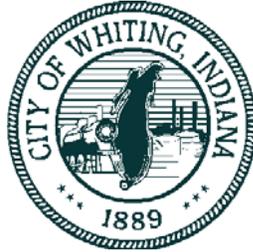


CITY OF WHITING, INDIANA



SAFETY POLICY MANUAL

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WHITING SAFETY BOARD MISSION STATEMENT

The City Of Whiting is committed to worker safety, and strives to provide a safe and healthy work environment for all employees. To this end, the City of Whiting has created a Safety Board whose goal is to constantly evaluate the working conditions of City employees, as well as compliance with all OSHA and other similar regulations. The Safety Board is committed to the prevention of occupational illness, injury and property damage. To this end:

- ❑ Each department head, manager, supervisor, foreman and work leader is responsible and accountable for creating a safe working environment and for the safe work practices of employees. In addition, all employees and contractors have an individual obligation to work and act safely at all times and to ensure the safety of their colleagues.
- ❑ Similarly, our employees must include safety considerations and observe safe working practices in all aspects of planning, design, supply, construction, operation, and administrative work.

CITY OF WHITING

SAFETY POLICY MANUAL

INTRODUCTION

The City Of Whiting is sincerely concerned with the safety and welfare of its employees and the public it serves. It acknowledges an obligation as an employer to provide the safest possible working environment for all employees. It also acknowledges as a public entity the need to provide a safe environment for the public that uses our services.

The primary purpose of this manual is to acquaint you with general safety rules and policies. It reflects the efforts of many people to establish reasonable, practical, and safe work practices to prevent accidents.

In order to perform public services without accidents, it is the responsibility of all City employees to contribute to that end. The attitude which should guide our efforts is as follows:

1. Accidents can be prevented.
2. Safety is the mark of skill and good sense.
3. The City is sincerely interested in safety and is willing to pay in time and money to prevent accidents.
4. Safety is a personal responsibility as well as a supervisory responsibility.
5. No job is so important and no service so urgent that we cannot take time to perform it safely.
6. We owe a moral obligation to each other and to the public to do everything possible to prevent accidents.
7. Our work areas and equipment should be kept as safe and clean as possible.
8. As hazards are noticed, they should be reported to supervisory personnel as soon as possible.
9. You should report all unsafe conditions encountered during your work day.
10. You are not expected to undertake a job until you have learned how to do it and are authorized to do so by your superintendent or supervisor.
11. All injuries must be reported immediately to your superintendent or supervisor.
12. Compliance with safety rules, general and departmental, is a condition of employment.
13. Safe workers benefit themselves, their families, their fellow workers, and the City they serve. Safety should be made a way of life and not restricted to the job only.

ORGANIZATION OF DEPARTMENTAL SAFETY COMMITTEE

The Departmental Safety Committee is established to create and maintain an active interest in safety and to serve as a means of safety communication. In addition, it expects the employees to share in the work of accident prevention.

This committee will consist of 8 members appointed by the Mayor:

Police - 1
Fire - 1
Street - 1
Teamster - 1
Water - 1
Retention Basin - 1
Park - 1
Administration - 2

Responsibilities of the Departmental Safety Committee will be to:

- 1 . Keep department employees informed on safety matters.
2. Make safety activities an integral part of the department's operations.
3. Provide a means for the free discussion of accident problems and the means for elimination of these problems.
4. Evaluate safety suggestions provided by the employees. Forward suggestions that have a departmental impact to the Department Head.
5. Conduct other safety activities as determined by the Department Head.
6. Develop policies and procedures to improve safety within the department. Make recommendations to the department heads to improve safety conditions and eliminate hazards.

The Departmental Safety Committee will meet at least monthly, at a time and place specified by the Chairperson. Time will be allowed during normal working hours. It is the responsibility of the Chairperson to confine the discussion and to conduct the meeting in a timely manner. Special meetings will be convened when necessary. An agenda shall be prepared by the Chairman and distributed to all members, the department heads and the Mayor. This will allow members to be better prepared to discuss agenda items.

1.0 **RESPONSIBILITIES**

1.1 **Mayor / Administrator**

The Mayor has the ultimate responsibility for *safety* in the organization under his management control. However, for practical purposes, the authority for safe operations is delegated down through all management levels.

1.2 **Departmental Heads / Supervisors**

The Departmental Superintendents or Supervisors will be responsible for the maintenance of safety working conditions within their department. Personal leadership will be provided in interpreting safety policy and actively supporting it. This will set an example to those responsible to him/her, and give equal emphasis and weight to such factors as work production, cost and quality. The Department Heads will actively support the work of the City Safety Committee and will promptly review the feasibility of accident prevention recommendations. Programs will be established and directions issued to implement feasible recommendations.

1.3 **Superintendent, Foremen, And Crew Leaders**

These employees are key persons in the safety program. Because of their constant contact with employees, they have the ultimate responsibility for the safety of other employees. To discharge their responsibility, they must make certain that: Each employee understands and follows established work procedures; necessary safety precautions are observed, including the use of proper safeguards and personal protective equipment; facilities and equipment are properly maintained; items that represent an accident potential are identified, reported and eliminated; and safety information is disseminated to the employees.

Supervisors must be receptive to safety suggestions of employees and ensure that they are forwarded to the next higher level of management for evaluation.

2.0 JOB SAFETY TRAINING PROGRAM

- 2.1 Safety training will be conducted on an ongoing basis for members of the various departments. Appropriate training will be given to all employees (new, transferred, current) on a three-year cycle training program. Specific training will be given according to the appropriate job skill areas. Additionally, training periods will be scheduled whenever a change occurs in safety procedures or equipment.
- 2.2 All training activities shall be recorded with the safety training record system.
- 2.3 Areas of training identified by the Departmental Safety Committee include:
- A. Accident reporting and worker's compensation
 - B. Blood borne pathogens
 - C. Chlorine handling
 - D. Confined space entry
 - E. Defensive driving
 - F. Excavation and trenching
 - G. Fall protection
 - H. Fire extinguishers
 - I. First aid
 - J. Flagging
 - K. General safety
 - L. Hand signal communication
 - M. Hand/power tools
 - N. Hazard communication
 - O. Hearing protection
 - P. Heavy objects (lifting & moving)
 - Q. Ladder safety
 - R. Lawn mower
 - S. Orientation
 - T. Personal protection - Ear
 - U. Personal protection - Eye
 - V. Personal protection - Foot and Hand
 - W. Personal protection - Head
 - X. Personal protection - Respiratory
 - Y. Road crew safety
 - Z. Rules on machine use
 - AA. Snowblower safety
 - BB. Trenching/excavating
 - CC. Welding equipment
 - DD. work zone safety

Note: (Some safety programs are not applicable to all departments)

2.4 Job Safety Training Procedures

No Department Head should assume that a newly hired, newly assigned, or reassigned employee clearly knows all the safe job procedures. He/she must be trained. The following four-point method of job instruction has been found useful for most operations.

A. Preparation

1. Put the employee at ease.
2. Define the job, and find out what the employee already knows about the job.
3. Get the employee interested in the correct position for him/her to work.
4. Place the employee in the correct position for him/her to work.

B. Presentation

1. Tell, show, and illustrate one important step at a time.
2. Stress each key point.
3. Instruct clearly, completely, and patiently.

C. Performance

1. Have the employee do the job. Coach him/her while he/she works.
2. Have the employee explain each key point to you as he/she does the job again.
3. Make sure the employee understands.
4. Continue until you know the employee knows.

D. Follow-Up

1. Put the employee on his/her own.
2. Designate to whom the employee goes for help.
3. Check frequently. Encourage questions.
4. Taper off extra coaching and close follow-up.

2.5 It is the responsibility of each employee using the safety equipment provided to ensure that the safety equipment is functioning as intended before placing that equipment into service.

3.0 DRIVER SAFETY PROGRAM

3.1 General

Basic to any Driver Safety Program is the understanding by all employees that there are preventable and non-preventable accidents. These two terms are a measure of the defensive driving skills exercised by the driver involved in a given accident. If a driver did everything within reason to avoid an accident, it is classified as non-preventable. If a driver fails to do so, then the accident is preventable. Defensive driving is an attitude. The driver can prevent accidents by using initiative, alertness, foresight, knowledge, judgment and skill.

3.2 Defensive Driver's Training Course

The standard of safe driving performance is to drive without a preventable accident. This is the training area in which to concentrate our effort. All vehicle operators shall be given a refresher Defensive Driver's Training Course at least every three years.

3.3 Seat Belts

All employees will wear seat belts and other protective devices, if installed, when operating or riding in a City owned vehicle, or when operating or riding in a private vehicle when on City business.

3.4 Driver / Operator License

The department heads will establish procedures to ensure that only those persons with the proper class of Indiana Operator's License for that particular type of vehicle involved will be allowed to operate vehicles. Employees shall notify their supervisor upon revocation or suspension of their Operator's License. At the time of employees' performance evaluations, verification of possession of a valid Vehicle Operator's License shall be made.

4.0 PERSONAL PROTECTION EQUIPMENT

4.1 Inventory of Personal Protective Equipment

It shall be the responsibility of the department heads to maintain an adequate inventory of personal protective equipment at all times. Employee input as to style and type of equipment shall be taken into consideration so long as proper safety protection is provided. Personal protective equipment is defined in the Congressional Federal Register (CFR), Title 29, Chapter XVII, Part 1910, 36 FR 10466, May 29, 1971, as amended.

4.2 Personal Protection Equipment Requirements

Personal protective equipment is not to be used as a substitution for the elimination of unsafe acts or conditions, but rather as a supplemental safety measure. When job requirements dictate the wearing of protective equipment, this requirement then becomes both a part of the accident prevention effort and a condition of employment.

Required personal protective equipment is provided for the employees' use and safety. Each employee is expected to maintain and use this equipment. In instances where employees furnish their own personal equipment, the Department Head is responsible to ensure adequacy and to ensure the equipment is properly maintained. Department Heads also have the responsibility for the proper use of personal protective equipment.

The following listing of when to use personal protection is not intended to be all inclusive:

A. Eve and Face Protection

1. Protective eye and face equipment shall be used when there is a reasonable probability of injury that can be prevented by such equipment.
2. Goggles or face shield shall be used in the following specific instances:
 - a. When operating metal or woodworking machines.
 - b. When handling electrolyte batteries.
 - c. When working overhead.
 - d. When using striking tools such as chisels or punches.
 - e. When using power activated tools.
 - f. During jackhammer operations.
 - g. When using air to clean an area.
 - h. When using hazardous liquids.
 - i. And any other occasion as necessary.
3. Welding, sandblasting or metal cutting operations require special protective equipment.

B. Foot Protection

The majority of the operations conducted by this organization expose the

employee to foot injuries. Therefore, all employees engaged in field and shop work will wear work boots with a Class 75 or higher rating.

C. Hand Protection

1. Gloves are required on most of the jobs performed by the various departments. Each employee will have a suitable pair available for use.
2. Special gloves will be used for welding or cutting operations, when handling toxic materials, and on other occasions as necessary.

D. Head Protection

Many activities performed by City employees involve working below ground level with material overhead, or working near construction machinery. Hard hats are provided to prevent head injuries: from being struck by falling objects, and from bumps against objects when working in confined spaces. The proper protection is provided when the head harness is adjusted so that there is approximately 1-1/2" clearance, (plus or minus 1/8"), between the skull and the inside of the hat when it is worn. When the harness becomes worn to the extent that it no longer can be adjusted to maintain that clearance, hard hats should be turned in for repair or replacement. A hard hat is a personal item and shall be for the exclusive use of the person to whom it is issued. Plastic hard hats should be kept clean and only cleaned as per the manufacturer's specifications.

1. All employees shall be issued a hard hat and be responsible to have such head protection with them at all times during the work shift.
2. Use common sense: Always wear the hard hat where there is an overhead danger, large machinery in operation, and whenever you are four feet below the surface of the ground-or deeper. The hard hat is required when doing tank painting or repair, when mowing in a gang, and whenever there is a bumping hazard. If you determine that there is no overhead hazard, and subsequently hit your head, you will be treated for any medical problems and issued a hard hat violation.
3. **HARD HATS ARE TO BE WORN AT ALL TIMES**, with the following exceptions:
 - a. **STREETS**
 - In vehicles
 - Cleaning storm water inlets Repairing potholes Operating hydrants
 - Laying asphalt (but not digging)
 - Spreading stone
 - Clearing stone
 - Reconstructing storm water inlets

- Joint and crack sealing
 - Following the packer during garbage and recycling pickup
- b. WATER
- In vehicles
 - Turning/exercising valves
 - Maintaining and painting hydrants
 - Performing above ground maintenance
 - Restoring excavations: Shoveling, cleaning up after job
 - Checking sewer complaints
 - Sawing pipe
 - Checking lift stations, above ground
 - On storm/flood patrol, above ground
 - Cleaning inlets
- c. ENGINEERING
- In situations in the field where there are no overhead or moving machinery hazards.
- d. VEHICLE MAINTENANCE
- Inside the Vehicle Maintenance Garage
 - Performing vehicle maintenance inside the Public Works Garages, Wastewater Treatment Plant and Park Garage. In all situations in the field where there is no overhead hazard, and where it is not a designated "Hard Hat Area."
- e. RETENTION BASIN
- Shoveling sludge beds
 - Mowing grass (rider or hand mower)
 - Doing plant check
 - Working on equipment that is below head level, except where there is low piping.
 - Performing inside building maintenance
 - Climbing ladders
- f. PUBLIC WORKS AND PARK DEPARTMENT
- Planting flowers, bushes, trees, etc.
 - Weeding flower beds or sidewalks
 - Edging sidewalks
 - Cutting grass
 - Supervising workers (unless near heavy equipment) Picking up trash
 - Loading or unloading small equipment, shrubs, etc.
 - Sweeping up areas - sidewalks, streets
 - Trimming hedges, evergreens, small plants
 - Installing - general landscaping
 - Picking up 10-45's
 - Digging up flowers, bulbs, bushes, etc.
 - Roto-tilling

- Raking leaves, beds, etc.
- Laying sod/picking up sod
- Watering plants
- Inside vehicles or buildings
- Washing equipment
- Working in greenhouse or planting area
- Checking and marking trees
- Treating trees for accident or construction damage
- Talking to residents for service or information requests concerning trees, lawns, insects, sight distance, etc.
- Working on or repairing recycling bins
- Cleaning or painting equipment, signs, benches, etc.
- Setting up cones or signs for traffic
- Acting as flagperson (stop/slow sign holder)
- Spreading salt
- Using snow blower
- Shoveling snow
- Working on stump holes - removing chips, filling with dirt and seeds
- Installing or removing trash containers Filling up at gas pumps
- Hooking or unhooking trailers
- Picking up storm damage
- Doing work on ladders
- Spreading or spraying fertilizer, weedkiller, insecticides, etc.
- Inspecting trees, lawns, flower beds, etc., for disease or insects
- Locating property lines to find out if tree is on residential or public property
- Working on private property, doing landscaping
- Installing signs
- Digging post holes
- Spreading dirt to fill holes in lawns/parkways
- Repairing equipment
- Dumping at dump
- Spreading grass seed
- Pruning lower branches on trees
- Putting up signs
- Painting streets, crosswalks Installing and repairing meters
- Reading meters
- Locating and turning off/on service lines
- Visiting residents who have requests for service
- Testing meters
- Taking water samples
- Taking water plant readings
- Maintaining equipment at the garages (below head)
- Performing building maintenance

E. Ear Protection

1. Protection against the effects of occupational noise exposure shall be used when the sound level exceeds the criteria in Table 1.
2. Examples of specific cases where hearing protection is required are:
 - a. During tasks involving the operation of jackhammers
 - b. When working around high capacity pumps
 - c. Working with power lawn equipment, string trimmers and chain saws

Table 1 - Permissible Noise Exposure

<u>Duration per day, hours</u>	<u>South Level, DBA Slow Response</u>
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ or less	115

Exposure to impulsive or impact noise should not exceed 140 db peak sound pressure.

In all cases where the sound levels exceed the values shown in Table 1, a continuing, effective hearing conservation program shall be initiated.

3. Work areas will be monitored to ensure compliance with this section.

F. Respiratory Protection (Also, see Chapter 14)

1. Employees who are exposed to hazardous atmosphere that cannot be eliminated by other methods will be provided the use of respiratory equipment. The type of protective device shall be appropriate for the hazardous material involved and the extent and nature of the work performed.
2. Handling toxic materials. When entering confined areas such as manholes or lift station wet wells, the area shall be ventilated and tested for combustibles and oxygen deficiency.
3. All employees exposed to confined area entry work shall receive specific training in working in these areas.

No confined area shall be entered without proper ventilation, atmosphere testing and monitoring. Where appropriate, a safety rescue harness will be worn

by the entering employee, radio communication shall be available and established, and at least two persons must be outside above the work site. (One in and two above)

The Police Dispatcher and the Street Department Secretary shall be notified of all confined entries by the Superintendent or Supervisor requesting employees to do any work involving confined area entries. No Superintendent or Supervisor shall instruct an employee to make such an ' entry without complying with all the above provisions, and no employee shall make such entry without informing the superintendent or supervisor. Parties responsible for deviations from this policy will be subject to disciplinary action.

See Chapter 8 of this Manual for detailed information on Confined Area Entry.

G. Full Body Harnesses, Life Lines and Lanyards

1. Full body harness, life lines, and lanyards will be used to protect employees from falls and to provide a means of rescue. An example of when this equipment would be used is when entering confined areas, and when working at a height of 6ft. or greater.
2. These devices will only be used for safeguarding employees, and shall not be used for lifting equipment or materials.

5.0 WORK RELATED INJURIES

5.1 Procedures

Procedures for dealing with work related injuries are outlined below. Application of these guidelines is the responsibility of the injured employee and the Department Head of the injured employee. The Department Head will file a Supervisor's Investigation Report with the Mayor by the end of the next working day. The said report is to be filed irregardless of whether or not the injured employee received medical treatment.

5.2 Emergency Medical Treatment

If emergency medical treatment is necessary, contact the Fire Department for medical assistance and transportation. Fire Department medical personnel are responsible for transportation decisions in accordance with Fire Department and City policy.

5.3 Non-Emergency Treatment

First aid kits are available at the Public Works Department, the City Hall, the Wastewater Treatment Plant, and the Park Department. Injured employees should be *taken* to Concentra Medical Center for non-emergency, non-life threatening treatment during the hours they are open. Otherwise, injured employees should be taken to St. Catherine's in East Chicago

5.4 Follow-up Medical Treatment - Work Related Injuries

Following the accident, the injured employee shall be responsible for notifying the Department Head on an ongoing basis of his/her condition.

5.5 Inquiries

If there are any questions regarding the treatment or reporting of an employee injury, contact the Indiana Public Employers' Plan, Inc.

5.6 Departmental Safety Committee

The Departmental Safety Committee shall review all work-related injuries and, where appropriate, recommend changes in operations or policies to ensure that preventable accidents do not occur again.

6.0 SAFETY INSPECTIONS

6.1 General

Safety inspections are designed to uncover unsafe acts or conditions, determine their causes, and recommend action to eliminate the unsafe acts or conditions.

6.2 Types of Inspections

Formal Safety Inspections of all Municipal buildings, plants and grounds shall be conducted on a formal basis (annually) with a follow-up correction inspection within thirty days-to be conducted by a committee made up of a Fire Department Inspector, a member of the City Safety Committee, and the Building Commissioner.

Informal inspections shall be conducted by the Department Head on a quarterly basis, to ensure that hazards are kept at a minimum, and that safe work practices are enforced. Emphasis shall be placed upon the condition of facilities, equipment and machines, as well as the following:

- A. Good housekeeping.
- B. Use of prescribed protective equipment.
- C. Adequacy of job procedures.
- D. Qualification of drivers and condition of vehicles
- E. Proper storage of flammable liquids.
- F. Proper guarding of open pits, ditches, tanks, etc..
- G. Proper maintenance of electrical equipment, power tools, and hand tools.
- H. Administrative compliance with this manual and other pertinent directives.

Spot Inspections: These are unannounced safety inspections conducted the Mayor, or the Chairperson of the City Safety Committee to determine the degree of safety standards that exist when an inspection is not expected. These inspections will concentrate on known problem areas.

6.3. Documentation

All inspections, formal and informal, will be documented by a written report.

Copies of all inspections will be distributed to the Mayor/Administrator and the Safety Director.

Each department head will receive a copy of an inspection, formal or informal, made in his/her department.

7.0 JOB HAZARD IDENTIFICATION AND REPORTING

7.1 General

The Job Safety Analysis Program is commonly referred to as the J.S.A. Program. It is a continuing, systematic effort to identify and analyze the hazards of potential accidents associated with each step of a job. Once established, a J.S.A. becomes the standard safe procedure which shall be made known to employees for the safe and efficient performance of the job being performed.

The J. S.A. reviews job methods as they relate to safety, and uncovers (1) hazards that may have been overlooked in the layout of the building and in the design of the machinery, equipment and processes; and (2) unsafe practices or conditions that may have developed after operations and production started.

Once the hazards are known, the proper solutions can be developed. The solutions noted in a J.S.A. may require physical changes in order to control the hazard, such as installing a guard over exposed gears or other moving parts of a machine. Other solutions may be new procedures that will eliminate or minimize the hazard, or additional personal protective equipment such as eye protection, head protection, or hand protection. All of these changes will require new training and close supervision.

After introduction of the J.S.A. Program, the main thrust usually takes two or three years to complete. It is during this time that jobs are analyzed for the first time. Once this original development phase is completed, the major effort is done. Thereafter, it is a matter of periodic review and revision, as required.

The purpose of a J.S.A. Program is not to accumulate safe job procedures for filing. The real purpose is to provide Crew Leaders and Superintendents/Supervisors with another tool or training guide to be used for the training of their employees.

Copies of complete and approved J.S.A.'s should be made readily available to all Crew Leaders whose employees are involved in doing the job. Whenever possible, the J.S.A. should be kept in a plastic holder attached to the equipment (or nearby) for easy reference.

7.2 Procedure

The notification of a hazard should be verbal, followed up by a written report to the Department Head. The Department Head must ensure that all pertinent information necessary for an evaluation and preliminary investigation must be made by the Department Head to determine the gravity of the reported hazard.

The Department Head will be responsible for the formal investigation of the reported

hazard. The Department Head will also present the results of the investigation to the Mayor.

- A. Hazards requiring immediate attention: If an employee has justifiable reason to believe that his/her safety and health are in danger due to an alleged unsafe working condition or alleged unsafe equipment, he/she shall immediately inform his/her superintendent/supervisor, who shall have the responsibility to determine what action, if any, should be taken-including whether or not the job should be shut down. Should the superintendent/supervisor deem the operation safe, the employee may request the presence of a second superintendent/supervisor for another opinion. If another superintendent/supervisor is not readily available, the employee shall then proceed. This instance, where an employee believes a directive is unsafe, must involve a new or unique situation that has never been addressed on any previous occasion by the employee's superintendent/supervisor as opposed to a situation that has been addressed on a previous occasion by the employee's superintendent or supervisor.

- B. Hazards not of an immediate serious nature: The employee shall give verbal, then written follow-up notification to the Department Head, using the City 3-part Message/Reply Form. The sender shall keep the yellow copy and send the white and pink copies to the Department Head. The Department Head shall reply, returning the white copy to the employee.

8.0 CONFINED AREA ENTRY

8.1 General

The procedures in the following sections are set forth as a means of protecting the health and significantly reducing the accidental injury and death associated with entering, working in, and exiting from confined spaces. Since deaths from confined spaces often occur because the atmosphere is oxygen deficient or toxic, confined spaces should be tested prior to entry and continually monitored. More than 60% of confined space fatalities occur among would-be rescuers. Therefore, a well-designated and properly executed rescue plan with the Fire Department is necessary.

These procedures are designed not only to make the confined area safe for the worker by introducing mechanical safeguards, but also to make the worker cognizant of the hazards associated with the work site, and the safe work practices necessary to deal with these hazards.

8.2 Definitions, Confined Area Entry

Atmosphere	Refers to the gases, vapors, mists, fumes and dusts within a confined space.
Ceiling Level	The maximum airborne concentration of a toxic agent to which an employee may be exposed for a specified period of time.
Combustible Dust	A dust capable of undergoing combustion or of burning when subjected to a source of ignition.
Confined Space	Refers to a space which by design has limited openings for entry and exit; unfavorable natural ventilation which would contain or produce dangerous air contaminants and which is not intended for continuous employee occupancy. Confined spaces include but are not limited to: storage tanks, inlets, catch basins, process vessels, pump pits, silos, vats, dry wells, wet wells, sewers, tunnels, meter vaults, valve vaults, and pipelines.
Confined Space Class "1"	A confined space that presents a situation that is immediately dangerous to life or health. The dangers include but are not limited to: oxygen deficiency, explosive or flammable atmospheres, and concentrations of toxic substances.
Confined Space Class "2"	A confined space that has the potential for causing injury and illness if preventive measures are not used.

Confined Space Class "3"	A confined space in which the potential hazard would not require any special modification of the work procedure, but where only properly trained persons may enter to perform work.
Oxygen Deficiency	Refers to an atmosphere containing oxygen at a concentration of less than 19.5% by volume.
Standby Person	A person trained in emergency rescue procedures and assigned to remain on the outside of the confined space and to be in communication with those working inside.

8.3 Training Guidelines for Confined Area Entry

The Confined Area Entry training program should be based on the specific hazards to be encountered, approved by a trained safety person, and given to all Street, Wastewater Treatment Plant and Park Department employees who will perform the work or who may be assigned as standby or rescue persons.

A. Qualifications of Training Personnel:

It is essential that the person in charge of training know the relevant aspects of safety as they relate to confined spaces. The instructor(s) must have a thorough working knowledge of the following:

1. Type(s) of confined spaces associated with the industrial activity.
2. Hazards involved
 - a. Chemical
 - b. Physical
3. Work practices and techniques
4. Atmosphere testing requirement
5. Safety Equipment
 - a. Full body harness and lifeline
 - b. Clothing
 - c. Other protection (hard hats, etc.)
6. Rescue procedures
7. Knowledge of applicable Federal, State, and Local Regulations

B. Training Methods

Basic types of training prescribed are:

1. Orientation of All New Employees. This type of training would consist of classroom sessions, along with a walk-through of the Public Works Garages and Wastewater Treatment Plant layouts to give the trainee a basic understanding of the City's activities.

2. On-the-Job Training This is the second phase of training. After classroom sessions and after the trainee has gained a basic understanding of the operation and hazards involved, on-the-job instruction should include observation and closely supervised participation in actual work practices. (See Section 2.4 of this manual for a simple outline on the Job Safety Training Procedure).
3. Retraining. This should be performed periodically, and as frequently as needed. It is necessary for a formal retraining program to be planned so that all employees may be kept abreast of changes. Retraining should also be considered necessary if a Department Head notices a weakness in employee performance.

C. Training Evaluation

The effectiveness of the training program can be determined by observing the employee to see if safe work practices are being followed, by testing the employee for knowledge of the operations and hazards, and by noting a reduction in the accident rate due to safe work practices and techniques which have been learned and are being practiced.

D. Training Program

The employer is responsible for ensuring that each employee is adequately trained, given refresher courses in assigned duties, and that the employee understands and applies safe work practices. The following are recommended areas that should be covered thoroughly in training:

1. The types of confined spaces that are found in the City. This should cover physical location, size and any pertinent information that would inform the worker of its function.
2. Physical and chemical hazards involved.
3. Atmospheric testing of the confined space.
4. Cleaning and purging.
5. Ventilation of the space by mechanical methods to reduce or eliminate toxic airborne contaminants.
6. Isolation and lockout of the confined space.
7. Safety Equipment and Clothing. This should include the type of protective shoes, gloves, protective clothing, head protection, and full body harnesses that are to be worn as well as the rationale for their use. The mandatory wearing of a full body harness should be demonstrated so that each individual understands the importance of the necessity of keeping life lines clear to the point of exit.

8. Buddy system and use of a standby person.
9. Communication systems and emergency signals.
10. Rescue Procedures. All employees working in or around a confined space should be fully trained in emergency entry and exit procedures and be trained in basic first aid.
11. Class 2 Checklist System. Information covered on the checklist should include: Purpose of the checklist, location where checklist will be posted, responsible persons, emergency information, and hazards to be encountered.
12. Documentation of Training. Satisfactory completion of this safety training should be entered into the employee's personnel record.

8.4 Procedure

NIOSH* investigations indicate that workers usually do not RECOGNIZE that they are working in a confined space with possible unforeseen hazards. TESTING and EVALUATION were not initiated prior to entry, and MONITORING was not performed during the work procedure. RESCUE consisted of spontaneous reaction to the emergency situation. All Fire Department and Street Department employees should be made familiar with the following three-step procedure:

- A. Recognition
- B. Testing, Evaluation and Monitoring
- C. Rescue

*National Institute for Occupational Safety and Health, U.S. Department of Health, Education and Welfare, Public Health Service, Center for Disease Control.

D. RECOGNITION

Worker training is essential to the RECOGNITION of what constitutes a confined space, and the hazards that may be encountered in them. This training must stress that death is the likely outcome, if proper precautions are not taken before entry is made.

CITY OF WHITING

CONFINED AREA ENTRY CLASSIFICATIONS

Class 1

KNOWN DANGER. DO NOT ENTER. LEAVE AREA IMMEDIATELY.

1 - Any confined area where gas or flammability is suspected

(CALL THE POLICE DISPATCHER AND FIRE DEPARTMENT)

CLASS 2

DO NOT ENTER IF ENTRY IS NECESSARY AND APPROVED, FOLLOW CLASS 2 CONFINED AREA ENTRY CHECKLIST.

2 - All manholes and other sewer openings

2 - Water tanks and reservoirs

2 - Meter vaults if power ventilation blower is not operating

2 - Valve vaults

2 - Pump pits

CLASS 3

ONLY PROPERLY TRAINED PERSONS MAY ENTER TO PERFORM WORK

3 - All dry wells and meter vaults, if the power ventilation blower is operating and if the oxygen deficiency detector identifies the atmosphere to be safety breathable.

CITY OF WHITING, INDIANA
 CONFINED AREA ENTRY PERMIT

LOCATION: _____ DATE: _____ TIME: _____

Work to be Done: _____

Permit #: _____ Requested by: _____

Names of Employees on this job: _____

"Persons entering the confined area are trained in the City safety procedure for proper entry, and have the proper safety equipment."

 Supervisor or Authorized Designee

* Entry and emergency procedures understood.

 Person Performing Work

 Standby # 1

 Standby #2

JOBSITE CHECKLIST

- | | <u>YES</u> | <u>NO</u> |
|---|------------|-----------|
| • Prior to starting job, was radio equipment checked for efficient operation? _ | _ | _ |
| • Was Supervisor or Authorized Designee notified that entry is necessary? _ | _ | _ |
| • Was the Police Dispatcher and Fire Dept. notified by radio of the location and reason for this confined area entry? | _ | _ |
| • Is all equipment required, by the City safety manual, for Permit Entry into confined areas, on hand? | _ | _ |

ENTRY PROCEDURE

- | | | |
|--|---|---|
| • Is "NO SMOKING" regulation being enforced? | _ | _ |
| • Is it safe to use electrical equipment? | _ | _ |
| • Has portable blower been set up? | _ | _ |
| • Is the person performing the work properly trained and outfitted with safety harness attached to a lifeline and recovery <i>system</i> ? | _ | _ |
| • Are two standby persons observing the confined area, ready to handle the lifeline, if necessary? | _ | _ |
| • Are gas checks/air quality checks being performed, using the proper equipment? | _ | _ |

GAS CHECKS/AIR OUALITY CHECKS

Readings: _____ Time: _____

_____	_____
_____	_____
_____	_____

- Has the Police Dispatcher and Fire Dept. been notified that confined area entry has been completed, and that they can discontinue monitoring the Public Works radio? _____

Never enter a confined area after an employee has been over come. Radio for help!

In an emergency:

- Never enter a confined area after a fellow employee has been overcome.
- By radio, report the emergency to the Police Dispatcher and Fire Department. Give the location and request ambulance assistance. (Street will contact the Fire and Police Department).

Public Works or Authorized Representative means:

Mayor
 Senior Foreman
 Foreman
 General Foreman
 Crew Leader
 Chief Mechanic
 Retention Basin Superintendent
 Water Department Superintendent
 Park Superintendent

RECOGNITION OF CITY CONFINED AREA LOCATIONS

A. Whiting Water Department
 1642 119th Street

- | | |
|-------------|--------------------------|
| LOCATION: 1 | Clear well basin |
| LOCATION: 2 | Settling Basin |
| LOCATION: 3 | Pit Between Ozone Towers |
| LOCATION: 4 | Venturi Meter Pit |
| LOCATION: 5 | Valve Pit |
| LOCATION: 6 | Pitot Test Pit |

B. Whiting City Hall
1443 119th Street

LOCATION: 1 Elevator Pit

C. Whiting Retention Basin
1500 Central Avenue

LOCATION: 1 Raw Sewage Pump Room (Hatch Door)
LOCATION: 2 Raw Sewage Pit (Hatch Door)
LOCATION: 3 Storm Pump Pit (Hatch)
LOCATION: 4 84” Sewer Pit
LOCATION: 5 Chlorine Room

D. Whiting Street Department
1915 Front Street

E. Whiting Park Department
1938 Clark Street

LOCATION: 1 Tunnel Pip Alleys
LOCATION: 2 Boiler Room
LOCATION: 3 Bowling Alley Tunnels
LOCATION: 4 Elevator

REASONS TO ENTER TANKS OR RESERVOIRS

1. Inspection of contractor's work
2. Repair of inside ladder
3. Maintenance/Cleaning of interior

E. Entry Permit Procedures - For Permitted Area Only

Follow permit procedures as outlined in this section

1. Eliminate any unsafe conditions when entrance cover is removed.
2. Temporary barriers to be installed if necessary to prevent accidental falls or objects

entering the space.

3. Before entering space, test for:
 - a. Oxygen content (19.5 - 23.5%)
 - b. Flammable gas, vapor or mist in excess of 10% of its lower flammable limit (LFL)
 - c. Potential toxic air contaminants
 - d. Periodic testing of atmosphere shall be done to ensure safe atmosphere
4. Forced air ventilation shall be used:
 - a. To eliminate any hazardous atmosphere
 - b. Directed to ventilate immediate area where employees are present.
 - c. Air supply shall be from a clean source
 - d. Periodically test atmosphere to ensure that forced air ventilation is preventing hazardous atmosphere
5. If hazardous atmosphere is detected before or during entry:
 - a. Entrant to leave area immediately
 - b. Evaluate area to determine how hazardous atmosphere developed. c. Ventilate area
 - d. Retest area
 - e. Supervisor shall verify space is safe to enter

F. Entry Supervisor

1. Knows the hazards that may be faced during entry.
2. Determines if acceptable entry conditions are present.
3. Checks entry permit.
4. Terminate entry and cancels permit if unsafe conditions or hazards are detected.
5. Ensure that testing and safety equipment is on site and ready for use.
6. May serve as entry or attendant if trained for the role they fill.
7. Verifies that rescue services are available

G. Authorized Entrant

1. Employee who is authorized to enter a confined space.
2. Knows the hazards that they may face during entry.
3. Communicate frequently with attendant.

4. Alert the attendant if they recognize any warning sign or symptom of exposure to a dangerous situation, exit as quickly as possible.
5. Exit immediately if order to evacuate is given by attendant or entry supervisor.
6. Continuously monitor atmosphere in confined space.

H. Entrant - Safety Equipment

1. Must use chest or body harness
2. Retrieval line attached at center of entrant's back
3. Retrieval shall be attached to a mechanical device or fixed point outside the permit space so that the rescue can begin as soon as attendant becomes aware rescue is necessary.

I. Attendant Duties

1. Knows the hazards that may be faced during entry.
2. Aware of possible behavioral effects of hazard exposure.
3. Continuously communicate with entrant.
4. Continuously monitor the confined space from top to bottom during entry and continue while entrant is conducting his/her work procedure.
5. Test atmosphere periodically.
6. Do not enter confined space at any time. Unplanned rescue, such as someone instinctively rushes in to help a downed co-worker, can easily result in a double fatality. Wait for rescue personnel.
7. Remain outside permit space until job is completed or until relieved.
8. If attendant must leave for any reason, entrant shall exit space. Do not work in space without an attendant.
9. Have retrieval line within reach at all times in case entrant has to be removed from space.
10. Check that air ventilator is operating properly and drawing clean air.

J. Contractor Performs Work Involving Permit Space Entry

1. Inform contractor that workplace contains permit space entry, and entry is allowed only through compliance with permit space program.
2. Apprise contractor of hazards involved.
3. Notify contractor of any precautions or procedures that host employer has implemented for protection of employees.
4. When host employer personnel and contractor personnel will be working in or near permit spaces, use the Entry Permit Procedures #2, 3, 4 and 5.

Rescue And Emergency Services

- A. An employer whose employees have been designated to provide permit space rescue and emergency services shall take the following measures:
1. Provide affected employees with the personal protective equipment (PPE) needed to conduct permit space rescues safety and train affected employees so they are proficient in the use of that PPE.
 2. Train affected employees to perform assigned rescue duties. The employer must ensure that such employees successfully complete the training required to establish proficiency as an authorized entrant.
 3. Train affected employees in basic first aid and cardiopulmonary resuscitation (CPR). The employer shall ensure that at least one member of the rescue team or service holding a current certification in first aid and CPR is available.
 4. Ensure that affected employees practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility simulate the types of permit spaces from which rescue is to be performed.
 5. To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant.
 6. Retrieval systems shall meet the following requirements:
 - a. Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which the employer can establish, presents a profile small enough for the successful removal of the entrant. 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 feasible or creates a greater hazard and that the use of wristlets is the safest and most effective alternative.

- b. 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 feet (1.52m) deep.
- c. If an injured entrant is exposed to a substance for which a Material Safety Data Sheet (MSDS) or other similar written information is required to be kept at the work site, that MSDS or written information shall be made available to the medical facility treating the exposed entrant.

Testing, Evaluation And Monitoring

All confined spaces should be TESTED before entry to determine whether the confined space atmosphere is safe for entry. Tests should be made for oxygen level, flammability, and known or suspected toxic substances. EVALUATION of the confined space should consider the following:

- Outer Safeguards. Warning devices, barriers, or barricades shall be placed to adequately protect the public and employees before manhole covers or gratings are removed or other work operations are begun. Trucks, tool carts, and other equipment shall be so placed as to present the least impediments or hazard to traffic, consistent with a safe working area for the employees. If possible, trucks or equipment shall be placed between the working area and oncoming *traffic*. However, any vehicle so used shall have a rotating warning light in operation.
- Manhole covers shall always be removed and replaced by means of approved hooks or hoists. Never use forgers. After being raised to a height of 6 inches, the cover shall be blocked and removed before the hook is removed.
- A torch or other open flame shall never be used to melt ice around a manhole or vault covers. Additionally, smoking shall not be permitted in or near any underground enclosure or structure. (Combustible gases or dust may ignite in the work area).
- Tools. Never toss tools into a manhole or other confined space. If more tools are needed while a confined space is being tested, always hand them down or lower them in a bucket or sling to avoid injuring anyone in the confined space. If there is any danger of explosion, only nonferrous, non-sparking tools should be used.
- Ventilation. Be aware that the air in a confined space will become stagnant and the oxygen depleted. The oxygen content of the atmosphere does not have to be very low

for a person to pass out. The oxygen content in a confined space must register between 19.5 and 21 percent. When a person is working in a confined space, detection devices that continuously monitor the atmosphere are mandatory.

- **Safety Apparel.** The person working in a confined space must wear proper safety apparel, including a hard hat, 45 second safety beeper, and safety harness. Self-contained breathing apparatus are not issued because the City will never require entry into an oxygen deficient atmosphere. Be aware that a depleted oxygen supply is not the only dangerous situation a person will encounter in a confined space. For example, if a water line breaks during the testing and water gushes into the pit, a properly fitted harness allows the worker to be quickly pulled to safety. Also, the ladder rungs going into the area may be weak or faulty, and the harness will pull the employee to safety.
- **Insects, rodents and reptiles.** Inspect confined spaces for insects, rodents, and reptiles, and dispose of them safely. It is not unusual to find black widow spiders, rats or rattlesnakes in a confined space. However, make sure your method of destroying insects or rodents does not contaminate the confined space atmosphere. Never use extermination chemicals in or near a confined space while someone is inside
- **Physical symptoms.** The employee should immediately vacate a confined space and return to open air at the first sign of physical weakness or at the onset of nausea or dizziness. The confined space should then be rechecked for toxic chemicals, explosive gases, and depleted oxygen. Most people agree that there is no warning before an oxygen-deficient atmosphere causes a person to pass out. If the confined space is continuously monitored, most life-threatening conditions will be detected and corrected before an employee is exposed to them.

Rescue

In an emergency:

- Never enter a confined area after a fellow employee has been overcome.
- By radio, report the emergency to the Police Dispatcher and Fire Department. Give the location, and request ambulance assistance. (Public Works will contact the Mayor's Office and the Police Department).
- Have one person go out to the street to direct the emergency crew to the confined area work site. At least one standby person is assigned for each entry. A Department Head must also be on site to oversee the safety of the operation. The standby person is in radio contact with the Police Dispatcher and is ready to operate the lifeline and tripod in order to pull the employee to safety. The Police Dispatcher monitors the Public Works radio band until given notification of safe exit from the confined area and is ready to respond immediately to an emergency.

8.5 Gases

Many types of gases may be found during work operations:

- A. **Sludge Gas** - Sludge gas is principally composed of methane and carbon dioxide, with small amounts of hydrogen, nitrogen, hydrogen sulfide, and oxygen. Occasionally, traces of carbon monoxide may be found in sludge gas. Sludge gas is lighter than air, and it will be found near the top of a structure. The gas will not support life, and it is flammable.
- B. **Sewer Gas** - This is a gas found in sewers which contains very high percentages of carbon dioxide, varying amounts of methane, hydrogen and hydrogen sulfide, and a low percentage of oxygen. This gas is lighter than air and will rise to the top of a closed structure. This gas will not support life and is flammable.
- C. **Ammonia** - Ammonia is 60% as heavy as air and is found near the top of a structure. It is injurious to both the air passages and the lungs of a person who comes in contact with it. It is very irritating to the eyes. The maximum amount that can be tolerated for a 60-minute period of time is .03 percent in the air. The odor of this gas is used to determine its presence.
- D. **Carbon Dioxide** - Carbon dioxide is 53% heavier than air and is found near the bottom of the structure. However, it may rise if heated. It is both colorless and odorless, and when breathed in may cause an acid taste in the mouth. Carbon dioxide is not normally found in dangerous amounts unless an oxygen deficiency exists, and at this time, it will act as an asphyxiate. The maximum amount that can be tolerated for a 60-minute period is from 4.0 to 6.0 percent in air. An atmosphere of 10 percent CO₂ cannot be tolerated for longer than a few minutes. This gas is not explosive or flammable.
- E. **Carbon Monoxide** - Carbon monoxide is slightly lighter than air and is found near the top of structures. It is colorless, odorless, tasteless, flammable, and poisonous. This gas acts as an asphyxiate. The maximum amount that can be tolerated for a 60-minute period is .04 percent in air. Carbon monoxide in concentrations of .2 percent to .25 percent would cause a person to become unconscious in 30 minutes. It is fatal in a concentration of .1 percent for a four hour period. Carbon monoxide will cause headaches at a concentration of .02 percent in a two-hour period or less.
- F. **Chlorine** - Chlorine gas is 2-1/2 times as heavy as air and will be found at the bottom of a structure. It has a yellow-green color and a very strong odor that causes choking at low concentrations. It is injurious to both the air passages and the lungs of a person who might come in contact with it, and will induce inflammation to surfaces of the respiratory tract. Chlorine is fatal at a concentration of 0.1 percent in a very short period of time. The maximum amount that can be tolerated for a 60-minute period is .0004 percent in air. This gas is non-flammable and not explosive. A chlorine leak detection kit is used to test for chlorine. (See the Chlorine Leak Section at the end of this chapter).

- F. **Gasoline** - Gasoline vapor is 3 to 4 times heavier than air and is found at the bottom of a structure. It is colorless and has an odor which is noticeable at .03 percent. Gasoline vapor has an anesthetic effect when inhaled and is rapidly fatal at 2.4 percent. It is dangerous for a short exposure of 1.1 to 2.2 percent. Gasoline vapor has little to no specific effect on the lungs, but acts after being absorbed into the blood and transported to the tissue of the body. Gasoline vapor is flammable and explosive in concentrations of 1.3 to 6.0 percent in air.
- G. **Hydrogen** - Hydrogen is 7% as heavy as air and is found at the top of a structure. It is both colorless and odorless, and acts as an asphyxiate. This gas acts mechanically to deprive the body tissues of oxygen and will not support life.
- H. **Hydrogen Sulfide** - Hydrogen sulfide is 19% heavier than air and will be found near the bottom of a structure, unless the gas is heated and the air is highly humid. This gas is colorless and has the odor of rotten eggs, even in small concentrations. This odor is not evident at a high concentration. This gas is fatal in a few minutes at a concentration of 0.2 percent. Exposure at concentrations of .07 to .1 percent will rapidly cause acute poisoning and paralyzes the respiratory center of the body. The maximum amount that can be tolerated for a 60-minute period is .02 to .03 percent in air.
- I. **Methane** - Methane gas is 55% as heavy as air and will be found near the top of a structure. It is both colorless and odorless, and acts as an asphyxiate. It also acts to mechanically deprive the body tissues of oxygen and does not support life. There is probably no limit to the amount of methane that can be tolerated, provided there is also sufficient oxygen to sustain life.
- J. **Nitrogen** - Nitrogen is almost as heavy as air and may be found near the top and bottom of a structure. This gas is both colorless and tasteless and is physiologically inert. It is the principal constituent of air (about 79 percent).
- K. **Oxygen** - Oxygen is 11% heavier than air and will be found at different levels of a structure. It is both colorless and tasteless. Normal air contains about 21 percent of oxygen and man can tolerate down to 12 percent oxygen. Below 10 percent is dangerous to life, and below 5 to 7 percent would probably be fatal. Oxygen is required to support combustion. An oxygen deficiency indicator shall be used to determine lack of the gas in the atmosphere.
- L. **Sulphur Dioxide** - Sulphur dioxide is 2-1/4 times heavier than air and will be found at the bottom of a structure. It is colorless and has a strong penetrating odor even in low concentrations. The maximum amount that can be tolerated for a 60minute period is .005 percent in air. This gas will cause injury to and act as an irritant to the air passages of the body, the lungs, and respiratory tract membranes. It will not burn or support combustion. A characteristic odor indicates the presence of this gas.

Notes on Chlorine Leaks:

- A. Only approved valves, fittings, packings, etc., shall be used in chlorine systems in order to prevent leaks.
- B. When it is necessary to work on chlorine lines or equipment, all sources of chlorine shall be turned off at the chlorine cylinders and the lines safely discharged (to normal path of usage, not to atmosphere) before any connection or pipe is opened.
- C. If a chlorine cylinder leaks, the cylinder shall be moved to the open air and placed a safe distance from all personnel. Leaky cylinders shall be turned so that the leak is on top.
- D. Authorized plant employees shall be instructed in the use of Self-Contained Breathing Apparatus (SCBA), in order to be prepared in the event of a chlorine leak.
- E. Approved SCBA shall be located where they are readily accessible, without requiring that an employee enter a contaminated area.
- F. If an employee should be exposed to chlorine fumes, he should breathe only short shallow breaths after he reaches fresh air.

9.0 EXCAVATION PROTECTION (TRENCHING)

9.1 General

The procedures in the following sections are designed to reduce the risk and severity of accidents by providing employees and Department Heads with the necessary information to prevent cave-ins through proper shielding, shoring, and sloping.

9.2 Definitions, Excavation Protection

Shielding	Steel plates and bracing welded or bolted together in a box, so that a worker in a trench is guarded from any caving in of the walls.
Shoring	A framework support system of wood, metal, or a combination of both, used in the prevention of the caving in of excavation and trench walls.
Sloping	Excavating the walls of the trench at an angle, so the downward forces on the soil are never allowed to exceed the soil's cohesive strength, thus preventing a cave-in of the excavation and trench walls. (This angle varies with the type of soil, the amount of soil it contains, and with surrounding conditions, especially vibration from machinery).

9.3 Training Guidelines for Excavation Protection Safety

Safety training in this topic is designed to reduce the risk and severity of accidents by providing clear, concise information on safe procedure.

A. Qualification of Training Personnel

The person in charge of the field aspect of training must know the relevant aspects of safety as they relate to excavation/trenching, including the causes of cave-ins and the prevention of and protection from cave-ins.

B. Training Methods

1. Orientation of all new employees. This type of training would consist of

classroom sessions, along with a walk-through of typical City excavation jobs.

2. **On-the-Job-Training.** This is the second phase of training. After classroom sessions and after the trainee has gained a basic understanding of the operation and hazards involved, on-the-job instruction should include observation and closely supervised participation in actual work practices. (See Section 2.4 of this manual for a simple outline on Job Safety Training Procedure).
3. **Retraining.** This should be performed periodically and as frequently as needed. It is necessary for a formal retraining program to be planned so that all employees concerned may be kept abreast of changes. Retraining should also be considered necessary if a supervisor notices a weakness in employee performance.

C. Training Evaluation

The effectiveness of the training program can be determined by observing the employee to see if safe work practices are being followed, testing the employee for knowledge of the operations and hazards, and by noting a reduction in the accident rate due to safe work practices and techniques which have been learned and are being practiced.

D. Training Program

The employer is responsible for ensuring that each employee is adequately trained and that the employee understands and applies safe work practices. The following are recommended areas that should be covered throughout in training.

1. Job Site

Prior to starting job, was "Holey Moley" notified and were underground services located?

Were overhead transmission lines noted, and precautions taken to avoid contact by cranes, etc?

Is housekeeping at job site satisfactory?

Is storage of material and equipment satisfactory?

Is spoil bank placed at least 2 feet from edge of excavation?

2. Excavation or Trench

If over 5 feet deep, it is sloped to the angle of repose, or shored, or is a trench box used?

If under 5 feet deep, but soil is unstable, is it sloped, supported or shored?

Is shoring system inspected regularly by a competent person?

If necessary to use mud pump, is it placed downwind from the excavation?

3. Exits

If trench is 4 feet or more in depth, is ladder provided?

Are ladders in good condition? Do they extend from the floor of the trench to 3 feet above the top of the excavation?

Are ladders secured at the top?

4. Completion of Job

Is trench backfilled as the shoring is dismantled?

Is shoring removed from the bottom up, and jacks and braces removed slowly?

In unstable soil, are ropes used to pull out jacks or braces from above?

9.4 Factors That Increase/Decrease the Probability of a Cave-In

The factors that increase or decrease the probability of a cave-in are related to the effects of soil strength and downward force. Any soil has a certain amount of cohesive strength holding particles of soil together. But where a trench or excavation has been dug, the force of gravity acts against the natural strength of the soil. When the downward pressure caused by gravity overcomes the soil strength, the trench wall caves in.

A. Soil strength can be affected by:

- Type of soil
- Moisture
- Freezing
- Recent excavation

In determining the soil strength, the first factor to consider is the type of soil. Loose grained, sandy soils have little cohesion and tend to cave into the excavation when unsupported.

A second factor affecting soil strength is moisture. Water can drastically reduce any soil's

ability to hold together, causing it to slide or cave in more easily. A trench that is safe in the morning may suddenly become unsafe in the afternoon after a rain or a spring thaw.

While thawing weakens the soil, freezing can strengthen it. But water expands as it freezes, and this movement can affect shoring, the earth behind the trench wall, or the entire trench. Also, although the soil near the surface may be frozen solid, it may be mud below the frost line.

Another factor that will reduce a soil's ability to support trench walls is a recent excavation. Soil that has never been disturbed will usually have greater strength than soil that has been excavated for pipe laying, road building, or some other purpose. Generally, the more recent the excavation, the weaker the soil. -

B. The downward force is affected by:

- Trench depth
- Soil weight (which is again related to moisture)
- Weight of the spoil bank
- Weight of adjacent equipment -
Vibration

Under any conditions, cave-in protection is required for trenching or excavations 5 feet deep. or more. Where soil is unstable protection may be advisable even in more shallow trenches.

Wet soils can be more than half again as heavy as dry soils. Since wet soils may also have less cohesive strength, moisture from any source is a major factor affecting the likelihood of cave-in. The weight and location of the spoil bank (the material removed from the trench) is another factor adding to the downward forces. The spoil bank, if properly placed, can easily add 50 percent or more to the weight of the soil subject to cave-in. Spoil should be placed 2 feet or more away from the edge of any excavation, and it must be stored in a way that will prevent it from falling or sliding back into the excavation. Lastly, operating compacting equipment in the trench, or nearby blasting, or the presence of people and equipment near the edge of the trench, can cause vibration that will loosen the soil and make a cave-in more likely.

9.5 Procedure

Prior to opening an excavation, determine whether underground installations (sewer, telephone, water, fuel, electric lines, etc.) will be encountered. Contact "Holey Moley" before the start of actual excavation.

Remember, when you double the trench depth, you increase the weight of earth subject to cave-in by at least a factor of four. If the trench is 5 feet deep or more, some type of cave in protection is required, no matter what the soil condition.

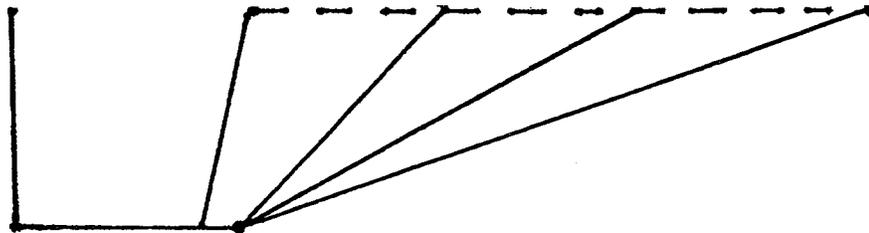
There are three basic ways to prevent cave-in or protect yourself from cave-ins:

A. **Sloping** - Sloping requirements vary depending on the type of soil. For deep trenches, sloping will take up more room than you may have available. But it is an easy and effective protective measure for many excavations. Sloping involves excavating the walls of the trench at an angle so the downward forces on the soil are never allowed to exceed the soil's cohesive strength.

For any section of an excavation, there will be a certain angle, called the angle of repose, where the surrounding earth won't slide or cave back into the trench. The angle of repose varies with the type of soil, the amount of moisture it contains, and with surrounding conditions, especially vibration from machinery.

In all excavations, a ladder must be provided. It should be located so workers will always be able to reach one within 25 feet, and it must extend at least 3 feet above the top edge of the trench. This allows workers to exit the trench quickly in case of emergency.

Solid	Compact	Average	Compact	Loose
Rock	Gravel	Soil	Sand	Sand
(90 dg)	1/2:1 (63 dg)	1:1 (45 dg)	1-1/2:1 (33 dg)	2:1 (26 dg)



B. **Shielding** - Shielding involves the use of a steel box, open at the top, bottom and ends. The box is placed into the ditch so workers can work inside it. As the work progresses, the protective box is moved or towed to provide a continuing shield.. from any caving in of the walls. This open-ended box is called a trench shield, a portable trench box, a sand box, or a drag shield.

Shielding does not prevent a cave-in. The shield cannot fit tightly enough in the trench to hold up the trench walls. However, if a cave-in does occur, the worker within the shield is protected. Shielding is constructed of steel plates and bracing, welded or bolted together. It is important that the shield extend above ground level, or that the trench walls above the top of the shield be properly sloped. A major disadvantage of the shield is that workers have a tendency to leave its protection in order to check completed work, or to help adjust pipe placement, or just to get out of the way of the job in progress. The shield only protects those workers actually within it.

C. **Shoring** - The third method protecting workers in trenches is shoring. If properly installed, shoring will actually prevent the caving in of excavation and trench walls.

Basically, shoring is a framework support system of wood, metal, or a combination of both.

The City Of Whiting prevents cave-ins through the use of sloping (1:1 or 45 degree angle) and shielding (a portable trench box). Inspections of excavations shall be made by the responsible supervisor.

In all excavations of 5 feet or deeper, use the trench box. If the use of the box is not feasible, use the sloping method of protection.

Once a trench box is below the surface of the ground by two feet or more, slope the hole back on a 1:1 or 45 degree angle.

In all excavations, a ladder will be placed in the trench. This ladder will extend 3 feet over the top of the trench.

Employees in an excavation will wear hard hats.

NOTE: All contractors and subcontractors shall comply with these City safety standards on excavations.

9.6 Emergency Procedure

In An Emergency

Probably the most important rule is: Don't work in a trench if you are alone. If a cave-in does occur, you could be trapped. Having someone nearby to dig you out or go for help can mean the difference between life and death.

If, in spite of all your precautions, you are caught in a cave-in, there are a few things you can do to increase your chances of survival:

- If it looks like you are about to be buried, yell. This increases the chances that someone will notice the cave-in and start to work getting you out immediately. It also makes it likely that someone will be watching as you go under, which could be critically important when rescuers try to find you in the dirt.
- As you go under, try to cover your face with your arms. The space between your arms and your face can help you breathe while you wait for rescuers to dig you out.
- If you are buried under very much dirt, you won't be able to dig yourself out. So, don't struggle. Your best course of action is to wait calmly for rescue.

The Fire Department Senior Officer will be the final authority at a rescue scene.

10.0 RULES ON MACHINE USE

- A. The machine shall never be oiled, greased, or fueled while the motor running. The gasoline tank shall be filled from approved safety-type cans or pumps.
- B. Operators shall keep other employees and bystanders a safe distance from the machine while it is in operation.
- C. An employee shall not attempt to clear the buckets or discharge chute while the machine is in operation.
- D. When an end-loader is being loaded by hand, the machine operator shall keep his hands and feet free of all controls except the brakes.
- E. Machines shall not be used on slopes or inclines without first preparing the right-of-way to prevent overturning.
- F. Employees other than the operator shall not stand with hands or feet resting on a machine while it is running, and shall keep clear of the discharge side.
- G. All underground cables and pipe lines shall be spotted and staked, or marked, when possible. When digging near such facilities, hand excavation shall be used to avoid damaging them.
- H. Machines, which are parked or operating on streets or highways, shall be protected by proper warning devices.
- I. When it is necessary to leave excavating equipment unattended, the blade, bucket, or scoop shall be lowered to the around, and the ignition system locked.
- J. Ground openings such as trenches and shafts, and obstructions, shall be protected by suitable barricades or covers.
- K. Equipment shall be shut down and de-energized before inspection or maintenance work are begun.
- L. Pressure on air tools shall be released before the equipment is left unattended.

- M. All connections to air tools shall be made secure before turning on air pressure.
- N. Compressed air at the tool shall not be turned on until the tool is under the control of the operator.
- O. All material removed from excavations shall be piled at least 2 feet from the edge of the excavation, preferably on the side next to traffic.

11.0 WORKING IN A PUBLIC RIGHT-OF-WAY

Municipal employees are often required to work in or along a right-of-way normally used for vehicle or pedestrian traffic. It is desirable that, whenever possible, some continued flow of traffic be maintained with the least possible interference to normal traffic patterns. There are two safety considerations involved:

- A. Protecting employees from being struck by vehicular traffic.
- B. Helping the public to safely avoid hazardous obstructions, excavations, etc., that interrupt the flow of both vehicle and pedestrian traffic.

The state highway administration has approved and issued the "Manual on Uniform Traffic Control Devices for Streets and Highways" as the national standard for all highways open to public travel.

The state manual is adopted as the official manual for a uniform system of traffic control devices for the City Of Whiting.

When road surfaces are being repaired, manholes opened, or excavations dug, it is necessary that adequate warning of the hazard be posted; that a minimum amount of the right-of-way be blocked off consistent with safety requirements; and that traffic be efficiently re-routed.

If repair work obstructs a traffic lane in a street and thus compresses several lanes of traffic into fewer lanes, warning by signs and barricades must be given to motorists well in advance of the obstruction. If manhole openings and excavations constitute a hazard to pedestrians, then adequate barricades and a re-routing of walkways should be provided.

Maintenance activities may include such minor interferences as tree trimming, curb site planting, street sweeper operation, trash pick-ups, light fixture cleaning, traffic signal repair, standing or slow-moving vehicles and equipment, or occasional movements into the normal right-of-way. The feature of simultaneous flashing of all turn signal lights should be used, augmented by oscillating or rotating lights, or flashing arrow signs mounted on the vehicle.

When maintenance or construction activities exceed 15 minutes duration, adequate signs and barricades should be set up.

The following safety procedures are recommended:

- A. No City street should be closed without proper notice given to the Police and Fire Departments.
- B. If an open excavation is left in a posted traffic lane when work is stopped or suspended for any reason, signs and lighted barricades shall not be sufficient. An excavation must be covered.
- C. Protection of persons working on roadway:
 - 1. "Men Working" signs should be placed in advance of the work in both directions during crack filling operations.
 - 2. Work should be done on one-half of the roadway at a time when patching and/or filling cracks, etc.
 - 3. A flagperson should be used where the amount or speed of traffic warrants.
- D. Flagperson should:
 - 1. Stand near enough to the workers being protected so that there is no doubt as to his/her purpose.
 - 2. Stay not less than 100 feet from the work crew, unless conditions make this impossible.
 - 3. Stand on the shoulder to the right of approaching traffic.

12.0 PROPER LIFTING PROCEDURES

Material handling causes many types of injuries such as strains, crushings, hernia, ruptures, fractures, lacerations, bruises and contusions.

Accidents of this nature can be avoided by planning ahead, using mechanical equipment where possible, and thinking about the proper way to perform the task.

The single and most important preventative safety measure an employee should keep on his mind is the **FOUR STEP LIFTING PROCESS**. This technique could save you pain and suffering. Therefore, it is essential that you carefully read and implement the lifting process described here:

A. GET READY

- Size up the load. If it is too heavy or bulky, play it smart - get help, or break the load down into smaller loads.
- Check the load and remove protruding nails, splinters, sharp edges, oil, grease or moisture.
- If the surface is rough - wear gloves.
- Wear safety shoes to help prevent foot injuries.
- Know where the load is going and where you are going to put it down.'
- Be sure the path you take is clear of obstacles.

B. PICK IT UP

- Get a firm footing and good balance. Place your feet about a shoulder-width apart.
- If the load is below waist level, bend your knees to get into position. Keep your back as straight as possible.
- Grip the load firmly.
- Lift the object to carrying position, keeping it close to the body. **LET THE LEG**

AND ARM MUSCLES DO THE WORK. DO NOT LIFT WITH YOUR BACK.

C. CARRY IT CAREFULLY

- Be sure you can see where you are going.
- When changing direction, **BE CAREFUL NOT TO TWIST YOUR BODY. CHANGE THE POSITION OF YOUR FEET TO TURN YOUR BODY.**

D. PUT IT DOWN....

- If the receiving surface is near waist high, place the load on the edge of the surface, then push it forward.
- If you lower the load to the floor, **BEND YOUR KNEES, KEEP YOUR BACK AS STRAIGHT AS POSSIBLE, AND KEEP THE LOAD CLOSE TO YOUR BODY.**

13.0 WORK AREA SAFETY GUIDE

A. Abrasive Blasting

1. Blast cleaning nozzles shall be equipped with an operating valve which must be held open normally (deadman control).
2. The air for abrasive blasting respirators shall be free of harmful quantities of contaminants.
3. Proper eye protective equipment to prevent injury shall be provided.

B. Abrasive Grinding

1. All abrasive wheel bench and stand grinders shall be provided with safety guards which are strong enough to withstand the effects of a bursting wheel.
2. An adjustable work rest of rigid construction shall be used on grinders, with the work rest kept adjusted to a maximum clearance of 1/8 inch between rest and wheel.
3. All areas with bench type grinders shall be clean and well lit.
4. Proper eye protective equipment to prevent injury shall be provided.

C. Pneumatic Tools

1. Pneumatic power tools shall be secured to the hose in a positive manner to prevent accidental disconnection.
2. Safety clips or retainers shall be securely installed and maintained on pneumatic impact tanks to prevent them from being accidentally expelled.
3. The manufacturer's safe operating pressure for all fittings shall not be exceeded.
4. Proper eye protective equipment to prevent injury shall be provided.

D. Hooks, Tow Straps, Slings, etc.

1. Chains, cables, ropes, hooks, tow straps, and slings, etc. shall be inspected by the employee using the equipment daily, and defective items shall be removed and

repaired, or destroyed and replaced.

2. Cables and chains shall be free from kinks or twists.

E. Compressed Gas Cylinders

1. Valve protection caps shall be in place-when compressed gas cylinders are transported, moved or stored.
2. Compressed gas cylinders shall be secured in an upright position at all times, except when cylinders are being moved. One (1) ton chlorine containers shall be stored horizontally.
3. Cylinders shall be kept at safe distances or shielded from welding or cutting operations.
4. Oxygen and fuel gas regulators shall be in proper working order. Regulators shall be purged when work is completed.

F. Chlorine

General

The following safety procedures for the proper handling of chlorine, in its various forms designed for municipal uses, are established for the personal safety of employees and the public. Supervisors and Superintendents shall instruct their employees in the following reputations and shall take steps necessary to ensure that the highest safety standards are observed.

2. Chlorine Gas in Cylinders

- a. Whether empty or full, all 150lb. chlorine cylinders shall be stored, transported, handled and used in an upright position. All one ton containers shall be stored in a horizontal position. **UNDER NO CONDITION SHALL 150 LB. CHLORINE CYLINDERS BE PLACED IN A HORIZONTAL POSITION. THE PROTECTIVE CAP SHALL BE SECURELY TIGHTENED ON ALL CHLORINE CYLINDERS EXCEPT WHEN ACTUALLY IN USE OR BEING PREPARED FOR USE.**
- b. All cylinders, empty or full, shall be located in a cool and dry location.
- c. In storage, 150 lb. chlorine cylinders shall be securely fastened in an upright position against a solid wall with chains firmly fastened to the wall. One ton cylinders shall be blocked to prevent rolling.

- d. When in use at plant location, 150 lb. cylinders shall be firmly placed on a level and stable scale platform. Prior to placing on any surface, the cylinder bottoms must be checked for any unevenness that may result in tipping.
- e. When loading or unloading or handling chlorine cylinders, employees shall take extreme care to ensure cylinders are not bumped, jarred or dropped. Special attention shall be given to the proper installation of the protective cap over the valve. All hoists shall be checked for proper and safe operation before use.
- f. Only Water Operators and Retention Basin Operators may change connections on chlorine cylinders. Changing connections shall be accomplished using proper safety equipment and precautions with a standby person present.
- g. If an employee detects chlorine gas, he should immediately leave the building, lock the doors, shut the windows (from the outside) and call the Police Dispatcher and Fire Department. No one shall enter that building without first putting on a self-contained air pack.
- h. If used to disinfect portions of the municipal water system, such structure will not be used for discharging water for public consumption until the Certified Operator in charge or his designee has verified the acceptable chlorine content of the water.

3. Chlorine Solution (Chlorine Water)

Chlorine solutions shall not be used by the City Of Whiting for any purpose unless under the specific orders and supervision of the Street Commissioner and the Retention Basin Treatment Plant Superintendent.

G. Cylinders of Compressed Gas Use in Welding

- 1. Compressed gas cylinders shall be kept away from excessive heat, shall not be stored where they might be damaged or knocked over by passing or falling objects, and shall be stored at least twenty feet away from combustible materials.
- 2. The valve protection cap shall be in place except when the cylinder is in use or is connected for use.
- 3. Acetylene cylinders shall be stored and used in a vertical, valve-end-up position only.
- 4. In storage, oxygen cylinders shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease) by a minimum distance of twenty feet, or by a non-combustible barrier at least five feet high, having a fire resistance rating of at least half an hour.

H. Electrical Installation

1. Every new electrical installation and all new equipment installed, replaced, modified, repaired or rehabilitated shall comply with the applicable provisions of the latest National Electrical Code and National Fire Protection Association (NFPA).
2. Electrical installations not covered by the preceding paragraph, shall comply with the articles and sections of the latest National Electrical Code.
3. All stationary, electrically-powered equipment, tools and devices.
4. Suitable insulating mats or platforms shall be provided where motors or controllers operating at more than 150 volts to ground are guarded against accidental contact by locations, and where adjustment or other attendance maybe necessary during operation.

I. Emergency Flushing, Eyes and Body

When the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate use.

J. Exits

1. In hazardous areas, or where employees may be endangered by the blocking of any single means of egress due to fire or smoke, there shall be at least two means of egress remote from each other.
2. Exits, and the way of approach and travel from exits, shall be maintained so that they are unobstructed and are accessible at all times.
3. Exit doors shall swing in the direction of travel.
4. Exits shall be marked by readily visible exit signs. Exit signs shall be distinctive in color and provide contrast with surroundings. The word "EXIT" shall be of plainly legible letters, not less than six inches high.

K. Fire Protection

1. Portable fire extinguishers, suitable to the conditions and hazards involved, shall be provided and maintained in an effective operating condition.
2. Portable fire extinguishers shall be conspicuously located and mounted where they will be readily seen and not obscured from view.
3. Portable fire extinguishers shall be given maintenance service at least

annually with a durable tag securely attached to show the maintenance date.

4. All rolling stock within this Department shall be equipped with a portable fire extinguisher and shall be inspected annually.

L. Flammable Liquids

1. Flammable liquids shall be kept in covered containers when not` actually in use.
2. Flammable and combustible liquids shall be drawn from or transferred into containers within a building only through a closed piping system, from safety cans by means of a device drawing through the top, or by gravity through an approved self-closing valve. Transferring by means of air pressure shall be prohibited.
3. Inside storage rooms for flammable and combustible liquids shall be of fire resistive construction, have self-closing doors at all openings, four inch sills or depressed floors, a ventilation system that provides at least six air changes within the room per hour and electrical wiring approved for use in hazardous locations, or a flammable liquid cabinet that will comply with both OSHA regulations and NFPA 30 requirements.
4. Outside storage areas shall be graded in such a manner to divert spills away from buildings or other exposures; or be surrounded with curbs or dikes at least six inches high with appropriate drainage to a safe location for accumulated liquids. The area shall be protected against tampering or trespassing where necessary, and shall be kept free of weeds, debris, and other combustible material not necessary to the storage, or a flammable liquid cabinet that will comply wit both OSHA regulations and NFPA 30 requirements.

M. General Conditions- Housekeeping

1. All floor surfaces shall be kept clean, dry and free from protruding nails, splinters, loose boards, holes or projections.
2. Where wet processes are used, drainage shall be maintained and false floors, platforms, mats, or other dry standing places should be provided where practical.
3. Step ladders shall be equipped with a metal spreader or locking device of sufficient size and strength to securely hold the front and back section in open position.
4. Ladders shall be maintained in good condition, and defective ladders shall be withdrawn from service.
5. Extension ladders shall be erected on a sound base at a 4 - 1 pitch and placed to prevent slippage.

6. The top of a ladder used to gain access to a roof should extend at least 3 feet above point of contact.
7. In areas containing electrical circuits, a portable, fiberglass ladder should be used.
8. In general industry use, portable metal ladders may be used in areas containing electrical circuits if proper safety measures are considered.

N. Machinery, Fixed

1. Machines designed for a fixed location shall be securely anchored to prevent walking or moving, or designed in such a manner that the machine will not move in normal operation.
2. All belts, pulley, chains, flywheels, rotating or reciprocating parts within 10 feet of the floor or working platforms shall be effectively guarded.

O. Toeboards

1. Railings, Railings, protecting floor openings or platforms, shall be equipped with toeboards whenever persons can pass beneath the open side, wherever there is moving machinery, or where there is equipment with which falling material could cause a hazard.
2. A toeboard shall be at least 4 inches in height and may be of any substantial material, either solid or open, with openings not to exceed one inch in greatest dimension.

P. Weeding, Mower, Tree Trimming and Removal

1. Employees shall be instructed in the safe use of all equipment, both power and hand tools.
2. Proper eye protective equipment to prevent injury shall be provided.
3. Proper foot and hand protection shall be worn

Q. Welding, Cutting and Heating

1. Only properly trained employees shall use welding equipment.
2. Proper precautions (isolating welding and cutting, removing fire hazards from the vicinity, providing a fire watch, etc.) for fire prevention shall be taken in areas where welding or other "hot work" is being done. No welding, cutting or heating shall be done where the application of flammable paints, or the presence of other flammable compounds, or heavy dust concentrations creates a fire hazard.

3. Arc welding and cutting operations shall be shielded by non-combustible or flameproof shields to protect employees from direct arc rays.
4. When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be placed or protected so that electrical contact cannot be made with employees or conducting objects.
5. All arc welding and cutting cables shall be completely insulated. There shall be no repairs or splices within ten feet of the electrode holder except where splices are equal to the cable. Defective cable shall be repaired or replaced.
6. Fuel, gas and oxygen hoses shall be easily distinguishable and shall not be interchangeable. Hoses shall be inspected at the beginning of each shift and shall be repaired or replaced if defective.
7. Proper eye protective equipment to prevent exposure to personnel shall be provided. Employee using welding equipment shall take all precautions to protect observers of the welding operations.

14.0 RESPIRATOR PROGRAM

14.1 Introduction

These guidelines are to ensure that all employees know how to select and know how to use respirators that allow workers to breathe safely without inhaling toxic gases or particles.

Respirator protection is no better than the respirator in use, even though it is worn conscientiously. Frequent random inspection shall be conducted by a qualified individual to assure that respirators are properly selected, used, cleaned and maintained.

14.2 Working with Respirators

A. Respirator Selection

Based on the identification of the hazards and their exposures, the appropriate respiratory protection is chosen. Care needs to be taken to assure complete protection to the employee. The level of protection is only as good as the respirator selected.

Selecting the proper respirator for the job, the hazard, and the person is very important, as is thorough training in the use and limitations of respirators.

1. The Hazards

There are three hazards that should be considered when selecting the proper respirator to use - they are gases and vapors, particulates, and oxygen deficiency.

Particulates are a very common hazard that may be in the form of dust, fumes and mist. Dust may be created from drilling, cutting or grinding operations, or may be created from grain or fabric materials being moved around.

Fumes are created from things like metals being heated, and as the material is cooled, small particles of the substance are usually suspended into the air.

Mist is another form of a particulate. Mist is tiny droplets of liquids found mostly around spraying operations such as paint booths.

Gases and vapors are another type of hazard to consider when selecting a respirator. Gases and vapors tend to get into the body a lot easier than particulates because there are no natural barriers to protect against them.

The air that we breathe is made of gases and vapors, and substances of this form that pass into the body as easily as oxygen, and like air, are invisible.

Gases can be formed as a by product of certain processes, such as decomposing sludge in a lift station or manhole, and can give off deadly gases such as hydrogen sulfide gases, carbon monoxide and methane.

The last, and most overlooked hazard, is oxygen deficiency. Oxygen deficiency is an atmosphere which contains less than 19.5% of oxygen by volume, which is considered to be oxygen deficient.

2. The Job

The hazard of each job shall be analyzed prior to selecting the proper respirator.

The different types of jobs to consider are: working in confined spaces, welding, cutting, cleaning and painting.

When working in confined spaces where oxygen deficiency and toxic gases and vapors are possible, a self-contained breathing apparatus, or supplied air respirator, shall be worn at all times.

When cleaning, welding, cutting and/or painting, air-purifying respirators can be worn depending on the atmosphere in which you are working.

3. The Person

Every respirator wearer shall receive fitting instructions, including demonstrations and practice in how the respirator should be worn, how to adjust it and how to determine if it fits properly. Respirators shall not be worn when conditions prevent a good face seal. Such conditions maybe a growth of beard, sideburns, a skull cap that projects under the facepiece or temple pieces on glasses. Also, the absence of one or both dentures can seriously affect the fit of a facepiece.

The worker's diligence in observing these factors shall be evaluated by periodic check.

To assure proper protection, the facepiece fit shall be checked by the wearer each time he/she puts on the respirator. This may be done by following the manufacturer's facepiece fitting instructions.

Providing respirator protection for individuals wearing corrective glasses is a serious problem. A proper seal cannot be established if the temple bars of the eye glasses extend through the sealing edge of the full facepiece. As a temporary measure, glasses with short temple bars or without temple bars may be taped to the wearer's head.

Wearing of contact lenses in contaminated atmospheres with a respirator shall not be allowed. Systems have been developed for mounting corrective lenses inside full facepieces. When a worker must wear corrective lenses as part of the facepiece, the facepiece and lenses shall be fitted by a qualified individual to provide good vision, comfort and a gas tight seal.

If corrective spectacles or goggles are required, they shall be worn so as not to affect the fit of the facepiece.

B. Types of Respirators

The three basic types of respirators that will be used by the Sewer Maintenance Department personnel are: dust mask (paper), half mask (cartridge) and self--contained breathing apparatus (SCBA) supplied air respirators.

1. Dust Mask Respirators

This type of respirator will only be used in an atmosphere where the wearer can visibly see dust or other contaminants. These masks are only designed to remove dust particles that you can see. Dust masks, like all respirators, have their limitations, and it is up to the employee to understand and recognize them.

All dust masks will be located in a clean and dry location. The mask will be stored in the original container supplied by the manufacturer. This container will be clearly marked and contain valuable information on the use and care of this type of respirator. This information should be read by the user prior to using. Any mask that is found out of its container will be destroyed.

2. Half Mask Type Respirators

Half mask respirators are of a type that may utilize either a single or double cartridge filter. The design of this mask will cover the nose and mouth area. This type of mask will cover the nose and mouth area. This type of mask must have a proper seal with the face area. Any void in the seal will let contaminants in and will greatly reduce the effectiveness of the filter. This respirator can use different types of cartridges. Before each use, the cartridge should be checked to assure it is the proper cartridge to be used. Any cartridge that is not properly labeled as to its use will be destroyed immediately.

Storage and care of this respirator is critical to its performance. The respirator will be cleaned and disinfected after each use. After cleaning, it will be sealed in a plastic bag and stored in its original or appropriate container.

This container will be properly labeled with the following information: use, care, fitting and maintenance instructions. All replacement cartridges will be stored in their original containers, and these must also be labeled for their use and restrictions.

Before and after each use, the respirator will be inspected for deteriorated parts. All straps, hooks, and pliable parts will be checked for cracks and/or deteriorated parts. The cartridge mask will be inspected to assure proper fit and seal when the cartridge is installed. If at anytime a part cannot be replaced, the respirator will be destroyed and replaced.

Never, should an employee use or wear a half mask respirator that is in question. Training on the use and care will be provided by the supervisor or his/her representative.

No employee will use a half mask respirator until they have been trained on its use and limitations.

3. Self-Contained Breathing Apparatus (SCBA)/Supplied Air Respirator (SAR)

SCBA/SAR respirators deliver a supply of safe breathing air from a tank or an uncontaminated area nearby.

These two types of respirators can be used in areas where there are toxic contaminants, such as gases and vapors, and oxygen deficient atmospheres.

C. Maintenance of Respirators

It is important to keep reusable respirators in as near new condition as possible to ensure that maximum protection to the user is obtained. Respirator maintenance should be performed according to the manufacturer's instructions. A written procedure should be established, enforced, and supported by management.

A program for maintenance and care of respirators shall include the following basic services:

1. Cleaning and disinfecting and inspection
2. Repair and replacement as needed
3. Storage

Equipment shall be properly maintained to retain its original effectiveness.

All respirators will be inspected routinely before and after each use. A respirator that is not routinely used, but is kept ready for emergency use, will be inspected after each use, and at least monthly, to assure that it is in satisfactory working condition.

Self-contained breather apparatus will be inspected monthly. Air and oxygen cylinders will be fully charged as needed. Regulators and warning devices will be inspected monthly to see that they are functioning properly.

Respirator inspection shall include a check for tightness of the facepiece, headbands, valves, connecting tube, and canisters. Rubber or elastomer parts shall be inspected for pliability and signs of deterioration. Stretching and manipulating rubber or elastomer parts with a massaging action will keep them pliable and flexible and prevent them from taking a set during storage.

A record will be kept of inspection dates and repairs made to respirators.

Routinely used respirators shall be collected, cleaned, and disinfected as frequently as necessary to ensure that proper protection is provided for the wearer. Those used by more than one worker will be thoroughly cleaned and disinfected after each use. Respirators used for emergency use shall be cleaned and disinfected after each use.

Replacement or repairs shall be done only with parts designed for the respirator. No attempt shall be made to replace components or to make adjustments or repairs

beyond the manufacturer's recommendations. Reducing or admission valves or regulators shall be returned to the manufacturer or to a trained technician for adjustment or repair.

After inspection, cleaning, and necessary repair, respirators shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respirators should be stored for quick accessibility at all times and should be stored in compartments built for the purpose. The compartments should be clearly marked. Respirators should not be stored in such places as lockers or tool boxes unless they are in carrying cases or cartons. Routinely used respirators, such as dust respirators, may be placed in plastic bags. Respirators should be placed or stored so that the facepiece and exhalation valve will rest in a normal position and function will not be impaired by the elastomer setting in an abnormal position.

Instructions for proper storage of emergency respirators, such as gas masks and self-contained breathing apparatus, are found in "Use and Care" instructions usually mounted inside the carrying case lid.

4. Air Quality

Compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration shall be of high priority.

Oxygen shall meet the requirements of the United States Pharmacopoeia for medical or breathing oxygen. Breathing air shall meet at least the requirements of the specifications for Grade D breathing air.

Compressed oxygen shall not be used in supplied air respirators or in open circuit, self-contained breathing apparatus that have previously used compressed air. Oxygen must never be used with air line respirators.

Breathing air may be supplied to respirators from cylinders or air compressors. A receiver, hip pack tank of sufficient capacity to enable the respirator wearer to escape from a contaminated atmosphere in the event of cylinder or compressor failure, and alarms to indicate such failure, shall be installed in the system.

Air line couplings shall be incompatible with outlets for other gas systems to prevent inadvertent servicing of air line respirators with non-respirable gases or oxygen.

D. Respirator Training

The importance of periodic training is vital in maintaining the quality of the program. The use of the respirators and their capabilities, along with their limitations, is the utmost vital portion of the training process. Without the proper training, the time and thought that went into evaluating the hazards involved can be considered a waste.

ANSI 288.2-1980 in Section 7.2 specifically describes the type and frequency of the training process. Training should be provided to all new employees or when work conditions change. When work conditions do change, then all employees need to be retrained for respiratory protection. ANSI recommends that retraining take place every 12 months.

E. Respirator Fitting

In conjunction with the training program, there must be a Respirator Fit Program. After all respirators have been selected, then the designated employees will be fit tested. After all employees have been fit tested and evaluated, then the next step is to provide training in how to select and wear the respirator on the job. The following procedures will be done in order to assure the best possible seal.

There are two types of fit testing procedures.

1. Quantitative Fit Test:

Quantitative fit testing commonly uses a test chamber or booth where a stream of air containing a know concentration of a finely divided particulate aerosol (such as corn oil mist or salt) is used. The test subject, while in the chamber, wears a facepiece identical to that worn in the work place. This respirator is equipped with a probe allowing a small air sample to be continuously taken from the interior of the facepiece. This air sample is fed to an instrument that analyzes and detects concentrations less than 0.01 percent of the particulate aerosol. Any portion of the particulate aerosol which is found in the sample of the air coming from within the facepiece is called "leakage" or "penetration." This leakage is displayed on a strip chart, therefore, providing a permanent record of the test.

The advantages of quantitative fit testing is that it is regarded as the most precise means now available for fit testing. The strip chart acts as documentation which can be stored to provide evidence of fit. A quantitative fit test can also be used as a training tool to the wearer.

The major disadvantage to this type of test fitting is the cost may not be feasible for a small program. Also, this type of system required a trained and experienced operator. Also, a significant amount of time is required for each fit test.

NOTE: In some cases where protection is required from some contaminants, the employer, if governed by OSHA Regulations, may not have a choice but to use quantitative fit testing.

2. Qualitative Fit Testing

The difference, between a Qualitative Fit Test and a Quantitative Fit Test, is that the

Quantitative Test can be measured. A Qualitative Fit Test requires some subjective response from the individual being tested. They utilize some type of test agent such as isoamyl acetate (banana oil), which is an organic vapor. The fit of the respirator is determined by the subject being able to detect the odor, or slight irritation, or taste.

These fit tests should be done during the fitting portion of the training program, and not at the work location. There are two other types of Qualitative Fit Testing that should be performed by the user before entering a contaminated area. These are negative pressure and positive pressure tests. The negative pressure test requires closing off the inhalation side of the air purifying respirator and inhaling lightly. There should be no air flow into the respirator detected. The positive pressure test is the complete opposite. This is performed by closing off the exhalation valve and exhaling slightly into the respirator. Again, no leakage should be noted. One, or both, of these tests are commonly recommended by the manufacturers for checking the fit of the respirator each time it is donned.

The advantage to this type of testing is that they are easy to perform, they require little or no equipment, and they can be performed by relatively inexperienced people.

The disadvantages to this type of testing is that it requires some subjective responses from the individual being tested. The test subjects must have a thorough understanding of the test and be motivated to obtain the best possible fit.

Based on the individual being tested, determination of a pass or fail of a respirator may vary with each individual. The test does not provide documentation of the test results.

3. Issuing of Respirators

Respirators should be issued to employees only after they have received a physical from a physician and after a fit test has been performed on the wearer. The person issuing the respirator should also be trained and educated in respirator protection. Complete records for each wearer should be kept on file.

F. Medical Evaluation and Surveillance

The wearing of respirators does impose additional physical and psychological stress on the individual worker. These might be in the form of increased resistance upon inhalation due to the resistance of the respirator and/or added fatigue. As the work rate of the worker increases, these stresses are likely to have a more pronounced effect. Guidelines should be established by a physician and through the administrator.

An annual review of a worker's medical status must be performed. (ANSI 288.21980). In some instances, the potential risk to the wearer maybe great enough to warrant an annual review.

14.3 Definitions for Respirators

AEROSOL: A system consisting of particles, solids or liquids suspended in air.

AIR LINE RESPIRATOR: A respirator that is connected to a compressed breathing air source by a hose of small inside diameter. The air is delivered continuously or intermittently in a sufficient volume to meet the wearer's breathing requirements.

AIR PURIFYING RESPIRATOR: A respirator that uses chemicals to remove specific gases and vapors from the air or that uses a mechanical filter to remove particulate matter. An air purifying respirator must only be used when there is sufficient oxygen to sustain life and the air contaminant level is below the concentration limits of the device.

APPROVED: Tested and listed as satisfactory by the Bureau of Mines, or jointly by the Mining Enforcement and Safety Administration, and the National Institute for Occupational Safety and Health.

ATMOSPHERE SUPPLYING RESPIRATOR: A respirator that provides breathing air from a source independent of the surrounding atmosphere. There are two types: air line and self-contained breathing apparatus.

CANISTER (AIR PURIFYING): A container with a filter, sorbent, or catalyst, or any combination thereof, which removes specific contaminants from the air drawn through it.

CARTRIDGE: A small canister.

CHEMICAL CARTRIDGE RESPIRATOR: A respirator that uses various chemical substances to purify inhaled air of certain gases and vapors. This type of respirator is effective for concentrations no more than ten times the threshold limit value (TLV) of the contaminant, if the contaminant has warning properties (odor or irritation) below the TLV.

CONTAMINANT: A harmful irritation or nuisance material that is foreign to a normal atmosphere.

DEMAND: The demand valve permits air flow only during inhalation.

DUST: A solid, mechanically produced particle with sizes varying from submicroscopic to visible or macroscopic.

EMERGENCY RESPIRATOR USE: Wearing a respirator when a hazardous atmosphere suddenly occurs that requires immediate use of a respirator either for escape from the hazardous atmosphere or for entry into the hazardous atmosphere to carry out maintenance or some other task.

EXHALATION VALVE: A device that allows exhaled air to leave a respirator and

prevents outside air from entering through the valve.

FACEPIECE: That portion of a respirator that covers the wearer's nose and mouth in a quarter-mask (above the chin) or that covers the nose, mouth, and eyes in a full facepiece. It is designed to make a gas tight or particle tight fit with the face and includes the straps, exhalation valve(s), and connections for an air purifying device or respirable gas source, or both.

FILTER: A media component used in respirators to remove solid or liquid particles from the inspired air.

FOG: A mist of sufficient concentration to perceptibly obscure vision.

FUME: A solid condensation particle of extremely small particle size, generally less than one micrometer in diameter.

GAS: An aeriform fluid which is in the gaseous state at ordinary temperature and pressure.

HAZARDOUS ATMOSPHERE: Any atmosphere, either immediately or not immediately dangerous to life or health, which is oxygen deficient or which contains a toxic or disease-producing contaminant exceeding the legally established permissible exposure limit (PEL) or, where applicable, the threshold limit value (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH).

HEAD HARNESS: That part of facepiece assembly which secures the facepiece to the wearer.

HELMET: That portion of a respirator which shields the eyes, face, neck, and other parts of the head.

HIGH-EFFICIENCY FILTER: A filter which removes from air 99.97% or more of monodisperse dioctyl phthalate (DOP) particles having a mean particle diameter of 0.3 micrometer.

HOOD: That portion of a respirator which completely covers the head, neck, and portions of the shoulders.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH): Any atmosphere that poses an immediate hazard to life or produces immediate irreversible debilitation effects on health.

INHALATION VALVE: A device that allows respirable air to enter a respirator and prevents exhaled air from leaving the respirator through the valve.

MECHANICAL FILTER RESPIRATOR: A respirator used to protect against airborne particulate matter like dusts, mists, metal fume, and smoke. Mechanical filter respirators do not provide protection against gases, vapors, or oxygen deficient atmospheres.

MIST: A liquid condensation particle with sizes ranging from submicroscopic to visible to macroscopic.

MOUTHPIECE: That portion of a respirator which is held in the wearer's mouth and is connected to an air-purifying device or respirable gas source, or both. It is designed to make a gas-tight or particle-tight fit with the mouth.

NEGATIVE PRESSURE RESPIRATOR: A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

NON-ROUTINE RESPIRATOR USE: Wearing a respirator when carrying out a special task that occurs frequently.

ODOR THRESHOLD USE: The lowest concentration of a contaminant that can be detected by the olfactory sense.

OXYGEN DEFICIENCY: An atmosphere, which contains less than 19.5% oxygen by volume, is considered to be deficient.

PARTICULATE MATTER: A suspension of fine solid or liquid particles in air, such as: dust, fog, fume, mist, smoke, or spray. Particulate matter suspended in air is commonly known as an aerosol.

PERMISSIBLE EXPOSURE LIMIT (PEL): The legally established, time-weighted average (TWA) concentration or ceiling concentration of a contaminant that shall not be exceeded.

POSITIVE PRESSURE RESPIRATOR: A respirator in which the air pressure inside the respiratory-inlet covering is positive in relation to the air pressure of the outside atmosphere during exhalation and inhalation.

PRESSURE DEMAND: Positive pressure is maintained in the facepiece.

PROTECTION FACTOR: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.

RESCUE RESPIRATOR USE: Wearing a respirator for entry into a hazardous

atmosphere to rescue a person in the hazardous atmosphere.

RESISTANCE: Opposition to the flow of air, as through a canister, cartridge, particulate filter, orifice, valve or hose.

RESPIRATOR: A device designed to protect the wearer from the inhalation of harmful atmospheres. Respirators include: abrasive blasting respirators, air-line respirators, air-purifying respirators, chemical-cartridge respirators, filter respirators, full facepiece gas masks, half-mask apparatus (SCBA), and supplied-air respirators (SAR).

RESPIRATORY PROTECTION: Devices that will protect the wearer's respirator system from exposure to airborne contaminants by inhalation. Respiratory protection is used when a worker must work in an area where he/she might be exposed to concentrations in excess of the allowable exposure limits.

RESPIRATORY SYSTEM: The breathing system that includes the lungs and the air passages (trachea or "windpipe," larynx, mouth, and nose) to the air outside the body, plus the associated nervous and circulatory supply.

ROUTINE RESPIRATOR USE: Wearing a respirator as a normal procedure when carrying out a regular and frequently repeated task.

SELF-CONTAINED BREATHING APPARATUS: A respiratory protection device that consists of a supply or means of respirable air, oxygen, or oxygen-generating material carried by the wearer.

SERVICE LIFE: The period of time that a respirator provides adequate protection to the wearer—for example, the period of time that an air-purifying device is effective for removing a harmful substance from inspired air.

SMOKE: A system which includes the products of combustion, pyrolysis, or chemical reaction of substances in the form of visible and invisible solid and liquid particles and gaseous products in air. Smoke is usually of sufficient concentration to perceptibly obscure vision.

SORBENT: A material which is contained in a cartridge or canister and which removes toxic gases and vapors, from the inhaled air.

SPRAY: A liquid, mechanically produced particle with sizes generally in the visible or macroscopic range.

SUPPLIED AIR RESPIRATORS: Air line respirators of self-contained breathing apparatus.

TIME-WEIGHTED AVERAGE (TWA): The average concentration of a contaminant in air during a specific time period.

VALVE: A device which controls the pressure, direction, or rate of flow of air or oxygen.

VAPOR: The gaseous state of a substance that is solid or liquid at ordinary temperature and pressure.

WELDING HELMET: A device designed to provide protection for the eyes and face against intense radiant energy and molten metal splatter in the welding and cutting of metals.

14.4 Rules and Regulations for Respirator Wearers:

- A. Employees are not allowed to wear beards due to the sealing effect of the respirator to the face.
- B. Respirators shall be cleaned after each permit usage.
- C. Respirators shall be inspected prior to each use.
- D. Respirators shall be repaired as needed with manufacturer's recommended parts only.
- E. Respirators shall be kept in sealed cases when not in use.
- F. Breathing air tanks shall be filled as needed.
- G. Employees shall report all defective equipment at once to the Department Head.
- H. Employees shall wear respirators when entering all confined spaces.
- I. Employees shall keep respirators and equipment in an orderly fashion.
- J. Employees shall not be allowed to wear contact lenses when wearing respirators.
- K. Employees shall test and inspect respirator equipment thoroughly on a monthly basis regardless of use or not.
- L. Employees shall take training courses for respirator use and selection.
- M. Employees shall take a physical when required by the Department Head.
- N. Employees shall fill out and sign inspection sheets on respirators.
- O. All respirator equipment shall remain the same compartment for easy access.
- P. Disciplinary action for violating any of these rules shall be enforced.

15.0 BLOODBORNE PATHOGENS CONTROL

Per OSHA 29CFR 1910.1030

To minimize exposure and contact to bloodborne products by in services (training) and counseling to personnel who have been exposed.

- Developing training program
- Maintaining training program and updating program yearly, or as necessary. Training program will be available to all personnel when wanted by personnel.
- Universal precautions

- Appropriate engineering control
- Work practice controls
- Personal protective equipment and use
- Housekeeping procedure
- We will assume all body fluids to be potentially infectious for HBO, HIV and other bloodborne pathogens.
- Body fluids:
 - Semen
 - Vaginal secretions
 - Cerebral spinal fluid
 - Synovial fluid
 - Pleural fluid
 - Pericardial fluid
 - Peritoneal fluid
 - Amniotic fluid
 - Saliva
- Decontamination equipment
- Sharp containers
- Biohazard boxes and lined bags with proper biohazard labeling

Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses is prohibited until proper safeguards are met, such as decontamination.

Personal protective equipment includes:

- Gloves - including allergenic
- Gowns
- Faceshields/masks
- Safety goggles
- Resuscitation bags
- Pocket masks
- Hoods
- Shoe covers

All personal protective equipment is inspected periodically and repaired or replaced to be maintained for effectiveness. Reusable equipment is to be cleaned, laundered, and decontaminated as needed.

All equipment and surfaces are cleaned and decontaminated after contact with bloodborne products.

- A. After completion of procedures.
- B. Immediately when surfaces are overtly contaminated.
- C. Contaminates (non-reusable equipment) to be disposed of in proper biohazard containers.
- D. All receptacles to be routinely inspected for defects, cleaned, and decontaminated as

needed. Items are to be bagged and discarded in containers that are: closable, leakproof, and puncture resistant. Containers are to be properly biohazard labeled. Waste containers are maintained in an upright position and replaced as necessary. Containers should not be allowed to overfill.

Contaminated clothing will be removed as soon as possible. Contaminated laundry will be placed in a leakproof container and marked biohazard. Laundry is not to be separated and universal precaution is to be used when handling laundry. Laundry is to be done in not less than 158 degrees Fahrenheit water temperature. Since there is no guarantee of proper handling of laundry that is contaminated, no laundry will be done at home. Laundry is to be done on station or at employer's expense. Spare clothing is to be kept on units or on vehicles in case of contamination.

15.1 Information and Training

Responsible party will give training and information to all required personnel within the department including when job classification changes and responsible party will have to keep up on current updates on bloodborne pathogens.

- Bloodborne pathogens standard
- Physiology and symptoms of bloodborne pathogens HIV, HBV, Tuberculosis
- Exposure facility, control plan and where copies are available
- Prevention and reducing exposure to bloodborne pathogens such as:
 - A. Engineering controls
 - B. Work practice controls
 - C. Personal protective equipment
 1. Types available
 2. Proper use
 3. Location within facility
 4. Removal
 5. Handling
 6. Decontamination
 7. Disposal
- Classroom type with instructor
- Video programs
- Training manuals and employee handouts
- Employee review sessions
- Dates of all training sessions
- Contents/summary of training contents
- Name and qualifications of instructor
- Name and job title of those attending training session
- Records of each employee to be kept for up to 30 years
- Biohazard labels
- Containers (trash cans) that are leakproof and puncture resistant
- Gloves and gowns that are hypoallergenic
- Faceshields - chin length or masks

- Eye protection with side shields
- Gowns and aprons
- Shoe covers
- Biohazard bags (trash bags)
- Hand cleaning equipment (Alcare) when unable to wash hands
- Decontamination cleaners - OSHA approved for killing HIV, HBV, and
- Tuberculosis - such as bleach (1 cup for 3 gallons of water)
- Employee handouts with information on bloodborne pathogens

- B. OSHA exposure to bloodborne pathogens
- C. Protecting yourself against bloodborne pathogens
- D. OSHA bloodborne pathogen rules
- E. Morbidity and mortality weekly report

Training should include:

- A. Understanding of what HIV, HBV, and TB is
- B. Safeguards for protection - vaccines
- C. Use of universal precautions and proper removal
- D. Responsibilities per job class
- E. Provided handouts and access to files
- F. Cleaning and decontamination - proper labeling and handling
- G. Exposure incidents need to line up health maintenance, doctors, and OSHA file started

Additional information can be obtained through your supervisor or safety director.

16.0 LOCKOUT/TAGOUT PROCEDURES

16.1 Statement of Purpose

It is the intention of the City Of Whiting to prevent injury to its employees by establishing Lockout/Tagout procedures per industry standards and in accordance with Federal Registry guidelines as listed within 29 CFR 1910.147. This Lockout/Tagout Procedure section of the City Of Whiting Safety Policy Manual covers the servicing and maintenance of machines, equipment and piping in which the unexpected energization or start-up, or release of stored energy, could cause injury to employees. The following stated standards

establish minimum performance requirements for the control of hazardous energy.

This section does not cover exposure to electrical hazards from work on or near conductors, capacitors or exposure to hazardous chemicals or gases.

16.2 Applications Where Lockout/Tagout Procedures Apply

The standards contained herein apply to the control of energy during the servicing and/or maintenance of machines, equipment, electrical control, pneumatic controls, hydraulic controls or piping.

Servicing and/or maintenance which takes place during normal operations is covered by these standards only if:

- A. An employee is required to remove or bypass a guard or other safety device.
- B. An employee is required to place any part of his/her body into an area where energy is being released, either by the operation of the equipment, or discharge of energy or force as in pressure or electrical discharging or release. Wherever actual work force, as in the movement of equipment or machinery (point of operation) exists, or where an associated danger zone exists during a machine operating cycle.

The standards do not apply to minor adjustments and changes, and other minor servicing activities, which take place during normal operations, provided that they are routine, repetitive, and integral to the use of the equipment during the operation, provided that the work is performed using alternative measures which provide effective protection.

16.3 Procedures

A. Standard Procedures

1. Lockout Procedure

- a. When performing any type of servicing or repairing to equipment which is other than routine adjustment or maintenance where guards and other safety devices are in place, then the equipment must be locked out to prevent unintentional starting of the equipment.
- b. When a lockout is placed on a piece of equipment, the employee must retain the key to the lockout device during the service to be performed. There will be two, and only two, keys to any lockout device. One key will be kept in the lockout device itself, only to be removed when the device is in use, with the key kept by the employee performing service. The second copy of all lockout device keys must be retained by the Department Head, and the Department Head only.

- c. There will be a centralized location, where all lockout devices are kept for each department, allowing access to all employees of that department. Lockout devices that are specialized to one particular piece of equipment may be stored in the area of that piece of equipment, but a record log of use must be kept at that site.
- d. A record will be kept of all lockout devices, when they are used, where they are used, by whom, the date placed on, the date removed, signature of employee checking out a lockout device, and a place for the signature of the Department Head if the lockout was removed by other than the employee placing the lockout on the equipment.
- e. The lockout device may only be removed by the employee performing service to the piece of equipment. The only exception being that the Department Head, or Assistant Department Head, may remove a lockout device in an instance where he/she has personally inspected the equipment and the employee placing the lockout on is not present that day.

2. Tagout Procedures

- a. When a piece of equipment requires servicing, other than routine, the piece of equipment must be affixed with a red tagout to prevent unintentional starting or use by other employees.
- b. A record will be kept on the tagout tag, which is placed on the equipment. The tagout tag will show the following:
 - 1) Employee's initials
 - 2) Time tagged out
 - 3) Date tagged out
 - 4) Problem observed
 - 5) When tagout tag is removed
 - 6) Who removed tagout tag
 - 7) Department Head or Assistant Department Head's signature
- c. There will be a centralized location where all tagout tags are kept for each department, allowing access to all employees of that department.
- d. A record will be kept of all tagout keys, in the centralized location, showing when they are used, where they are used, by whom, the date placed on, the date removed, signature of employee checking out a tagout tag, and a place for the signature of the employee removing the tagout.
- e. The only employees that may remove a tagout are the following:
 - 1) The employee placing the tagout on the piece of equipment
 - 2) The maintenance employees, when performing services or repairs

- required
- 3) The Department Head or Assistant Department Head

B. Electrical

When working on replacing fuses, circuit breakers, or performing any servicing to electrical controls, the main control breaker must be shut off, and locked out during servicing. The lockout applies only where the employee performing servicing is not in the immediate vicinity of and in complete and sole control of the main disconnect breaker.

If the employee is to leave the area of the electrical servicing prior to its completion, the main breaker must be locked out if placing the breaker back into the on position poses a threat of danger to the controls, attached equipment or to any employee turning that unit on. A lock must be placed on the breaker switch preventing operation of the switch.

If a lockout is placed on the control, only the employee who placed the lockout on the disconnect breaker, may remove the lockout. The key must be removed by the employee and retained by that employee until the work to be performed is completed, or until it is safe to return the unit to service. In a case where the lockout employee is unavailable to remove the lockout, the Department Head may, after thorough inspection of the equipment, remove the lockout and return the unit to service.

If an employee notices a problem in an electrical panel where the employee believes a failure may result, the employee is to shut down the main disconnect and tagout the unit. The employee will affix a tagout that lists the employee's name, date, time of tagout, and reason for tagout. The tagout tag must be affixed in a way to prevent the returning of the breaker to an "on" position. The tagout tag must be affixed in such a manner as to be easily noticeable to any and all employees that may attempt to return the unit to service. Only the tagout employee, maintenance mechanic, or Department Head or Assistant Department Head may remove the tagout.

C. Motorized Equipment

General - When performing any type of servicing or repair to equipment which is powered by either diesel, natural gas, LP gas or gasoline engines, other than routine adjustment or maintenance where guards and other safety devices are in place, then the coupling between the motor and the piece of equipment should be disconnected.

1. Electric Powered

When performing any type of servicing or repairing to electrically powered equipment, other than routine adjustment or maintenance where guards and other safety devices are in place, then the main control breaker must be locked out. In addition, if the piece of equipment in question is not located close to the main control breaker to give the employee performing service sole and total control over

that main breaker, then a lockout must also be placed on the equipment's local disconnect switch.

If a piece of electrically motorized equipment is located remote from its main disconnect breaker and has no local disconnect, then the employee must uncouple the electrical motor shaft from the piece of equipment in question. The main control breaker for the piece of equipment must still be locked out.

If a piece of electrically motorized equipment is located remote from its main disconnect breaker, has no local disconnect, and has a common drive shaft with the driven equipment (no coupling), then the equipment must be unwired electrically at the motor prior to servicing. Unwiring the motor leads can only be done by trained personnel or a certified electrician.

2. Gasoline/Diesel/Natural Gas/LP Gas Powered

Gasoline - When performing any type of servicing or repair to gasoline powered equipment, other than routine adjustment or maintenance where guards and other safety devices are in place, then the battery must be disconnected during the repair to prevent unintentional starting of the unit. In addition, the unit must have a tagout placed on the starter control or control panel if servicing cannot be completed within that immediate time period.

Gasoline - When the gasoline powered equipment is not equipped with a battery/starter combination, then the spark plug wire or distributor wire must be removed. In addition, the unit must have a tagout placed on the starting device or control panel if servicing cannot be completed within that immediate time period.

Diesel - When performing any type of servicing or repair to diesel powered equipment, other than routine adjustment or maintenance where guards and other safety devices are in place, then the battery must be disconnected during the repair to prevent unintentional starting of the unit. In addition, the unit must have a tagout placed on the starter control or control panel if servicing cannot be completed within that immediate time period.

Diesel - When the diesel powered equipment is not equipped with a battery/starter combination, then the fuel line between the fuel injector pump and injectors must be disconnected. In addition, the unit must have a tagout placed on the starting device or control panel if servicing cannot be completed within that immediate time period.

Natural Gas/LP Gas - When performing any type of servicing or repair to Natural gas TLP gas powered equipment, other than routine adjustment or maintenance where guards and other safety devices are in place, then the battery must be disconnected during the repair to prevent unintentional starting of the unit. Secondly, the fuel supply valve must be shut off and locked out with a locking

valve handle boot. In addition, the unit must have a tagout placed on the starter control or control panel if servicing cannot be completed within that immediate time period.

3. Automatically Starting Equipment

Whenever working on any piece of automatically starting equipment, the employee must shut down the automatic controls and lock out that controller during the time of servicing or repair. This must be done in addition to the aforesated, outlined procedures.

4. Vehicles and Heavy Equipment

When performing any type of servicing or repair to vehicles and/or heavy equipment other than routine adjustment or maintenance where guards and other safety devices are in place, the ignition keys should be removed and retained by the employee performing the work.

Before performing any work to the vehicle or heavy equipment, the wheels should be chocked, or should be chained down and locked to prevent unintended movement of the vehicle. In addition, any parking brakes must be set prior to any work performed.

If the vehicle is lifted via jacks, then jack stands must be placed in a manner so as to remove the load from the jack. The jack must not be used to support the vehicle or piece of equipment during the work performed. If a lift or rack is used to suspend the piece of equipment or vehicle, then the lift locking mechanism must be locked in prior to servicing.

In a situation where hydraulic rams are involved (example: endloader/backhoe buckets, jack stabs, dump truck beds, snow plows, etc.), ram locks must be placed on the extended rams prior to any servicing. Under no circumstances is servicing on buckets, dump lifts or beds or equipment to take place with the lift itself as the support. Jacking beams or jack stands are allowed only in a situation where servicing or repair of the lift ram itself is required. After safety support devices are in place, all tension must be released, removing all load from the lift ram.

All procedures stated previously in Section C, 1 thru 4 apply respectively.

5. Hydraulically/Pneumatically Assisted or Driven Equipment

When performing any type of servicing or repair to hydraulically/ pneumatically assisted or driver equipment other than routine adjustment or maintenance where guards and other safety devices are in place, then the hydraulic pump must be locked out or disconnected from the Power Take-Off (PTO) shaft. If the hydraulic pack runs more than one piece of equipment, then the piece of equipment in

question must be isolated. If a hydraulic/pneumatic feed valve is in place, it must be closed and locked out. If a hydraulic/pneumatic feed valve is not in place, compressor or hydraulic pack must be shut off long enough so that the pressure drive line is removed and capped.

After isolating the unit from the pressure source, all line pressure to and from the unit to be serviced must be relieved.

If the aforementioned sections cannot be performed, then the main equipment driver shaft must be clamped or chained down to prevent movement of the unit. It must be done sufficiently in a manner which provides two and one-half times the restraint (as measured in ft./lbs of torque) than the unit can develop. This may only be done with the written approval of the Department Head.

6. Pumps, Compressors and Blowers

When performing any type of servicing or repair to pumps, compressors or blowers other than routine adjustment or maintenance where guards and other safety devices are in place, both inlet and outlet valves must be closed and tagged out. All pressure must be relieved from the compression or propulsion section prior to any work performed.

If possible, the drive mechanism (belts or coupling) should be disconnected prior to work performed.

All aforementioned procedures pertaining to the drive motor for the pump, blower or compressor must be followed prior to any work or servicing taking place. If the drive is electrical, then the equipment must be locked out at the local disconnect as well as the main breaker for the piece of equipment in question.

When performing work to a compressor, all pressure must be discharged or relieved prior to the work taking place.

When the blower, compressor or pump is automatically starting, then in addition to the aforementioned procedures, all procedures as described in Section 3.30 shall be followed.

17.0 HAZARD COMMUNICATIONS PROGRAM

17.1 Statement of Purpose

The purpose behind establishing a Hazard Communication Program, in compliance with OSHA Standard 29 CFR 1910.1200, is to inform workers of the potentially hazardous substances produced or imported into the work place and to equip them to deal with these hazards safely in everyday work situations, as well as in emergencies.

This section provides requirements for each department to establish their own individual program, and thus does not in itself constitute a hazard communication program. Each department is required to establish and implement their own Hazard Communication Program under the City program guidelines and requirements.

17.2 Program Responsibilities

A. Record Keeping and Implementation

The Mayor will appoint each Department Head to be responsible for establishing, implementing and keeping up to date, the Hazard Communications Program for their respective departments. Those departments and responsible persons are listed below:

<u>Department</u>	<u>Responsible Person</u>
Administration	Mayor or designee
Clerk-Treasurer	Clerk-Treasurer
Police Department	Police Chief
Fire Department	Fire Chief
Street Department	Street Commissioner
Sewer Department	WWTP Superintendent
Park Department	Park Superintendent
Water Department	Water Superintendent

The Department Head will be responsible for determining who is responsible, on a day to day basis, for keeping current all Hazard Communications and Material Safety Data Sheet (MSDS) records.

The Department Head will, on a quarterly basis, review and evaluate the MSDS and Haz-Com records.

Each Department Head will submit a copy of the department's master MSDS record to the Mayor. The Administration office will retain a master copy of all departmental Haz-Com and MSDS programs. It shall be the responsibility of each Department Head to annually update the master copy of their programs retained at the City Hall.

B. Employee Training

The Department Head, or designated Haz-Com Coordinator, shall conduct a training session at the initial start of the department's Haz-Com Program. The Department Head, or Coordinator, shall hold a monthly meeting with all employees of that department to update all employees on any updates to the Haz-Com Program for that department. It shall cover any new hazardous procedures or new hazardous chemicals and safety measures that need to be taken.

A sign-in record of employee attendance for all Haz-Com training and update sessions will be kept on file at each department. It must be signed by each employee in attendance.

The Department Head, or designated Haz-Com Coordinator, shall draft and give to all employees a booklet of Haz-Com Standards for their department. In addition, the booklet shall be given to any new employees at the time of hiring.

The employees shall sign that they have received the booklet. The booklet shall contain the following:

1. Any operations in their work where hazardous chemicals or substances are present.
2. The location and availability of the written hazard communication program, including the list of hazardous chemicals and MSDS's.
3. Methods and observations used to detect the presence or release of hazardous chemicals or substances in the work area.
4. The physical and health hazards of chemicals in the area.
5. Protective measures including emergency procedures and protective equipment needed.
6. An explanation of the department's labeling system and how to obtain and understand MSDS's.
7. How employees can obtain copies of MSDS's for personal use.

C. Contractor Employers

Any time that contractual work is done for a department, it is the responsibility of the Department Head and the Mayor, to specify within any services contract, that all contractor employees be given that department's Haz-Com program booklet. A record of receipt must be given by the Contractor to the Department Head prior to the start of any work. The record must be signed by each contractor employee involved in the work performed for that department showing that the contractor employee personally received the department's HazCom booklet.

The department's Haz-Com Program and MSDS's shall be made available to any contractor employers and their employees.

The aforementioned policies shall also pertain and apply to any subcontractors and their employees. The general contractor shall be made responsible for implementing the Haz-Com procedures as well as supplying the Department Head with a list of subcontractors and their employees involved in the work outlined under the contract. This, in no way, relieves the Department Head from having the ultimate responsibility of ensuring that any and all workers are informed as to the hazards of work in the department's work areas.

17.3 Material Safety Data Sheets (MSDS)

A. General Requirements

Every department is to set up, implement and maintain a list of hazardous chemicals

and substances that are in the work area. For each hazardous chemical used or stored in the work area, there must be a Material Safety Data Sheet (MSDS). A master file on all MSDS's are to be kept in the administration area of the department by the Department Head.

All MSDS's must list the following information:

1. Common name of the chemical or substance
2. Chemical composition of the chemical or substance
3. Hazards involved with use and misuse of the chemical or substance
4. Necessary precautionary measures to be taken when using or storing the chemical or substance
5. Emergency procedures that need to be taken in case of misuse, spill or contamination
6. Location or locations of chemical or substance within the work place
7. Name, address and contact person of manufacturer and/or distributor
8. Protective ear or safety equipment needed for handling, storage or use

All hazardous chemicals or substances must be clearly labeled with its common name, hazards related to its use, and precautionary measures needed in its use.

If a chemical is placed in an unmarked container, it must be used, in total, prior to the end of that work shift. If not used by the end of that shift, the container must be labeled.

All building piping must be labeled with at least the direction and the common name of the substance or chemical passing through or contained therein.

As changes occur in the chemical make-up of any chemical or substance, the container labeling and MSDS's must be updated.

The MSDS's must be placed in a book or books which are easily accessible to the employees within the department.

A procedure must be established, implemented and communicated to all employees of the department so that employees can obtain personal copies of MSDS's.

B. Locations

A City Master File of all MSDS's, compiled from all Departmental Master Files, shall be located in the City Hall. The City Master File shall be retained by the Mayor. The City Master File shall be made accessible to all City employees upon request.

A Departmental Master File, compiled from MSDS's for hazardous chemicals and substances used or generated with the department, shall be kept in the Administration or Office Section of each department. It shall be made accessible to all employees within the department upon request.

Wherever there are large stocks of hazardous materials in areas where work is performed on a frequent basis, there is to be a local MSDS station. MSDS's, for chemicals and substances used in those specific work areas, shall be contained therein. But, only the Departmental Master File and City Master File need contain all MSDS's for the department.

C. Establishing and Maintaining an Inventory List

Each department is responsible for establishing, and keeping up to date, an inventory listing of all hazardous chemicals and substances used within their department. The inventory list shall be kept in the front of the Departmental Master File. The inventory list shall contain the following:

1. Common name of the chemical or substance
2. Location, in the Departmental Master File, of the MSDS's of each chemical or substance
3. Location(s) of each substance or chemical
4. How chemical or substance is packaged, (i.e. bulk, aerosol, bags, drums, buckets, cans, bottles)

As new chemicals or substances are used and shipped in, it shall be the responsibility of the Department Head and/or Coordinator to make sure that MSDS's are shipped with the chemical or substance. If an MSDS does not accompany the shipment, it is the Department Head and/or Coordinator's responsibility to contact the manufacturer/distributor/vendor to obtain the appropriate MSDS's.

When establishing the program, the file and books must be complete. All MSDS's must be present. If there are hazardous chemicals or substances used by the department that do not have an MSDS, then the manufacturer must be contacted, and the MSDS must be obtained.

As new MSDS's come in, they must be delivered to the Department Head or Coordinator. It is their responsibility to constantly keep up to date the Departmental Master File as well as any or all location MSDS Stations. It is further the responsibility of the Department Head to keep the City Master File up to date by furnishing the Mayor with copies of all new MSDS's as they come in to the department.

17.4 Non-Routine Hazards

A. General Requirements

Each department is responsible for establishing a manual of procedures concerning non-routine work that is hazardous in nature, or could pose a potential hazard in the performance of work in that area. Examples of non-routine hazardous work, is work that is not performed on a day-to-day basis (cleaning out tank interiors, working in wet wells of lift stations, handling or responding to a spill of hazardous materials,

etc.).

Prior to the start of any non-routine, potentially hazardous job, the employees involved must be informed of the potential hazards involved, protective measures or protective gear needed to perform the outlined task, and emergency procedures in case of contamination or accident.

The Department Head is responsible for ensuring, in writing, that employees have been briefed and received proper training and information pertaining to the non-routine work and its potential hazards.

17.5 Labeling

A. General Requirements

All containers of hazardous chemicals and substances must be clearly labeled with a standardized Hazardous Materials Identification Guide (HMIG). The HMIG will list the degree of health risk, the degree of flammability, the degree of reactivity and protective equipment required. The degrees of health risk, flammability and reactivity will be graded from 0 to 4. The different protective equipment required should be listed per their combination from A to X. The HMIG is listed below. The HMIG is as follows:

0 - Minimal	A-eye protection
1 - Slight	B-eye protection, gloves
2 - Moderate	C-eye protection, gloves, chemical apron
3 - Serious	D-face shield, gloves, chemical apron
4 - Extreme	E-eye protection, gloves, dust mask
	F-eye protection, gloves, chemical apron, dust mask
Health Risk - Blue	G-eye protection, gloves, respirator
Flammability - Red	H-goggles, gloves, respirator, chemical apron
Reactivity-Orange fumes	I-eye protection, gloves, respirator for dust and
Protective Equipment - White chemical	J-goggles, gloves, respirator for dust/fumes, apron
	K-Self Contained Breathing Apparatus (SCBA), gloves, chemical suit, boots
	X-Ask your supervisor for specific protective gear needed

All employees are to be supplied with training on how to properly read and understand the Department's HMIG labeling system, as well as being supplied with a personal HMIG pocket-type guide listing the labeling system.

As hazardous chemicals or substances are shipped in, it is the responsibility of the Coordinator to ensure that the containers are affixed with the proper HMIG labeling.

If a product is transferred from a bulk container to a dispenser or unlabeled container, it must be used in its entirety by the end of that work shift or work day. If not, then the receiving container must be affixed with a HMIG label containing the same information as the original bulk container.

An HMIG guide should be posted in each and every building containing hazardous chemicals or substances to ensure availability to all employees.

The Department Head or Coordinator shall, as changes in chemicals are sent by manufacturer or vendor, revise the labeling information on the product(s) in question.

The Department Head or Coordinator shall annually conduct a review of all labels to see if revisions need to be made to the HMIG labels.

Prior to using any hazardous chemical or substance, employees must first read and understand the HMIG label for the product to be used.

B. Piping

To comply with OSHA standards, all piping in buildings within all departments must either be color coded per OSHA standards, or at least labeled with direction of flow and the material being transmitted through the pipe.

Colors used for color coding of piping is as follows:

Compressed Air	OSHA Green
Potable Water	OSHA Dark Blue
Non-Potable Water	OSHA Light Blue
Chlorine	OSHA Yellow
Raw Sewage	OSHA Grey
Sewage Sludge	OSHA Brown
Digester Supernatant	OSHA Silver
Methane Gas	OSHA Red
Natural Gas	OSHA Orange
Sulfur Dioxide	OSHA Purple

If piping is color coded, flow directional arrows must be placed on the piping.

A color chart must be posted, in a conspicuous place, so that employees can quickly and easily reference what materials are contained within the piping in each building.

All tanks used for bulk storage of chemicals must be clearly labeled with the following:

1. Common name of the chemical or substance
2. Chemical composition of the chemical or substance

3. Hazards involved with use and misuse of the chemical or substance
4. Necessary precautionary measures to be taken when using or storing the chemical or substance
5. Emergency procedures that need to be taken in case of misuse, spill or contamination
6. Location or locations of chemicals or substances within the work place
7. Name, address and contact person of manufacturer and/or distributor
8. Protective gear or safety equipment needed for handling, storage or use.

18.0 FALL PROTECTION

18.1 Introduction

The following procedures are set forth as a means of protecting the health and significantly reducing the accidental injury or death associated with falls.

Any employee on a walking/working surface shall be protected from falling six (6) feet or more, by a guard rail system or a personal fall arrest system.

1. An employee on a walking/working surface (horizontal/vertical) with an unprotected edge or side which is six (6) feet or more above a lower level.
2. Employees in a hoist area who have any opportunity to lean over an opening while aiding in hoisting operations.
4. Employees on a walking/working surface shall be protected from falling through

holes more than six (6) feet above lower levels.

5. Employees who are six (6) feet or more above dangerous equipment.

18.2 Definitions

GUARDRAIL SYSTEM: A barrier erected to prevent employees from falling to lower levels.

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

FULL BODY HARNESS: Means straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system

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

OPENING: A gap or void thirty (30) inches or more high and eighteen (18) inches or more wide in a wall or partition, through which employees can fall to a lower level.

18.3 Training Requirements

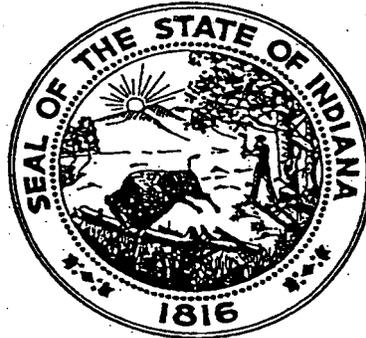
The Fall Protection Training Program will be provided to all applicable departments and their employees who might be exposed to fall hazards. It is essential that each employee be trained by a competent person qualified in the following areas:

1. The nature of fall hazards in the work area.
2. The correct procedures for erecting, maintaining and in specifying the fall protection systems to be used.
3. The use and operation of guardrail systems, personal fall arrest systems, controlled access zones and other protection to be used.
4. The role of employees in fall protection plans.

29 CFR 1910.38 and 29 CFR 1926.35 EMERGENCY ACTION PLAN

This is a guide whose intended usage is to serve as a convenient guide for obtaining compliance with the applicable OSHA standard. It should be expanded, personalized, and tailored to your companies, places of business, or work sites.

This publication does not alter or determine compliance responsibilities, which are set forth in OSHA standards and in the Occupational Safety and Health Act. Moreover, because interpretation and enforcement policy may change over time, for additional guidance on OSHA compliance requirements, the reader should consult current administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the courts.



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05-16-02

EMERGENCY ACTION PLAN

I. PURPOSE

The purpose of an Emergency Action Plan is to protect the employees from serious injury, property loss, or loss of life in the event of a major disaster. A major disaster constitutes any one (1) of the following: fire - tornado - earthquake - violence in the workplace - bomb threat - hazardous chemical spill.

In the event of any disaster listed, this Emergency Action Plan describes the responsibilities and actions to be taken to protect all employees.

II. GENERAL PROCEDURES

In the event of a disaster, the warning may come from any one (1) of the following sources: commercial radio or television, civil defense radio, in-plant system, in-plant alarm, messenger, police, or fire.

A. Notification of Emergency Warning

A person receiving notification of a possible disaster, or an in-plant emergency should immediately notify their immediate supervisor. The type of disaster or emergency situation should then be conveyed to all employees with the use of the established emergency alarm system.

B. Emergency Control Committee

The following personnel will constitute the Emergency Control Committee. In the event of a disaster or immediate emergency, they are to report to a designated emergency Control Center unless the prevailing situation dictates otherwise.

Committee members are:

1. Mayor or his designee
2. Police Chief
3. Fire Chief

Responsibilities - Emergency Control Committee .

1. Assess nature and extent of all emergencies
2. Assume control of all emergency actions
3. Assign tasks to personnel to carry out specific actions
4. Order evacuation if deemed necessary
5. Take any other action necessary to protect life
6. Annually review plan and revised as necessary
7. Plan training exercises to test evacuation plan
8. Instruct personnel of their duties under this plan

In any emergency situation, the ranking member of management present shall have final authority to coordinate procedures, and amend, modify or supersede any

provisions of this plan in order to ensure employee safety.

C. Emergency Control Center

Emergency actions should be coordinated at the Emergency Control Center which will be designated at City Hall. If this office is not available, report to the most convenient office of the other two (2) committee members.

D. First Aid Services

All first-line supervisors have been certified by the American Red Cross to provide first aid. They will be available to administer first aid in the plant, or in the event of a complete evacuation at a safe assembly area outside the plant.

E. Utility Controls

All maintenance personnel will know the location and operation of main controls for shutting off the gas, electricity, and water leading into the building.

F. New Information

Information to any source of news media will only be released at the discretion of the Mayor.

III. EMERGENCY ALARMS

A. Alarm System

In the event of a fire, the Alarm System will be activated automatically. Upon activation, the flow of water will begin in the area of the fire, and an alarm will sound throughout the building. Upon hearing the alarm, employees should, if time permits, shut off the power to the equipment they are operating and proceed to the evacuation sites indicated outside the building and conduct a roll call.

B. Action

When the alarm is activated, at least one (1) member of the Emergency Control Committee should report to the evacuation site outside the plant. The other members should take necessary action to insure safety of the employees and notify proper agencies for any services that are needed.

C. Building-Wide Evacuation Alarm

With the exception of a fire, employees should not evacuate the building unless authorized by the Emergency Control Committee. Once at the assembly site, the first-line supervisor should conduct a roll call and report to a Emergency Control Committee member for assistance.

D. Phone Listings

A listing of all emergency telephone numbers are located at plant and office telephones. If the emergency occurs on the day shift, the switchboard operator will be responsible for contacting the appropriate agency. A member of the Emergency Control Committee should then be contacted for assistance.

IV. EVACUATION SITES

A map of all evacuation sites will be displayed in the lunch room and all departments. Each map will show the route and exit to take depending where employees are located in the plant. It will be the responsibility of the first-line supervisor to inform employees of these evacuation routes.

V. PROCEDURE FOR EMERGENCY SHUTDOWN OF OPERATIONS

An emergency shutdown will only be ordered from the highest ranking member of the Emergency Control Committee. No employee should risk any type of injury to accomplish this task. However, if time permits, the following personnel should perform the following duties:

VI. TORNADO

In the event of a tornado or a severe weather warning, the following procedure should be put in effect by the supervisor or emergency Control Committee:

- A. Listen for latest advisories on radio.
- B. Post outlooks for outside observation.
- C. If necessary, initiate emergency shutdown procedures.
- D. Move personnel into designated safe assembly areas within the building.
- E. After tornado passes, restore calm and check for injuries.

VII. EARTHQUAKE

An earthquake will usually occur without any type of warning. Due to the suddenness, all personnel should attempt to get into a doorway passage or under a table or desk. Any place where an employee feels safety is warranted. **NO ONE SHOULD GO OUTSIDE THE BUILDING.** After an earthquake has stopped, the following procedure should be initiated:

- A. All employees should help restore calm to fellow employees.
- B. Emergency Control Committee and first-line supervisors should check for injuries and provide first aid as needed.
- C. The maintenance department should check for fires and shut off all gas, electricity, and water at main controls.
- D. The building should be inspected by a member of the Emergency Control Committee

for damage. If major structural damage has occurred, the Emergency Control Committee should order a complete evacuation.

- E. The Emergency Control Committee should then notify proper utility' companies or other services as needed.

VIII. BOMB THREAT

In the event of a bomb threat, which will normally be received over the telephone, the following procedure should be followed: .

- A. The person receiving the bomb threat should complete the attached form as soon as possible and answer questions once the report has been turned over to the Emergency Control Committee.
- B. The Emergency Control Committee shall determine the appropriate procedures to be taken among the following:
 - 1. Commence immediate building wide evacuation to outside evacuation sites
 - 2. Contact proper law enforcement agencies
 - 3. Contact the fire department
 - 4. Do not permit re-entry until the building has been searched and declared safe by bomb disposal unit.
- C. If a bomb threat is received by any other means than the telephone, the person receiving the threat should report immediately to their first-line supervisor or a member of the Emergency Control Committee.

IX. FIRE PREVENTION AND WORKPLACE HAZARDS

- A. It is the responsibility of all employees to prevent any type of fire in the-building.

Listed below is a list of general items to take into consideration to accomplish this objective:

- 1. Extinguish all cigarettes in their proper place.
 - 2. Do not have open flame around any type of chemicals, paints, solvents, or flammable liquids.
 - 3. Make sure all hand held torches are extinguished when not in use.
 - 4. Do not put any type of hot object in trash cans; i.e., cigarette butts.
- B. Listing of Some Workplace Hazards:
 - 1. Flammable Substances
 - a. Paint and Paint Solvents
 - b. Mineral Spirits

- c. Alcohol
- d. Oxygen and Acetylene Tanks
- e. Hydraulic Oil
- f. Grease

2. Welding Operations

- a. All welding operations will be done in a confined area unless, otherwise instructed by the maintenance manager. A fire extinguisher will be immediately available in case of an emergency.

X. CONTROL OF WORKPLACE HAZARDS

- A. All flammable and combustible materials will be stored in a designated area or flammable storage area.
- B. Good housekeeping will be the responsibility of ALL employees.
 - 1. Waste materials are to be discarded in their proper places
 - 2. Operators are to pick up and sweep any debris on or around their machine on a shift to shift basis
 - 3. All aisles and exits will be kept clear
 - 4. All painted areas to fire extinguishers will be kept clear for access
 - 5. All employees will know evacuation routes and exits to proceed to when instructed, if an emergency situation develops
 - 6. All employees will be instructed on the company Emergency Action Plan
 - 7. Emergency telephone numbers will be posted at main receptionist desk, offices of Emergency Control Committee members and first-line supervisors Each first-line supervisor will be responsible for their shift employees to handle, store, and maintain hazardous materials properly

XI. MAINTENANCE OF FIRE EQUIPMENT AND SYSTEMS

- A. Maintenance Manager Responsibilities
 - 1. Maintenance department will conduct monthly inspection of fire extinguishers and blanket locations. Any questions or problems should be conveyed back to the maintenance manager.
 - 2. An outside safety firm will run annual checks on all fire extinguisher equipment

BOMB THREAT CHECKLIST

INSTRUCTIONS: BE CALM AND COURTEOUS.
LISTEN, DO NOT INTERRUPT CALLER.

NAME OF OPERATOR:

TIME:

DATE:

CALLERS IDENTITY: MALE FEMALE ADULT JUVENILE

ORIGIN OF CALL: LOCAL LONG DISTANCE BOOTH INTERNAL

SPECIFICS ABOUT BOMB:

- A. KEEP CALLER TALKING IF CALLER IS AGREEABLE TO FURTHER CONVERSATION.
- B. ASK QUESTIONS LIKE:
WHEN WILL BOMB GO OFF? WHAT IS YOUR PRESENT LOCATION?
LOCATION OF BOMB? WHAT IS YOUR NAME AND ADDRESS? WHAT
KIND OF BOMB? HOW DO YOU KNOW SO MUCH ABOUT THE BOMB?
- C. DID CALLER APPEAR FAMILIAR WITH PLANT OR BUILDING BY HIS
DESCRIPTION OF BOMB LOCATION?
- D. AFTER CALL IS TAKEN, NOTIFY AT ONCE A MEMBER OF THE EMERGENCY
CONTROL COMMITTEE

TITLE: EMPLOYEE EMERGENCY PLANS AND FIRE PREVENTION PLANS

Standard Number: 1910.38

- (a) "Emergency action plan" -
- (a)(1) "Scope and application." This paragraph (a) applies to all emergency action plans required by a particular OSHA standard. The emergency action plan shall be in writing (except as provided in the last sentence of paragraph (a)(5)(iii) of this section) and shall cover those designated -actions employers and employees must take to ensure employee safety from fire and other emergencies.
- (a)(2) "Elements." The following elements, at a minimum, shall be included in the plan:
 - (a)(2)(i) Emergency escape procedures and emergency escape route assignments;
 - (a)(2)(ii) Procedures to be followed by employees -who remain to operate critical-plant operations before they evacuate;
 - (a)(2)(iii) Procedures to account for all employees after emergency evacuation has been completed;
 - (a)(2)(iv) Rescue and medical duties for those employees who are to perform them;.
 - (a)(2)(v) The preferred means of reporting fires and other emergencies; and
 - (a)(2)(vi) Names or regular job titles of persons or departments who can be contacted for further information or explanation of duties under the plan.
- (a)(3) Alarm system."
- (a)(3)(i) The employer shall establish an employee alarm system which complies with 1910.165.
- (a)(3)(ii) If the employee alarm system is used for alerting fire brigade members, or for other purposes, a distinctive signal for each purpose shall be used.
- (a)(4) "Evacuation." The employer shall establish in the emergency action plan the types of evacuation to be used in emergency circumstances.
- (a)(5) "Training "
- (a)(5)(1) Before implementing the emergency action plan, the employer shall designate and train a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees.
- (a)(5)(ii) The employer shall review the plan with each employee covered by the plan at the following times:
 - (a)(5)(ii)(A) Initially when the plan is developed,
 - (a)(5)(ii)(B) Whenever the employee's responsibilities or designated actions under the plan change, and
 - (a)(5)(ii)(C) Whenever the plan is changed.
- (a)(5)(ni) The employer shall review with each employee upon initial assignment those parts of the plan which the employee must know to protect the employee in the event of an emergency. The written plan shall be kept at the workplace and made available for employee review. For those employers with 10 or fewer employees the plan may be communicated orally to employees and the employer need not maintain a written plan.

- (b) "Fire prevention plan" -
- (b)(1) "Scope and application." This paragraph (b) applies to all fire prevention plans required by a particular OSHA standard. The fire prevention plan shall be in writing, except as provided in the last sentence of paragraph (b)(4)(ii) of this section.
- (b)(2) "Elements." The following elements, at a minimum, shall be included in the fire prevention plan:
 - (b)(2)(i) A list of the major workplace fire hazards and their proper handling and storage procedures, potential ignition sources (such as welding, smoking and others) and their control procedures, and the type of fire protection equipment or systems which can control a fire involving them;
 - (b)(2)(ii) Names or regular job titles of those personnel responsible for maintenance of equipment and systems installed to prevent or control ignitions or fires; and
 - (b)(2)(iii) Names or regular job titles of those personnel responsible for control of fuel source hazards.
- (b)(3) "Housekeeping." The employer shall control accumulations of flammable and combustible waste materials and residues so that they do not contribute to a fire emergency. The housekeeping procedures shall be included in the written fire prevention plan.
- (b)(4) "Training."
 - (b)(4)(i) The employer shall apprise employees of the fire hazards of the materials. and processes to which they are exposed.
 - (b)(4)(ii) The employer shall review with each employee upon initial assignment those parts of the fire prevention plan which the employee must know to protect the employee in the event of an emergency. The written plan shall be kept in the workplace and made available for employee review. For those employers with 10 or fewer employees, the plan may be communicated orally to employees and the employer need not maintain a written plan.
- (b)(5) "Maintenance." The employer shall regularly and properly maintain, 'according to established procedures, equipment and systems installed on heat producing equipment to prevent accidental ignition of combustible materials. The maintenance procedures shall be included in the written fire prevention plan.

[45 FR 60703, Sept. 12, 1980]

FORMS

1. Confined Entry Permit
3. Employer's Report Of Injury/Illness Of Employee (To Be Included
3. Supervisor's Incident Investigation Report (2 Pages) (To Be Included)
4. City Of Whiting Medical Care Verification Form
5. Supervisor's Investigation Report - Motor Vehicle
6. Vehicle Inspection

SUPERVISOR'S INVESTIGATION REPORT

MOTOR VEHICLE

The unsafe acts of drivers and the unsafe conditions that cause accidents can be corrected only when they are know specifically. It is your responsibility to find them and name them and to state the remedy for them in this report.

Code: _____

CITY OF WHITING DEPARTMENT: _____

DRIVER: _____

TYPE OF VEHICLE; IDENTIFYING NO: _____

LOCATION OF ACCIDENT: _____

DATE AND TIME OF ACCIDENT: _____

NO. OF PERSONS INJURED AND EXTENT OF PROPERTY DAMAGE (City and other):

DESCRIPTION OF ACCIDENT (State in detail-what occurred just before and at the time of the accident): _____

UNSAFE CONDITION (Describe unsafe conditions such as faulty brakes, lights, etc. contributing to accident): _____

UNSAFE ACT (Describe the unsafe action of driver as turning from wrong lane, speeding, failing to signal, etc. _____

REMEDY (As a supervisor, what action have you taken or do you propose taking to prevent a repeat accident?): _____

Supervisor

Employee

Date Prepared

(Use reverse side for sketch and additional detail)

CITY OF WHITING, INDIANA CONFINED AREA ENTRY PERMIT

LOCATION: _____ DATE: _____ TIME: _____

Work to be Done: _____

Permit #: _____ Requested by: _____

Names of Employees on this job: _____

"Persons entering the confined area are trained in the City safety procedure for proper entry, and have the proper safety equipment."

Supervisor or Authorized Designee

* Entry and emergency procedures understood.

Person Performing Work

Standby # I

Standby #2

JOBSITE CHECKLIST

- | | <u>YES</u> | <u>NO</u> |
|---|------------|-----------|
| • Prior to starting job, was radio equipment checked for efficient operation? | _____ | _____ |
| • Was Supervisor or Authorized Designee notified that entry is necessary? | _____ | _____ |
| • Was the Police Dispatcher and Fire Dept. notified by radio of the location and reason for this confined area entry? | _____ | _____ |
| • Is all equipment required, by the City safety manual, for Permit Entry into confined areas, on hand? | _____ | _____ |

ENTRY PROCEDURE

- | | | |
|--|-------|-------|
| • Is "NO SMOKING" regulation being enforced? | _____ | _____ |
| • Is it safe to use electrical equipment? | _____ | _____ |
| • Has portable blower been set up? | _____ | _____ |
| • Is the person performing the work properly trained and outfitted with safety harness attached to a lifeline and recovery <i>system</i> ? | _____ | _____ |
| • Are two standby persons observing the confined area, ready to handle the lifeline, if necessary? | _____ | _____ |
| • Are gas checks/air quality checks being performed, using the proper equipment? | _____ | _____ |

GAS CHECKS/AIR QUALITY CHECKS

Readings: _____		Time: _____
_____		_____
_____		_____
_____		_____

- | | | |
|--|-------|-------|
| • Has the Police Dispatcher and Fire Dept. been notified that confined area entry has been completed, and that they can discontinue monitoring the Public Works radio? | _____ | _____ |
|--|-------|-------|

Never enter a confined area after an employee has been over come. Radio for help!

VEHICLE INSPECTION

WHITING PUBLIC WORKS DEPARTMENT DAILY CHECK

ODOMETER READING _____

NAME _____ ROUTE _____ VEHICLE _____ DATE _____

SHIFT: 1 OR 2

PLEASE CHECK IF OK BEFORE STARTING VEHICLE

OK REPAIR

ALL FLUID LEVELS		
RADIATORS/HOSES		
LIGHTS (EMERGENCY WARNING DEVICES)		
WINDSHIELD WIPERS & WASHER		
HYDRAULIC OIL HOSES		
EXHAUST		
WHEELS AND LUGS		
INTERIOR		
RADIO		
BRAKES - AIR PRESSURE		
SAFETY EQUIPMENT		
SUSPENSION/STEERING		
OILER BOX		
CAB & BODY CONDITION		
TRANSMISSION LEVEL		
HORN		
LEAKS (GENERAL CONDITION)		
WARNING GAUGES		

COMMENTS: _____
