Informed of air testing in my work area.

NAME (Please Print)

DATE

SIGNATURE

EMPLOYEE #.



ATTACH A COPY OF THE RESPIRATOR MANUFACTURER'S SPECIFICATIONS FOR FIT TESTING TO THIS SHEET.



**APPENDIX C (CONTINUED)
RESPIRATORY FIT TEST OPTIONS PER OSHA CPL 2-0.120**

Table 1 Acceptable Fit-Testing Methods		
	QLFT	QNFT
Half Face, Negative Pressure, APR (<100 fit factor)	Yes	Yes
Full-Face, Negative Pressure, APR (<100 fit factor) used in atmosphere up to 10 times the PEL	Yes	Yes
Full-Face, Negative Pressure, APR (>100 fit factor)	No	Yes
PAPR	Yes	Yes
Supplied-Air Respirators (SAR), or SCBA used in Negative Pressure (Demand Mode) (>100 fit factor)	No	Yes
Supplied-Air Respirators (SAR), or SCBA used in Positive Pressure (Pressure Demand Mode)	Yes	Yes
SCBA - Structural Fire Fighting, Positive Pressure	Yes	Yes
SCBA/SAR - IDLH, Positive Pressure	Yes	Yes
Mouth bit Respirators	Fit-testing Not Required	
Loose-fitting Respirators (e.g., hoods, helmets)		



APPENDIX D
1910.134 APP D - RESPIRATORY PROTECTION

- **Standard Number:** 1910.134 App D
- **Standard Title:** Respiratory Protection
- **Subpart Number:** I
- **Subpart Title:** Personal Protective Equipment

Produced by USDOL OSHA - Directorate of Safety Standards &
Directorate of Health Standards
Maintained by USDOL OSHA - OCIS

* Appendix D to Sec. 1910.134 (Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

* Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substances does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

* You should do the following:

- *1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitation.
- *2. Choose respirators certified for use to protect against the containment of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
- *3. Do not wear your respirator into atmospheres containing contaminants of which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
- *4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.



* [63 FR 1152, Jan 8, 1998; 63 FR 20098, April 23, 1998]



APPENDIX E
OSHA RESPIRATOR MEDICAL EVALUATION QUESTIONNAIRE (MANDATORY)

To the employer: Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee:

Can you read (circle one): Yes/No

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date: _____
2. Your name: _____
3. Your age (to nearest year): _____
4. Sex (circle one): Male/Female
5. Your height: _____ ft. _____ in.
6. Your weight: _____ lbs.
7. Your job title: _____
8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code): _____
9. The best time to phone you at this number: _____
10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No
11. Check the type of respirator you will use (you can check more than one category):
 - a. N, R, or P disposable respirator (filter-mask, non-cartridge type only).
 - b. Other type (for example, half- or full-face piece type, powered-air purifying, supplied-air, self-contained breathing apparatus).
12. Have you worn a respirator (circle one): Yes/No
If "yes", what type(s): _____

Part A. Section 2 (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: Yes/No

2. Have you ever had any of the following conditions?
 - a. Seizures: (fits) Yes/No
 - b. Diabetes: (sugar disease) Yes/No
 - c. Allergic reactions that interfere with your breathing: Yes/No
 - d. Claustrophobia (fear of closed-in places): Yes/No
 - e. Trouble smelling odors: Yes/No

3. Have you ever had any of the following pulmonary or lung problems?
 - a. Asbestosis: Yes/No
 - b. Asthma: Yes/No
 - c. Chronic bronchitis: Yes/No
 - d. Emphysema: Yes/No
 - e. Pneumonia: Yes/No
 - f. Tuberculosis: Yes/No
 - g. Silicosis: Yes/No
 - h. Pneumothorax (collapsed lung): Yes/No
 - i. Lung cancer: Yes/No
 - j. Broken ribs: Yes/No
 - k. Any chest injuries or surgeries: Yes/No
 - l. Any other lung problem that you've been told about: Yes/No

4. Do you currently have any of the following symptoms of pulmonary or lung illness?
 - a. Shortness of breath: Yes/No
 - b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes/No
 - c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes/No
 - d. Have to stop for breath when walking at your own pace on level ground: Yes/No
 - e. Shortness of breath when washing or dressing yourself: Yes/No
 - f. Shortness of breath that interferes with your job: Yes/No
 - g. Coughing that produces phlegm (thick sputum): Yes/No
 - h. Coughing that wakes you early in the morning: Yes/No
 - i. Coughing that occurs mostly when you are lying down: Yes/No
 - j. Coughing up blood in the last month: Yes/No
 - k. Wheezing: Yes/No
 - l. Wheezing that interferes with your job: Yes/No
 - m. Chest pain when you breathe deeply: Yes/No
 - n. Any other symptoms that you think may be related to lung problems: Yes/No

5. Have you ever had any of the following cardiovascular or heart problems?
 - a. Heart attack: Yes/No
 - b. Stroke: Yes/No
 - c. Angina: Yes/No
 - d. Heart failure: Yes/No
 - e. Swelling in your legs or feet (not caused by walking): Yes/No
 - f. Heart arrhythmia (heart beating irregularly): Yes/No
 - g. Any other heart problem that you've been told about: Yes/No

6. Have you ever had any of the following cardiovascular or heart symptoms?
 - a. Frequent pain or tightness in your chest: Yes/No
 - b. Pain or tightness in your chest during physical therapy: Yes/No
 - c. Pain or tightness in your chest that interferes with your job: Yes/No
 - d. In the past two years, have you noticed your heart skipping or missing a beat: Yes/No
 - e. Heartburn or indigestion that is not related to eating: Yes/No
 - f. Any other symptoms that you think may be related to heart or circulation problems: Yes/No

7. Do you currently take medication for any of the following problems?
 - a. Breathing or lung problems: Yes/No
 - b. Heart trouble: Yes/No
 - c. Blood pressure: Yes/No
 - d. Seizures (fits): Yes/No

8. If you've used a respirator, have you ever had any of the following problems?
(If you've never used a respirator, check the following space and go to question 9: _____)
 - a. Eye irritation: Yes/No
 - b. Skin allergies or rashes: Yes/No
 - c. Anxiety: Yes/No
 - d. General weakness or fatigue: Yes/No
 - e. Any other problem that interferes with your use of a respirator: Yes/No

9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes/No

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-face piece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you ever lost vision in either eye (temporarily or permanently): Yes/No
11. Do you currently have any of the following vision problems?
 - a. Wear contact lenses: Yes/No
 - b. Wear glasses: Yes/No
 - c. Color blind: Yes/No
 - d. Any other eye or vision problem: Yes/No
12. Have you ever had an injury to your ears, including a broken ear drum: Yes/No
13. Do you currently have any of the following hearing problems?
 - a. Difficulty hearing: Yes/No
 - b. Wear a hearing aid: Yes/No
 - c. Any other hearing or ear problem: Yes/No
14. Have you ever had a back injury: Yes/No
15. Do you currently have any of the following musculoskeletal problems?
 - a. Weakness in any of your arms, hands, legs, or feet: Yes/No
 - b. Back pain: Yes/No
 - c. Difficulty fully moving your arms and legs: Yes/No
 - d. Pain or stiffness when you lean forward or backward at the waist: Yes/No
 - e. Difficult fully moving your head up or down: Yes/No
 - f. Difficulty fully moving your head side to side: Yes/No
 - g. Difficulty bending at your knees: Yes/No
 - h. Difficulty squatting to the ground: Yes/No
 - i. Climbing a flight of stairs or a ladder carrying more than 25 lbs.: Yes/No
 - j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/No

Part B. Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: Yes/No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes or dust) or have you come into skin contact with hazardous chemicals: Yes/No

If "yes", name the chemicals if you know them: _____

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:

a. Asbestos: Yes/No

b. Silica (e.g., in sandblasting): Yes/No

c. Tungsten/cobalt (e.g., grinding or welding this material): Yes/No

d. Beryllium: Yes/No

e. Aluminum: Yes/No

f. Coal (for example, mining): Yes/No

g. Iron: Yes/No

h. Tin: Yes/No

i. Dusty environments: Yes/No

j. Any other hazardous exposures: Yes/No

If "yes", describe these exposures: _____

4. List any second jobs or side businesses you have: _____

5. List your previous occupations: _____

6. List your current and previous hobbies: _____

7. Have you been in the military services? Yes/No

If "yes", were you exposed to biological or chemical agents (either in training or combat):

Yes/No

8. Have you ever worked on a HAZMAT team? Yes/No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes/No

If "yes", name the medications if you know them: _____

-
-
10. Will you be using any of the following items with your respirator(s)?
- HEPA Filters: Yes/No
 - Canisters (for example, gas masks): Yes/No
 - Cartridges: Yes/No
11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?
- Escape only (no rescue): Yes/No
 - Emergency rescue only: Yes/No
 - Less than 5 hours per week: Yes/No
 - Less than 2 hours per day: Yes/No
 - 2 to 4 hours per day: Yes/No
 - Over 4 hours per day: Yes/No
12. During the period you are using the respirator(s), is your work effort:
- Light (less than 200 kcal per hour): Yes/No
If "yes", how long does this period last during the average shift: ____ hrs. ____ mins.
Examples of a light work effort are sitting while writing, typing, drafting or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.
 - Moderate (200 to 350 kcal per hour): Yes/No
If "yes", how long does this period last during the average shift: ____ hrs. ____ mins.
Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.
 - Heavy (above 350 kcal per hour): Yes/No
If "yes", how long does this period last during the average shift: ____ hrs. ____ mins.
Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).
13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: Yes/No
If "yes", describe this protective clothing and/or equipment: _____

14. Will you be working under hot conditions (temperatures exceeding 77° F): Yes/No
15. Will you be working under humid conditions: Yes/No

16. Describe the work you'll be doing while you're using your respirator(s): _____

17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases): _____

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):

Name of the first toxic substance: _____
Estimated maximum exposure level per shift: _____
Duration of exposure per shift: _____

Name of the second toxic substance: _____
Estimated maximum exposure level per shift: _____
Duration of exposure per shift: _____

Name of the third toxic substance: _____
Estimated maximum exposure level per shift: _____
Duration of exposure per shift: _____

The name of any other toxic substances that you'll be exposed to while using your respirator:

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, and security): _____

APPENDIX F
PROGRAM EVALUATION

Program Evaluation

The entire respiratory protection program will be continually evaluated throughout the year with a documented, in-depth, evaluation conducted at least once a year. The continuing evaluations will be documented and filed and will document that the program is being properly implemented (with or without corrective action) and that employees are being consulted regarding proper respirator use. In addition, the continuing evaluations will document that workplace conditions and changes are properly reviewed and incorporated into the program, when necessary, to ensure that the program is effective and properly implemented. Employees using respirators will be regularly consulted to assess their opinion of the program's effectiveness and identify problems (real and suspected). Any program deficiency (real or suspected) will be investigated and corrective action taken immediately, when necessary.

Annual In-Depth Evaluation

This evaluation (review) will be conducted by the Respiratory Protection Program Administrator and the Superintendent of the department being reviewed.

The following checklist will be completed, signed, dated and filed. Needed corrective action will be documented (and documentation attached to checklist) and the program revised, as needed, with revision date noted on the program.

Note: The checklist may also be used during continuing evaluations.

**RESPIRATORY PROTECTION
Program Evaluation**

Date of Evaluation: _____

Page 1 of 3

	1910.134 - Respiratory Protection	YES	NO
1.	In order to determine if a respiratory exposure exists, have all MSDS's been reviewed to determine where possible exposures could exist and have all areas been checked (using a 4-gas meter, detector tubes, etc.) for possible Oxygen deficiency or other chemicals?		
2.	Is air sampling (monitoring) conducted, based on continuing MSDS review (initial and as new ones are received), to determine employee exposure, if any, and are employees informed of the results?		
3.	Are engineering controls (ventilation and exhaust, etc.) being used when feasible to control atmospheric contamination and eliminate or reduce employee exposure?		
4.	Is proper respiratory equipment provided based on a reasonable estimate of employee exposures to respiratory hazards?		
5.	Is respiratory equipment selected for the specific hazard in accordance with the manufacturer's specifications and NIOSH approved for that hazard?		
6.	Are there written operating procedures governing the selection and use of the respiratory equipment?		
7.	Before employees are assigned a task that requires them to wear respiratory equipment, do they privately complete the medical evaluation form, seal it in an envelope and mail it, is the physician's or health care professional's (PLHCP) approval (including limitations, denials, etc.) received and filed, and a documented, qualitative fit test performed?		
8.	Has the supplemental information (type and weight of respirator, duration and frequency of use, expected physical work effort, additional PPE to be worn and temperature and humidity extremes) been forwarded to the PLHCP?		
9.	Is it documented that the employee is informed of the PLHCP's approval, limitations, denial, etc. and the PLHCP's medical determination filed with the other medical records required by OSHA 1910.1020.		
10.	Does the employee use the respiratory equipment in accordance with the manufacturer's instructions and training received?		
11.	Does the employee receive training in the use of the respiratory equipment and its limitations in accordance with the manufacturer's instructions?		
12.	Is respiratory equipment assigned on an individual basis, when practical?		
13.	When respiratory equipment is individually assigned, is it durably marked (in accordance with the manufacturer's instructions) to identify the user?		

**RESPIRATORY PROTECTION
Program Evaluation**

Date of Evaluation: _____

Page 2 of 3

1910.134 - Respiratory Protection		YES	NO
14.	Is respiratory equipment cleaned and disinfected on a regular basis (before and after each use) in accordance with the manufacturer's instructions?		
15.	Are respirators stored in a convenient, clean and sanitary location, in a manner that will protect them from damage and deformation of the face piece and exhalation valve?		
16.	Are respirators inspected before each use, during cleaning and at least monthly in accordance with the manufacturer's instructions and are deteriorated parts properly replaced only by qualified employees?		
17.	Is exposure to employees properly monitored?		
18.	Is there continual (and at least an in-depth annual) evaluation of the effectiveness of the respiratory program?		
19.	Is appropriate surveillance of the work area maintained so that changing conditions, employee exposure or employee stresses are recognized prior to the respiratory equipment user exceeding the manufacturer's warnings, limitations or instructions?		
20.	Are there frequent random inspections to assure that the respiratory equipment is properly selected, used, cleaned, stored and maintained in accordance with the manufacturer's instructions?		
21.	Is the medical status of an employee assigned respiratory equipment periodically checked (in accordance with the PLHCP's recommendations, changing job conditions, changes in employee's physical condition, etc.)?		
22.	Is a record maintained showing the date respiratory equipment was assigned (was the assignment form completed and filed)?		
23.	Does the training of employees who use respiratory equipment include: proper fitting, testing face piece seal, wearing in normal air for a familiarity period, wearing in a test atmosphere and understanding the manufacturer's instructions, warnings, etc.?		
24.	Are employees instructed not to wear beards, sideburns, skull caps, or temple pieces on glasses that would prevent getting a good seal or interfere with valve function?		
25.	Does the employee check the respiratory equipment after putting it on for proper fit and seal?		
26.	Are proper provisions made for people who wear corrective eyewear and also must use respiratory equipment?		

**RESPIRATORY PROTECTION
Program Evaluation**

Date of Evaluation: _____

Page 3 of 3

1910.134 - Respiratory Protection		YES	NO
27.	Are employees who wear corrective eyewear instructed to notify management, if their respiratory equipment interferes with, makes uncomfortable, forces removal of or causes vision impairment of the eyewear, so that proper equipment can be provided?		
28.	Is qualitative fit testing properly conducted, prior to initial use and at least annually thereafter, and is the fit testing properly documented using the form, Appendix C, which has been properly completed and filed with the other medical records?		
29.	Have additional, documented, qualitative fit tests been conducted whenever an employee reports or others observe changes in the employee's physical condition (facial scars, dental changes, cosmetic surgery, change in weight, etc.) that could affect the fit?		
30.	Is repair or adjustment of respiratory equipment done only by appropriately trained personnel using only the manufacturer's NIOSH-approved parts for the equipment?		
31.	Are employees instructed in the correct way to store respiratory equipment in accordance with the manufacturer's instructions?		
32.	Are checks made to see that employees are not storing respiratory equipment in tool boxes or lockers without being in proper containers?		

APPENDIX G

Annual Follow Up Respiratory Medical Questionnaire

Purpose: To determine the necessity for medical reevaluation for respirator use

Employee Section

Date: _____

Print Name: _____

In the past year have you had any medical signs or symptoms or physical change that affects your ability to use a respirator? (circle one) YES NO

In the past year has there been a change in workplace conditions (e.g., physical work effort, protective clothing, temperature) that has affected your ability to use a respirator? (circle one) YES NO

Employee Signature: _____

Employer Representative Section

Date: _____

Print Name/Title: _____

In the past year has a physician or other licensed health care practitioner, supervisor, or respirator program administrator informed you of the need for the above named employee to be medically reevaluated for respirator use? (circle one) YES NO

Has information from the respiratory protection program, including observations made during fit testing and program evaluation, and indicated a need for medical reevaluation of the above employee? (circle one) YES NO

Has a change occurred in workplace conditions (e.g., physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed on the above named employee and therefore require medical reevaluation for respirator use? (circle one) YES NO

In reviewing all of the above information, it is determined that the above named employee (circle one) IS IS NOT in need of medical reevaluation for respirator use at this time.

Signature: _____

LOCKOUT/TAGOUT

Purpose

This policy provides a procedure that establishes requirements for lockout/tag out of machinery and equipment to protect personnel from hazards and injuries that may occur as the result of unexpected release of an energy source during repair or maintenance.

Authorized and Affected Personnel

Authorized - only personnel who have been trained and demonstrated proficiency to perform lockout/tag out procedures will be allowed to perform these procedures.

Affected - any employee who operates machinery and/or equipment, or is subject to locations where lockout/tag out procedures are performed. Affected personnel will be trained to recognize and understand our lock-out procedures.

Training

Management will provide training to ensure the purpose and function of the lockout/tag out procedure are understood by all employees and will include the following:

Each authorized, affected, and/or qualified employee will be trained in the recognition of hazards, type and magnitude of energy and electrical, and the methods necessary for energy isolation and control.

Each affected and other employees will be trained in the purpose, and recognition, of the lockout/tag out procedure. In addition, each affected employee will be trained to visually quick-check his or her work station at the start of each shift looking especially for:

Missing or damaged guards.

Exposed electrical connections, exposed un-insulated or damaged wiring, missing or open enclosures, etc.

Leaking or damaged piping, hose, reservoirs, etc.

Any item noted will be immediately reported to his or her supervisor and lockout/tag out procedures put in place until they are corrected.

All employees will be familiarized with the hazards and danger relative to attempting to restart a machine or equipment which is locked or tagged out. They will also be familiarized with the purpose of the program, location of this program and procedures.

Each employee trained will be certified as having received the training and a clear understanding what is required of them.

RETRAINING will be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures as outlined below.

Additional retraining shall also be conducted whenever periodic inspection reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

The retraining will re-establish employee proficiency and introduce new or revised control methods and procedures, as necessary. Public Works Director will document that employee training has been accomplished and is being kept up-to-date. The documentation shall contain each employee's name and dates of training.

Lockout and Tag out Device Requirements

Our devices are:

Identifiable: Each lock must be identified as to its owner. The identification can be an ID tag, ID stamped on the lock, etc.

Used only for controlling energy.

Durable for the exposed environment for the maximum period of time the machine or equipment is locked out or tagged out.

Standardized throughout the facility in one of the following criteria: Color, Size, or Shape.

Substantial: Lockout devices (i.e., padlocks) must be incapable of being removed with using excessive force.

Tag out devices (i.e., tags) must be attached in such a way to prevent accidental removal. The attaching device must be self-locking and non-reusable and shall warn against hazardous conditions.

Tags

Lockouts are preferred to tag outs; however, there may be instances where this is not possible. When the use of tags is the only means of energy isolation, City of Marion employees will be instructed in its limited ability to provide the same protection that a lockout provides. When tags are used, the same restrictions apply as with the locks even though the removal of the tags is easier. It will be stressed to all employees the importance of the tag out policy and the importance of following all rules and regulations regarding this policy. (When tags are used, level of safety will be equivalent to lockout procedures).

APPLICATION OF CONTROL MEASURES

Preparation for Shutdown

Before authorized or affected employees turn off a machine or equipment the authorized employee will have knowledge of the type and magnitude of the energy; the hazards of the energy to be controlled, and the means to control the energy.

Machine or Equipment Shutdown

The machine or equipment will be shut down using the specific procedures for that specific machine. An orderly shutdown will be utilized to avoid any additional or increased hazards to employees as a result of equipment de-energization.

Machine or Equipment Isolation

All energy control tag out devices will be affixed to energy isolating devices by authorized employees. Lockout devices will be affixed in a manner that will hold the energy isolating device in a "safe" or "off" position.

Where tag out devices are used, they will be affixed in such a manner that will clearly state that the operation or the movement of energy isolating devices from the "safe" or "off" position is prohibited.

The tag out devices will be attached to the same point a lock would be attached. If the tag cannot be affixed at that point, the tag will be located as close as possible to the device in a position that will be immediately obvious to anyone attempting to operate the device.

Stored Energy

Following the application of the lockout or tag out devices to the energy isolating devices, all potential or residual energy will be relieved, disconnected, restrained, and otherwise rendered safe.

Verification of Isolation

Prior to starting work on machines or equipment that have been locked or tagged out, the authorized employee will verify that isolation or de-energization of the machine or equipment has been accomplished.

SPECIAL INSTRUCTIONS FOR PERSONNEL COVERED BY THE ELECTRICAL LOCKOUT/TAGOUT STANDARD.

A tag used without a lock as permitted by 29 CFR 1910.333 (b) (2) (iii) (C) will be supplemented by at least one additional safety equivalent to that obtained by the use of a lock, including the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.

????? Qualified personnel will use the test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and will verify that the circuit elements and equipment parts are de-energized. The tests will also determine if any energized condition exists as a result of inadvertently induce voltage or unrelated voltage back feed even though specific parts of the circuit have been de-energized and presumed to be safe. If the circuit to be tested is over 600 volts, the test equipment will be checked for proper operation immediately after the test.

Procedure Involving More Than One Person

If more than one individual is required to lockout tag out a machine or piece of equipment, each individual shall have his/her own personal lockout and/or tag out device on the energy isolating device(s). When an energy isolating device cannot accept multiple locks or tags, a multiple lockout or tag out device (hasp) may be used.

Lockout or Tag out Device Application

When Lockout or Tag out is used, a single lock may be used to lockout the machine or equipment with the key being placed in a lockout box or cabinet which allows the use of multiple locks to secure it. Each employee will then use his/her own lock to secure the box or cabinet. As each person no longer needs to maintain his/her lockout protection, that person will remove his/her lock from the box or cabinet.

Testing or Positioning Of Machines/Equipment

In situations in which lockout/tag out devices must be temporarily removed from the energy isolating device and the machine/equipment energized to test or position the machine/equipment or component thereof, the following sequence shall be followed:

Ensure tools/materials are clear of machine/equipment.

Employees are removed from area.

Remove lockout/tag out devices.

Energize and proceed with testing or positioning.

De-energize all systems and re-apply energy control measures if further repairs are required.

Release from Lockout or Tag out

Before lockout or tag out devices is removed and the energy restored to the machine or equipment, the following actions will be taken:

The work area will be thoroughly inspected to ensure that non-essential items have been removed and that machine or equipment components are operational.

The work area will be checked to ensure that all employees have been safely positioned or removed. Before the lockout or tag out devices is removed, the affected employees will be notified that the lockout or tag out devices is being removed.

Lockout or Tag out Device Removal

Each lockout or tag out device will be removed from each energy isolating device by the authorized employee who applied the device.

An authorized employee will assume responsibility of the entire crew in these instances so as to ascertain the exposure status of each crew member and ensure continuity of protection.

Shift or Personnel Changes

To ensure the continuity of the lockout or tag out protection, including provision for the orderly transfer of lockout or tag out devices between off-going and oncoming employees, the off-going authorized employee will communicate to the oncoming authorized employee which machine or equipment is locked and/or tagged out and the reason. The lockout or tag out device(s) of the off-going authorized employee will be replaced by the oncoming authorized employee lockout or tag out device(s). The Public Works Director will be in charge when these changes occur and will assume the responsibility for maintaining control over and coordinating the change(s).

TRENCHING AND EXCAVATIONS

(Call 1-800-DIG-SAFE, before doing any digging)

OSHA requires that all excavations over five feet deep be sloped, shored, sheeted, braced or otherwise supported. When soil conditions are unstable, excavations shallower than five feet also must be sloped, supported or shored.

Elimination of trenching and excavation failures is actually a very simple matter. Failures will not happen if we learn what causes them, plan accordingly, proceed in keeping with the standards, and insist on safe work practices. Through a system of options you can select methods best suiting your needs and equipment. The new standard recognizes these methods of employee protection:

Sloping and benching of soil

Trench shields

Aluminum hydraulic shoring

Other alternatives to wood-shoring, such as pneumatic hydraulic shoring and trench jacks.

Soil Type Identification:

TYPE A is defined as cohesive soils with an unconfined compressive strength of 1.5 tons per square foot or greater. Examples of cohesive soils are: clay, silty clay, sandy clay, clay loam and, in some cases, silty and sandy clay loam. Cemented soils such as calcite and hardpan are also considered Type A. However, no soil is Type A if:

It is fissured.

The soil is subject to vibration from heavy traffic, pile driving or similar effects.

The soil has been previously disturbed.

The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical or greater.

The material is subject to other factors that would require it to be classified as a less stable material.

The exclusions for Type A eliminate its use in most typical construction situations. What is left, typically are Types B and C.

TYPE B is defined as:

Cohesive soil with an unconfined compressive strength greater than .5 TSF but less than 1.5 TSF.

Granular cohesion less soils including: angular gravel, silt, silt loam, sandy loam and in some cases silty and sandy clay loam.

Previously disturbed soils except those that would be classified as Type C soil.

Soil that meets the unconfined compressive strength or cementation requirements of Type A, but is fissured or subject to vibration.

Dry rock that is not stable.

Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical, but only if the material would otherwise be classified as Type B.

Most soils fall into this category until they become predominantly granular or saturated, at which time they become Type C.

TYPE C is defined as:

Cohesive soil with an unconfined compressive strength of .5 TSF or less.

Granular soils including gravel, sand and loamy sand.

Submerged soil or soil from which water is freely seeping.

Submerged rock that is not stable.

Material in a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical or steeper.

A competent person shall classify the soil type on the basis of at least one visual and one manual analysis. These tests are designed to determine stability based on a number of criteria: cohesiveness, whether or not it is fissured, the presence and amount of water, the unconfined compressive strength, the presence of layering, prior excavation and vibration.

We Have A Choice

One method of ensuring the safety and health of workers in a trench or excavation is to slope the sides of the cut to the "angle of repose", the angle closest to the horizontal at which the soil will remain stable. The angle of repose varies with different kinds of soil, and must be determined on each individual operation. When an excavation has water conditions, silty material, or loose boulders, or when it is being dug in areas where erosion, deep frost, or slide planes are apparent, the angle of repose must be flattened.

We may use a trench box, a prefabricated movable trench shield composed of steel plates welded to a heavy steel frame. OSHA standards permit the use of a trench box as long as the protection it provides is equal to or greater than the protection that would be provided by a standard shoring system.

Sloping

Sloping is the oldest and still a popular method of preventing cave-ins. Sloping means that the sides of an excavation are laid back to a "maximum allowable slope" from which they will not collapse. In the original standard this was known as the angle of repose, a term that was borrowed from stockpiling. That term is not used in the new standard. Superintendents wanting to slope using the new standard have four options:

Slope the angle required by the standard for Type C, which is the most unstable soil type.

Use the tables provided in the standard to determine the maximum allowable angle (after determining the correct soil type).

Use tabulated data prepared by a registered professional engineer.

Have a registered professional engineer design a sloping plan specifically for that job.

It should be noted that any job over 20 feet in depth requires the services of a registered professional engineer if sloping is to be used. Spoil piles are to be at least two feet from the edge of the trench and should likewise be sloped to a safe angle.

Shoring

Shoring is the second means of providing cave-in protection. In shoring, the sides of the excavations are braced up by structural components strong enough to prevent a cave-in. There are numerous ways to shore up excavations. Screw jacks, aluminum pneumatic, aluminum hydraulic, sheet pile and combinations of the methods are commonly used. As in sloping, the standard provides options. After determining the soil type, the excavator may use charts provided in the standard for shoring up to depths of 20 feet; use manufacturer's tabulated data or have a plan designed by a registered professional engineer.

Installing The Protection

Whatever support system is used, workers should always apply shoring starting from the top of the trench or excavation and working down. In installing the shoring, care must be taken to place the cross beams or trench jacks in true horizontal position and to space them vertically at appropriate intervals. The braces also must be secured to prevent sliding, falling or kick outs.

All materials used for shoring must be in good condition, free of defects, and of the right size.

Installing the shoring should closely follow the excavation work. It is dangerous to allow trenches to remain unshored even if work is not being done in them: Dirt walls will slough off, causing dangerous overhangs. The longer a trench is left unsupported, the greater the chance of a cave-in.

Superimposed Loads

Superimposed loads in the vicinity of a trench or excavation increase the pressure on excavation walls. Heavy equipment and materials such as pipes or timbers should be kept as far back from the excavation as possible. When heavy loads must be located near an excavation, the walls must be braced, sheet piled, or shored to safely support the extra weight. In some cases, it may be necessary to lessen the pressure of these loads. Pile driving or cranes, for example, would be mounted on wooden mats or heavy planking to spread the weight more evenly.

Buildings, curbs, trees, utility poles, and other structures adjoining the excavation area also can place more stress on a trench side than it can safely accommodate. In these instances, OSHA requires that shoring, bracing, or underpinning be provided as necessary not only to protect workers but also to prevent the dislocation of the soil beneath the structures in the vicinity.

In addition, spoil; (the excavated material) can exert great pressure on the excavation walls. Spoil must be stored two feet or more from the edge of the excavation, and be barricaded or retained in an effective manner.

Even when this is done, large heavy objects can roll or slide down the incline and into the trench. Tools and rocks should either be placed on the outer slope of the excavated materials, or else on the other side of the trench if the surface is flat.

When workers are working on hard surface roads where a flow of traffic is being maintained, it is important that small stones be removed from the road. Stones are sometimes thrown with great speed by the tires of passing cars and can cause serious accidents.

Injuries can result when workers fall into construction trenches; people fail to look where they are going, when they walk too close to the edge; or when they attempt to leap across the trench.

Rocks and tools thrown near the edge are not only a hazard to employees working in the trenches, but can cause falls into the trench by workers working on the surface.

Use extra care in venturing near the edges of trenches and other excavations when the weather is bad or there are icy, muddy conditions.

Wales or shoring timbers should not be used as supports for platforms to carry concrete mixers or other heavy equipment. If it is necessary for a mixer to be used over the trench, vertical supporting members should be cut in between the wales, and the load transmitted to the ground through additional vertical members from the bottom waler.

When internal combustion engines are used in or near trenches, precautions should be taken against exhaust gases entering the trenches. Where necessary, ducts should be attached to the exhaust to conduct the gases away from the trench.

After The Work Is Completed

As soon as work is completed, the trench should be backfilled as the shoring is dismantled. After the trench has been cleared, workers should remove the shoring from the bottom up, taking care to release jacks or braces slowly. In unstable soil, ropes should be used to pull out the jacks or braces from above.

Special Precautions

Sometimes the superintendent will have to guard against an unstable excavation bottom, such as below the water level. Sheet piling may have to be driven below the bottom of such an excavation to add to the soil stability.

The OSHA Standard requires that diversion dikes and ditches or other suitable means be used to prevent surface water from entering an excavation and to provide adequate drainage of the area adjacent to the excavation. Water causes soil erosion and softening and should not be allowed to accumulate in a trench or excavation.

Inspections

Excavations, adjacent areas and protective systems must be inspected daily by a competent person prior to start of work. Inspections also are required after rainstorms or any change in condition that can increase the possibility of a cave-in or slide or other hazard. If dangerous ground movements are apparent, such as subsidence or tension cracks, or other hazards noted, all work in the excavation must be stopped and all personnel removed from the excavation until the problem has been corrected.

Quick Exits

In case of an emergency, workers must be able to leave the trench quickly. OSHA regulations state when employees are required to be in trenches four feet deep or more, adequate means of exit, such as a ladder or steps, shall be provided and located so as to require no more than 25 feet lateral travel.

Ladders must be in good condition, extend from the floor of the trench to three feet above the top of the excavation, and be secured at the top.

TRENCHING AND EXCAVATIONS -CHECK-LIST

Before Trenching or Excavation

- CHECK: Soil conditions or other material to be dug.
- CHECK: Proximity to utilities, buildings and sources of vibration.
- CHECK: Owners of utilities, service, or transmission piping, etc. and arrange for shutdown or relocating of facilities, if necessary.
- CHECK: For previously disturbed ground.
- CHECK: For trees, boulders, or other employee hazards.
- CHECK: Adequacy and availability of all equipment, including personal protective gear, shoring materials, signs, barricades, and machinery.

During Trenching or Excavation

- CHECK: For changing ground conditions, particularly after rainfall.
- CHECK: For possible oxygen deficiency or gaseous conditions.
- CHECK: Adequacy of shoring and/or sloping as work progresses.
- CHECK: For maintenance of entrance and exit facilities.
- CHECK: All sheeting, bracing, shoring and underpinning.
- CHECK: For changes in vehicular and machinery operational patterns.

After Trenching or Excavation

- CHECK: Depth of trench or excavation, its sloping and shoring.
- CHECK: Sloping or banks, sides, and walls in relation to depth of cut, water content of soil, vibrations.
- CHECK: Entrance and exit facilities.
- CHECK: Location of heavy equipment-power shovels, derricks, trucks.
- CHECK: That excavated material is two feet or more from edge of opening.
- CHECK: The adequacy of portable trench boxes or trench shields, if used.
- CHECK: For correct positioning of cross braces or trench jacks to prevent sliding, falling or kick outs.

HEARING CONSERVATION PROGRAM

City of Marion shall administer a continuing, effective, hearing conservation program, as outlined below, whenever employee exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or an equivalent 50% dose.

Determination And Monitoring

A noise survey (s) will be conducted to determine if any employee's exposure equals or exceeds an 85 dBA average. Monitoring (noise survey) of employee noise exposure shall be repeated when a change in production, processes, equipment, controls or personnel occurs which may significantly change the noise level.

Employee Notification

Employees exposed at or above 85 dBA average shall be notified in writing of the results of the monitoring. New employees shall be notified of their exposures at or above 85 dBA average.

Observation of Monitoring

Employees may observe any measurements of noise exposure conducted.

Audio Metric Testing Program

Baseline Audiograms - for each employee exposed to noise levels at or above 85 dBA average, a baseline audiogram shall be established. Testing shall be preceded by at least 14 hours without exposure to workplace noise.

Annual Audiograms - annually after obtaining the baseline audiogram, a new audiogram shall be obtained for each employee exposed at or above 85 dBA.

Follow-Up Procedures

The annual audiogram shall be compared to the baseline audiogram. If a standard threshold shift is indicated, the following steps shall be taken:

Employees not using hearing protectors shall be required to do so and properly trained.
Employees already using hearing protectors shall be refitted and trained and provided with protection offering greater attenuation if necessary.

Inform the employee in writing of the existence of the shift within 21 days of the determination that the shift has occurred.

Refer the employee for a clinical evaluation if further testing is needed or if a medical pathology of the ear is suspected from the wearing of hearing protectors.

Inform the employees of a need for an examination if medical pathology is suspected, unrelated to the wearing of hearing protection.

Hearing Protectors

Hearing protectors shall be made available and training given in their use, to all employees exposed to an 85 dBA average, at no cost to the employees. Hearing protection shall be mandatory for the following employees:

Those exposed at 85 dBA or greater who have shown a standard threshold shift.

New employees exposed to the 85-90 dBA level who cannot be tested within six (6) months, must wear hearing protection until they can be tested (must be within one year).

Employees exposed to sound levels above the permissible noise exposures:

Permissible Noise Exposures

<u>Duration per day, hours</u>	<u>Sound Level dBA Slow Response</u>
8	90
6	92
4	95
3	97
2	100
1	105
½	110
¼ or less	115

Hearing Protection Attenuation

Hearing protection shall attenuate at least to a 90 dBA average. For employees who have experienced a standard threshold shift, attenuation shall be to an 85 dBA or below average.

Warning Signs

Signs shall be posted at entrances to or on the periphery of all well-defined work areas which may expose employees at or above an 85 dBA average. Signs shall clearly indicate a high noise area and that hearing protectors may be required.

For areas of 90 dBA or above, signs shall indicate high noise area and that hearing protection is mandatory.

Training Program

All employees included in the hearing conservation program shall participate annually in fit testing.

Access to Information

Copies of the noise standard (1910.95) shall be made available to employees and a copy shall be posted in the workplace.

Records

Noise exposure measurement records shall be maintained for at least two (2) years. Audiometric tests shall be maintained for at least the duration of the employee's employment. Access to records shall be provided upon request to employees and former employees.

BLOODBORNE PATHOGENS EXPOSURE CONTROL PROCEDURES

Purpose

This program's purpose is to eliminate or minimize employee occupational exposure to blood and other body fluids.

Scope

This section applies to the employee's identified by the Exposure Determination or has had an exposure incident.

Compliance Methods

Universal precautions, treating all bodily fluids as potentially infectious material, will be observed at City of Marion in order to prevent contact with blood and other potentially infectious materials.

Engineering and work practices will be utilized to eliminate and/or minimize exposure to employees. When exposure remains after institution of these controls, personal protective equipment will be provided at no cost to the employee and will be used. We require the following engineering controls:

	<u>Control</u>	<u>Location</u>
A.	Absorbent blanket or absorbent material	
B.	Biohazard warning label or red-orange bag	
C.	Scooping device	
D.	Containers for sharps	
E.	Disinfectant for clean-up	
F.	Face Shield	
G.	Apron	
H.	Protective gloves	
I.	Caution tape	

The above controls will be inspected and examined by Public Safety Officer on a monthly basis. The monthly schedule will be posted at each first aid station. Hand washing facilities are readily accessible for anyone who incurs exposure to blood or body fluids. All areas that come into contact with the exposure must be decontaminated. After removal of personal protective gloves, employee will wash hands and any potentially contaminated skin with soap and water. If eyes have been exposed, they will be flushed using water.

Hepatitis B Vaccine and Post-Exposure Evaluation and Follow-Up

General:

We will make available Hepatitis B vaccine and vaccination series to all employees who have potential occupational exposure, and post-exposure follow-up to employees who have had an exposure incident.

We will ensure that all medical evaluations and procedures including the Hepatitis B vaccine and vaccination series and post-exposure follow-up, including protective measures are:

- Made available at no cost to the employee;

- .Performed by or under the supervision of a licensed physician or by or under the supervision of another licensed health care professional.

Hepatitis B Vaccination:

City Clerk is in charge of the Hepatitis B vaccination program.

Designated first-aider prior to being assigned duties will be offered Hepatitis B vaccination after the employee has received the training in occupational exposure (see information and training) and within 10 working days of initial assignment. It will be made available to all employees who have potential occupational exposure unless the employee has previously received the complete Hepatitis B vaccination series.

If the employee initially declines Hepatitis B vaccination but at a later date while still covered under the standard decides to accept the vaccination, the vaccination will then be made available.

All employees who decline the Hepatitis B vaccination offered will sign a waiver indicating their refusal.

If a routine booster dose of Hepatitis B vaccine is recommended at a future date, such booster doses will be made available.

Post Exposure and Follow-Up:

All exposure incidents will be reported, investigated, and documented. When the employee incurs an exposure incident, it will be reported within hours to office.

Following a report of an exposure incident, the exposed employee will immediately receive a confidential medical evaluation and follow-up, including at least the following elements:

- Documentation of the route of exposure, and the circumstances under which the exposure incident occurred.

- Identification and documentation of the source individual.

The source individual's blood will be tested as soon as feasible and after consent is obtained in order to determine HBV and HIV infectivity. If consent is not obtained, we will establish that legally required consent cannot be obtained. When the source individual's consent is not required by law, the source individual's blood, if available, will be tested and the results documented.

Results of the source individual's testing will be made available to the exposed employee, and the employee will be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.

Collection and testing of blood for HBV and HIV serological status will comply with the following:

The exposed employee's blood will be collected as soon as feasible and tested after consent is obtained.

The employee will be offered the option of having his or her blood collected for testing of the employee's HIV/HBV serological status. The blood sample will be preserved for up to 90 days to allow the employee to decide if the blood should be tested for HIV serological status.

All employees who incur an exposure incident will be offered post-exposure evaluation and follow-up in accordance with the OSHA standard. All post-exposure follow-up will be performed by a licensed physician.

Information Provided to the Health care Professional

City Clerk will ensure that the health care professional responsible for the employee's Hepatitis B vaccination is provided with the following:

A written description of the exposed employee's duties as they relate to the exposure incident.

Written documentation of the route of exposure and circumstances under which exposure occurred.

Results of the source individual's blood testing, if available; and

All medical records relevant to the appropriate treatment of the employee, including vaccination status.

Health care Professional's Written Opinion

The corporate office will obtain and provide the employee with a copy of the evaluating health care professional's written opinion within 15 days of the completion of the evaluation.

The health care professional's written opinion for HBV vaccination will be limited to whether HBV vaccination is indicated for an employee, and if the employee has received such vaccination.

The health care professional's written opinion for post-exposure follow-up will be limited to the following information:

A statement that the employee has been informed of the results of the evaluation; and

A statement that the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials that require further evaluation or treatment.

Labels and Signs

We will ensure that biohazard labels will be affixed to containers used to store, transport or ship potentially infectious materials.

The universal biohazard symbol will be used. The label will be fluorescent orange or orange-red.

Information and Training

We will ensure that training is provided at the time of initial assignment to tasks where occupational exposure may occur, and that it will be repeated within twelve months of the previous training. Training will be tailored to the education and language level of the employee, and offered during the normal work shift. The training will be interactive and cover the following:

A copy of the standard and an explanation of its contents.

A discussion of the epidemiology and symptoms of blood borne diseases.

An explanation of the modes of transmission of blood borne pathogens.

An explanation of City of Marion Blood borne Pathogen Exposure Control Plan (this program), and a method for obtaining a copy.

The recognition of tasks that may involve exposure.

An explanation of the use and limitation of methods to reduce exposure, for example, engineering controls, work practices and personal protective equipment (PPE).

Information on the types, use, location, removal, handling, decontamination, and disposal of PPEs.

An explanation of the basis of selection of PPEs.

Information on the Hepatitis B vaccination, including method of administration, and that it will be offered free of charge.

Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials.

An explanation of the procedures to follow if an exposure incident occurs, including the method of reporting and medical follow-up.

Information on the evaluation and follow-up required after an employee exposure incident.

An explanation of the signs, labels, and color coding systems.

The person conducting the training will be knowledgeable in the subject matter.

Employees who have received training on blood borne pathogens in the twelve months preceding the effective date of this policy will only receive training in provisions of the policy that were not covered.

Additional training will be provided to employees when there are any changes of tasks or procedures affecting the employee's occupational exposure.

Recordkeeping

The City Clerk is responsible for maintaining medical records as indicated below. These records will be kept at office.

These records will be kept confidential, and will be maintained for at least the duration of employment plus 30 years. The records will include the following:

The name and social security number of the employee.

A copy of the employee's HBV vaccination status, including the dates of vaccination.

A copy of the information provided to the health care professional, including a description of the employee's duties as they relate to the exposure incident, and documentation of the routes of exposure and circumstances of the exposure.

Training Records

The City Clerk is responsible for maintaining the following training records. The records will be kept at corporate office.

Training records will be maintained for three years from the date of training. The following information will be documented:

The dates of the training sessions.

An outline describing the material presented.

The names and qualifications of persons conducting the training.

The names and job titles of all persons attending the training session.

- All employee records will be made available to the employee.
- All employee records will be made available to the Assistant Secretary of Labor for the Occupational Safety and Health Administration upon request.
- If this facility is closed or there is not successor employer to receive and retain the records for the prescribed period, the Director of the National Institute for Occupational Safety and Health (NIOSH) will be contacted for final disposition.
- The City Clerk is responsible for annually reviewing this program and its effectiveness and for updating this program as needed.

ATTACHMENT A **DECONTAMINATION**

All contaminated surfaces and/or work areas will be decontaminated after completion of treatment if any spill of blood occurs or whenever blood or body fluids are observed on work surfaces or work areas. Decontamination will be accomplished using germicide provided for this purpose, located at each first aid station. Any pails or cans used to pick up contaminated materials will be decontaminated using the above procedure.

To disinfect equipment soiled with blood or body fluids, wash thoroughly with a solution of common household chlorine bleach and water, or other equivalent germicide. Approximately 1/4 cup of bleach per gallon of water is enough. Surfaces, such as floors, woodwork, ambulance and automobile seats, and countertops, must be cleaned of any soil you can see before using a bleach solution.

Wash and dry protective clothing and work uniforms according to the manufacturer's instructions. Scrub soiled boots, leather shoes, and other leather goods, such as belts, with soap, a brush, and hot water.

If something occurs that creates disposable waste or soiled laundry, the employer should provide containers to store the materials until they are disposed of or laundered. The containers must have warning signs, such as "biohazard," to eliminate or minimize exposure of employees. In addition, the employer must provide training to ensure that all employees understand and avoid the hazard.

The OSHA standard requires that the employer keep the work area in a clean and sanitary condition. The employer is required to develop and put into action a written schedule for cleaning and decontamination at the work site. The schedule should be based on the location in the facility, the type of surface to be cleaned, the type of soil present, and the tasks procedures being done. In addition, the employer has a responsibility to have a plan in place to deal with any spill that might occur. The plan should include a system to report a spill and the action taken to resolve the spill. It should also include a list of employees responsible for containment, instructions for clean-up, and the final disposition of spill.

The first step in dealing with a spill is containment. Spill containment units designed for hazardous materials are sold and work very well. However, any absorbent material, such as paper towels, can be used if the material is disposed of properly. The steps for spill management are as follows:

Wear gloves and other appropriate personal protective equipment when cleaning spills.

Clean up spills immediately or as soon as possible after the spill occurs.

If the spill is mixed with sharp objects, such as broken glass and needles, do not pick these up with your hands. Use tongs, broom and dust pan, or two pieces of cardboard.

Dispose of the absorbent material used to collect the spill in a labeled biohazard container.

Flood the area with disinfectant solution, and allow it to stand for at least 20 minutes.

Use paper towels to absorb the solution, and put the towels in the biohazard container.

Handle all soiled equipment, supplies, or other materials with great care until they are properly cleaned and disinfected.

EXPOSURE DETERMINATION

Exposure Determination

We have performed an exposure determination as to which employees may incur occupational exposure to blood, other potentially infectious materials or body fluids.

At this facility, the following employees are in this category:

(Designated first aiders) (This must be listed as an employee's primary job responsibility).

(All supervisors)

(Housekeeping)

(Shop Personnel, by classification)

(Food preparation)

(Health care Provider)

One of the keys to implementing a successful Exposure Control Plan is to identify exposure situations that employees may encounter. When deciding who is affected by this standard use the following definition as guidance.

Occupational Exposure is defined as: reasonable anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

To facilitate this in our facility, we have prepared the following lists:

Job classifications in which all employees have occupational exposure to blood borne pathogens.

Job classifications in which some employees have occupational exposure to blood borne pathogens.

Tasks and procedures in which occupational exposure to blood borne pathogens occur (these tasks and procedures are performed by employees in the job classifications shown on the two previous lists).

Below are listed the job classifications in our facility where all employees may come into contact with potentially infectious materials, which may result in possible exposure to bloodborne pathogens:

<u>JOB TITLE</u>	<u>DEPARTMENT/LOCATION</u>
Refuse Operator	Refuse
Sewer Treatment Operator	Sewage Treatment

Below are listed the job classifications in our facility where some employees may have an occupational exposure to potentially infectious materials, which may result in possible exposure to blood borne pathogens:

<u>JOB TITLE</u>	<u>DEPARTMENT/LOCATION</u>
Water & Sewer Distribution	All Locations
_____	_____
_____	_____

**WORK ACTIVITIES INVOLVING POTENTIAL EXPOSURE
TO BLOODBORNE PATHOGENS**

Below are listed the tasks and procedures in our facility where employees **may** have an occupational exposure to potentially infectious materials which may result in exposure to blood borne pathogens.

<u>TASK/PROCEDURE</u>	<u>JOB CLASSIFICATION</u>	<u>DEPARTMENT/LOCATION</u>
<hr/>	<hr/>	<hr/>

HEPATITIS B VACCINATION

Vaccination Program

The City Clerk is responsible for setting up and operating our vaccination program.

To protect our employees as much as possible from the possibility of Hepatitis B infection, our facility has implemented a vaccination program. This program is available, at no cost, to all employees who have occupational exposure to blood borne pathogens or who have had an exposure incident.

The vaccination program consists of a series of three inoculations over a six-month period. As part of their blood borne pathogens training, our employees have received information regarding Hepatitis vaccination, including its safety and effectiveness.

Vaccinations are performed under the supervision of a licensed physician or other health care professional. Employees taking part in the vaccination program are listed on the following pages. Employees who have declined to take part in the program are listed as well, and have signed the "Vaccination Declination Form".

To ensure that all employees are aware of our vaccination program, it is thoroughly discussed in our blood borne pathogens training. We also have posted "Vaccination Program Notices" in prominent places throughout our facility.

EMPLOYEES ELIGIBLE FOR HEPATITIS B VACCINATION

EMPLOYEE	DEPARTMENT	ACCEPTED/ DECLINED	DATES SCHEDULED	INOCULATION RECEIVED			ADMINISTERING HEALTH CARE PROFESSIONAL (INITIALS)
				#1	#2	#3	

**MAKE SURE YOU HAVE RECEIVED YOUR
HEPATITIS B VACCINATION**

The vaccination is given at the following times:

LOCATION: _____

To sign up call _____ or talk to your supervisor

The vaccination is free of charge to all employees.

VACCINATION DECLINATION FORM

Date: _____

Employee Name: _____

Employee ID #: _____

I understand that due to my occupational exposure to blood or other potential 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

Facility Representative Signature

Date

EXPOSURE INCIDENT INVESTIGATION FORM

Date of Incident: _____

Time of Incident: _____

Location: _____

Potentially Infectious Materials Involved:

Type: _____

Source: _____

Circumstances (work being performed, etc.): _____

How Incident Was Caused: _____

Personal Protective Equipment Being Used: _____

Actions Taken (decontamination, clean-up, reporting, etc.): _____

Recommendations for Avoiding Repetition: _____

POST-EXPOSURE EVALUATION AND FOLLOW-UP CHECKLIST

The following steps must be taken, and information transmitted, in the case of an employee's exposure to Blood borne Pathogens:

<u>ACTIVITY</u>	<u>COMPLETION DATE</u>
• Employee furnished with documentation regarding exposure incident.	_____
• Source individual identified. (_____) Source individual	_____
• Source individual's blood tested and results given to exposed employee. _____ Consent has not been able to be obtained.	_____
• Exposed employee's blood collected and tested	_____
• Appointment arranged for employee with health care professional. (_____) Professional's name	_____
Documentation forwarded to health care professional. _____ Blood borne Pathogens Standard. _____ Description of exposed employee's duties _____ Description of exposure incident, including routes of exposure. _____ Result of source individual's blood testing. _____ Employee's medical records.	_____

Labels And Signs

For our employee's one of the most obvious warnings of possible exposure to blood borne pathogens are biohazard labels. Because of this, we have implemented a comprehensive biohazard warning labeling program in our facility using red "color-coded" containers. The Public Works Director is responsible for setting up and maintaining this program in our facility.

The following items in our facility are labeled:

- Containers of regulated waste.

- Refrigerators/freezers containing blood or other potentially infectious materials. (Medical)

- Contaminated equipment.

On labels affixed to contaminated equipment we have also indicated which portions of the equipment are contaminated.

ELECTRIC POWER GENERATION, TRANSMISSION, AND DISTRIBUTION

Training

All Employees:

Trained in and familiar with the safety-related work practices, safety procedures, and other safety requirements that pertain to their respective job assignments. Employees shall also be trained in and familiar with any other safety practices, including applicable emergency procedures (such as pole top and manhole rescue), that are not specifically addressed by this section but are related to their work and are necessary for their safety.

Qualified Employees:

In addition to the above, qualified employees shall be trained and competent in:

1. The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment.
2. The skills and techniques necessary to determine the nominal voltage of exposed live parts.
3. The minimum approach distances specified in this section corresponding to the voltages to which the qualified employee will be exposed.
4. The proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulating tools for working on or near exposed energized parts of electrical equipment.

Supervision and Inspection:

The employer shall determine through regular supervision and inspection conducted on at least an annual basis that each employee is complying with the safety-related work practices required by this section.

Training and Retraining:

1. If the supervision and annual inspections indicate that the employee is not complying with the safety-related work practices required.
2. If new technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that are different from those which the employee would normally use.
3. If he or she must employ safety-related work practices that are not normally used during his or her regular job duties.
4. Tasks performed less often than once per year will necessitate retraining before performance of the work practices involved.

Training Contents:

May be classroom or on-the-job. Establishes employee proficiency.

Certification:

The employer shall certify that each employee has received the required training. This certification is made when the employee demonstrates proficiency in the work practices involved and shall be maintained for the duration of the employee's employment. Employment records that indicate that an employee has received the required training are an acceptable means of meeting this requirement. If training was conducted by a previous employer, the present employer must verify that it took place.

Existing Conditions:

Existing conditions related to the safety of the work to be performed shall be determined before work on or near electric lines or equipment is started. Such conditions include, but are not limited to, the nominal voltages of lines and equipment, the maximum switching transient voltages, the presence of hazardous induced voltages, the presence and condition of protective grounds and equipment grounding conductors, the condition of poles, environmental conditions relative to safety, and the location of circuits and equipment, including power and communications lines and fire protective signaling circuits.

Medical Services and First Aid

Scope:

Employees performing work on or associated with exposed lines or equipment energized at 50 volts or more, or enclosed spaces requiring an attendant.

Requirements:

1. In the absence of an infirmary, clinic, or hospital in near proximity to the workplace which is used for the treatment of all injured employees, a person or persons shall be adequately trained to render first aid.
2. First aid supplies approved by the consulting physician must be readily available.
3. When eyes or body may be exposed to injurious corrosive materials, facilities must be provided in the work area for flushing and drenching.

Who Must Be Trained:

The numbers of employees who must be trained in first aid and cardiopulmonary resuscitation is dependent upon the work setting and the type of work being done. The following are the requirements for training related to the type of work being done:

1. Field work involving two or more employees at a location--At least two persons must be trained (only one needs to be trained if all employees are trained within 3 months of hiring date).
2. Fixed work locations (such as generating stations) --enough trained to ensure that each employee exposed to electric shock can be reached within 4 minutes by a trained person. When the number of employees is insufficient to meet this requirement, then all employees must be trained.
3. Enclosed spaces--Attendants must be trained.

First Aid Supplies:

Must be placed in weatherproof containers if they could be exposed to the weather.

Must be maintained and readily available for use. They must be inspected frequently enough to ensure that expended items are replaced.

Job Briefing

Scope:

All employees involved in the operation and maintenance of electric power generation, control, transformation, transmission and distribution lines and equipment.

Requirements:

1. At least one briefing at the start of the first job of each day or shift if repetitive. Additional briefings if significant changes occur that might affect the safety of employees.

2. Job briefing may be minimal if work is routine and employees, by virtue of training and experience, can reasonably be expected to recognize and avoid the hazards involved in the job. More extensive discussion is conducted if work is complicated, particularly hazardous, or employees cannot be expected to recognize and avoid the hazards of the job.

Hazardous Energy Control (Lockout/Tag out)

Scope:

Employees or outside servicing personnel are performing servicing or maintenance work on a machine or equipment installed in electric power generation facilities when the unexpected energizing, startup, or release of stored energy could occur and cause injury, Lockout/Tag out procedures will apply.

Confined (Enclosed) Spaces

Scope:

Routine entry into enclosed spaces requires the use of the confined space entry procedures.

Excavations

Scope:

Employees performing work in or around excavations.

Requirements:

1. All Trenching and Excavation procedures are to be followed including the following.
2. Exposure to vehicular traffic shall wear high-visibility or reflector vest.

Personal Protective Equipment

Head Protection:

Each affected employee shall wear protective helmets when working in areas where there is a potential for injury to the head from falling objects.

Protective helmets designed to reduce electrical shock hazard shall be worn by each such affected employee when near exposed electrical conductors which could contact the head.

Foot Protection:

Each affected employee shall wear protective footwear when working in areas where there is a danger of foot injuries due to falling and rolling objects, or objects piercing the sole, and where such employee's feet are exposed to electrical hazards.

General Fall Protection:

Body belts, safety straps, lanyards, lifelines, and body harnesses shall be inspected before use each day to determine that the equipment is in safe working condition. Defective equipment shall not be used.

Lifelines shall be protected against being cut or abraded.

Fall arrest equipment, work positioning equipment, or travel restricting equipment shall be used by employees working at elevated locations more than 4 feet (1.2 meters) above the ground on poles, towers, or similar structures if other fall protection equipment has not been provided.

Fall Protection for Qualified Employees:

The use of fall protection equipment is not required for qualified employees climbing or changing locations on poles, towers, or similar structures unless conditions such as, but not limited to, ice, high winds, the design of the structure (for example, no provision for holding on with hands), or the presence of contaminants on the structure could cause the employee to lose his or her grip or footing.

This applies to structures that support overload electric power generation, transmission, and distribution lines and equipment. It does not apply to portions of buildings such as loading docks, to electrical equipment, such as transformer and capacitors, nor to aerial lifts.

Employees undergoing training are not considered qualified employees for the purposes of fall protection. Unqualified employees (including trainees) are required to use fall protection any time they are more than 4 feet above the ground.

Personal Fall Arrest Systems:

When stopping or arresting a fall, personal fall arrest systems shall limit the maximum arresting force on an employee to 900 pounds (4 kN) if used with a body belt.

When stopping or arresting a fall, personal fall arrest systems shall limit the maximum arresting force on an employee to 1,800 pounds (8 kN) if used with a body harness.

Personal fall arrest systems shall be rigged such that an employee can neither free fall more than 6 feet (1.8 m) nor contact any lower level.

If vertical lifelines or drop lines are used, not more than one employee may be attached to any one lifeline.

Snap hooks may not be connected to loops made in webbing type lanyards.

Snap hooks may not be connected to each other.

Personal fall arrest systems and their use shall comply with the provisions set forth below. Effective January 1, 1998, body belts are not acceptable as part of personal fall arrest systems:

1. Connectors shall be drop forged, pressed or formed steel, or made of equivalent material.
2. Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system.
3. D-rings and snap hooks shall have a minimum tensile strength of 5,000 pounds.
4. D-rings and snap hooks shall be proof-tested to a minimum tensile load of 3,000 pounds without cracking, breaking, or taking permanent deformation.
5. Snap hooks shall be a locking type designed and used to prevent disengagement.
6. On suspended scaffolds or similar work platforms with horizontal lifelines which may become vertical lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline.
7. Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.
8. Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds.
9. Lifelines shall be protected against being cut or abraded.
10. Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.
11. Self-retracting lifelines and lanyards which do not limit free fall distance 2 feet or less, rip stitch lanyards, and tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.
12. Ropes and straps used in lanyards, lifelines, and strength components of body belts and body harnesses shall be made from synthetic fibers.
13. Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached, or shall be designed, installed, and used as follows:
 - a. As part of a complete personal fall arrest system which maintains a safety factor of at least two; and
 - b. Under the supervision of a qualified person.
 - c. Personal fall arrest systems. When stopping a fall, shall:
 - d. Limit maximum arresting force on an employee to 900 pounds when used with a body belt;

- e. Limit maximum arresting force on an employee to 1,800 pounds when used with a body harness;
- f. Be rigged such that an employee can neither free fall more than 6 feet, nor contact any lower level;
- g. Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet; and
- h. Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet, or the free fall distance permitted by the system whichever is less.
- i. The attachment point of the body belt shall be located in the center of the wearer's back. The attachment point of the body harness shall be located in the center of the wearer's back near shoulder level, or above the wearer's head.

- 14. Body belts, harnesses, and components shall be used only for employee protection, and not to hoist material.
- 15. Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.
- 16. The employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves.
- 17. Personal fall arrest systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service.
- 18. Body belts shall be at least 1-5/8 inches wide.

Shock-Absorbing Lanyards:

Shock-absorbing lanyards serve to mitigate a portion of the shock of a fall by absorbing some of the energy of the fall through the use of web-tearing or stretch fiber construction. These lanyards contribute to the overall safety and effectiveness of fall arrest systems which employ lanyard connections.

Locking snap lanyards with built-in shock absorbers reduce fall arresting forces by 65 to 80 percent compared to the forces generated by a traditional lanyard.

Forces generated by 220 pounds of weight free falling 6 feet:

- 1. Steel lanyard--3,970 pounds of force.
- 2. Webbing lanyard--2,760 pounds of force.
- 3. Nylon rope lanyard--2,395 pounds of force.
- 4. Shock-absorbing lanyard--830 pounds of force.

Rescue Preplanning

Minimizing the time between a fall occurrence and medical attention of the workers is vitally important. A thorough rescue program should be established prior to using fall protection equipment.

Lineman's Body Belts, Safety Straps, and Lanyards

General Requirements:

The requirement of this section shall be complied with for all linemen's body belts, safety straps, and lanyards required for use after the effective date.

1. Hardware for lineman's body belts, safety straps, and lanyards shall be drop forged or pressed steel and have a corrosive resistive finish tested to American Society for Testing Materials B117-64 (50 hour test). Surfaces shall be smooth and free of sharp edges.
2. All buckles shall withstand a 2,000 pound tensile test with a maximum permanent deformation no greater than 1/64 inch.
3. D-rings shall withstand a 5,000 pound tensile test without failure. Failure of a D-ring shall be considered cracking or breaking.
4. Snap hooks shall withstand a 5,000 pound tensile test without failure. Failure of a snap hook shall be distortion sufficient to release the keeper.

Specific Requirements:

1. All fabric used for safety straps shall withstand an ac dielectric test of not less than 25,000 volts per foot "dry" for 3 minutes, without visible deterioration.
2. All fabric and leather used shall be tested for leakage current and shall not exceed 1 milliampere when a potential of 3,000 volts is applied to the electrodes positioned 12 inches apart.
3. Direct current tests may be permitted in lieu of alternating current tests.
4. The cushion part of the body belt shall:
 - a. Contain no exposed rivets on the inside;
 - b. Be at least 3 inches in width;
 - c. Be at least 5/32 inch thick if made of leather; and
 - d. Have pocket tabs that extended at least 1-1/2 inches down and 3 inches back of the inside of circle of each D-ring for riveting on pliers or tool pockets. On shifting D-belts, this measurement for pocket tabs shall be taken when the D-ring section is centered.
5. A maximum of four tool loops shall be so situated on the body belt that 4 inches of the body belt in the center of the back, measuring from D-ring to D-ring, shall be free of tool loops, and any other attachments.

6. Suitable copper, steel, or equivalent liners shall be used around bar of D-rings to prevent wear between these members and the leather or fabric enclosing them.
7. All stitching shall be of a minimum 42 pound weight nylon or equivalent thread and shall be lock stitched. Stitching parallel to an edge shall not be less than 3/16 inch from edge of narrowest member caught by the thread. The use of cross stitching on leather is prohibited.
8. The keeper of snap hooks shall have a spring tension that will not allow the keeper to begin to open with a weight of 2-1/2 pounds or less, but the keeper of snap hooks shall begin to open with a weight of 4 pounds, when the weight is supported on the keeper against the end of the nose.
9. Testing of lineman's safety straps, body belts, and lanyards shall be in accordance with the following procedure:
 - a. Attach one end of the safety strap or lanyard to a rigid support, the other end shall be attached to a 250 pound canvas bag of sand.
 - b. Allow the 250 pound canvas bag of sand to free fall 4 feet for safety strap test and 6 feet for lanyard test; in each case stopping the fall of the 250 pound bag;
 - c. Failure of the strap or lanyard shall be indicated by any breakage, or slippage sufficient to permit the bag to fall free of the strap or lanyard. The entire "body belt assembly" shall be tested using one D-ring. A safety strap or lanyard shall be used that is capable of passing the "impact loading test" and attached as required. The body belt shall be secured to the 250 pound bag of sand at a point to simulate the waist of a man and allowed to drop as stated. Failure of the body belt shall be indicated by any breakage, or slippage sufficient to permit the bag to fall free of the body belt.

Electrical Protective Equipment

Scope:

Insulating blankets, matting, covers, line hose, gloves, and sleeves made of rubber.

Design Requirements:

1. Blankets, gloves, and sleeves shall be produced by a seamless process.
2. Each item shall be clearly marked with type and class. (Non-ozone resistant equipment other than matting shall be marked Type I, ozone resistant equipment other than matting shall be marked Type II.)
3. Markings shall be non-conducting and shall be applied in such a manner as not to impair the insulating qualities of the equipment. Markings on gloves shall be confined to the cuff portion of the glove.

Electrical Requirements:

1. Equipment shall be capable of withstanding the ac proof test voltage specified in Table I-2 or the dc proof test voltage specified in Table I-3 (see tables at the end of this section).
2. The test voltage shall be applied continuously for 3 minutes for equipment other than matting and shall be applied continuously for 1 minute to matting.
3. Gloves shall be capable of withstanding the ac proof test voltage specified in Table I-2 after a 16 hour water soak.
4. When the ac proof test is used on gloves, the 60 hertz proof test current may not exceed the values specified in Table I-2 at any time during the test period.
5. If the ac proof test is made at a frequency other than 60 hertz, the permissible proof test current shall be computed from the direct ratio of the frequencies.
6. For the test, gloves (right side out) shall be filled with tap water and immersed in water to a depth that is in accordance with Table I-4. Water shall be added to or removed from the glove, as necessary, so that the water level is the same inside and outside the glove.
7. After the 16 hour water soak test (see No. 4), the 60 hertz proof-test current may exceed the values given in Table I-2 by not more than 2 milliamperes.
8. Equipment that has been subjected to a minimum breakdown voltage test may not be used for electrical protection.
9. Material used for the Type II insulating equipment shall be capable of withstanding an ozone test with no visible effects. Any visible signs of ozone deterioration of the material, such as checking, cracking, breaks, or pitting is evidence of failure to meet the requirements for ozone resistant material.

In-service Care and Use:

1. Electrical protective equipment shall be maintained in a safe, reliable condition.
2. The following specific requirements apply to insulating blankets, covers, line hose, gloves, and sleeves made of rubber:
 - a. Maximum use voltages shall conform to those listed in Table I-5.
 - b. Insulating equipment shall be inspected for damage before each day's use and immediately following any incident that can reasonably be suspected of having caused damage. Insulating gloves shall be given an air test, along with the inspection.
3. Insulating equipment with any of the following defects may not be used:
 - a. A hole, tear, puncture, or cut.
 - b. Ozone cutting or ozone checking (the cutting action produced by ozone on rubber under mechanical stress into a series of interlacing cracks).

- c. An embedded foreign object.
 - d. Any of the following texture changes: swelling, softening, hardening, or becoming sticky or inelastic.
 - e. Any other defect that damages the insulating properties.
4. Insulating equipment found to have other defects that might affect its insulating properties shall be removed from service and returned for testing.
5. Insulating equipment shall be cleaned as needed to remove foreign substances.
6. Insulating equipment shall be stored in such a location and in such a manner as to protect it from light, temperature extremes, excessive humidity, ozone, and other injurious substances and conditions.
7. Protector gloves shall be worn over insulating gloves, except as follows:
- a. Protector gloves need not be used with Class O gloves, under limited use conditions, where small equipment and parts manipulation necessitate unusually high finger dexterity.
- Note: Extra care is needed in the visual examination of the gloves and in the avoidance of handling sharp objects.
- b. Any other class of glove may be used for similar work without protector gloves if the employer can demonstrate that the possibility of physical damage to the gloves is small and if the class of glove is one class higher than that required for the voltage involved. Insulating gloves that have been used without protector gloves may not be used at a higher voltage until they have been tested under the provisions of this section.
8. Electrical protective equipment shall be subjected to periodic electrical tests. Test voltages and the maximum intervals between tests shall be in accordance with Tables I-5 and I-6.
9. Insulating equipment failing to pass inspections or electrical tests may not be used by employees, except as follows:
- a. Rubber insulating line hose may be used in shorter lengths with the defective portion cut off.
 - b. Rubber insulating blankets may be repaired using a compatible patch that results in physical and electrical properties equal to those of the blanket.
 - c. Rubber insulating blankets may be salvaged by severing the defective area from the undamaged portion of the blanket. The resulting undamaged area may not be smaller than 22 inches by 22 inches (560 mm by 560 mm) for Class 1, 2, 3, and 4 blankets.
 - d. Rubber insulating gloves and sleeves with minor physical defects, such as small cuts, tears, or punctures, may be repaired by the application of a compatible patch. Also, rubber insulating gloves and sleeves with minor surface blemishes may be repaired with a compatible liquid compound. The patched area shall have electrical and physical properties equal to those of the surrounding material. Repairs to gloves are permitted only in the area between the wrist and the reinforced edge of the opening.

- e. Repaired insulating equipment shall be re-tested before it may be used by employees.
- d. The employer shall certify that equipment has been tested in accordance with the requirements of this section. The certification shall identify the equipment that passed the test and the date it was tested.

Note: Marking of equipment and entering the results of the tests and the dates of testing onto logs are two acceptable means of meeting this requirement.

Ladders and Platforms

Special Ladders and Platforms:

Portable ladders and platforms used on structures or conductors in conjunction with overhead line work:

1. Ladders and platforms shall be secured to prevent their becoming accidentally dislodged.
2. Ladders and platforms may not be loaded in excess of the working loads for which they are designed.
3. Ladders and platforms may be used only in applications for which they are designed.
4. In the configurations in which they are used, ladders and platforms shall be capable of supporting without failure at least 2.5 times the maximum intended load.

Conductive Ladders:

Portable metal ladders and other portable conductive ladders may not be used near exposed energized lines or equipment. However, in specialized high voltage work, conductive ladders shall be used where the employer can demonstrate that non-conductive ladders would present a greater hazard than conductive ladders.

Portable Wood Ladders:

Established minimum requirements for the construction, care, and use of the common types of portable wood ladders in order to ensure safety under normal conditions of usage.

All wood parts shall be free from sharp edges and splinters; sound and free from accepted visual inspection from shake, wane, compression failures, decay, or other irregularities. Low density wood shall not be used.

General Requirements:

1. A uniform step spacing shall be employed which shall be not more than 12 inches. Steps shall be parallel and level when the ladder is in position for use.
2. The minimum width between side rails at the top inside to inside, shall be not less than 11-1/2 inches. From top to bottom, the side rails shall spread at least 1 inch for each foot of length of stepladder.
3. Single ladders longer than 30 feet shall not be supplied.
4. Two-section extension ladders longer than 60 feet shall not be supplied.

Hand and Portable Power Tools

Live-Line Tools

Scope:

Employees performing work using live-line tools (hot sticks).

Design of Tools:

Live-line tool rods, tubes, and poles shall be designed and constructed to withstand the following minimum tests:

1. 100,000 volts per foot (3281 volts per centimeter) of length for 5 minutes if the tool is made of Fiberglass-Reinforced Plastic (FRP), or
2. 75,000 volts per foot (2461 volts per centimeter) of length for 3 minutes if the tool is made of wood, or
3. Other tests that the employer can demonstrate are equivalent.

Condition of Tools:

Each live-line tool shall be wiped clean and visually inspected for defects before use each day.

If any defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is present after wiping, the tool shall be removed from service and examined and tested before being returned to service.

Live-line tools used for primary employee protection shall be removed from service every 2 years for examination, cleaning, repair, and testing as follows:

1. Each tool shall be thoroughly examined for defects.
2. If a defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is found, the tool shall be repaired and refinished or shall be permanently removed from service. If no such defect or contamination is found, the tool shall be cleaned and waxed.
3. The tool shall be tested in accordance with the following conditions:
 - a. After the tool has been repaired or refinished; and
 - b. After the examination if repair or refinishing is not performed, unless the tool is made of FRP rod or foam-filled FRP tube and the employer can demonstrate that the tool has no defects that could cause it to fail in use.
4. The test method used shall be designed to verify the tool's integrity along its entire working length and, if the tool is made of fiberglass-reinforced plastic, its integrity under wet conditions.

5. The voltage applied during the test shall be as follows:
 - a. 75,000 volts per foot (2461 volts per centimeter) of length for 1 minute if the tool is made of fiberglass, or
 - b. 50,000 volts per foot (1640 volts per centimeter) of length for 1 minute if the tool is made of wood, or
 - c. Other tests that the employer can demonstrate are equivalent.

Materials Handling and Storage

Materials Stored Near Energized Parts and Equipment:

In areas not restricted to qualified persons only, materials or equipment may not be stored closer to energized lines or exposed energized parts of equipment than the following distances plus an amount providing for the maximum sag and side swing of all conductors and providing for the height and movement of material handling equipment:

1. For lines and equipment energized at 50 kV or less, the distance is 10 feet (305 cm).
2. For lines and equipment energized at more than 50 kV, the distance is 10 feet (305 cm) plus 4 inches (10 cm) for every 10 kV over 50 kV.

In areas restricted to qualified employees, material may not be stored within the working space about lines or equipment.

Note: The requirements for the size of working spaces in areas restricted to qualified employees are contained in the sections dealing with power generation and substations.

Working On or Near Exposed Energized Parts

Scope:

Employees who work on or near exposed live parts.

General Requirements:

Only qualified employees may work on or with exposed energized lines or parts of equipment. Only qualified employees may work in areas containing unguarded, non-insulated energized lines or parts of equipment operating at 50 volts or more. Electric lines and equipment shall be considered and treated as energized unless the provisions of "Hazardous Energy Control (Lockout/Tag out) Procedures" or "De-energizing Lines and Equipment for Employee Protection" have been followed.

Multiple Employee Requirements:

Except as provided in "Solo Qualified Employee Requirements," at least two employees shall be present while the following types of work are being performed:

1. Installation, removal, or repair of lines that are energized at more than 600 volts.
2. Installation removal or repair of de-energized lines if an employee is exposed to contact with other parts energized at more than 600 volts.
3. Installation, removal, or repair of equipment, such as transformers, capacitors, and regulators, if an employee is exposed to contact with parts energized at more than 600 volts.
4. Work involving the use of mechanical equipment other than insulated aerial lifts, near parts energized at more than 600 volts.
5. Other work that exposes an employee to electrical hazards greater than or equal to those posed by operations that are specifically listed in Paragraphs 1 through 4 of this section.

Solo Qualified Employee Requirements:

Multiple Employee Requirements of this section do not apply to the following operations:

1. Routine switching of circuits, if the employer can demonstrate that conditions at the site allow this work to be performed safely.
2. Work performed with live-line tools if the employee is positioned so that he or she is neither within reach of nor otherwise exposed to contact with energized parts.
3. Emergency repairs to the extent necessary to safeguard the general public.

Minimum Approach Distances:

The employer shall ensure that no employee approaches or takes any conductive object closer to exposed energized parts than set forth in Table R-6 through Table R-10, unless:

1. The employee is insulated from the energized part (insulating gloves or insulating gloves and sleeves worn in accordance with the "Type of Insulation section below.
2. The energized part is insulated from the employee and from any other conductive object at a different potential.
3. The employee is insulated from any other exposed conductive object, as during live-line bare-hand work.

Note: "Guarding of Energized Parts" contain requirements for the guarding and isolation of live parts. Parts of electric circuits that meet these provisions are not considered as "exposed" unless a guard is removed or an employee enters the space intended to provide isolation from the live parts.

Type of Insulation:

If the employee is to be insulated from energized parts by the use of insulating gloves (under Minimum Approach Distances paragraph of this section), insulating sleeves shall also be used. However, insulating sleeves need not be used under the following conditions:

1. If exposed energized parts on which work is not being performed are insulated from the employee.
2. If such insulation is placed from a position not exposing the employee's upper arm to contact with other energized parts.

Making Connections:

The employer shall ensure that connections are made as follows:

1. In connecting de-energized equipment or lines to an energized circuit by means of a conducting wire or device, an employee shall first attach the wire to the de-energized part.
2. When disconnecting equipment or lines from an energized circuit by means of a conducting wire or device, an employee shall remove the source end first.
3. When lines or equipment are connected to or disconnected from energized circuits, loose conductors shall be kept away from exposed energized parts.

Apparel:

1. When work is performed within reaching distance of exposed energized parts of equipment, the employer shall ensure that each employee removes or renders non-conductive all exposed conductive articles, such as key or watch chains, rings, or wrist watches or bands, unless such articles do not increase the hazards associated with contact with the energized parts.
2. The employer shall train each employee who is exposed to the hazards of flames or electric arcs in the hazards involved.
3. The employer shall ensure that each employee who is exposed to the hazards of flames or electric arcs does not wear clothing that, when exposed to flames or electric arcs could increase the extent of injury that would be sustained by the employee.

Note: Clothing made from the following types of fabrics, either alone or in blends, is prohibited, unless the employer can demonstrate that the fabric has been treated to withstand the conditions that may be encountered or that the clothing is worn in such a manner as to eliminate the hazard involved: acetate, nylon, polyester, rayon.

Fuse Handling:

When fuses must be installed or removed with one or both terminals energized at more than 300 volts or with exposed parts energized at more than 50 volts, the employer shall ensure that tools or gloves rated for the voltage are used. When expulsion type fuses are installed with one or both terminals energized at more than 300 volts, the employer shall ensure that each employee wears eye protection, uses a tool rated for the voltage, and is clear of the exhaust path of the fuse barrel.

Non-current-Carrying Metal Parts:

Non-current-carrying metal parts of equipment or devices, such as transformer cases and circuit breaker housings, shall be treated as energized at the highest voltage to which they are exposed, unless the employer inspects the installation and determines that these parts are grounded before work is performed.

De-energizing Lines and Equipment for Employee Protection

Scope:

Employees or outside servicing personnel who perform service or maintenance work on distribution and transmission lines or equipment when the unexpected energizing, startup, or release of stored energy could occur and cause injury.

Who Must Be Trained:

All employees who are exposed or may be exposed to energized transmission and distribution lines and equipment. Conductors and parts of equipment that have been de-energized under procedures other than those stated in these procedures shall be treated as energized.

Grounding for the Protection of Employees

Scope:

Grounding of transmission and distribution lines and equipment for the purposes of protecting employees.

Requirements:

For the employee to work lines or equipment as de-energized, the lines or equipment shall be de-energized under the provisions of these procedures and shall be grounded as specified in this section. However, if the employer can demonstrate that installation of a ground is impracticable or that the conditions resulting from the installation of a ground would present greater hazards than working without grounds, the lines and equipment may be treated as de-energized provided all of the following conditions are met:

1. The lines and equipment have been de-energized.
2. There is no possibility of contact with another energized source.
3. The hazard of induced voltage is not present.

Equipotential Zone:

Temporary protective grounds shall be placed at such locations and arranged in such a manner as to prevent each employee from being exposed to hazardous differences in electrical potential.

Protective Grounding Equipment:

Protective grounding equipment shall be capable of conducting the maximum fault current that could flow at the point of grounding for the time necessary to clear the fault. This equipment shall have an ampere capacity greater than or equal to that of No. 2 AWG copper.

Protective grounds shall have an impedance low enough to cause immediate operation of protective devices in case of accidental energizing of the lines or equipment.

Testing:

Before any ground is installed, lines and equipment shall be tested and found absent of nominal voltage, unless a previously installed ground is present.

Order of Connection:

When a ground is to be attached to a line or to equipment, the ground-end connection shall be attached first, and then the other end shall be attached by means of a live-line tool.

Order of Removal:

When a ground is to be removed, the grounding device shall be removed from the line or equipment using a live-line tool before the ground-end connection is removed.

Additional Precautions:

When work is performed on a cable at a location remote from the cable terminal, the cable may not be grounded at the cable terminal if there is a possibility of hazardous transfer of potential should a fault occur.

Removal of Grounds for Test:

Grounds may be removed temporarily during tests. During the test procedure, the employer shall ensure that each employee uses insulating equipment and is isolated from any hazards involved, and the employer shall institute any additional measures as may be necessary to protect each exposed employee in case the previously grounded lines and equipment become energized.

Testing and Test Facilities

Scope:

Only testing involving interim measurements to determine maintenance needs and fitness for security utilizing high voltage, high power, or combinations of both. Testing involving continuous measurements such as routine metering, relaying, and normal line work are not applicable. Both permanent and temporary test areas are included.

Excluded Activities:

Routine inspection and maintenance measurements made by qualified employees in accordance with established work practice rules. Two examples are "phasing-out" testing and testing for a "no voltage" condition.

Training Requirements:

1. Employers shall establish and enforce safe work practices for the protection of each worker from hazards of high voltage or high power testing at all test areas, temporary and permanent.
2. Training shall include test area guarding, grounding, and the safe use of measuring and control circuits.
3. Training shall include a means of periodic safety checks of field test areas.
4. Employees shall be trained in safe work practices upon their initial assignment to the test area, with periodic reviews and updates as required in this section.

Guarding of Test Areas:

Permanent test areas shall be guarded by walls, fences, or barriers designed to keep employees out of the test areas.

In field testing, or at a temporary test site where permanent fences and gates are not provided, one of the following means shall be used to prevent unauthorized employees from entering:

1. The test area shall be guarded by the use of distinctively colored safety tape that is supported approximately waist high and to which safety signs are attached.
2. The test area shall be guarded by a barrier or barricade that limits access to the test area to a degree equivalent, physically and visually, to the barricade specified in the preceding paragraph.
3. The test area shall be guarded by one or more test observers stationed so that the entire area can be monitored.

Guarding shall be provided within the test areas to control access to test equipment or to apparatus under test that may become energized as part of the testing by either direct or inductive coupling, in order to prevent accidental employee contact with energized parts.

Grounding Practices:

The employer shall establish and implement safe grounding practices for the test facility.

All conductive parts accessible to the test operator during the time the equipment is operating at high voltage shall be maintained at ground potential except for portions of the equipment that are isolated from the test operator by guarding.

Wherever ungrounded terminals of test equipment or apparatus under test may be present, they shall be treated as energized until determined by tests to be de-energized.

Visible grounds shall be applied, either automatically or manually with properly insulated tools, to the high-voltage circuits after they are de-energized and before work is performed on the circuit or item or apparatus under test. Common ground connections shall be solidly connected to the test equipment and the apparatus under test.

In high power testing, an isolated ground-return conductor system shall be provided so that no intentional passage of current, with its attendant voltage rise, can occur in the ground grid or in the earth. However, an isolated ground-return conductor need not be provided if the employer can demonstrate that both the following conditions are met:

1. An isolated ground-return conductor cannot be provided due to the distance of the test site from the electric energy source, and
2. Employees are protected from any hazardous step and touch potentials that may develop during the test.

In tests in which grounding of test equipment by means of the equipment grounding conductor located in the equipment power cord cannot be used due to increased hazards to test personnel or the prevention of satisfactory measurements, a ground that the employer can demonstrate affords equivalent safety shall be provided, and the safety ground shall be clearly indicated in the test setup.

When the test area is entered after equipment is de-energized, a ground shall be placed on the high voltage terminal and any other exposed terminals.

High capacitance equipment or apparatus shall be discharged through a resistor rated for the available energy.

A direct ground shall be applied to the exposed terminals when the stored energy drops to a level at which it is safe to do so.

If a test trailer or test vehicle is used in field testing, its chassis shall be grounded. Protection against hazardous touch potentials with respect to the vehicle, instrument panels, and other conductive parts accessible to employees shall be provided by bonding, insulation, or isolation.

Control and Measuring Circuits:

Control wiring, meter connections, test leads, and cables may not be run from a test area unless they are contained in a grounded metallic sheath and terminated in a grounded metallic enclosure or unless other precautions are taken that the employer can demonstrate as ensuring equivalent safety.

Meters and other instruments with accessible terminals or parts shall be isolated from test personnel to protect against hazards arising from such terminals and parts becoming energized during testing. If this isolation is provided by locating test equipment in metal compartments with viewing windows, interlocks shall be provided to interrupt the power supply if the compartment cover is opened.

The routing and connections of temporary wiring shall be made secure against damage, accidental interruptions, and other hazards. To the maximum extent possible, signal, control, ground, and power cables shall be kept separate.

If employees will be present in the test area during testing, a test observer shall be present. The test observer shall be capable of implementing the immediate de-energizing of test circuits for safety purposes.

Safety Check:

Safety practices governing employee work at temporary or field test areas shall provide for a routine check of such test areas for safety at the beginning of each series of tests.

The test operator in charge shall conduct these routine safety checks before each series of tests and shall verify at least the following conditions:

1. That barriers and guards are in workable condition and are properly placed to isolate hazardous areas;
2. That system test status signals, if used, are in operable condition;
3. That test power disconnects are clearly marked and readily available in an emergency;
4. That ground connections are clearly identifiable;
5. That personal protective equipment is provided and used, and
6. That signal, ground, and power cables are properly separated.

Mechanical Equipment

Scope:

Operation of mechanical equipment used in the generation, transmission, and distribution of electric power, and the employees who operate such equipment.

Requirements:

The critical safety components of mechanical elevating and rotating equipment shall receive a thorough visual inspection before use on each shift.

Note: Critical safety components of mechanical elevating and rotating equipment are components whose failure would result in a free fall or free rotation of the boom.

No vehicular equipment having an obstructed view to the rear may be operated on off-highway jobsites where any employee is exposed to the hazards created by the moving vehicle, unless:

1. The vehicle has a reverse signal alarm audible above the surrounding noise level.
2. The vehicle is backed up only when a designated employee signals that it is safe to do so.

The operator of an electric line truck may not leave his or her position at the controls while a load is suspended, unless the employer can demonstrate that no employee (including the operator) might be endangered.

Rubber-tired, self-propelled scrapers, rubber-tired front-end loaders, rubber-tired dozers, wheel type agricultural and industrial tractors, crawler type tractors, crawler type loaders, and motor graders, with or without attachments, shall have rollover protective structures.

Outriggers:

Vehicular equipment, if provided with outriggers, shall be operated with the outriggers extended and firmly set as necessary for the stability of the specific configuration of the equipment. Outriggers may not be extended or retracted outside of clear view of the operator unless all employees are outside the range of possible equipment motion.

If the work area or the terrain precludes the use of outriggers, the equipment may be operated only within its maximum load ratings for the particular configuration of the equipment without outriggers.

Applied Loads:

Mechanical equipment used to lift or move lines or other material shall be used within its maximum load rating and other design limitations for the conditions under which the work is being performed.

Operations Near Energized Lines or Equipment:

Mechanical equipment shall be operated so that the minimum approach distances of Table R-6 through Table R-10 are maintained from exposed energized lines and equipment. However, the insulated portion of an aerial lift operated by a qualified employee in the lift is exempt from this requirement.

A designated employee other than the equipment operator shall observe the approach distance to exposed lines and equipment and give timely warnings before the minimum approach distance is reached, unless the employer can demonstrate that the operator can accurately determine that the minimum approach distance is being maintained.

If, during operation of the mechanical equipment, the equipment could become energized, the operation shall also comply with at least one of the following criteria:

1. The energized lines exposed to contact shall be covered with insulating protective material that will withstand the type of contact that might be made during the operation.
2. The equipment shall be insulated for the voltage involved. The equipment shall be positioned so that its non-insulated portions cannot approach the lines or equipment any closer than the minimum approach distances specified in Table R-6 through Table R-10.
3. Each employee shall be protected from hazards that might arise from equipment contact with the energized lines. The measures used shall ensure that employees will not be exposed to hazardous differences in potential. Unless the employer can demonstrate that the methods in use protect each employee from the hazards that might arise if the equipment contacts the energized line, the measures used shall include all of the following techniques:
 - a. Using the best available ground to minimize the time the lines remain energized.
 - b. Bonding equipment together to minimize potential differences.
 - c. Providing ground mats to extend areas of equipotential.

- d. Employing insulating protective equipment or barricades to guard against any remaining hazardous potential differences.

Overhead Lines

Scope:

Work performed on or near overhead lines and equipment.

Requirements:

Before elevated structures, such as poles or towers, are subjected to stresses such as climbing or the installation or removal of equipment, the employer shall ascertain that the structures are capable of sustaining the additional or unbalanced stresses. If the pole or other structure cannot withstand the loads which will be imposed, it shall be braced or otherwise supported so as to prevent failure.

When poles are set, moved, or removed near exposed energized overhead conductors, the pole may not contact the conductors.

When a pole is set, moved, or removed near an exposed energized overhead conductor, the employer shall ensure that each employee wears electrical protective equipment or uses insulated devices when handling the pole and that no employee contacts the pole with non-insulated parts of his or her body.

To protect employees from falling into holes into which poles are to be placed, the holes shall be attended by employees or physically guarded whenever anyone is working nearby.

Installing and Removing Overhead Lines:

The following provisions apply to the installation and removal of overhead conductors or cable.

The employer shall use the tension stringing method, barriers, or other equivalent measures to minimize the possibility that conductors and cables being installed or removed will contact energized power lines or equipment.

The protective measures required for mechanical equipment shall also be provided for conductors, cables, and pulling and tensioning equipment when the conductor or cable is being installed or removed close enough to energized conductors that any of the following failures could energize the pulling or tensioning equipment or the wire or cable being installed or removed:

1. Failure of the pulling or tensioning equipment.
2. Failure of the wire or cable being pulled.
3. Failure of the previously installed lines or equipment.

If the conductors being installed or removed cross over energized conductors in excess of 600 volts and if the design of the circuit-interrupting devices protecting the lines so permits, the automatic closing feature of these devices shall be made inoperative.

Before lines are installed parallel to existing energized lines, the employer shall make a determination of the approximate voltage to be induced in the new lines, or work shall proceed on the assumption that the induced voltage is hazardous. Unless the employer can demonstrate that the lines being installed are not subject to the induction of a hazardous voltage or unless the lines are treated as energized, the following requirements also apply:

1. Each bare conductor shall be grounded in increments so that no point along the conductor is more than 2 miles (3.22 km) from a ground.
2. The grounds required in this section shall be left in place until the conductor installation is completed between dead ends.
3. The grounds required in this section shall be removed as the last phase of aerial cleanup.
4. If employees are working on bare conductors, grounds shall also be installed at each location where these employees are working, and grounds shall be installed at all open dead-end or catch-off points or the next adjacent structure.
5. If two bare conductors are to be spliced, the conductors shall be bonded and grounded before being spliced.

Reel handling equipment, including pulling and tensioning devices, shall be in safe operating condition and shall be leveled and aligned.

Conductor grips may not be used on wire rope, unless the grip is specifically designed for this application.

Reliable communications, through two-way radios or other equivalent means, shall be maintained between the reel tender and the pulling rig operator.

The pulling rig may only be operated when it is safe to do so.

Note: Examples of unsafe conditions include employees in locations prohibited by this section, conductor and pulling line hang-ups, and slipping of the conductor grip.

While the conductor or pulling line is being pulled (in motion) with a power-driven device, employees are not permitted directly under overhead operations or on the cross arm, except as necessary to guide the stringing sock or board over or through the stringing sheave.

Towers and Structures:

The following requirements apply to work performed on towers or other structures which support overhead lines.

The employer shall ensure that no employee is under a tower or structure while work is in progress, except where the employer can demonstrate that such a working position is necessary to assist employees working above.

Tag lines or other similar devices shall be used to maintain control of tower sections being raised or positioned, unless the employer can demonstrate that the use of such devices would create a greater hazard.

The load line may not be detached from a member or section until the load is safely secured.

Except during emergency restoration procedures, work shall be discontinued when adverse weather conditions make the work hazardous in spite of the work practices required by this section.

Note: Thunderstorms in the immediate vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that are presumed to make this work too hazardous to perform, except under emergency conditions.

Live-Line Bare-Hand Work:

Scope:

Employees using or supervising the use of the live-line bare-hand maintenance on energized lines.

Training:

Before using or supervising the use of the live-line bare-hand technique on energized circuits, employees shall be trained in the technique and in the safety requirements of this section. Employees shall receive refresher training as required by this 1910.269.

General Requirements:

Before any employee uses the live-line bare-hand technique on energized high voltage conductors or parts, the following information shall be ascertained:

1. The nominal voltage rating of the circuit on which the work is to be performed.
2. The minimum approach distances to ground of lines and other energized parts on which work is to be performed.
3. The voltage limitations of equipment to be used.

The insulated equipment, insulated tools, and aerial devices and platforms used shall be designed, tested, and intended for live-line bare-hand work. Tools and equipment shall be kept clean and dry while they are in use.

The automatic closing feature of circuit-interrupting devices protecting the lines shall be made inoperative, if the design of the devices permits.

Work may not be performed when adverse weather conditions would make the work hazardous even after the work practices required by this section are employed. Additionally, work may not be performed when winds reduce the phase-to-phase or phase-to-ground below the minimum approach distances, unless the grounded objects and other lines and equipment are covered by insulating guards.

Note: Thunderstorms in the immediate vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that are presumed to make live-line bare-hand work too hazardous to perform safely.

A conductive bucket liner or other conductive device shall be provided for bonding the insulated aerial device to the energized line or equipment.

The employee shall be connected to the bucket liner or other conductive device by the use of conductive shoes, leg clips, or other means.

Where differences in potentials at the worksite pose a hazard to employees, electrostatic shielding designed for the voltage being worked shall be provided.

Before the employee contacts the energized part, the conductive bucket liner or other conductive device shall be bonded to the energized conductor by means of a positive connection. This connection shall remain attached to the energized conductor until the work on the energized circuit is completed.

Aerial lifts to be used for live-line bare-hand work shall have dual controls (lower and upper) as follows:

1. The upper controls shall be within easy reach of the employee in the basket. On a two-basket type lift, access to the controls shall be within easy reach from either basket.
2. The lower set of controls shall be located near the base of the boom, and they shall be so designed that they can override operation of the equipment at any time.

Lower (ground level) lift controls may not be operated with an employee in the lift, except in case of emergency.

Before employees are elevated into the work position, all controls (ground level and bucket) shall be checked to determine that they are in proper working condition.

Before the boom of an aerial lift is elevated, the body of the truck shall be grounded, or the body of the truck shall be barricaded and treated as energized.

A boom-current test shall be made before work is started each day, each time during the day when higher voltage is encountered, and when changed conditions indicate a need for an additional test. This test shall consist of placing the bucket in contact with an energized source equal to the voltage to be encountered for a minimum of 3 minutes. The leakage current may not exceed 1 microampere per kilovolt of nominal phase-to-ground voltage. Work from the aerial lift shall be immediately suspended upon indication of a malfunction in the equipment.

The minimum approach distances specified in Table R-6 through Table R-10 shall be maintained from all grounded objects and from lines and equipment at a potential different from that to which the live-line bare-hand equipment is bonded, unless such grounded objects and other lines and equipment are covered by insulating guards.

While an employee is approaching, leaving, or bonding to an energized circuit, the minimum distances in Table R-6 through Table R-10 shall be maintained between the employee and any grounded parts, including the lower boom and portions of the truck.

While the bucket is positioned alongside an energized bushing or insulator string, the phase-to-ground minimum approach distances of Table R-6 through Table R-10 shall be maintained between all parts of the bucket and the grounded end of the bushing or insulator string or any other grounded surface.

Hand lines may not be used between the bucket and the boom or between the bucket and the ground. However, non-conductive type hand lines may be used from conductor to ground if not supported from the bucket. Ropes used for live-line bare-hand work may not be used for other purposes.

Non-insulated equipment or material may not be passed between a pole or structure and an aerial lift while an employee working from the bucket is bonded to an energized part.

A minimum approach distance table reflecting the minimum approach distances listed in Table R-6 through Table R-10 shall be printed on a plate of durable non-conductive material. This table shall be mounted so as to be visible to the operator of the boom.

A non-conductive measuring device shall be readily accessible to assist employees in maintaining the required minimum approach distance.

Line-Clearance Tree Trimming

Scope:

Line-clearance tree trimmers only. Does not apply to qualified employees. A qualified employee is an employee that has been trained to work on energized electric power generation, transmission, and distribution installations. Line-clearance tree trimmers are not considered to be "qualified employees".

Electrical Hazards:

Before an employee climbs, enters, or works around any tree, a determination shall be made of the nominal voltage of electric power lines posing a hazard to employees. However, a determination of the maximum nominal voltage to which an employee will be exposed may be made instead, if all lines are considered as energized at this maximum voltage.

There shall be a second line-clearance tree trimmer within normal (this is, unassisted) voice communication under any of the following conditions:

If a line-clearance tree trimmer is to approach more closely than 10 feet (305 cm) any conductor or electrical apparatus energized at more than 750 volts or,

1. If branches or limbs being removed are closer to lines energized at more than 750 volts than the distances listed in Table R-6, Table R-9, and Table R-10 or,
2. If roping is necessary to remove branches or limbs from such conductors or apparatus.

Line-clearance tree trimmers shall maintain the minimum approach distances from energized conductors given in Table R-6, Table R-9, and Table R-10.

Branches that are contacting exposed energized conductors or equipment or that are within the distances specified in Table R-6, Table R-9, and Table R-10 may be removed only through the use of insulating equipment.

Ladders, platforms, and aerial may not be brought closer to an energized part than the distances listed in Table R-6, Table R-9, and Table R-10.

Line-clearance tree trimming work may not be performed when adverse weather conditions make the work hazardous in spite of the work practices required by this section. Each employee performing line-clearance tree trimming work in the aftermath of a storm or under similar emergency conditions shall be trained in the special hazards related to this type of work.

Note: Thunderstorms in the immediate vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that are presumed to make line-clearance tree trimming work too hazardous to perform safely.

Brush chippers shall be equipped with a locking device in the ignition system.

Access panels for maintenance and adjustment of the chipper blades and associated drive train shall be in place and secure during operation of the equipment.

Brush chippers not equipped with a mechanical in feed system shall be equipped with an in feed hopper of length sufficient to prevent employees from contacting the blades or knives of the machine during operation.

Trailer chippers detached from trucks shall be chocked or otherwise secured.

Each employee in the immediate area of an operating chipper feed table shall wear personal protective equipment.

Sprayers and Related Equipment:

Walking and working surfaces of sprayers and related equipment shall be covered with slip-resistant material. If slipping hazards cannot be eliminated, slip-resistant footwear or handrails and stair rails may be used instead of slip-resistant material.

Equipment on which employees stand to spray while the vehicle is in motion shall be equipped with guardrails around the working area.

Stump Cutters:

Stump cutters shall be equipped with enclosures or guards to protect employees.

Each employee in the immediate area of stump grinding operations (including the stump cutter operator) shall wear personal protective equipment

Gasoline-Engine Power Saws:

Gasoline-engine power saw operations shall meet the following requirements:

1. Each power saw weighing more than 15 pounds (6.8 kilograms, service weight) that is used in trees shall be supported by a separate line, except when work is performed from an aerial lift and except during topping or removing operations where no supporting limb will be available.
2. Each power saw shall be equipped with a control that will return the saw to idling speed when released.
3. Each power saw shall be equipped with a clutch and shall be so adjusted that the clutch will not engage the chain drive at idling speed.
4. A power saw shall be started on the ground or where it is otherwise firmly supported. Drop starting of saws over 15 pounds (6.8 kg) is permitted outside of the bucket of an aerial lift only if the area below the lift is clear of personnel.
5. A power saw engine may be started and operated only when all employees other than the operator are clear of the saw.
6. A power saw may not be running when the saw is being carried up into a tree by an employee.
7. Power saw engines shall be stopped for all cleaning, refueling, adjustments, and repairs to the saw or motor, except as the manufacturer's servicing procedures require otherwise.

Backpack Power Units:

While a backpack power unit is running, no one other than the operator may be within 10 feet (305 cm) of the cutting head of a brush saw.

A backpack power unit shall be equipped with a quick shutoff switch readily accessible to the operator.

Backpack power unit engines shall be stopped for all cleaning, refueling, adjustments, and repairs to the saw or motor, except as the manufacturer's servicing procedures require otherwise.

Rope:

Climbing ropes shall be used by employees working aloft in trees. These ropes shall have a minimum diameter of 0.5 inch (1.2 cm) with a minimum breaking strength of 2,300 pounds (10.2 kN). Synthetic rope shall have elasticity of not more than 7 percent.

Rope shall be inspected before each use and, if unsafe (for example, because of damage or defect), may not be used.

Rope shall be stored away from cutting edges and sharp tools. Rope contact with corrosive chemicals, gas, and oil shall be avoided.

When stored, rope shall be coiled and piled, or shall be suspended, so that air can circulate through the coils.

Rope ends shall be secured to prevent their unraveling.

Climbing rope may not be spliced to effect repair.

A rope that is wet, that is contaminated to the extent that its insulating capacity is impaired, or that is otherwise not considered to be insulated for the voltage involved may not be used near exposed energized lines.

Fall Protection:

Each employee shall be tied in with a climbing rope and safety saddle when the employee is working above the ground in a tree, unless he or she is ascending into the tree.

Communication Facilities

Microwave Transmission:

The employer shall ensure that no employee looks into an open waveguide or antenna that is connected to an energized microwave source.

If the electromagnetic radiation level within an accessible area associated with microwave communication systems exceeds the radiation protection guide given in 29 CFR 1910.97 (a)(2), the area shall be posted with a warning symbol described in 29 CFR 1910.97 (a)(3). The lower half of the warning symbol shall include the following statements or ones that the employer can demonstrate are equivalent: "Radiation in this area may exceed hazard limitations and special precautions are required. Obtain specific instruction before entering".

When an employee works in an area where the electromagnetic radiation could exceed the radiation protection guide, the employer shall institute measures that ensure that the employee's exposure is not greater than that permitted by that guide. Such measures may include administrative and engineering controls and personal protective equipment.

Power Line Carriers:

Power line carrier work, including work on equipment used for coupling carrier current to power line conductors, shall be performed in accordance with the requirements pertaining to work on energized lines.

Radiation Protection Guide

For normal environmental conditions and for incident electromagnetic energy of frequencies from 10 MHz to 100 GHz, the radiation protection guide is 10 mW/cm² (milliwatt per square centimeter) as averaged over any possible 0.1 hour period. This means the following:

Power density: 10 mW/cm² for periods of 0.1 hour or more.

Energy density: 1 mW h/cm² (milliwatt hour per square centimeter) during any 0.1 hour period.

This guide applies whether the radiation is continuous or intermittent.

These formulated recommendations pertain to both whole body irradiation and partial body irradiation. Partial body irradiation must be included since it has been shown that some parts of the human body (e.g., eyes, testicles) may be harmed if exposed to incident radiation levels significantly in excess of the recommended levels.

Underground Electrical Installation

Scope:

Safe work practices on underground electrical installations in manholes or subsurface vaults.

Access:

A ladder or other climbing device shall be used to enter and exit a manhole or subsurface vault exceeding 4 feet (122 cm) in depth. No employee may climb into or out of a manhole or vault by stepping on cables or hangers.

Lowering Equipment Into Manholes:

Equipment used to lower materials and tools into manholes or vaults shall be capable of supporting the weight to be lowered and shall be checked for defects before use. Before tools or material are lowered into the opening for a manhole or vault, each employee working in the manhole or vault shall be clear of the area directly under the opening.

Attendants for Manholes:

While work is being performed in a manhole containing energized electric equipment, an employee with first aid and CPR training shall be available on the surface in the immediate vicinity to render emergency assistance.

Occasionally, the employee on the surface may briefly enter a manhole to provide assistance, other than emergency. Except, if that attendant is in charge of a confined (Enclosed) space.

For the purpose of inspection, housekeeping, taking readings, or similar work, an employee working alone may enter, for brief periods of time, a manhole where energized cables or equipment are in service, if the employer can demonstrate that the employee will be protected from all electrical hazards.

Reliable communications, through two-way radios or other equivalent means, shall be maintained among all employees involved in the job.

Duct Rods:

If duct rods are used, they shall be installed in the direction presenting the least hazard to employees. An employee shall be stationed at the far end of the duct line being rodded to ensure that the required minimum approach distances are maintained.

Multiple Cables:

When multiple cables are present in a work area, the cable to be worked shall be identified by electrical means, unless its identity is obvious by reason of distinctive appearance or location or by other readily apparent means of identification. Cables other than the one being worked shall be protected from damage.

Moving Cables:

Energized cables that are to be moved shall be inspected for defects.

Defective Cables:

Where a cable in a manhole has one or more abnormalities that could lead to or be an indication of an impending fault, the defective cable shall be de-energized before any employee may work in the manhole, except when service load conditions and a lack of feasible alternatives require that the cable remain energized. In that case, employees may enter the manhole provided they are protected from the possible effects of a failure by shields or other devices that are capable of containing the adverse effects of a fault in the joint.

Note: Abnormalities such as oil or compound leaking from cable or joints, broken cable sheaths or joint sleeves, hot localized surface temperatures of cables or joints, or joints that are swollen beyond normal tolerance are presumed to lead to or be indication of an impending fault.

Sheath Continuity:

When work is performed on buried cable or on cable in manholes, metallic sheath continuity shall be maintained or the cable sheath shall be treated as energized.

Substations

Scope:

Employees performing work in any area of the substation.

This section is intended to supplement rather than modify the more general requirements provided elsewhere in these procedures.

Access and Working Space:

In substations, sufficient access and working space shall be provided and maintained about electric equipment to permit ready and safe operation and maintenance of such equipment.

Draw out Type Circuit Breakers:

In substations, when draw out type circuit breakers are removed or inserted, provisions to ensure that the breaker is in the open position are required. The control circuit shall be rendered inoperative if the design of the equipment permits.

Substation Fences:

Conductive fences around substations shall be grounded. When a substation fence is expanded or a section is removed, fence grounding continuity shall be maintained, and bonding shall be used to prevent electrical discontinuity.

Guarding of Rooms Containing Electric Supply Equipment:

Rooms and spaces in which electric supply lines or equipment are installed shall meet specific requirements under the following conditions:

1. If exposed live parts operating at 50 to 150 volts to ground are located within 8 feet of the ground or other working surface inside the room or space,
2. If live parts operating at 151 to 600 volts and located within 8 feet of the ground or other working surface inside the room or space are guarded only by location, or
3. If live parts operating at more than 600 volts are located within the room or space, unless:
 - a. The live parts are enclosed within grounded, metal-enclosed equipment whose only openings are designed so that foreign objects inserted in these openings will be deflected from energized parts, or
 - b. The live parts are installed at a height above ground and any other working surface that provides protection at the voltage to which they are energized corresponding to the protection provided by an 8 foot height at 50 volts.

The requirements of the rooms and spaces are as follows:

1. The rooms and spaces shall be so enclosed within fences, screens, partitions, or walls as to minimize the possibility that unqualified persons will enter.
2. Signs warning unqualified persons to keep out shall be displayed at entrances to the rooms and spaces.
3. Entrances to rooms and spaces that are not under the observation of an attendant shall be kept locked.
4. Unqualified persons may not enter the rooms or spaces while the electric supply lines or equipment is energized.

Guarding of Energized Parts:

Guards shall be provided around all live parts operating at more than 150 volts to ground without an insulating covering, unless the location of the live parts gives sufficient horizontal or vertical or a combination of these clearances to minimize the possibility of accidental employee contact.

Except for fuse replacement and other necessary access by qualified persons, the guarding of energized parts within a compartment is maintained during operation and maintenance functions to prevent accidental contact with energized parts and to prevent tools or other equipment from being dropped on energized parts.

When guards are removed from energized equipment, barriers shall be installed around the work area to prevent employees who are not working on the equipment, but who are in the area, from contacting the exposed live parts.

Substation Entry:

Upon entering an attended substation, each employee other than those regularly working in the station shall report his or her presence to the employee in charge in order to receive information on special system conditions affecting employee safety.

The job briefing shall cover such additional subjects as the location of energized equipment in or adjacent to the work area and the limits of any de-energized work area.

Who Must Be Trained:

All employees must be trained who are exposed or may be exposed to the hazards of electric substations.

Power Generation

Effective Date: May 31, 1994, except combustible atmospheres associated with coal handling (February 1, 1996).

Scope:

Employees performing work associated with electric power generating plants.

Interlocks and Other Safety Devices:

Interlocks and other safety devices shall be maintained in a safe, operable condition and no interlock or other safety device may be modified to defeat its function, except for test, repair, or adjustment of the device.

For example, pressure vessels are commonly equipped with safety relief valves. Modifying or removing these valves would expose employees to a possible explosion.

Changing Brushes:

Before exciter or generator brushes are changed while the generator is in service, the exciter or generator field shall be checked to determine whether a ground condition exists. The brushes may not be changed while the generator is energized if a ground condition exists.

Access and Working Space:

In electric generating plants, sufficient access and working space shall be provided and maintained about electric equipment to permit ready and safe operation and maintenance of such equipment.

Guarding of Rooms Containing Electric Supply Equipment:

Rooms and spaces in which electric supply lines or equipment are installed shall meet specific requirements under the following conditions:

1. If exposed live parts operating at 50 to 150 volts to ground are located within 8 feet of the ground or other working surface inside the room or space,
2. If live parts operating at 151 to 600 volts and located within 8 feet of the ground or other working surface inside the room or space are guarded only by location or
3. If live parts operating at more than 600 volts are located within the room or space, unless:
 - a. The live parts are enclosed within grounded, metal-enclosed equipment whose only openings are designed so that foreign objects inserted in these openings will be deflected from energized parts, or
 - b. the live parts are installed at a height above ground and any other working surface that provides protection at the voltage to which they are energized corresponding to the protection provided by an 8 foot height at 50 volts.

The requirements of the rooms and spaces are as follows:

1. The rooms and spaces shall be so enclosed within fences, screens, partitions, or walls as to minimize the possibility that unqualified persons will enter.
2. Signs warning unqualified persons to keep out shall be displayed at entrances to the rooms and spaces.
3. Entrances to rooms and spaces that are not under the observation of an attendant shall be kept locked.
4. Unqualified persons may not enter the rooms or spaces while the electric supply lines or equipment is energized.

Guarding of Energized Parts:

Guards shall be provided around all live parts operating at more than 150 volts to ground without an insulating covering, unless the location of the live parts gives sufficient horizontal or vertical or a combination of these clearances to minimize the possibility of accidental employee contact.

Except for fuse replacement and other necessary access by qualified, the guarding of energized parts within a compartment shall be maintained during operation and maintenance functions to prevent accidental contact with energized parts and to prevent tools or other equipment from being dropped on energized parts.

When guards are removed from energized equipment, barriers shall be installed around the work area to prevent employees who are not working on the equipment, but who are in the area, from contacting the exposed live parts.

Water or Steam Spaces:

When working in water and steam spaces associated with boilers, a designated employee shall inspect conditions before work is permitted and after its completion. Eye protection, or full face protection if necessary, shall be worn at all times when condenser, heater, or boiler tubes are being cleaned.

When working in water and steam spaces associated with boilers, where it is necessary for employees to work near tube ends during cleaning, shielding shall be installed at the tube ends.

Chemical Cleaning of Boiler and Pressure Vessels:

Areas where chemical cleaning of boilers and pressure vessels is in progress shall be cordoned off to restrict access during cleaning. If flammable liquids, gases, or vapors or combustible materials are used or may be produced during the cleaning process, the following requirements also apply:

1. The area shall be posted with signs restricting entry and warning of the hazards of fire and explosion.
2. Smoking, welding, and other possible ignition sources are prohibited in these restricted areas.
3. The number of personnel in the restricted areas shall be limited to those necessary to accomplish the task safely.
4. There shall be ready access to water or showers for emergency use.
5. Employees in restricted areas shall wear protective equipment meeting the requirements of Subpart I of this part and including, but not limited to, protective clothing, boots, goggles, and gloves.

Chlorine Systems:

Chlorine system enclosures shall be posted with signs restricting entry and warning of the hazard to health and the hazards of fire and explosion.

Only designated employees may enter the restricted chlorine system area. Additionally, the number of personnel shall be limited to those necessary to accomplish the task safely.

Emergency repair kits shall be available near the shelter or enclosure to allow for the prompt repair of leaks in chlorine lines, equipment, or containers.

Before repair procedures are started, chlorine tanks, pipes, and equipment shall be purged with dry air and isolated from other sources of chlorine.

The employer shall ensure that chlorine is not mixed with materials that would react with the chlorine in a dangerously exothermic or other hazardous manner.

Boilers/Ash Hoppers:

Before internal furnace or ash hopper repair work is started, overhead lines shall be inspected for possible falling objects. If the hazard of falling objects exists, overhead protection such as planking or nets shall be provided.

When opening an operating boiler door, employees shall stand clear of the opening of the door to avoid the heat blast and gases which may escape from the boiler.

Turbine Generators:

Smoking and other ignition sources are prohibited near hydrogen or hydrogen sealing systems, and signs warning of the danger of explosion and fire shall be posted.

Excessive hydrogen makeup or abnormal loss of pressure shall be considered as an emergency and shall be corrected immediately.

A sufficient quantity of inert gas shall be available to purge the hydrogen from the largest generator.

Coal and Ash Handling:

Only designated persons shall operate railroad equipment.

Before a locomotive or locomotive crane is moved, a warning shall be given to employees in the area.

Employees engaged in switching or dumping cars may not use their feet to line up draw heads.

Draw heads and knuckles may not be shifted while locomotives or cars are in motion.

When a railroad car is stopped for unloading, the car shall be secured from displacement that could endanger employees.

An emergency means of stopping dump operations shall be provided at rail car dumps.

The employer shall ensure that employees who work in coal or ash handling conveyor areas are trained and knowledgeable in conveyor operation and in the requirements of this standard which include the following items:

1. Employees may not ride a coal or ash handling conveyor belt at any time. Employees may not cross over the conveyor belt, except at walkways, unless the conveyor's energy source has been de-energized and has been locked out or tagged in accordance with the Hazardous Energy Control (Lockout/Tag out) Standards.
2. A conveyor that could cause injury when started may not be started until personnel in the area are alerted by a signal or by a designated person that the conveyor is about to start.
3. If a conveyor that could cause injury when started is automatically controlled or is controlled from a remote location, an audible device shall be provided that sounds an alarm that will be recognized by each employee as a warning that the conveyor will start and that can be clearly heard at all points along the conveyor where personnel may be present. The warning device shall be actuated by the device starting the conveyor and continues for a period of time before the conveyor starts that are long enough to allow employees to move clear of the conveyor system. A visual warning may be used in place of the audible device if the employer demonstrates that it will provide an equally effective warning in the particular circumstances involved.

Exception: If the employer can demonstrate that the system's function would be seriously hindered by the required time delay, warning signs may be provided in place of the audible warning device. If the system was installed before January 31, 1995, warning signs may be provided in place of the audible warning device until such time as the conveyor or its control system is rebuilt or rewired. These warning signs shall be clear, concise, and legible and shall indicate that conveyors and allied equipment may be started at any time, that danger exists, and that personnel must keep clear. These warning signs shall be provided along the conveyor at areas not guarded by position or location.

Remotely and automatically controlled conveyors, and conveyors that have operating stations which are not manned or which are beyond voice and visual contact from drive areas, loading areas, transfer points, and other locations on the conveyor path not guarded by location, position, or guards shall be furnished with emergency stop buttons, pull cords, limit switches, or similar emergency stop devices. However, if the employer demonstrates that the design, function, and operation of the conveyor do not expose an employee to hazards, an emergency stop device is not required.

1. Emergency stop devices shall be easily identifiable in the immediate vicinity of such locations.
2. An emergency stop device shall act directly on the control of the conveyor involved and may not depend on the stopping of any other equipment.
3. Emergency stop devices shall be installed so that they cannot be overridden from other locations.

Where coal handling operations may produce a combustible atmosphere from fuel sources or from flammable gases or dust, sources of ignition shall be eliminated or safely controlled to prevent ignition of the combustible atmosphere.

Employees shall not work on or beneath overhanging coal in coal bunkers, coal silos, or coal storage areas unless the employees are protected from all hazards posed by shifting coal.

An employee entering a bunker or silo to dislodge the contents shall wear a body harness with lifeline attached. The lifeline is secured to a fixed support outside the bunker and is attended at all times by an employee located outside the bunker or facility.

Hydro Plants and Equipment:

Employees working on or close to water gates, valves, intakes, fore bays, flumes, or other locations where increased or decreased water flow or levels may pose a significant hazard shall be warned and shall vacate such dangerous areas before water flow changes are made.

Who Must Be Trained:

All employees must be trained who are exposed or may be exposed to the hazards in the unique areas in electric power generating plants discussed above.

Special Conditions

Scope:

Employees performing work or may be exposed to "special or unique" hazards associated with electric power generation, transmission, or distribution work in the following areas.

Capacitors:

Before employees work on capacitors, the capacitors shall be disconnected from energized sources and, after a wait of at least 5 minutes from the time of disconnection, the capacitors are short circuited.

Before the units are handled, each unit in series-parallel capacitor banks shall be short circuited between all terminals and the capacitor case or its rack. If the cases of capacitors are on ungrounded substation racks, the racks shall be bonded to the ground.

Any line to which capacitors are connected shall be short circuited before it is considered de-energized.

Current Transformers:

The secondary of a current transformer may not be opened while the transformer is energized. If the primary of the current transformer cannot be de-energized before work is performed on an instrument, a relay, or other section of a current transformer secondary circuit, the circuit shall be bridged so that the current transformer secondary will not be opened.

Series Street Lighting:

If the open-circuit voltage exceeds 600 volts, the series street lighting circuit shall be worked in accordance with Overhead Lines or Underground Electrical Installations.

A series street lighting loop may only be opened after the street lighting transformer has been de-energized and isolated from the source of supply or after the loop is bridged to avoid an open-circuit condition.

Illumination:

Sufficient illumination shall be provided to enable the employee to perform the work safely.

Protection Against Drowning:

Whenever an employee may be pulled or pushed or may fall into water where the danger of drowning exists, the employee shall be provided with and shall use US Coast Guard approved personal flotation devices.

Each personal flotation device shall be maintained in safe condition and shall be inspected frequently enough to ensure that it does not have rot, mildew, water saturation, or any other condition that could render the device unsuitable for use.

When crossing streams or other bodies of water, employees shall use a safe means of passage, such as a bridge.

Employee Protection in Public Work Areas:

Traffic control signs and traffic control devices used for the protection of employees shall meet the requirements of §1926.200 (g) (2).

Before work is begun in the vicinity of vehicular or pedestrian traffic that may endanger employees, warning signs or flags and other traffic control devices shall be placed in conspicuous locations to alert and channel approaching traffic.

Where additional employee protection is necessary, barricades shall be used.

Excavated areas shall be protected with barricades.

At night, warning lights shall be prominently displayed.

Back feed:

If there is a possibility of voltage back feed from sources of cogeneration or from the secondary system (for example, back feed from more than one energized phase feeding a common load), the requirements of Working on or Near Exposed Energized Parts apply if the lines or equipment are to be worked as energized. The requirements of Hazardous Energy Control and Grounding for the Protection of Employees apply if the lines or equipment are to be worked as de-energized.

Lasers: Laser equipment shall be installed, adjusted, and operated in accordance with §1926.54 of the Construction standards.

Hydraulic Fluids:

Hydraulic fluids used for the insulated sections of equipment shall provide the necessary insulation for the voltage involved.

**Electric Power Generation, Transmission, and Distribution
Tables**

Table I-2 AC Proof-Test Requirements					
Class of Equipment	Proof-Test Voltage (rms V)	Maximum Proof-Test Current, mA (gloves only)			
		267 mm (10.5 in.) glove	358 mm (14 in.) glove	406 mm (16 in.) glove	457 mm (18 in.) glove
0	5,000	8	12	14	--
1	10,000	--	14	16	--
2	20,000	--	16	18	20
3	30,000	--	18	20	22
4	40,000	--	--	22	24

Table I-3 DC Proof-Test Requirements	
Class of Equipment	Proof-Test Voltage
0	20,000
1	40,000
2	50,000
3	60,000
4	70,000

Note: The dc voltages listed in this table are not appropriate for proof testing rubber insulating line hose or covers. For this equipment, dc proof tests shall use a voltage high enough to indicate that the equipment can be safely used at the voltages listed in Table I-4. See ASTM D 1050-90 and ASTM D 1049-88 for further information on proof tests for rubber insulating line hose and covers.

Table I-4 Glove Tests--Water Level*, **				
Class of Glove	AC Proof-Test		DC Proof-Test	
	mm	in.	mm	in.
0	38	1.5	38	1.5
1	38	1.5	51	2.0
2	64	2.5	76	3.0
3	89	3.5	102	4.0
4	127	5.0	153	6.0

*The water level is given as the clearance from the cuff of the glove to the waterline with a tolerance of ± 13 mm (± 0.5 in.).

**If atmospheric conditions make the specified clearances impractical, the clearances may be increased by a maximum of 25 mm (1 in.).

Table I-5 Rubber Insulating Equipment Voltage Requirements			
Class of Equipment	Maximum Use Voltage* ac, rms	Re-test Voltage** ac, rms	Re-test Voltage** dc, avg
0	1,000	5,000	20,000
1	7,500	10,000	40,000
2	17,000	20,000	50,000
3	26,500	30,000	60,000
4	36,000	40,000	70,000

*The maximum use voltage is the ac voltage (rms) classification of the protective equipment that designates the maximum nominal design voltage of the energized system that may be safely worked. The nominal design voltage is equal to the phase-to-phase voltage on multiphase circuits. However, the phase-to-ground potential is considered to be the nominal design voltage:

- If there is no multiphase exposure in a system area and if the voltage exposure is limited to the phase-to-ground potential, or
- If the electrical equipment and devices are insulated or isolated or both so that the multiphase exposure on a grounded wye circuit is removed.

**The proof-test voltage shall be applied continuously for at least 1 minute, but no more than 3 minutes.

Table I-6 Rubber Insulating Equipment Test Intervals	
Type of Equipment	When to Test
Rubber insulating hose	Upon indication that insulating value is suspect.
Rubber insulating covers	Upon indication that insulating value is suspect.
Rubber insulating blankets	Before first issue and every 12 months thereafter.*
Rubber insulating gloves	Before first issue and every 6 months thereafter.*
Rubber insulating sleeves	Before first issue and every 12 months thereafter.*

*If the insulating equipment has been electrically tested but not issued for service, it may not be placed into service unless it has been electrically tested within the previous 12 months.

Table R-6 AC Live-Line Work Minimum Approach Distance				
Nominal Voltage in Kilovolts Phase-to- Phase	Distance			
	Phase-to-Ground Exposure		Phase-to-Phase Exposure	
	(ft-in)	(m)	(ft-in)	(m)
0.05 to 1.0	Avoid Contact		Avoid Contact	
1.1 to 15.0	2-1	0.64	2-2	0.66
15.1 to 36.0	2-4	0.72	2-7	0.77
36.1 to 46.0	2-7	0.77	2-10	0.85
46.1 to 72.5	3-0	0.90	3-6	1.05
72.6 to 121	3-2	0.95	4-3	1.29
138 to 145	3-7	1.09	4-11	1.50
161 to 169	4-0	1.22	5-8	1.71
230 to 242	5-3	1.59	7-6	2.27
345 to 362	8-6	2.59	12-6	3.80
500 to 550	11-3	3.42	18-1	5.50
765 to 800	14-11	4.53	26-0	7.91

Table R-7
 AC Live-Line Work Minimum Approach Distance
 With Overvoltage Factor Phase-to-Ground Exposure

Maximum Anticipated Per Unit Transient Overvoltage	Distance in Feet-Inches						
	Maximum Phase-to-Phase Voltage in Kilovolts						
	121	145	169	242	362	552	800
1.5						6-0	9-8
1.6						6-6	10-8
1.7						7-0	11-8
1.8						7-7	12-8
1.9						8-1	13-9
2.0	2-5	2-9	3-0	3-10	5-3	8-9	14-11
2.1	2-6	2-10	3-2	4-0	5-5	9-4	
2.2	2-7	2-11	3-3	4-1	5-9	9-11	
2.3	2-8	3-0	3-4	4-3	6-1	10-6	
2.4	2-9	3-1	3-5	4-5	6-4	11-3	
2.5	2-9	3-2	3-6	4-6	6-8		
2.6	2-10	3-3	3-8	4-8	7-1		
2.7	2-11	3-4	3-9	4-10	7-5		
2.8	3-0	3-5	3-10	4-11	7-9		
2.9	3-1	3-6	3-11	5-1	8-2		
3.0	3-2	3-7	4-0	5-3	8-6		

Table R-8 AC Live-Line Work Minimum Approach Distance With Overvoltage Factor Phase-to-Phase Exposure							
Maximum Anticipated Per Unit Transient Overvoltage	Distance in Feet-Inches						
	Maximum Phase-to-Phase Voltage in Kilovolts						
	121	145	169	242	362	552	800
1.5						7-4	12-1
1.6						8-9	14-6
1.7						10-2	17-2
1.8						11-7	19-11
1.9						13-2	22-11
2.0	3-7	4-1	4-8	6-1	8-7	14-10	26-0
2.1	3-7	4-2	4-9	6-3	8-10	15-7	
2.2	3-8	4-3	4-10	6-4	9-2	16-4	
2.3	3-9	4-4	4-11	6-6	9-6	17-2	
2.4	3-10	4-5	5-0	6-7	9-11	18-1	
2.5	3-11	4-6	5-2	6-9	10-4		
2.6	4-0	4-7	5-3	6-11	10-9		
2.7	4-1	4-8	5-4	7-0	11-2		
2.8	4-1	4-9	5-5	7-2	11-7		
2.9	4-2	4-10	5-6	7-4	12-1		
3.0	4-3	4-11	5-8	7-6	12-6		

Table R-9 DC Live-Line Work Minimum Approach Distance With Overvoltage Factor					
Maximum Anticipated Per Unit Transient Overvoltage	Distance in Feet-Inches				
	Maximum Line-to-Ground Voltage in Kilovolts				
	250	400	500	600	750
1.5 or Lower	3-8	5-3	6-9	8-7	11-10
1.6	3-0	5-7	7-4	9-5	13-1
1.7	4-1	6-0	7-1	10-3	14-4
1.8	4-3	6-5	8-7	11-2	15-9

Table R-10 Altitude Correction Factor		
Altitude		Correction Factor
Feet	M	
3,000	900	1.00
4,000	1,200	1.02
5,000	1,500	1.05
6,000	1,800	1.08
7,000	2,100	1.11
8,000	2,400	1.14
9,000	2,700	1.17
10,000	3,000	1.20
12,000	3,600	1.25
14,000	4,200	1.30
16,000	4,800	1.35
18,000	5,400	1.39
20,000	6,000	1.44

PERSONAL PROTECTIVE EQUIPMENT

Purpose

The purpose of this program is to assess the need for appropriate Personal Protective Equipment (PPE). Each unique job designation which incorporates specific use of equipment and/or procedures will be assessed for the need of specific PPE's and documented within this program.

Equipment

All equipment shall be certified PPE's. Equipment specified within the job assessments will be used while performing work duties for that operation. Affected employees are not permitted to substitute any equipment in place of the specified PPE's unless first cleared with management and the safety coordinator.

Training

All employees will be trained on the following topics concerning the required PPE's for their work area and/or function:

- When PPE is necessary

- What PPE is necessary

- How to properly don, doff, adjust, and wear PPE

- The limitations of the PPE

- The proper care, maintenance, useful life and disposal of the PPE

All employees will demonstrate an understanding of the training topics and proper use of the equipment.

Compliance

Any employee who is not in compliance with the PPE requirements and procedures will be immediately subject to the appropriate reprimand procedures.

EMERGENCY RESPONSE PROCEDURES

In order to best handle a Major Emergency that might arise, we feel two things need to be considered first.

Form an "Emergency Response Team", headed by a selected leader, and two or more members, all trained to know the best procedures to handle the difference emergencies.

Identify the major emergencies that could occur.

Forming An Emergency Response Team

Team to be headed by a selected leader.

Members should be selected so that at least one or more members are generally present anytime employees are working.

Items that members must learn and know:

Be familiar with the entire physical facility.

Be familiar with the chemicals used in facility.

All emergency and rescue numbers, where and how to use.

Location and how to operate all firefighting equipment.

Location and how to use the MSDS book on Chemicals.

Accepted procedure regarding gas supply.

Accepted procedure regarding electric supply.

Location and how to turn off main water supply.

Names of employees trained to do special or rescue procedures.

Where to locate and how to use First Aid supplies and equipment.

How to use the Lock Out procedures on equipment.

How to make out a "Report of Emergency".

List of Major Emergencies

Accident
Fire, Explosion or electrical
Weather
Medical

IN CASE OF EMERGENCY

GENERAL PROCEDURE

First person at emergency will sound general alarm and notify a member of the Emergency Response Team (henceforth known as ERT).

First ERT member on scene will take charge and will take the following steps:

See that any emergency phone numbers needed are called.

If necessary, will see that employees are evacuated to designated area and a head count taken.

Assess any serious medical problems.

Protect emergency site from traffic and try to stop any further injuries or damage.

See that area is made safe for traffic before allowing re-entry or notifying All Clear.

ERT member in charge will make a Report of Emergency.

In case of: ACCIDENT EMERGENCY

Notify necessary medical, fire or rescue personnel as needed.

Keep emergency area clear.

ERT member in charge will do a report on emergency.

In case of: FIRE, ELECTRICAL AND/OR EXPLOSION EMERGENCY

Notify necessary Medical and/or fire and rescue personnel as needed.

Turn off affected utilities at respective mains.

Keep area clear of traffic.

Clear area for traffic or rope area off.

ERT member in charge will do report of emergency.

In case of: **CHEMICAL EMERGENCY**

Get medical assistance, if necessary.

BLOCK OFF AREA

Notify necessary ERT or other personnel needed to handle Emergency.

Clean up area according to M.S.D.S. sheet on chemicals involved, using approved safety equipment.

ERT member in charge will do a report of the emergency.

In Case of: **WEATHER EMERGENCY**

Direct employees to safest area in case of alert.

In case of storm damage, person in charge will apply any of the above procedures as deemed necessary.

ERT member in charge will do report on emergency.

In case of: **MEDICAL EMERGENCY**

Notify necessary medical assistance, ERT or other personnel needed to handle emergency.

Keep Emergency area clear.

See that area is returned to safety for traffic.

ERT member in charge will do a report of the emergency.