



# **Accident Prevention Program**

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## Introduction

City policy is that the safety and health of our employees and everyone else affected by our activities is fundamental to the success of our community. We are committed to the protection from accidental loss to our employees and property through the continuous development and implementation of this Accident Prevention Program. Management supports the implementation of this program by dedicating time and resources to comply with all present and future safety & health codes and regulations.

The City is committed to providing and maintaining a safe and healthful work environment. We strive to anticipate, identify, control and eliminate any foreseeable hazards that may result in personal injuries, illnesses, security losses, and damage to property. As such, this Accident Prevention Program may be updated as necessary.

All activities will be conducted in accordance with the Department of Occupational Safety and Health/Washington Industrial Safety and Health Administration (DOSH/WISHA) requirements. The City's goal is to provide adequate training and proper equipment, and to develop safe work procedures and practices to assure all activities will be performed safely and efficiently.

Management is primarily responsible for the implementation of this policy. Supervisors are responsible to check the workplace for unsafe conditions, watch employees for unsafe actions and take prompt action to eliminate any hazards. All employees are responsible for performing their jobs in accordance with the established facility safety rules, regulations, and procedures. Employees are encouraged to anticipate and identify hazards and report all hazards to their supervisor.

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## Management Responsibilities

Leaders should create an atmosphere that clearly demonstrates to employees that safety is a vital part of their personal and professional activities. Leaders are responsible for implementing systems and programs that convey that safety is a core value to all employees.

All Managers:

Mandatory:

- Implement the Accident Prevention Program.
- Notify HR or Senior Management, who will report all fatalities and hospitalizations within 8 hours to the nearest Department of Labor and Industries office. (1-800-4BE SAFE)
- Ensure that sufficient employee time, supervisor support, and funds are budgeted for the Safety Committee, safety equipment, training, and to carry out the safety program.
- Make sure that incidents are investigated and corrective action is taken to prevent the hazardous conditions or behaviors from happening again.
- Ensure that a record of injuries and illnesses is maintained and posted as described in this program.
- Follow established safety rules and attend required training.

Recommended:

- Safety performance is included in each employee's as well as each manager's performance assessment process each year.
- Acknowledge safe practices and reports of hazardous conditions/practices.

## Supervisor Responsibilities

All Supervisors must be actively involved in the Accident Prevention Program. Supervisor's duties include but are not limited to:

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**Mandatory:**

- Ensure that each employee supervised has received an initial orientation of the Accident Prevention Program before beginning work.
- Makes certain that each employee supervised is competent or receives training on safe operation of equipment or tasks before starting work on that equipment or project.
- Take care that each employee receives required personal protective equipment (PPE) and training in its use and maintenance, before beginning work on a project requiring PPE.
- Conduct regular walk-around safety-checks of the work area. Promptly correct any hazards you find.
- Observe the employees you supervise working. Promptly correct any unsafe behavior and enforce all safety rules
- Provide training and take corrective action as necessary.
- Follow safety rules and attend required training.
- Investigate incidents in your department/division.

**Recommended:**

- Talk to management and the safety committee about changes to work practices or equipment that will improve employee safety.
- Conduct a conference with the employee to gain insight on how work and safety might be improved.
- Document safety compliance in employee performance assessments.
- Report your investigation findings to management and the safety committee.

## **Employee Responsibilities**

Each employee is responsible for workplace safety. Employees should watch for potential hazards, and think about how to avoid the hazard. All employees:



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**Mandatory:**

- Observe and comply with all safety signs, rules, and regulations described in this program.
- Promptly report all on-the-job injuries to the supervisor.
- Report potential or unsafe conditions and practices.
- Report all near-miss incidents to your supervisor promptly.
- Incorporate safe practices into all activities.
- Attend & participate in safety meetings.
- Always use personal protective equipment (PPE) in good working condition where it is required.
- Do not remove or tamper with any safety device or safeguard provided for employee protection.
- Operate equipment safely. Do not operate equipment you are not trained for or qualified to operate.
- Report all equipment damage or failure to your supervisor immediately.
- Anticipate, identify and correct unsafe conditions and practices.

**Recommended:**

Make suggestions to your supervisor, safety committee representative or management about changes you believe will improve employee safety.

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## **A. Purpose**

This procedure outlines requirements for the development and implementation of safety training for safety procedures, safe work practices, and safety rules and regulations. All City of Port Townsend employees shall comply fully with the requirements for Safety Orientation and Training as outlined below as applicable with their individual job description.

## **B. General**

1. Every employee assigned shall receive the City-provided safety orientation and training appropriate for the tasks that they will be performing.
2. The City-provided safety orientation shall not be considered a substitute for new site safety orientation training on projects.

## **C. Safety Orientation**

1. Each new-hire shall receive the City-provided safety orientation training prior to being assigned to a project or location.
2. The content of safety orientation may vary depending upon the scope of work to be performed; the new employee's assigned job duties, and existing safety conditions in the work area. At minimum, new hires shall receive safety instruction on Sections 1 – 10 of this Accident Prevention Program.
3. Project management shall conduct annual refresher safety orientation for all project or location employees.

## **D. Safety Training**

1. The need for a comprehensive safety training program on projects or locations is widely recognized due to the many hazards and exposures that can be anticipated throughout the life of work scope.
2. Each project employee, direct hire, and vendor, performing assigned tasks shall receive the task-specific safety training required or otherwise necessary to perform those assigned tasks in a safe manner. Management should evaluate the training needs and objectives for the project based on the scope of work to be performed. Each supervisor must assess the training needs for employees based on the task to be performed and schedule training as

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required.

3. The following is a partial list of safety/HR training topics that may be required by City and/or DOSH for employees performing related tasks:

- a. First Aid/CPR
- b. Heat Stress
- c. Crane Safety
- d. Trenching & Excavations
- e. Electrical Safety
- f. Hazard Communications
- g. Confined Space Entry
- h. Lockout/Tag-out
- i. Accident Investigation
- j. Fall Protection
- k. Accident Prevention
- l. Blood-borne Pathogens
- m. Defensive Driving

4. All training conducted shall be documented.

5. Refresher training shall be conducted as required.

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## A. Purpose

The purpose of this procedure is to provide requirements and guidance concerning a basic written method for hazard identification, risk assessment and control to effectively manage hazards that may occur in the workplace.

This procedure is to be used as a generic guideline for general occupational health and safety risks. For specific work processes, a Job Hazard Analysis and a detailed Hazard Assessment and Risk Control study may be used to assess the likelihood and severity of a specific activity.

All City employees shall comply fully with the requirements for Hazard Identification and Risk Control as outlined below:

## B. Definitions

1. *Hazard*: A condition or set of circumstances that present a potential for harm. Hazards are divided into two broad categories:
  - a. Health hazards (cause occupational illnesses)
  - b. Safety hazards (cause physical harm/injuries)
2. *Hazard Identification*: The process of examining each work area and work task for the purpose of identifying all the hazards which are “inherent in the job”. Work areas include but are not limited to machine workshops, laboratories, office areas, agricultural environments, stores and transport, maintenance and grounds, and teaching spaces. Tasks can include (but may not be limited to) using screen based equipment, audio and visual equipment, industrial equipment, hazardous substances and/or dangerous goods, teaching/dealing with people, driving a vehicle, dealing with emergency situations, construction.
3. *Risk*: The likelihood or probability that a hazardous event (with a given outcome or consequence) will occur.
4. *Risk Assessment*: Is defined as the process of assessing the risks associated with each of the hazards identified so that appropriate control measures can be implemented based on the probability, i.e. likelihood that harm, injury or ill health may occur and how severe the consequences of exposure might be.

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5. *Risk Control*: The process of identifying and implementing the most cost effective risk control measures having regard to the Hierarchy of Control Principles.
6. *Monitoring and Review*: Ongoing monitoring of the hazards identified, risk assessment and risk control processes and reviewing the process to ensure that they are working effectively.

### C. Basic Steps to Follow to Identify Hazards and Control Hazards

1. *HAZARD IDENTIFICATION* – Hazards might be identified by the following measures:
  - a. *Observation*- Use your senses of sight, hearing, smell and touch- combined with knowledge and experience. When an unsafe act is observed, the person observing has the responsibility to stop the unsafe act and initiate the compliance process if deemed necessary. If an employee makes the observation, he/she shall stop the unsafe act and notify their supervisor and/or any other member of the project management team. A new employee has the same level of empowerment as a seasoned supervisor to stop a project for the sake of safety. The supervisor will initiate safety coaching as required.
  - b. *Safety Data Sheets*- Obtain them from manufacturers and suppliers. Read them carefully to identify possible harm from hazardous substances and precautions that need to be taken.
  - c. *Hazard and Risk Surveys*- Conduct hazard spotting surveys of main work areas. Talk to others about their safety concerns.
  - d. *Record Analysis*- Keep records of identified hazards, near misses, injuries and workers' compensation claims. By analyzing these leading and lagging indicators, trends can be identified that will drive hazard mitigation measures.
  - e. *Safety Audits*- By utilizing regular audit data in conjunction (if applicable) with safety committees, a hazard management plan can be developed to address hazards identified within these audits.
  - f. *Regulatory Requirements and Best Practices*

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## 2. ASSESS THE RISK

- a. Once a hazard has been identified, the likelihood and possible severity of injury or harm will need to be assessed before determining how best to minimize the risk. High risk hazards will need to be addressed more urgently than low risk situations.
- b. It may be decided that the same hazard could lead to several different possible outcomes. For each hazard, consider how likely each possible outcome is, and record the highest priority. A risk matrix might be considered when determining likelihood of risk vs.

	Severity					
		1- Low	2	3	4	5- High
Likelihood	1- Low	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	20
	5- High	5	10	15	20	25

potential consequences.

- c. The following matrix can be used to assign a “risk rating” to a hazard. Where exposure is more likely and the potential consequences more severe, highest priority is given for prompt resolution.
- d. Risks that are assessed as red are the risks that are unacceptable and that will require control mechanisms to be put into place immediately to prevent the risk from occurring. Green risks are generally considered acceptable with yellow risks in between.

## 3. MAKE THE CHANGE

- a. While it is your employer's responsibility to fix hazards, each employee can make a huge contribution towards ensuring that a

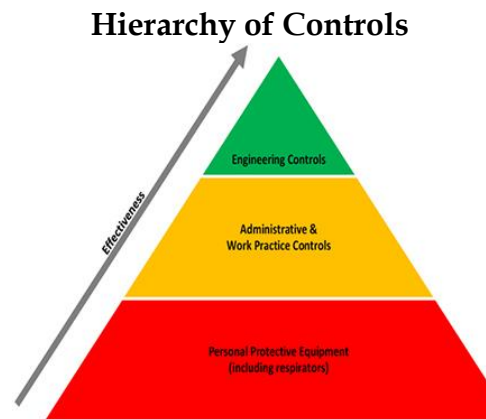
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workplace is free from recognized hazards. As an example, you can pick up things from the floor and put them away to eliminate a trip hazard.

- b. The best way to fix a hazard is to get rid of it altogether (Remove it at its source or elimination). This is not always possible, but your employer should try to make hazards less dangerous by looking at alternative options (in order from most effective to least effective):

i. *Engineering Controls*

Outside of total elimination of the hazard or substituting a process for something less hazardous, the first and best strategy is to control the hazard at its source. Engineering controls do this, unlike other controls that generally focus on the employee exposed to the hazard. The basic concept behind engineering controls is that, to the extent feasible, the work environment and the job itself should be designed to eliminate hazards or reduce exposure to hazards.



Engineering controls can be simple in some cases. They are based on the following principles:

- If feasible, design the facility, equipment, or process to remove the hazard or substitute something that is not hazardous.
- If removal is not feasible, enclose the hazard to prevent exposure in normal operations.
- Where complete enclosure is not feasible, establish barriers or local ventilation to reduce exposure to the hazard in normal operations.

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*ii. Safe Work Practices/Administrative Controls*

Safe work practices include general workplace rules and other operation-specific rules. For example, even when a hazard is enclosed, exposure can occur when maintenance is necessary. Through established safe work practices, employee exposure to hazards can be further reduced.

While safe work practices can be considered forms of administrative controls, OSHA uses the term administrative controls to mean other measures aimed at reducing employee exposure to hazards (for example, rotation of workers.) These types of controls are normally used in conjunction with other controls that more directly prevent or control exposure to the hazard.

*iii. Personal Protective Equipment (PPE)*

When exposure to hazards cannot be engineered completely out of normal operations or maintenance work, and when safe work practices and other forms of administrative controls cannot provide sufficient additional protection, a supplementary method of control is the use of protective clothing or equipment. PPE may also be appropriate for controlling hazards while engineering and work practice controls are being installed. For specific OSHA requirements on personal protective equipment, see OSHA's standard, [1910 Subpart I](#).

Sometimes, it will require more than one of the risk control measures above to effectively reduce exposure to hazards.

## **D. Job Hazard Analysis**

1. A Job Hazard Analysis (JHA) is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment. Ideally, after you identify uncontrolled hazards, you will take steps to eliminate or reduce them to an acceptable risk level. A JHA may be written and reviewed prior to beginning any work activities, at the change of shift or should a new hazard be introduced into the working



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environment.

2. A JHA may be conducted on many different types of jobs in your workplace; however, priority should go to the following types of jobs:
  - a. Jobs with the highest injury or illness rates
  - b. Jobs with the potential to cause severe or disabling injuries or illnesses, even if there is no history of previous accidents
  - c. Jobs in which one simple human error could lead to a severe accident or injury
  - d. Jobs that are new to your operation or have undergone changes in processes and procedures
  - e. Jobs complex enough to require written instructions
3. The JHA process should consist of the following steps:
  - a. Conduct a preliminary job review. This should include identifying any hazard that may pose an immediate danger to an employee's life or health, taking immediate corrective actions to protect the worker. Do not wait to complete your JHA to correct these hazards.
  - b. Outline steps or tasks required for the job being assessed. Whenever possible, an employee should be observed performing the job with each step listed as the worker takes it. The list of steps should not be overly detailed as to become unnecessarily long or broad. Steps should be reviewed with the worker to ensure accuracy.
  - c. Identify hazards associated with each job step.
  - d. Consider control measures that should be in place to eliminate or reduce the hazards identified.

## E. Forms

- Job Hazard Analysis Form

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## Job Hazard Analysis

### 1. Analysis information

Work activity Enter text.	JHA no. 1	New or revised Enter text.	Date Enter a date.
Department Enter text.	Staff name Enter text.	Position Enter text.	
Reviewing Staff	Approval (reviewer signature)		Date Enter a date.

### 2. Work activity review

Work activity tasks	Identified hazards	Controls for identified hazards
	1. Click here to enter text.	1. Click here to enter text.

### 3. Equipment and training determinations

**Required personal protective equipment (PPE)** [Briefly note the hazard the selected PPE is addressing]

1. Click here to enter text.

**Required or recommended training needed prior to undertaking work activity**

Click here to enter text.

**Comments or rationale for findings (if needed)**

Click here to enter text.

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#### **A. Purpose**

To identify the reporting and recordkeeping requirements for occupational injuries and illnesses.

#### **B. General Requirements**

1. All City of Port Townsend employees shall comply fully with the requirements for reporting and recordkeeping related to occupational injuries and illnesses.
2. In the event of an incident requiring offsite medical treatment, a preliminary verbal report shall be submitted to the Department Director. A member of the City's management team may if necessary, accompany an injured employee for offsite treatment. A report of what happened, the casual and contributing factors involved, and the corrective measures to prevent reoccurrence shall be submitted within 24 hours.

#### **C. Employer's First Report of Injury**

1. An Employer's First Report of Injury Form (both Employee and Supervisor's Reports) shall be completed for incidents involving injury to an employee no matter how minor. For injuries requiring medical treatment; it is important that claims be reported immediately and in full compliance with state reporting requirements.
2. Workers compensation claims for City employees must be reported to their immediate supervisor and Human Resources.

#### **D. Accident Investigation Report**

1. The Accident Investigation Report (Team Investigation) shall be utilized for all injuries requiring beyond First Aid treatment.
2. At minimum, distribution of completed Preliminary Accident Investigation Report Form shall include Human Resources.

#### **E. OSHA Form 300**

1. The Log of Work-Related Injuries and Illnesses - Form 300 is used to classify work-related injuries and illnesses and note the extent and severity of each case.

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2. Each recordable case must be entered on the OSHA 300 Form within seven (7) calendar days of receiving information that a recordable case has occurred. Minor injuries requiring first aid do not need to be recorded on this form.
3. The OSHA 300 Form shall be maintained on file for a minimum of five (5) years following the end of the calendar year that is covered.

#### **F. OSHA Form 300A**

1. At the end of each calendar year, a Summary of Work-Related Injuries and Illnesses –Form 300 A shall be completed for each work establishment. The annual summary must be posted no later than February 1 of the year following the year covered by the records and must remain in place until April 30.
2. The annual summary must be posted in a location where employee notices are usually posted and where employees can readily access it.
3. The OSHA 300A form shall be maintained on file for a minimum of five (5) years.
4. Beginning February 1<sup>st</sup> of 2017, a copy *both Form 300 as well as 300A* may be submitted electronically to OSHA via a secure website.

#### **G. Reporting Requirements to OSHA**

1. In accordance with RCW 296-27-031, DOSH shall be notified by calling [1-800-423-7233](tel:1-800-423-7233) in the event of the following:
  - a. Within 8 hours after the death of any employee as a result of a work-related incident.
  - b. Within 24 hours after the in-patient hospitalization of one or more employee
  - c. An employee's loss of an eye as a result of a work-related incident
  - d. An employee's amputation as a result of a work-related incident
2. An incident may be reported to OSHA by the following methods:

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- a. In person to the OSHA Area Office that is nearest to the site of the incident
- b. By telephone to the OSHA toll-free central telephone number, (800) 321-6742
- c. Via electronic submission using the reporting application located on OSHA's public web site at [www.osha.gov](http://www.osha.gov)

## H. Incident Investigation Reports

1. Incident investigation reports shall be prepared and distributed in accordance with the requirements of Section 6, Incident Investigation, of this Manual.

## I. Records Retention

1. Employee Medical and Exposure Records
  - a. Medical and exposure records of employees exposed or potentially exposed to toxic substances or harmful physical agents in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption) must be labeled and maintained for the duration of the project.
  - b. Upon project completion, all records will be boxed separately and shipped to Human Resources and maintained for thirty (30) years in accordance with OSHA regulations.
  - c. Toxic substance or harmful physical agent means any chemical substance, biological agent (bacteria, virus, fungus, etc.), or physical stress (noise, heat, cold, vibration, repetitive motion, ionizing and non-ionizing radiation, hypo or hyperactive pressure, etc.) that:
  - d. Is listed in the latest printed edition of the National Institute for Occupational Safety and Health (NIOSH) Registry of Toxic Effects of Chemical Substances (RTECS) or
  - e. Has yielded positive evidence of an acute or chronic health hazard in testing conducted by, or known to, the employer or
    - i. Is the subject of a material safety data sheet kept by or

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known to the employer indicating that the material may pose a hazard to human health.

- f. Employee exposure records are records that contain any of the following kinds of information:
  - i. Environmental (workplace) monitoring results or other measurements of a toxic substance or harmful physical agent.
  - ii. Biological monitoring results.
  - iii. Safety Data Sheets (SDS).
  - iv. Any chemical inventory or other record which reveals the identity of a toxic substance or harmful physical agent, and where and when it was used.
- g. Employee medical records are records concerning the health status of an employee which are made by a physician, nurse, or other health care personnel or technician, including:
  - i. Medical and employment questionnaires or histories.
  - ii. Medical examinations and laboratory tests.
  - iii. Medical opinions, diagnoses, progress notes and recommendations.
  - iv. Medical treatments and prescriptions.
  - v. Employee medical complaints.

## 2. All Other Employee Medical Records

- a. All other employee medical records not specifically covered by paragraph L-1 above, shall be retained for a minimum of ten (10) years after project completion. Employee medical records shall not be disposed of until it is verified by the City Attorney that there is no remaining open workers compensation or related general liability or auto liability claims activity.
- b. Employee medical records includes, but may not be limited to the

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following:

- i. Investigation Reports
- ii. Employer's First Report of Injury
- iii. Physician's Reports
- iv. OSHA 300 Form
- v. First Aid Log
- vi. Medical Treatment/Return to Work Authorization
- vii. Medical Bills
- viii. Medical Questionnaires/Physicals
- ix. Respiratory Fit Test Records
- x. Request for Medical or Exposure Records

#### **J. Employee Access to Records**

1. Whenever an employee or designated employee representative requests access to medical and exposure records, such access shall be provided in a reasonable time, place, and manner at NO COST to the employee.
2. The requesting employee or employee's designated representative shall fill out the Request for Medical or Exposure form and submit it to Human Resources. The employee's written consent must be received before any records will be released to a designated representative.
3. Once the properly completed form is received, records will be provided to the requesting party within fifteen (15) working days. If the records cannot be provided within the 15 day period, the requesting party will be notified of the reason for the delay and informed as to the earliest possible date that the records can be made available.

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### K. Recommended/Optional First Aid Log & Form

1. The first-aid log is a chronological listing of ALL visits requiring first aid treatment for occupational injuries and illnesses. Every injury or illness reported, no matter how slight, can be recorded promptly following treatment.

First Aid Log Location: _____					
Employee Name	Job Title	Date	Time	Nature of Injury	Treatment Received



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#### **A. Purpose**

This section applies to the investigation and analysis of incidents regardless of severity of injury or amount of property damage. The primary purpose of incident investigation and analysis is to prevent incidents. The investigation and analysis must produce factual information that will lead to corrective actions and that will prevent or reduce the risk of future incidents in the work place.

The City of Port Townsend shall have in effect an investigation and analysis system that allows basic facts concerning an incident including “near miss” incidents to be recorded quickly, efficiently, and uniformly. In order to have an effective accident prevention program, investigations must be fact-finding, not faultfinding.

#### **B. Responsibility for Accident Investigation**

An appropriate City supervisory employee or designated safety manager, shall have primary responsibility to plan, coordinate, and conduct the investigation of each incident. The supervisor may be assisted by a fellow worker familiar with the work activity involved, a safety and health professional, a safety coordinator/inspector, and/or a representative of an insurance company. The size of the investigation team will be dependent upon the extent of the investigation to be conducted. Each investigation shall be conducted as soon as possible after an incident and the results presented to all concerned parties as quickly as possible.

#### **C. Incident Investigation Checklist**

In the event of an incident, the following steps must be followed:

1. *Care for the injured* - The first concern at an incident scene, regardless of its seriousness, is to provide care for the injured. Nothing is to interfere with this concern except the safety of the rescuers.
2. *Protect other people, evidence and property* - The investigation is to begin only after the incident scene is safe to approach.
3. *Preserve the scene as it was immediately after the incident* - Cordon off or barricade the incident scene and adjacent area to prevent others from destroying evidence.
4. *Follow Proper Notification Procedures*- Notifiable incidents should be reported immediately. A notifiable incident includes: death of a person, injury to a

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person other than an employee, injury where employee required medical attention, dangerous occurrences (property damage, fire hazard, vehicle accidents, an unsafe behavior or other incident). Notify the following:

- Death of a person – notify Human Resources, Department Head & City Manager
- Injury to a person other than an employee - Notify City Administration/Executive Assistant
- Injury that requires medical attention – Notify Supervisor and Human Resources
- Property damage, fire hazard, vehicle accident, unsafe behavior or other incident – Notify Supervisor and Department Head

5. *Notify Other Parties-* In addition, other parties may need to be notified depending on the circumstances involved. These include:

- Appropriate first responders and law enforcement agency
- City's designated representative – immediate notification, follow-up within 24 hours or as soon as possible
- Insurance carrier claims adjuster
- Washington State Department of Labor and Industry, Division of Occupational Safety and Health, in accordance with specific reporting requirements i.e., fatality or in-patient hospitalization of any employee within eight (8) hours of the incident., non-hospitalized amputation or loss of an eye(s) of any employee within twenty-four (24) hours of the incident. The WA L&I phone number is **1-800-423-7233**

6. *Conduct a visual inspection of the incident scene* - Visually inspect the incident scene as conditions can rapidly change. Photograph, note and record location of all items of evidence and mark the location of any item likely to be moved.

7. *Obtain identities of all people who may have information concerning the incident* - Record the individual's name, trade, employer, address, and home phone number. Take photos of driver's license, vehicle license, business cards, etc.

8. *Examine the evidence* - Identify and examine all items that are pertinent to what, how, when, and why the incident occurred. Be careful not to contaminate evidence.

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9. *Photograph evidence* - As soon as possible after the incident, take dated photographs of the incident scene and adjacent areas including major elements and articles of evidence. Photographs and negatives shall be included as exhibits to the incident report.
10. *Prepare a diagram of the incident scene* - Sketch the incident scene and indicate locations of all evidence essential to understanding the incident situation. Measure and record distances involved on the sketch. Additional information should include weather, lighting and background noise. The diagram shall be included as an exhibit to the incident report.
11. *Interview and obtain statements from all witnesses* - As soon as possible after the incident, interview all persons who may be able to contribute information about the incident; obtain hand-written recorded statements from each person.
12. *Prepare Incident Investigation Report* - A written report must be prepared for all serious incidents as well as each incident investigated. The report shall be prepared using the forms included herein. The report shall include what happened, when it happened, why it happened, and who was involved. The report is to indicate conclusions regarding the physical cause of the incident and summarize corrective action to be taken to prevent a reoccurrence. Attach all statements as exhibits to the incident report. A preliminary incident report must be completed by close of business the day of the incident. Final report to be completed within 72 hours of the incident.
  - Under no circumstance is the report to place responsibility or legal liability upon any party. The report is to be considered confidential and not shared with other parties unless approved by City management.
  - A copy of the completed report, supporting data, and exhibits shall be forwarded to Human Resources and a copy retained in the project file, marked "Incident Investigation Report - Confidential - Legal". The report shall bear a legend: "Confidential and Privileged Information, including mental impressions and opinions of claim, prepared at the request of the City, its insurer, and its counsel in anticipation of litigation."

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- Incident Investigation Reports are to be treated as confidential and privileged and prepared in anticipation of litigation. As such, Incident Investigation Reports are not to be issued and/or distributed without the approval of the City Attorney.

#### **D. Other Incidents**

When a supervisor becomes aware of an employee injury where the injury was not serious enough to warrant a team investigation as described above, the supervisor will write an "Supervisor's Incident Investigation Report" to accompany the "Employee's Report of Incident Form"

#### **E. Near Miss Incidents**

Incidents defined as a "near miss" are to be investigated in the same manner as outlined in items 2 through 12 above.

#### **F. Investigation Objectives**

1. Locate and identify evidence relevant to the incident. Evidence will be available from:
  - a. People involved (including injured, principals, perpetrators and witnesses)
  - b. Tools and Materials involved (including those in use, ready for use, and stored in the area)
  - c. Environmental factors involved (including weather, light, temperature and noise)
2. Examine the evidence to ascertain its impact on the incident sequence.
3. Reconstruct the sequence of events based on the evidence.

From the evidence, develop conclusions regarding the physical cause of the incident; however, these conclusions should not attempt to place legal liability upon any party.

#### **G. Forms**

- Employee's Report of Incident Form
- Supervisor's Incident Investigation Report
- Accident Investigation Report (Investigation Team)
- Accident Investigation Witness Statement
- Vehicle Accident Report Form

*Always refer to the electronic copy for the latest revision*



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### Supervisor's Incident Investigation Report

Please return to Human Resources within three business days of incident.

**Instructions:** Complete this form as soon as possible after an incident.

This is a report of a: <input type="checkbox"/> Death <input type="checkbox"/> Injury <input type="checkbox"/> Lost Time <input type="checkbox"/> Dr. Visit <input type="checkbox"/> First Aid <input type="checkbox"/> Near Miss (check all that apply)		
Date of incident:	This report is made by: <input type="checkbox"/> Supervisor <input type="checkbox"/> Team <input type="checkbox"/> Other	
<b>Step 1: Injured employee (complete this part for each injured employee)</b>		
Name:	Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female	Age:
Department:	Job title at time of accident:	
Part of body affected: (shade all that apply)	Nature of injury: (most serious one) <input type="checkbox"/> Abrasion, scrapes <input type="checkbox"/> Amputation <input type="checkbox"/> Broken bone <input type="checkbox"/> Bruise <input type="checkbox"/> Burn (heat) <input type="checkbox"/> Burn (chemical) <input type="checkbox"/> Concussion (to the head) <input type="checkbox"/> Crushing Injury <input type="checkbox"/> Cut, laceration, puncture <input type="checkbox"/> Hernia <input type="checkbox"/> Illness <input type="checkbox"/> Sprain, strain <input type="checkbox"/> Damage to a body system: <input type="checkbox"/> Other _____	This employee works: <input type="checkbox"/> Regular full time <input type="checkbox"/> Regular part time <input type="checkbox"/> Seasonal <input type="checkbox"/> Temporary  Months with this employer  Months doing this job:

### Step 2: Describe the incident

Exact location of the incident:		Exact time:	
What part of employee's workday? <input type="checkbox"/> During meal period		<input type="checkbox"/> Entering or leaving work <input type="checkbox"/> Doing normal work activities <input type="checkbox"/> During break <input type="checkbox"/> Working overtime <input type="checkbox"/> Other _____	
Names of witnesses (if any):			
Number of attachments:	Written witness statements:	Photographs:	Maps / drawings:
What personal protective equipment was being used (if any)?			

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Describe step by step the events that led up to the injury. Include names of any machines, parts, objects, tools, materials and other important details.

### Step 3: Why did the incident happen?

#### Unsafe workplace conditions: (Check all that apply)

- ☐ Inadequate guard
- ☐ Unguarded hazard
- ☐ Safety device is defective
- ☐ Tool or equipment defective
- ☐ Workstation layout is hazardous
- ☐ Unsafe lighting
- ☐ Unsafe ventilation
- ☐ Lack of needed personal protective equipment
- ☐ Lack of appropriate equipment / tools
- ☐ Unsafe clothing
- ☐ No training or insufficient training
- ☐ Other: \_\_\_\_\_

#### Unsafe acts by people: (Check all that apply)

- ☐ Operating without permission
- ☐ Operating at unsafe speed
- ☐ Servicing equipment that has power to it.
- ☐ Making a safety device inoperative
- ☐ Using defective equipment
- ☐ Using equipment in an unapproved way
- ☐ Unsafe lifting by hand
- ☐ Taking an unsafe position or posture
- ☐ Distraction, teasing, horseplay
- ☐ Failure to wear personal protective equipment
- ☐ Failure to use the available equipment / tools
- ☐ Other: \_\_\_\_\_

Why did the unsafe conditions exist?

Why did the unsafe acts occur?

Is there a reward (such as "the job can be done more quickly", or "the product is less likely to be damaged") that may have encouraged the unsafe conditions or acts? ☐ Yes ☐ No

If yes, describe:

Were the unsafe acts or conditions reported prior to the incident? ☐ Yes ☐ No

Have there been similar accidents or near misses prior to this one? ☐ Yes ☐ No

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#### Step 4: How can future incidents be prevented?

What changes do you suggest to prevent this incident/near miss from happening again?

- ☐ Stop this activity     ☐ Guard the hazard     ☐ Train the employee(s)     ☐ Train the supervisor(s)  
☐ Redesign task steps     ☐ Redesign work station     ☐ Write a new policy/rule     ☐ Enforce existing policy  
☐ Routinely inspect for the hazard     ☐ Personal Protective Equipment     ☐ Other: \_\_\_\_\_

What should be (or has been) done to carry out the suggestion(s) checked above?

Description continued on attached sheets: ☐

#### Step 5: Who completed and reviewed this form? (Please Print)

Written by:	Title:
Names of investigation team members:	
Reviewed by:	Title:
	Date:



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## ACCIDENT INVESTIGATION REPORT (Investigation Team)

**Instructions:** Complete this form as soon as possible after an accident that results in serious injury or illness.  
(Optional: Use to investigate a minor injury or near miss that *could have resulted in a serious injury or illness.*)

This is a report of a: <input type="checkbox"/> Death <input type="checkbox"/> Lost Time <input type="checkbox"/> Dr. Visit Only <input type="checkbox"/> First Aid Only <input type="checkbox"/> Near Miss		
Date of incident:	<input type="checkbox"/> Team <input type="checkbox"/> Final Report	
<b>Step 1: Injured employee (complete this part for each injured employee)</b>		
Name:	Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female	Age:
Department:	Job title at time of accident:	
Part of body affected: (shade all that apply)	Nature of injury: (most serious one) <input type="checkbox"/> Abrasion, scrapes <input type="checkbox"/> Amputation <input type="checkbox"/> Broken bone <input type="checkbox"/> Bruise <input type="checkbox"/> Burn (heat) <input type="checkbox"/> Burn (chemical) <input type="checkbox"/> Concussion (to the head) <input type="checkbox"/> Crushing Injury <input type="checkbox"/> Cut, laceration, puncture <input type="checkbox"/> Hernia <input type="checkbox"/> Illness <input type="checkbox"/> Sprain, strain <input type="checkbox"/> Damage to a body system: <input type="checkbox"/> Other _____	This employee works: <input type="checkbox"/> Regular full time <input type="checkbox"/> Regular part time <input type="checkbox"/> Seasonal <input type="checkbox"/> Temporary  Months with this employer  Months doing this job:  (EG: nervous, respiratory, or circulatory systems)

## Step 2: Describe the accident

Exact location of the accident:		Exact time:	
What part of employee's workday?	<input type="checkbox"/> Entering or leaving work	<input type="checkbox"/> Doing normal work activities	
<input type="checkbox"/> During meal period	<input type="checkbox"/> During break	<input type="checkbox"/> Working overtime	<input type="checkbox"/> Other
Names of witnesses (if any):			
Number of attachments:	Written witness statements:	Photographs:	Maps / drawings:
What personal protective equipment was being used (if any)?			

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Describe step by step the events that led up to the injury. Include names of any machines, parts, objects, tools, materials and other important details.

### Step 3: Why did the accident happen?

Unsafe workplace conditions: (Check all that apply)

- ☐ Inadequate guard
- ☐ Unguarded hazard
- ☐ Safety device is defective
- ☐ Tool or equipment defective
- ☐ Workstation layout is hazardous
- ☐ Unsafe lighting
- ☐ Unsafe ventilation
- ☐ Lack of needed personal protective equipment
- ☐ Lack of appropriate equipment / tools
- ☐ Unsafe clothing
- ☐ No training or insufficient training
- ☐ Other: \_\_\_\_\_

Unsafe acts by people: (Check all that apply)

- ☐ Operating without permission
- ☐ Operating at unsafe speed
- ☐ Servicing equipment that has power to it.
- ☐ Making a safety device inoperative
- ☐ Using defective equipment
- ☐ Using equipment in an unapproved way
- ☐ Unsafe lifting by hand
- ☐ Taking an unsafe position or posture
- ☐ Distraction, teasing, horseplay
- ☐ Failure to wear personal protective equipment
- ☐ Failure to use the available equipment / tools
- ☐ Other: \_\_\_\_\_

Why did the unsafe conditions exist?

Why did the unsafe acts occur?

Is there a reward (such as "the job can be done more quickly", or "the product is less likely to be damaged") that may have encouraged the unsafe conditions or acts? ☐ Yes ☐ No

If yes, describe:

Were the unsafe acts or conditions reported prior to the accident? ☐ Yes ☐ No

Have there been similar accidents or near misses prior to the accident? ☐ Yes ☐ No

### Step 4: How can future accidents be prevented?

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What changes do you suggest to prevent this accident/near miss from happening again?

- ☐ Stop this activity     ☐ Guard the hazard     ☐ Train the employee(s)     ☐ Train the supervisor(s)  
☐ Redesign task steps     ☐ Redesign work station     ☐ Write a new policy/rule     ☐ Enforce existing policy  
☐ Routinely inspect for the hazard     ☐ Personal Protective Equipment     ☐ Other: \_\_\_\_\_

What should be (or has been) done to carry out the suggestion(s) checked above?

Description continued on attached sheets: ☐

### Step 5: Who completed and reviewed this form? (Please Print)

Written by:	Title:
Names of investigation team members:	
Reviewed by:	Title:  Date:

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## ACCIDENT INVESTIGATION WITNESS STATEMENT FORM

Company Name:		Date of Accident:	
Injured Party:		Time of Accident:	
Project Name:			
Witness Name:		Witness Phone #:	
Witness Address:			

### WITNESS STATEMENT

INSTRUCTIONS: Complete in your own words, the immediate events leading up to and including the accident. Your effort to provide complete descriptive details of the events is essential to determine the facts about this accident.

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*I have read the above statement and certify that it is true to the best of my knowledge.*

**Witness Signature:**

**Date:**

**Supervisor Signature:**

**Date:**

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## VEHICLE ACCIDENT REPORT FORM

Form must be submitted within 5 days of accident/incident

Employee Name	Was a Police Report Filed? Yes <input type="checkbox"/> No <input type="checkbox"/>
Project Location	Police Report # _____
Location of accident/incident	Accident/incident occurred Date _____ Time _____
Did this accident result in an injury? Yes <input type="checkbox"/> No <input type="checkbox"/> <i>If yes, please complete injury details</i>	Accident/incident reported Date _____ Time _____
Name of any witnesses	

Accident/incident resulted in (mark all that apply)

☐ Fatality
 ☐ First aid only
 ☐ Medical treatment required
 ☐ Workdays lost
 ☐ Equipment damage

Describe injuries
Describe how accident/incident occurred
What actions, events, or conditions contributed most directly to this accident/incident?
What could be done to prevent future accidents/incidents of this type?

### **Both Parties must sign below**

Date \_\_\_\_\_ Printed name of employee \_\_\_\_\_ Signature \_\_\_\_\_

Date \_\_\_\_\_ Printed Name of supervisor \_\_\_\_\_ Signature \_\_\_\_\_

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#### **A. Purpose**

The Hazard Communication Program is intended to comply with, implement, and communicate the Washington State Labor and Industry, Division of Occupational Safety and Health Hazard Communication Standard, WAC 296-901, and to provide workers protection against hazardous chemicals in the workplace.

All City employees shall comply fully with the requirements for Hazard Communication as outlined below.

#### **B. General**

The Hazard Communication Standard (HCS) is a performance oriented standard. It sets out broad goals, but, unlike many other federal regulatory requirements, it does not stipulate how to meet those goals. It does, however, list the elements that every Hazard Communication Program must include.

This standard is now aligned with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). This will provide a common and coherent approach to classifying chemicals and communicating hazard information on labels and Safety Data Sheets.

Under Hazard Communication, each contractor who uses hazardous chemicals must develop:

1. A written Hazard Communication Program that spells out how each employer will meet its hazard communication responsibilities.
2. An inventory list of all hazardous chemicals on the project.
3. A file of Safety Data Sheets (SDS), each of which provides detailed information on the properties, hazards, and safe handling of an individual hazardous chemical or hazardous chemical product.
4. A method to ensure that each container of hazardous chemicals has the proper labeling and hazard warnings.
5. An information and training program for workers who may be exposed to hazardous chemicals including proper handling of these chemicals.
6. A training procedure for workers who have not received such training and who perform non-routine tasks such as confined-space entry, emergency spill control, or any task involving a hazardous chemical presenting special safety and health risks.
7. A method of informing other employers and their employees of hazardous chemicals in the workplace which they may encounter.

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## C. Procedure

### 1. Chemical Inventory

- a. Each employer shall maintain a current Hazardous Chemicals List on the project. This list will include the following information:
  - i. The chemical or common name used on the container label or on the SDS.
  - ii. The quantity of the chemical usually stored on site.
  - iii. The location where the chemical is usually stored on site.

- b. A Safety Data Sheet shall be available for every hazardous chemical on the list.

### 2. Safety Data Sheets (SDS)

- a. Any employer purchasing and using hazardous chemicals shall require the vendor to provide an SDS for each chemical. An SDS can also be obtained from the manufacturer.
- b. This requirement must be communicated to all individuals who obtain hazardous chemicals. Purchase orders shall include in writing the request for the SDS if required.
- c. Upon receipt of each SDS, the original will be maintained on file at the office or project site.
- d. The designated program coordinator shall maintain a project SDS notebook (file) in a current and organized manner.
- e. Should a chemical be received without an SDS and the chemical is not listed on the Hazardous Chemical List, the office or project will request an SDS from the distributor or manufacturer of the chemical.
- f. SDS's shall be readily available for review by employees, employers, and OSHA representatives upon request.
- g. SDS's will be required for, but not limited to, hazardous chemicals contained in general categories including; abrasives, adhesives and/or sealants, asbestos, biologicals, cleaners, coatings, fuels, compressed gases, insulations, lubricants, masonry products, metals, paint products, pesticides, radioactive materials, solvents, welding and soldering products, and treated wood and/or wood dust.
- h. SDS's may be provided to workers through computers, the Internet, CD- ROM, and fax machines. If an electronic method is used for maintaining SDS's, you must ensure that:
  - i. Reliable devices are readily accessible in the workplace at all times;
  - ii. Workers are trained in the use of the devices, including specific software;

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- iii. There is an adequate backup system in the event of the failure of the system such as power outages or on-line delays; and
- iv. The system is part of the overall hazard communication program of the workplace.
- i. Additionally, workers must be able to access hard copies of the SDS, and in medical emergencies, you must be able to **immediately** provide copies of SDS's to medical personnel.

#### D. Labels and Warnings

1. The designated Hazard Communication Coordinator (HCC) shall be responsible for verifying that all containers of hazardous chemicals received and maintained on site. At minimum the following labeling requirements must be met for *primary containers*. The container must be:
  - a. Clearly labeled as to contents,
  - b. Display appropriate signal words such as "WARNING" or "DANGER," pictograms, hazard statements or precautionary statements unique to the chemical in use.
  - c. Contain the name and address of the manufacturer, importer, or other source of the chemical.
  - d. Contain labels that have not been defaced and/or removed and are clearly legible.
2. Secondary Containers can be defined as any container being used beyond the original manufacturer's container that the chemical was shipped in. Secondary containers are exempt from the labeling regulations so long as the portable/working container remains in the direct control and supervision of the employee, and only over the duration of a standard working day. Whenever in doubt, it is best to label all secondary containers each and every time chemicals are transferred from their original container. *Secondary container* labeling requirements require the following:
  - a. The name of the chemical (Not in symbols)
  - b. Appropriate hazard warnings (Any combination of words and/or pictograms)
  - c. Specific physical/health hazards present including target organs
3. Examples of labels used for City projects can be found in H (4) - Forms.
  - a. Additional labeling may be required, including, but not limited to, hazardous waste in satellite and long-term storage, PCB waste,



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equipment containing Class I ozone depleting substances, etc.

4. All labels must remain legible, prominently displayed, and must be written in English. For employees speaking other languages, provisions shall be made to ensure that they understand hazards present.
5. All supervisors must ensure that their workers understand these warnings and that the SDS is available for their review upon request.

#### E. **Employee Information and Training**

1. Employees must be informed of:
  - a. The requirements of the OSHA Hazard Communication Standard.
  - b. Any operations in their work areas where hazardous chemicals are present.
  - c. The location and availability of the Written Hazard Communication Program, Hazardous Chemicals List, and SDS's for the chemicals with which they work or to which they may be exposed.
2. Employees shall receive initial general training prior to their initial assignment and when new hazards are introduced in the following:
  - a. How to read labels and review SDS's to obtain appropriate hazard information. This may be best accomplished by reviewing actual container labels and SDS's for chemicals used on-site. The SDS provides the name of the chemical, how to use and store it, how to handle an emergency, what the hazards of the chemical are, and where to get more information about it. *All employees must know how to read and understand the contents of a Safety Data Sheet (SDS)*
  - b. Physical and health effects of hazardous chemicals.
  - c. Types of exposures (acute or chronic) and routes of entry (inhalation, absorption, and ingestion).
  - d. Methods and observational techniques used to determine the presence or release of hazardous chemicals in the work area including odors, appearance, labels, or information contained in the SDS.
  - e. How to lessen or prevent exposure to hazardous chemicals by using safe work methods and personal protective equipment.
  - f. Emergency procedures to follow if exposed to hazardous chemicals.
3. Category and Specific Training
  - a. Employees are required to receive specific training for each hazardous chemical they may be expected to use or encounter prior to work with the material. If specific training is not provided,

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training must be provided for categories of hazards including physical (flammables, combustibles, and compressed gases) and health (carcinogens, corrosives, asphyxiates, irritants and/or sensitizers, oxidizers, and explosives). These may include but is not limited to the following:

- i. *Carcinogens* present a health hazard that requires special attention. Review the Hazardous Chemical List and SDS's to determine if any carcinogens or suspected carcinogens are present on site. If a hazardous chemical is a suspected carcinogen, the label should so indicate. Workers must be instructed that specific training, including a review of the SDS, must be completed before using the chemical.
- ii. *Corrosives* are any chemicals that cause visible destruction of living tissue at the site of contact. Acids and caustics are corrosive and require special personal protective equipment such as safety glasses or goggles, protective clothing, chemical resistant gloves, and face shields.
- iii. *Asphyxiates* are generally defined as any agent which causes a lack of oxygen in the worker's breathing zone. Confined spaces have this potential and must be tested before entry and periodically during entry. Argon, used frequently to purge, is commonly associated with asphyxiation.
- iv. *Irritants and sensitizers* are associated with inflammation of living tissue and allergic reactions following repeated exposure. When using such chemicals wear appropriate personal protective equipment. Many workplace chemicals and procedures involve either irritants or sensitizers, including solvents, fuels, insulation, Portland cement, cutting oils, thinners, epoxies, and arc welding.
- v. ***Oxidizers are chemicals that may react violently with flammables, combustibles, or water. A review of the Hazardous Chemical List and SDS's will aid in determining the need for additional training.***
- vi. *Explosives* are chemicals that cause a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature. Explosives require specific training.

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- b. Additional training shall be provided when new hazardous chemicals are brought on site if the initial training did not adequately address the hazards. This training may be specific and must be provided to those workers expected to work with or be exposed to the hazards, or provided to all workers (for example, as a weekly "tool box" topic). If review of an SDS and the hazards associated with a chemical reveal a special concern regarding employee safety and health, specific training shall be provided to workers who will work with that chemical.
- c. Training shall be provided workers in the use of electronic equipment/devices, including specific software, when electronic method is used to maintain SDS.

**F. Hazardous Non-Routine Tasks**

1. Occasionally workers will be assigned a task that is not routine. For example, workers may be required to work in a confined space, or with a chemical they have not used before. Before starting such work, every worker involved will be given such information as is necessary to enter and work safely within the confined space or with the chemical. No employee is to begin work at a non-routine task without first being briefed on any hazards that may be involved in the performance of such an assignment. After receiving such training, workers are not to begin work unless their immediate supervisor is aware of their activity.

**G. Forms**

1. Hazardous Chemical list
2. Typical Hazardous Chemicals in Construction
3. Hazardous Chemical Labeling Systems
  - a. GHS, HMIS, NFPA

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## GENERAL HAZARDOUS CHEMICAL LIST

Product Name	Chemical Name	Amount	Location	SDS on File
Unleaded Gasoline	Gasoline, All Grades	Gallons	Vehicle	Yes
Diesel Fuel	Diesel Fuel No. 2	Gallons	Vehicle	Yes
Anti-Freeze	Ethylene-Glycol	Gallons	Vehicle	Yes
Engine Oil	15W40 Engine Oil (& the like consistencies)	Quarts	Vehicle	Yes
Window Washer Fluid	Window Washer Fluid	~1 Gallon	Vehicle	Yes
Automatic Transmission Fluid	Automatic Transmission Fluid	< 1 qt.	Vehicle	Yes
Brake Fluid	DOT 4 Brake Fluid	< 1 qt.	Vehicle	Yes
Hydraulic Fluid	Hydraulic Fluid	Varies	Various Jobsite Equipment	Yes
Additional Hazardous Chemicals shall be added to this log on a project-specific basis. This should be updated to reflect any changes based upon project-specific chemical exposure				

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## 1. TYPICAL HAZARDOUS CHEMICAL IN CONSTRUCTION

Substance	Known or Suspected Health or Physical Hazards	Where Found
Acetylene	Flammable; combustible	Welding/burning operations
Arsenic	Lung and skin cancer	Wood preservatives
Asbestos	Lung cancer	Water Mains, Insulation, building products, water mains
Benzene	Leukemia	Solvents, glues
Calcium Oxide (Lime)	Skin, eye and respiratory irritant	Concrete and masonry
Coal Tar/Asphalt	Eye and respiratory irritant	Roof and foundation work
Concrete/Mortar	Irritant	Concrete and masonry
Curing Compound	Flammable; combustible, irritant	Concrete
Epoxy Resin	Severe irritant to skin, eyes and respiratory tract; some suspected of causing cancer, some flammable	Adhesives
Form Oil	Irritant	Concrete work
Formaldehyde	Nasal and brain cancer	Plywood, particle board, foam insulation
Fuels and Lubricants	Flammable; combustible, irritant	Internal combustion engines; heaters
Glass Fiber Dust	Irritant	Insulation
Lead	Kidney, blood and nervous system; skin and eye irritation	Plumbing and roofing work; soldering
Methylene Chloride	Cancer, heart, liver, nervous system, skin and eye irritation	Paint stripping solvents, cleaning solvents, polyurethane foam
Muriatic Acid	Severe irritant especially to eyes and mucus membranes	Masonry work










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Oxygen	Supports combustion in flammable and combustible areas	Welding/burning operations
Quartz Dust (Silica)	Lung scarring	Limestone and granite aggregates
Trichloroethylene	Lung cancer, central nervous system depressant	solvents, paint, resin, varnish
Vinyl Chloride	Liver cancer	Polyvinyl chloride plastics
Welding Fumes from Nickel, Beryllium and Chromates	Lung and nasal cancer	Welding
Wood Dust	Irritant; nasal, colon and rectal cancer	Woodworking
Xylene	Flammable; combustible, irritant	Concrete

### HAZARDOUS CHEMICAL LABELING SYSTEM

#### a) Globally Harmonized System (GHS)

#### b) HMIS Labeling

GHS - Hazard Pictograms and Related Hazard Classes		
		
<b>Exploding Bomb</b> • Explosives • Self-reactives • Organic Peroxides	<b>Corrosion</b> • Skin corrosion/burns • Eye damage • Corrosive to metals	<b>Flame Over Circle</b> • Oxidizing gases • Oxidizing liquids • Oxidizing solids
		
<b>Gas Cylinder</b> • Gases under pressure	<b>Environment</b> • Aquatic toxicity	<b>Skull &amp; Crossbones</b> • Acute toxicity (fatal or toxic)
		
<b>Exclamation Mark</b>	<b>Health Hazard</b>	<b>Flame</b>

<b>HEALTH</b>	<input type="checkbox"/>
<b>FLAMMABILITY</b>	<input type="checkbox"/>
<b>REACTIVITY</b>	<input type="checkbox"/>
<b>PERSONAL PROTECTION</b>	<input type="checkbox"/>

#### c) NFPA 704 Diamond

t revision





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a. Globally Harmonized Systems:




GHS Elements:		
Description	Pictogram	Hazard class and hazard category:
<b>Exploding Bomb</b>		Unstable explosives
		Explosives of Divisions 1.1, 1.2, 1.3, 1.4
		Self-reactive substances and mixtures, Types A,B
		Organic peroxides, Types A,B
<b>Flame</b>		Flammable gasses, category 1
		Flammable aerosols, categories 1,2
		Flammable liquids, categories 1,2,3
		Flammable solids, categories 1,2
		Self-reactive substances and mixtures, Types B,C,D,E,F
		Pyrophoric liquids, category 1

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		Pyrophoric solids, category 1
		Self-heating substances and mixtures, categories 1,2
		Substances and mixtures, which in contact with water,
		Emit flammable gases, categories 1,2,3
		Organic peroxides, Types B,C,D,E,F
<b>Flame Over Circle</b>		Oxidizing gases, category 1
		Oxidizing liquids, categories 1,2,3
<b>Gas Cylinder</b>		Gases under pressure:
		- Compressed gases
		- Liquefied gases
		- Refrigerated liquefied gases
		- Dissolved gases
<b>Corrosion</b>		Corrosive to metals, category 1
		Skin corrosion, categories 1A,1B,1C
		Serious eye damage, category 1
<b>Skull and Crossbones</b>		Acute toxicity (oral, dermal, inhalation), categories 1,2,3



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<b>Exclamation Mark</b>		Acute toxicity (oral, dermal, inhalation), category 4
		Skin irritation, category 2
		Eye irritation, category 2
		Skin sensitization, category 1
		Specific Target Organ Toxicity - Single exposure, category 3
<b>Health Hazard</b>		Respiratory sensitization, category 1
		Germ cell mutagenicity, categories 1A,1B,2
		Carcinogenicity, categories 1A,1B,2
		Reproductive toxicity, categories 1A,1B,2
		Specific Target Organ Toxicity - Single exposure, categories 1,2
		Specific Target Organ Toxicity - Repeated exposure, categories 1,2
<b>Environment</b>		Aspiration Hazard, category 1
		Hazardous to the aquatic environment
		- Acute hazard, category 1
		- Chronic hazard, categories 1,2

## b. HMIS Labeling

*Always refer to the electronic version for the latest revision*

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### General Rating Summary:

Health Rating Chart	
* Chronic Hazard	Chronic (long-term) health effects may result from repeated exposure.
0- Minimal Hazard	No significant risk to health.
1- Slight Hazard	Irritation or minor reversible injury possible.
2- Moderate Hazard	Temporary or minor injury may occur.
3- Serious Hazard	Major injury likely unless prompt action is taken and medical treatment is given.
4- Severe Hazard	Life-threatening, major or permanent damage may result from single or repeated exposures.

Flammability Rating Chart	
0- Minimal Hazard	Materials that will not burn.
1- Slight Hazard	Materials that must be preheated before ignition will occur. Includes liquids, solids, and semi-solids having a flash point above 200° F. (Class IIIB)
2- Moderate Hazard	Materials which must be moderately heated or exposed to high ambient temperatures before ignition will occur. Includes liquids having a flash point at or above 100°F, but below 200°F. (Class II & IIIA)
3- Serious Hazard	Chemicals capable of ignition under almost all normal temperature conditions. Includes flammable liquids with a flash point between 73°F and 100°F. (Class IB & IC)
4- Severe Hazard	Flammable gasses or very volatile flammable liquids with flash points below 73°F and boiling points below

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	100°F. Materials may ignite spontaneously with air. (Class IA)
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Reactivity Rating Chart	
0- Minimal Hazard	Materials that are normally stable, under fire conditions and will not react to water, polymerize, decompose, condense or self-react.
1- Slight Hazard	Materials that are normally stable, but can become unstable at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.
2- Moderate Hazard	Materials that are unstable and may undergo violent chemical change at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.
3- Serious Hazard	Materials that may form explosive mixtures with water and are capable of detonation or explosive reaction in the presence of a strong igniting source or undergo chemical change at normal temperature and pressure with moderate risk of explosion.
4- Severe Hazard	Materials that are readily capable of water reaction, detonation or explosive decomposition at normal temperatures and pressures.

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PERSONAL PROTECTION INDEX							
<b>A</b>				<b>G</b>	 +  + 		
<b>B</b>	 + 			<b>H</b>	 +  +  + 		
<b>C</b>	 +  + 			<b>I</b>	 +  + 		
<b>D</b>	 +  + 			<b>J</b>	 +  +  + 		
<b>E</b>	 +  + 			<b>K</b>	 +  +  + 		
<b>F</b>	 +  +  + 			<b>X</b>	Consult your supervisor or S.O.P. for "SPECIAL" handling directions		
<b>A</b>		<b>n</b>		<b>o</b>		<b>p</b>	
Safety Glasses		Splash Goggles		Face Shield & Eye Protection		Gloves	
<b>t</b>		<b>u</b>		<b>w</b>		<b>y</b>	
Dust Respirator		Vapor Respirator		Dust & Vapor Respirator		Full Face Respirator	
						<b>z</b>	
						Airline Hood or Mask	

### General Rating Summary:

Health (Blue)		
Rating	Kind of Hazard	Description
4	Danger	May be fatal on short exposure. Specialized protective equipment required
3	Warning	Corrosive or toxic. Avoid skin contact or inhalation
2	Warning	May be harmful if inhaled or absorbed
1	Caution	May be irritating
0		No unusual hazard

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Flammability (Red)		
Rating	Kind of Hazard	Description
4	Danger	Flammable gas or extremely flammable liquid
3	Warning	Flammable liquid flash point below 100° F
2	Caution	Combustible liquid flash point of 100° to 200° F
1		Combustible if heated
0		Not combustible

Reactivity (Yellow)		
Rating	Kind of Hazard	Description
3	Danger	May be explosive if shocked, heated under confinement or mixed with water
2	Warning	Unstable or may react violently if mixed with water
1	Caution	May react if heated or mixed with water but not violently
0	Stable	Not reactive when mixed with water

Special Notice Key (White)	
W	Water Reactive
OX	Oxidizing Agent

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Personal Protective Equipment			Page 53 of 292

## A. Purpose

This procedure provides requirements and guidance for using personal protective equipment (PPE) to reduce employee exposure to workplace hazards. Each contractor shall have a personal protective equipment program in accordance with this safety plan, 29 CFR 1926.28 and Subpart E.

All City employees shall comply fully with the requirements for Personal Protective Equipment as outlined below.

## B. General

1. Pre-task planning shall be conducted to identify workplace hazards and the PPE requirements necessary to effectively mitigate those hazards. A written job hazard analysis (JHA) may be conducted for workplace hazards.
2. In accordance with the findings on the Job Hazard analysis, a written assessment shall take place outlining these task-specific PPE requirements. A sample assessment can be found in section M.
3. PPE requirements shall be communicated to each employee. Employees required to wear PPE shall receive the training necessary to enable them to use the PPE provided properly. PPE shall be selected and fitted to each affected employee.
4. Retraining shall be conducted when work assignments change, new or different PPE is introduced or if employee(s) demonstrate improper use, lack of use, or inadequate skill or understanding.
5. Document that each employee received and understood the training. A record shall be prepared which contains the identity of the worker, the date of training, and the means used to verify that the worker understood the training.
6. PPE shall be used and maintained by the user in a sanitary and reliable condition. As such, PPE shall be inspected before each use and any damaged or defective PPE must be immediately removed from service.
7. Periodic audits shall be conducted to monitor compliance with PPE requirements.

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8. With the exception of safety shoes, employee owned or supplied PPE is not allowed on City worksites or locations. All PPE shall be provided by the City at no cost to the affected employee.

### **C. Head Protection**

1. Employees shall wear hard hats at all times in construction areas/projects or areas of an existing facility that have been designated as a "Hard Hat Area".
2. Hard hats shall meet the requirements of ANSI Z89.1 – 1969, Safety Requirements for Industrial Head Protection.
3. Hard hats that have been altered by drilling or cutting will not be permitted.
4. Welders are required to wear hard hats when in a hard hat area. Soft cap welding is not permitted.
5. Hard hats shall be worn in accordance with the manufacturer's instructions/recommendations.
6. Equipment operators shall wear hard hats unless a fully enclosed cab protects them.
7. "Bump caps" and metallic hard hats are prohibited on City projects.
8. Hard hats will be inspected regularly for signs of cracking, chips, or other visible defects and replaced when damaged. Headband assemblies must be in good condition and should be exchanged whenever they become broken or weakened.

### **D. Eye and Face Protection**

1. Employees shall wear safety glasses with side shields in all work areas where a Job Hazard Analysis indicates they are needed.
2. Safety glasses shall meet the requirements of ANSI Z87.1 – 1989, Practice for Occupational and Educational Eye Protection.

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3. Employees requiring prescription eyewear must wear glasses with frames and lenses meeting ANSI specifications or wear protective eyewear over their corrective lenses.
4. Additional eye and/or face protection, such as goggles, face shields, and welding shields will be required when engaged in operations such as welding, burning, grinding, chipping, handling chemicals, corrosive liquids, molten materials, drilling, using powder-actuated tools, sandblasting, pouring concrete, etc.
5. Employees whose presence is required in close proximity to tasks requiring additional eye protection will wear the same level of protection.
6. Welder's helpers shall wear filtered safety lenses with the correct color density to provide protection against welder's flash.
7. Visitors wearing prescription eyewear must meet the approved applicable standards with side shields or wear goggles or other protective eyewear over their corrective lenses in all work areas where a Job Hazard Analysis indicates they are needed.
8. Equipment operators shall be required to wear protective eyewear unless they are in enclosed cabs.

#### **E. Foot Protection**

1. When foot protection is necessary to protect employees from the hazards identified, the employee(s) assigned to those work areas or tasks shall be required to wear boots that provide adequate protection and meet the specifications of ANSI Z41 – Safety-Toe Footwear.
2. All employees on construction projects are required to wear protective (safety or steel toe) footwear.
3. Additional protective footwear protecting the toes and metatarsal area of the foot shall be worn when performing tasks that present a potential for serious foot injury (i.e., operating jackhammers, drilling to break concrete, operating ground compactors, etc.)
4. Employees working with wet concrete shall wear rubber boots.



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5. The City does not permit the use of safety-toed tennis shoes unless a Job Hazard Analysis concludes that such shoes are safe for that job title/position.
6. Open-toe shoes, sandals, tennis shoes, jogging or athletic shoes, and other such footwear shall not be permitted on construction sites.
7. Boots shall be maintained in good repair and those with worn heels or thin or worn soles shall not be permitted.

#### **F. Hand Protection**

1. Employees performing tasks that present a potential for hand injury shall wear the appropriate gloves suitable for the hazard present.
2. Employees working on construction projects shall wear gloves during all work activities, unless the use of gloves would increase the hazard potential of the task.
3. Employees operating drill presses, bench grinders, and similar rotating tools and machinery shall not wear gloves.
4. All exceptions to the use of gloves shall be identified on the Pre-Task Plan (PTP) and approved by project management.
5. Gloves such as neoprene, nitrile, butyl rubber, polyvinyl alcohol, etc., may be required when handling specific chemicals. The appropriate Safety Data Sheet (SDS) shall be reviewed to determine appropriate PPE for hand protection.
6. Cut resistant or “Kevlar” gloves shall be worn when handling or working around objects with sharp edges or hot surfaces.
7. Gloves shall be worn during welding and burning operations.

#### **G. Hearing Protection**

1. Hearing protection shall be worn when employees are subjected to sound levels equal to or exceeding 85 dBA based on a time-weighted average when measured on the A-scale of a standard sound level meter at slow response.

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2. When administrative and/or engineering controls fail to reduce sound levels below permissible noise exposure levels based on an eight-hour time-weighted average, a hearing conservation program shall be implemented.
3. Ear protection devices (ear plugs) inserted in the ear shall be fitted or determined by a competent person.
4. Hearing protection required signage shall be posted in work areas that exceed permissible noise exposure levels.

#### **H. Work Clothing**

1. Minimum acceptable work clothing for all employees working on project sites includes long pants, safety footwear, and a shirt that completely covers the shoulders with a minimum 4-inch sleeve.
2. Additional work clothing such as long-sleeve shirts, flame retardant clothing, etc., may be required for employees visiting and/or working in operating areas of client facilities.
3. For the most part, construction, maintenance, and other employees assigned to operating client facilities should be cautioned against wearing loose clothing, rings, watches, necklaces, or having long hair – all of which may catch in power-driven equipment.
4. Non-conductive apparel shall be worn for those employees with the potential to contact exposed energized parts. Conductive apparel could include conductive articles of clothing such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear.

#### **I. Seat Belts**

1. All employees operating motor vehicles and all passengers therein shall wear seat belts.
2. Employees operating mobile equipment with rollover protection (ROPS) shall wear seat belts.

#### **J. Traffic Vests/Apparel**

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1. Employees required to work in the immediate vicinity of moving traffic shall wear, as a minimum, reflective high visibility traffic vests/apparel which meet D.O.T. standards.
2. Reflective traffic vests/apparel shall be worn when such activities are being conducted at night and other periods where low light conditions are present.

#### **K. Life Jackets/Vests**

1. Employees required to work over or near water more than 36 inches in depth shall be required to wear a U.S. Coast Guard approved life jacket or buoyant work vest.

#### **L. Other**

1. PPE requirements for Fall Protection are contained in Section 14 of this manual.
2. PPE requirements for Respiratory Protection are contained in Section 21 of this manual.

#### **M. PPE Assessment Form**

PPE Assessment Table		
Hazard	Frequency Occurs	PPE Required
Access & Egress		
Chemical/Biological		
Compression/Crushing		
Confined Space Hazards		
Drowning		
Electrical		
Engulfment		

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Ergonomic		
Drowning		
Fire Potential		
Harmful Dust		
Hot/Cold Equipment		
Impact		
Light (Optical) Radiation		
Material Handling		
Material Storage		
Noise		
Penetration		
Radiation (Ionizing)		
Tools		
Vibration		
Walking Surfaces		
Weather		
Injury/Accident Data		

**Performed By:** \_\_\_\_\_

**Date of Assessment:** \_\_\_\_\_

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## **A. Purpose**

This procedure ensures prompt qualified medical attention is provided to those in need and shall comply with OSHA 29 CFR 1910.151.

## **B. Medical Attention / First Aid**

1. Before work begins, provisions for prompt medical attention shall be made available in case of serious injury, including communication (for example posting) of emergency telephone numbers (control room, Fire, Police, Ambulance) in an appropriate location.
2. The site may designate a person who has a valid certificate in first aid and CPR training and is available to render immediate assistance to treat injured employees, in the absence of an infirmary, clinic, hospital, or physician that is within three minutes travel time of the ES Facility or job site.
3. The required number of persons who are trained in first aid and CPR for the facility or job site is not defined by regulation. However, it is recommended that at least one employee who is trained in First Aid/CPR is available per shift.
4. All newly assigned employees must complete site orientation, including an explanation of how to report medical emergencies and how to summon aid.
5. Employees who act as First Aid responders shall be trained and equipped
6. First Aid procedures shall be followed to ensure that prompt qualified medical attention is provided to those in need. This procedure shall be followed in regards to first aid care and medical attentions to all City employees shall comply with OSHA 29 CFR 1910.151.
7. Training - all designated first responders shall be trained and qualified to administer appropriate first aid treatment, may care for minor injuries not requiring the attention of a physician. Training shall conform to the American Red Cross, American Heart Association, and National Safety Council, Medic First Aid or equivalent. Training will be verified via appropriate documents.
8. First Aid kits shall be available on site.
  - a. First Aid Supplies:
    - i. First aid supplies are accessible when required and maintained in a weatherproof container or first aid station. Each item should be available in an individually sealed package.

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- ii. A designated representative shall check the contents of each first aid kit before it is designated as available for use, and check the site/vehicle first aid kits and supplies on a monthly basis to ensure that the expended or expired items are replaced. The inspection shall be documented. A City employee or an outside vendor can check the inventory and maintain these first aid supplies including eyewash supplies.
9. Emergency Eyewash and Shower - If there is the possibility that an employee's skin may be splashed by chemicals or chemical containing solutions, an emergency shower or drench hose should be provided at the work area. If there is a possibility that an employee's eyes may be splashed by chemical containing solutions, a plumbed eyewash station should be provided in the work area.
10. Employees must be instructed on the proper use of the eyewash and emergency showers. If an employee's eyes or skin are splashed by chemical containing solutions, the employee must flush them immediately and continue to do so for 15 minutes. Employees should then seek medical attention.

### **C. Emergency Medical Response**

1. When an emergency situation arises, the first person on the scene shall initiate an emergency response. The communication channels established during emergency planning will be used to notify the appropriate on-site, (EMRT), and off-site emergency medical providers.
2. Information transmitted from the scene concerning the emergency should include the name of the individual reporting the emergency, an accurate description of the nature of the emergency, the exact location, and the nature of the injury.
3. Information transmitted to off-site emergency response providers shall include the details described above and any other information requested. The operator should stay on the line until an emergency response has been confirmed.
4. The on-site emergency response team will provide for the care and comfort of the injured until released by the responding off-site emergency response provider. The site emergency response team shall make itself available to assist as required.
5. The project management team will secure the scene at the earliest possible

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moment and initiate an incident investigation once the scene has been secured and the injured has been transported for off-site medical attention.

**D. First Aid Station- Approved First Aid Supplies**

1. City First Aid kits will comply with ANSI (American National Standards Institute) standards.

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Fire Protection & Prevention			Page 63 of 292

## A. Purpose

To provide the general requirements for maintaining an appropriate Fire Protection and Fire Prevention Program.

All City of Port Townsend employees shall comply fully with City requirements for fire protection and prevention as outlined below.

## B. Definitions

1. *Class A Fires* – fires in ordinary combustible materials such as wood, cloth, paper, trash, rubber, and plastic.
2. *Class B Fires* – fires in flammable liquid, oil, grease, tar, oil-based paint, lacquer, and flammable gas.
3. *Class C Fires* – fires involving energized electrical equipment or systems, resulting in the extinguishing media conducting electricity.
4. *Class D Fires* – fires in combustible metals, such as magnesium, titanium, zirconium, sodium, lithium, and potassium.
5. *Combustible Liquid* – a liquid having a flash point at or above 140 deg. F (60 deg. C) and below 200 deg. F (93.4 deg. C).
6. *Flammable* – means capable of being easily ignited, burning intensely, or having a rapid rate of flame spread.
7. *Flammable Liquid* – a liquid having a flash point below 140 deg. F and having a vapor pressure not exceeding 40 pounds per square inch (absolute) at 100 deg. F.
8. *Flash Point* – means the temperature of a liquid that gives off vapor sufficient to form an ignitable mixture with the air near the surface of the liquid or within the vessel.
9. *Safety Can* – a safety can is an FM-approved container of not more than five-gallon capacity having a flash-arresting screen, spring-closing lid, and spout cover that has been so designed to safely relieve internal pressure when subjected to fire exposure.



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### **C. General**

The requirements of a Fire Protection and Prevention Program are determined mainly by the conditions prevalent at each project. It has as its basic minimum the requirements of Washington State Department of Labor and Industry, Division of Occupational Safety and Health (DOSH), WAC 296-24-567, and OSHA, 29 CFR 1926 Sub-part F.

### **D. Fire Protection**

The Fire Protection and Prevention Program for the City and each jobsite will determine, in large measure, the type and quantity of firefighting equipment required.

#### **1. Mobile Fire Equipment**

- a. Generally, mobile equipment will not be required, other than perhaps large-wheeled extinguishers or small firefighting equipment trailers. It is recognized, however, that where the facilities are widespread, or where several plants will require fire protection, motorized equipment could be beneficial. These situations should be treated as special cases; approval of the client should be obtained before procuring expensive, specialized motor equipment.

#### **2. Portable Fire Extinguishers**

- a. Many types of extinguishers are available to combat the various classes of fires for buildings or areas with ordinary and/or extra-hazard occupancy. However, to avoid confusion and to provide the maximum protection, it is recommended that standard multi-purpose A:B:C extinguishers be used. Class "A" fires are fires in ordinary combustible materials such as wood, cloth, paper, rubber, and plastics; Class "B" fires are fires in flammable liquids, gases, and greases; and Class "C" fires are fires which involve energized electric equipment where electrical conductivity of the extinguishing media is of importance. Whenever possible, equipment should be de-energized before using a Class "C" extinguisher. The type recommended for these classes is Underwriter's Laboratories rated 4A:40-B:C and having a capacity of 10 pounds.
- b. Underwriter's Laboratories (UL) rating should not be confused with

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manufacturers' model numbers. All reputable suppliers will provide the UL ratings of their portable fire extinguishers upon request.

c. Other requirements include the following:

- i. Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 100 feet. The area to be protected per portable fire extinguisher for Class "A" fires is 3,000 square feet.
- ii. Fire extinguishers shall be mounted not more than 5'-0" above the floor and shall be marked and conspicuously located. *For more information, please refer to fire extinguisher requirements as outlined in NFPA 10.*
- iii. One or more fire extinguishers rated at 2A shall be provided on each floor. In multi-story buildings at least one portable fire extinguisher shall be located adjacent to each stairway leading to an EXIT.
- iv. When flammable or combustible liquids or flammable gases are being used, a fire extinguisher rated 10-B shall be provided within 50 feet travel distance from any point of the protected area to the nearest portable fire extinguisher. Extinguishers subject to freezing shall be protected from freezing.
- v. Carbon tetrachloride, chlorobromomethane, and other toxic-vaporizing liquid fire extinguishers are prohibited.

3. Fire Watch and Fire Extinguisher Training

- a. All City employees that may be required to utilize fire extinguishers as part of their normal duties shall be provided training to familiarize them with the operation of fire extinguishers and with incipient-stage firefighting in accordance with the NFPA standards.
- b. Portable fire extinguishers training will be conducted at time of hire and annually or on as needed basis depending on changing conditions.

4. Fire Extinguisher Inspections

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- a. Fire extinguishers shall be inspected monthly to ensure that they have not been discharged, removed, or otherwise damaged. Inspection tags provided by a certifying vendor shall be used to verify inspection and include the initials of the individual performing the monthly inspection. Annual service by a certifying vendor shall be conducted for all portable fire extinguishers. Partially discharged and discharged fire extinguishers shall be removed from service immediately.

#### 5. Fire Hydrants and Hose Stations

- a. In addition to portable extinguishers which are not very effective for large fires, fixed hydrants and hose stations should be strategically located throughout the entire jobsite. They should be placed in those areas that are subject to large Class "A" fires requiring a considerable amount of water. Hydrant hoses and nozzles should be provided so that all points in the protected area can be reached. Pressurized water is recommended as the retardant for Class "A" fires.
- b. If hose connections are not compatible with the equipment of local fire departments, adapters and wrenches shall be provided at each hose station.
- c. The above guidelines are based on the assumption that an adequate supply of water will be available. If such is not the case, then appropriate adjustments shall be made in the number, type, and size of portable extinguishers provided.

#### 6. Water Supply

- a. DOSH requires that an adequate supply of water, either temporary or permanent, be available to properly operate the firefighting equipment as soon as combustible materials accumulate.
- b. All or part of a fire system which is to be provided as a part of the permanent plant facility should be completed and put into service as soon as practicable. Permanent fire hydrants should be installed; each should be equipped with adequate fire hoses, nozzles, tools, and a protective structure. If permanent fire hydrants are not located to adequately service structures, work areas, and storage areas, temporary fire hydrants and supply lines must be provided. Both permanent and temporary hydrants shall be activated as soon as structural progress permits.

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- c. If pumps are required, they should be reliable and have sufficient water capacity to discharge water at the rate dictated by the design of the project. Standby pumps that can be activated if needed are also desirable.

## E. Flammable and Combustible Liquids

1. Only Factory Mutual (FM) Laboratories approved containers and portable tanks shall be used for storage and handling of flammable and combustible liquids. Dip tanks containing flammable or combustible liquids should have covers that will close automatically in the event of fire.
2. Factory Mutual (FM) Laboratories approved metal and identified safety cans shall be used for handling and using flammable liquids in quantities greater than one gallon. Flammable, highly viscous (extremely difficult to pour) liquid materials may be used and handled in original shipping containers.
  - a. For storage, use, and handling of flammable liquids in quantities of one gallon or less, only the original container or a Factory Mutual (FM) Laboratories approved metal safety can shall be used.
3. The following storage requirements shall apply:
  - a. *Indoor Storage*- No more than 15 gallons of flammable or combustible liquids shall be stored indoors except in an FM approved storage cabinet.<sup>1</sup> Inside storage rooms must meet all OSHA requirements as stated in Standard 1926.152 (b) (4) (i), dated 11/01/93. Materials that will react with water and create a fire hazard shall not be stored in the same room with flammable or combustible liquids.
  - b. *Outdoor Storage*- The storage area shall be diked so that spillage will be contained. The dike must have provisions for draining off rain or ground water and spillage of flammable or combustible liquids. The dike shall contain the flammable liquids plus 10 percent freeboard for rainwater.<sup>2</sup>

<sup>1</sup> OSHA permits the use of specially fabricated plywood cabinets and FM approved metal storage cabinets. However, it is strongly recommended that all flammable and combustible liquids, other than those in immediate use, be kept in outdoor storage areas. This recommendation is made for two reasons. First, the potential damage due to fire is greatly reduced; and second, the FM approved cabinets are too expensive for the benefit gained by their use.

<sup>2</sup> NFPA Standard No. 30, Flammable and Combustible Liquids Code

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- i. Portable tanks shall be no closer than 20 feet to any building or structure. Portable tanks larger than 660 gallons shall have emergency venting and other devices as required by Chapters II and III of NFPA 30-1969. Portable tanks not exceeding 660 gallons shall have emergency venting and other required devices. An access way at least 12 feet wide for firefighting equipment shall be available within 200 feet of each portable tank.
- ii. Storage areas shall be kept free of organic fuels and extraneous materials not required for the storage operations. Storage tanks and containers shall be protected against collision damage.

## **F. Fire Control**

1. OSHA requires that at least one portable fire extinguisher be rated at not less than 20:B units and located as follows:
  - a. Outside, but not more than 10 feet from the door opening into, any room used for storage of more than 60 gallons of flammable or combustible liquids.
  - b. No closer than 25 feet to, and no farther than 75 feet from, any outside flammable liquid storage area.
  - c. On all tank trucks or other vehicles used for transporting and/or dispensing flammable or combustible liquids.<sup>3</sup>
2. Final-Use Areas
  - a. Flammable liquids shall be kept in closed containers when not in actual use. Leakage or spillage of flammable or combustible liquids shall be disposed of promptly and safely. Operations involving the use of flammable liquids must be at least 50 feet away from any open flame or other source of ignition.

## **G. Power-Operated Equipment and Welding Operations**

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<sup>3</sup> For the above purposes, it is recommended that multipurpose, dry chemical extinguishers rated not less than 20-B:C be provided.

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1. *Power-Operated Tools and Equipment*- Power-operated tools or equipment shall not be used in an explosive or flammable atmosphere.
2. *Welding and Cutting Operations*- Transporting, moving, and storing compressed gas cylinders shall be in accordance with the provisions of subparagraph (a) of 29 CFR 1926.350 (OSHA Requirements) and NFPA 51.
  - a. Compressed gas cylinders shall be located so that sparks, hot slag, or flame from welding or cutting operations cannot reach them. This may necessitate the use of fire-resistant shields or coverings. Oxygen cylinders shall be separated from fuel gas cylinders or other combustible materials by a distance of at least 20 feet, or separated by a noncombustible barrier at least five feet high with a fire-resistance rating of at least ½ hour.
  - b. Cylinders shall be placed where they cannot become part of an electrical circuit. Electrodes shall not be struck against a cylinder to strike an arc. No welding, cutting, or heating shall be done in the presence of flammable compounds or where heavy dust concentrations create a hazard.
  - c. Torches shall be lighted by friction strikers or other Factory Mutual (FM) Laboratories approved devices, not by matches or hot work.
  - d. Suitable firefighting equipment conspicuously placed in the work area shall be maintained in a state of readiness for instant use. If normal fire prevention measures are not adequate during welding, cutting, or heating operations, additional personnel (fire watches) shall be assigned to guard against fire during that actual operation and for a period of time after completion of the work to ensure that no possibility of fire exists. Such personnel shall be alerted to the specific types of fires anticipated and shall be proficient in the use of the firefighting equipment provided.
3. Hot Work Permits
  - a. Hot work operations shall not be initiated before a Hot Work Permit (Form O) for Hot Work Permit Form) has been obtained. The requirement for Hot Work Permits may be waived based on project and work area conditions, but such waiver shall require approval by the senior on-site manager.

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## H. Fire Prevention

### 1. Housekeeping

- a. Elimination of combustible material is a fundamental and major part of any fire prevention program. It requires special efforts on construction projects because of the large amounts of materials that occur as packaging from incoming material; from lumber and scaffolding; temporary protective coverings; and rags used for cleaning oil, grease, and paints. These materials are easily ignited by welding sparks or other relatively small ignition sources and can become the tinder for starting fires in other areas less susceptible to damage from heat or smoke.
- b. A continuous and effective housekeeping program must be strictly adhered to throughout the duration of the project. The program should provide for the following:
  - i. A sufficient number of appropriate containers to receive trash and waste materials. These may be metal skip boxes for major trash removal, or covered metal containers with self-closing covers for smaller articles, particularly oily rags and papers.
  - ii. Prompt removal of all combustible trash to prevent any appreciable accumulation. Removal should be on a daily basis or more frequently where substantial amounts of trash are being generated.
  - iii. Removal of combustible packaging materials wherever possible from incoming shipments before the parts enter either permanent or temporary structures. In no case shall excelsior, shredded paper, polystyrene, or other protective filler material be kept in an open box or crate, even if the box or crate will be used for storage purposes.
  - iv. Correct placement of trash containers. Never place trash containers in the immediate proximity of materials or equipment especially susceptible to fire damage.
  - v. Use of only metal toolboxes, tool cabinets, plan tables, workbenches, and desks. Scaffolding should have planks of

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metal or fire-resistant wood (although this is not always possible).

- vi. Prohibiting the use of combustible polyethylene, untreated tarpaulins, or other fire-hazardous materials for temporary enclosures, equipment coverings, etc., inside or outside other structures.
- vii. Supervision of the program by a person vested with authority for enforcing the full intent of the program.

## 2. Smoking

- a. Smoking is prohibited at or in the vicinity of operations which constitute a fire hazard. Signs reading "No Smoking" or "Open Flame" shall be conspicuously posted in these areas.

## 3. Service and Refueling Areas

- a. All flammable or combustible liquids must be stored in FM approved containers. Dispensing hoses and nozzles shall be of FM approved types. Nozzles shall be an automatic type without a latch-open device.
- b. Conspicuously placed, clearly identified, and easily accessible switches shall be provided at a remote location to shut off all power to the dispensing devices in the event of an emergency.
- c. There shall be no smoking or open flames in areas used for fueling, servicing fuel systems, or receiving or dispensing of flammable or combustible liquids. Signs stating "No Smoking" or "Open Flames" shall be conspicuously posted. The motors of all equipment being fueled must be shut off during fueling.
- d. Each service or fueling area shall be provided with portable fire extinguishers rated not less than 20-B:C so there will be at least one extinguisher within 75 feet of each pump, dispenser, underground fill pipe opening, and lubrication or service area.

## I. Recommended:

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- a. The Fire Marshal and a City representative may conduct an annual “risk reduction” walk through of all City facilities to assist in compliance.
- b. Provisions may be made to comply with International Fire Code.

#### **J. Forms**

- OSHA Standards Requiring Fire Extinguishers in Construction
- Conversion of Fire Extinguisher Classifications
- Fire Extinguisher Inspection Log
- Hot Work Permit
-

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## OSHA STANDARDS REQUIRING FIRE EXTINGUISHERS IN CONSTRUCTION

STANDARD	LOCATION	TYPE	DISTANCE
150 (c) (1) (i)	Building area	2A	100 feet
150 (c) (1) (iv)	Each floor	2A	-----
150 (c) (1) (iv)	Multistory building	2A	Adjacent to stairway
150 (c) (1) (vi)	5 gal. of flammable/ combustible or 5 lb. of flammable gas	10B	50 feet
151 (c) (6)	Open yard storage	2A or suitable for Hazard	100 feet
152 (d) (1)	Flammable liquid storage room	20B	10 feet, outside
152 (d) (2)	Outside flammable liquid storage area	20B	25 to 75 feet
152 (d) (4)	Vehicles used for dispensing or trans- porting flammable or combustible liquids	20B:C	On vehicle
152 (g) (11)	Service or fuel area	20B:C	75 feet

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153 (l)	LPG storage area	20B:C	-----
352 (d)	Welding, cutting, or heating areas	Suitable	-----
550 (a) (14) (i)	Crane cabs	5B:C	On crane
800 (m) (8)	Tunnel machinery not using fire-resistant hydraulic fluid	4A:40B:C	-----
800 (m) (11)	Tunnel underground belt conveyors at head & tail pulley	4A:40B:C	-----
902 (i)	Vehicles used for transportation of explosives	10A:B:C	-----

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## CONVERSION OF FIRE EXTINGUISHER CLASSIFICATIONS

Type 2 A = 2½ gallon water pump or  
pressure extinguisher

Type 20 B:C = 30 pounds of  
dry chemical

Type 10 B = 17 gallon foam extinguisher

Type 5 B:C = 20 pounds of  
carbon dioxide

Type 20 B = 33 gallon foam extinguisher

Type 4 A:40 B:C = 17 gallons water &  
75 to 350 pounds of dry chemical

*Note: For multi-use purposes, it is recommended that 5 to 20 A:B:C fire extinguishers be used on all agency projects.*

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## FIRE EXTINGUISHER INSPECTION LOG

Month/ Year: \_\_\_\_\_

Date: \_\_\_\_\_

Location Number Type	Appearance	Hose	Guages	Inspection Plate	Pin Retain

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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### HOT WORK PERMIT

Time Hot Work Allowed \_\_\_\_\_ To \_\_\_\_\_ Date \_\_\_\_\_  
 Job Description \_\_\_\_\_

Type Of Work

- ☐ Electric Welding  
☐ Red Heading  
☐ Powder Gun  
☐ Hammering  
☐ Gas Welding/Burning  
☐ Other \_\_\_\_\_

- ☐ Melting Pot  
☐ Chiseling  
☐ Grinding  
☐ Brazing  
☐ Soldering  
☐ Drilling

- Alarms Must Be Cut Off ☐ Yes ☐ No  
 Fire Watch Required ☐ Yes ☐ No  
 Vapor/Gas Combustion Test Required ☐ Yes ☐ No

Special Instructions

\_\_\_\_\_

Approvals (Signatures)

<u>Shift</u>	<u>Supervisor</u>	<u>Foreman</u>
Day	_____	_____
Swing	_____	_____
Night	_____	_____

Person Doing The Work Must Check  
Items and Sign Below

- Hand Fire Extinguisher In Area Yes ☐  
 Combustible Materials Removed From Area Yes ☐  
 Combustible Materials Removed From Area Below Yes ☐  
 All Flammable Liquids Removed From Area Yes ☐  
 All Flammable Gas Shut-Off And Isolated Yes ☐  
 Welding Screens Positioned Where Needed Yes ☐  
 Sheathing Provided Where Needed Yes ☐  
 Welding Cables And Hoses Out Of Travel Areas Or Secured At Least 7' Overhead Yes ☐  
 Vapor Combustion Test Conducted Yes ☐  
 Vapor Combustion Test Conducted Where Necessary Yes ☐  
 If Tested, Who Conducted Test? \_\_\_\_\_  
 Test Results \_\_\_\_\_  
 Using Pipe as Required on Special Work Permit Yes ☐

\_\_\_\_\_  
 Signature of Person Performing The Hot Work

BE TAKEN WHEN USING TOOLS.

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## A. Purpose

The purpose and scope of this document is to comply with Chapter 296-876 WAC Ladder Safety procedures and training for City employees. All employees who might be expected to use a ladder during the course of work should be familiar with this document. This standard operating procedure covers all types of ladders, including step, extension, and fixed ladders. Ladder users must be able to recognize and avoid ladder hazards and be aware of safe practices in setting up, storing, moving and working from this equipment.

## C. General Policy

1. All City employees who use ladders must inspect them for defects or possible hazards before the ladders are used. Ladders with loose parts or faulty rungs should be taken out of service immediately.
2. Ladders shall be maintained in good condition at all times.
3. Ladders that are taken out of service shall be tagged "Defective" and removed from the work area or destroyed.
  - a. Ladders may be repaired only if repairs will restore the ladder to a condition meeting its **original design criteria**.
  - b. Wooden ladders shall meet ANSI A14.1, American National Standard for Ladders Portable Wood-Safety Requirements, in effect when the ladder was installed.
  - c. Ladders used on Construction Sites shall be appropriate for industrial applications (Class I or 1-A). Light-duty household ladders are not permitted.
    - a. Ladders shall not exceed the length limits established for each type as in Table 1.

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(a) Table 1. Maximum Ladder Lengths	
Type	Feet
Single, portable ladders	30
Two-section extension ladders	60
Step ladders	20
Mason's ladders	40

#### D. Definitions

1. *CFR* - Code of Federal Regulations
2. *WAC* - Washington Administrative Code
3. *Competent Person* - One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt, corrective measures to eliminate them. A Competent Person is also one who has extensive knowledge/experience in a particular activity or job function
4. Ladder Categories
  - *Type IA*-300 pounds extra heavy duty
  - *Type I*-250 pounds, heavy duty
  - *Type II*-225 pounds, medium duty
  - *Type III*-200 pounds, light duty
5. *Fixed Ladder* - A ladder that cannot be easily moved or carried, and may be an integral part of a structure.

#### D. General Ladder Safety Procedures

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## 1. Safe Ladder Setup

- a. All ladders must be placed on firm ground.
- b. Do not set ladders on boxes, blocks or other objects that might move.
- c. Do not lean or reach out while standing on ladders.
- d. Secure ladders whenever a danger of slippage might occur.
- e. Do not use ladders in high wind or during inclement weather conditions.
- f. Never set up ladders in front of or around doors, unless the door is posted or locked.
- g. Do not sit on ladders.
- h. Use safety shoes or other rubber sole shoes when climbing a ladder.
- i. You must set up non-self-supporting ladders at a safe angle. The ladder is set at the proper angle when the horizontal distance from the top support to the foot of the ladder is approximately  $\frac{1}{4}$  the working length of the ladder.

## 2. Climbing and Standing on Ladders Safely

- a. Always face a ladder when climbing up or down.
- b. Avoid carrying materials or tools when climbing a ladder. Climb the ladder first then pull up the materials with a rope.
- c. Rungs and steps should be clear of grease, oil, wet paint, snow, and ice before climbing.
- d. Do not climb onto a ladder from the side.
- e. Do not slide down a ladder.
- f. Climb or stand on a ladder with your feet in the center of the rung.

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- g. Do not stand on the top rung or step of a ladder.

### **3. Proper Use and Care of Ladders**

- a. Never use metal ladders near exposed electrical wires.
- b. Place warning signs or setup barriers around a ladder before use.
- c. Do not move a ladder while someone is on it.
- d. Never use a ladder when under the influence of alcohol or prescription medications.
- e. Do not leave tools or materials on top of ladders.
- f. Only one person should be on a ladder at a time.
- g. Do not use a ladder on a scaffold.
- h. Do not try to rock a ladder to move it.
- i. Store wood ladders where they will not be exposed to the elements.
- j. Make sure ladders are properly secured when transported.
- k. Do not paint wood ladders. Painting could hide potentially dangerous defects.
- l. Remove defective ladders from service

### **4. Step Ladder Safety**

- a. Never use a stepladder over 20 feet in length.
- b. Always open a stepladder completely and make sure the spreader is locked before use.
- c. Do not stand higher than the second step from the top of a step ladder.
- d. Do not straddle a stepladder.

### **5. Extension Ladder Safety**

- a. The sections of an extension ladder should overlap enough to retain the strength of the ladder. \* see Table 2
- b. Never splice or tie two short ladders together.
- c. When using a ladder for access to a landing, it must extend 3 rungs or 3 feet above the landing.
- d. The top of an extension ladder should rest against a flat, firm surface.
- e. Elevate and extend these extension ladders only from the ground.

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- f. When practical, secure extension ladders at both the base and the top.

b. Table 2	
c. Minimum Required Overlap for Extension Ladders	
Length of Ladder	Required Overlap
Up to 36'	3 Feet
Over 36' to 48'	4 Feet
Over 48' to 60'	5 Feet

## 6. Extension Ladder Setup

- a. Lay the ladder on the ground when it is collapsed.
- b. Have someone foot the ladder or make sure it is braced against something.
- c. Pick up the ladder and walk it to an upright position, making sure it will not be obstructed by trees or wires.
- d. Slide the bottom of the ladder outwards to the proper angle and set the feet correctly.
- e. Then extend the ladder by pulling the extension line.
- f. Make sure the rungs on the upper half of the ladder are properly secured by the locking mechanism.
- g. If possible, tie the ladder off or have someone steady the ladder as you climb it.

## 7. Fixed Ladder Safety

- a. Fixed ladders must be secured to the object they are attached to.
- b. Fixed ladders over 20 feet must have a safety cage surrounding the ladder.
- c. The safety cage should have 15" clearance to all points from the center.

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- d. Defects in fixed ladders should be repaired as soon as possible.
- e. When a defect is not repairable the ladder must be taken out of service.

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## A. Purpose

To provide minimum requirements for the use of fall protection equipment and devices to protect employees exposed to fall hazards.

Fall protection and 100% tie-off is required anytime an employee is working from an unprotected elevation of six (6) feet (four (4) feet for general industry) or more above the ground, next level or as deemed necessary. The requirement for fall protection includes any work performed when the employee is stationary, when traveling, and anytime the employee is exposed to a fall and is not protected by a standard guardrail system or other approved form of fall prevention.

The use of fall protection equipment may be required for exposures less than six (6) feet if equipment or materials below the employee present a hazard.

All City employees shall comply fully with the requirements for Fall Protection as outlined below.

## B. Definitions

1. *100% Fall Protection Requirement* – the employee is protected at all times from the possibility of falls of six feet or more. This includes protection when moving or in a stationary position. Fall protection may be provided by guardrail systems, floor opening covers, safety nets, or personal fall arrest systems involving the use of body harnesses and lanyards.
2. *100% Tie Off* – body harnesses and lanyard(s) are used exclusively to achieve 100 percent fall protection. This normally requires affected employees to use two lanyards to afford protection during movement.
3. *Anchorage Point* – means a secure point of attachment for lifelines, lanyards, or deceleration devices. Anchorage points shall be capable of supporting at least 5,000 pounds per employee attached.
4. *Fully Body Harness* – means a configuration of straps to distribute fall arrest forces over at least the thighs, pelvis, chest, waist, and shoulders with a means to attach it to other components of a fall arrest system.
5. *Competent Person* – an individual knowledgeable of fall protection equipment including manufacturer's recommendations and instructions for proper use, inspection, and maintenance. Capable of identifying existing and potential fall hazards and has authority to take prompt corrective action to eliminate

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those hazards. Knowledgeable of the requirements of this procedure and applicable regulatory requirements.

6. *Deceleration Device (Shock Absorber)* – any device that serves to dissipate a substantial amount of energy during a fall arrest.
7. *Fall Prevention* – the use of barriers, floor opening covers, etc. to provide a physical means of preventing fall hazards that do not rely on the employee's use of a personal fall arrest system.
8. *Fall Restraint System* – approved device and any necessary components that function together to restrain an employee in such a manner as to prevent the employee from falling to a lower level.
9. *Hole Cover* – a cover installed over a hole to prevent employee and material falls to lower levels. Hole covers shall be designed to support at least twice the intended load, secured to prevent accidental displacement, and marked "Hole Cover, Do Not Remove".
10. *Low-Slope Roof* – means a roof having a slope less than or equal to 4 in 12 (vertical to horizontal)
11. *Lifeline* – a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection at both ends to stretch horizontally (horizontal lifeline), and to which other elements of a personal fall arrest system are attached.
12. *Personal Fall Arrest System* – system used to arrest a fall and consists of anchorage, connectors, body harness and possibly a lanyard, deceleration device, lifeline, or suitable combinations of these.
13. *Positioning Device System* – means a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall form, and work with both hands while leaning.
14. *Self-Retracting Lifeline* – a fall protection device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests a fall.
15. *Standard Guardrail System* – a vertical barrier consisting of, but not limited to, top rails, midrails, toeboards, and posts, erected to prevent employees from

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falling to a lower level. Toprails must be capable of withstanding a 200 pound force applied in an outward or downward direction. Midrails and intermediate vertical posts must be capable of withstanding a 150 pound force applied in an outward or downward direction.

### C. Training

1. Employees must be trained on the proper use, care, inspection and limitations of fall protection equipment prior to being assigned tasks where fall protection equipment is required.
2. Fall protection training shall be provided by a competent person qualified in the following areas:
  - a. The nature of fall hazards in the work area.
  - b. Correct procedures for erecting, maintaining, disassembling, and inspecting fall protection systems to be used.
  - c. The use of guardrail systems, safety nets, and other protection to be used.
  - d. City policies and procedures and applicable OSHA Subpart M Fall Protection requirements.
3. Fall protection training shall at minimum address the following areas:
  - a. The nature of potential fall hazards that may be encountered.
  - b. City policies and procedures related to fall protection and prevention.
  - c. Evaluating fall hazards properly during pre-task planning.
  - d. The correct procedures for erecting, using and disassembling fall protection systems.
  - e. The correct procedures for handling, storing and inspecting fall protection equipment.
  - f. The correct procedures for fitting and wearing of fall protection equipment.
  - g. The requirements for proper anchorage points.

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h. Fall protection emergency rescue

4. Emergency rescue training must be conducted by a competent fall protection rescue trainer that has the education, knowledge, and experience to teach hands on rescue.
  - a. A site / project specific fall protection rescue plan must to be developed and prepared by a competent person prior to any work commencing.
  - b. Emergency response personnel should be trained to recognize and respond to risk of suspension trauma.
  - c. Fall protection rescue protocol is as follows:
    - i. Self-rescue – by the worker that has fallen
    - ii. Assisted rescue – by co-workers in accordance with specific plan
    - iii. Professional rescue – by local area EMS / Fire Department / ERT
5. Fall protection training shall be documented and maintained on file. Training records shall include name of employee trained, date of training, and the name of the person who conducted the training.
6. Retraining is required when a lack of employee proficiency is observed and when new fall protection equipment is introduced.

#### **D. Inspection and Storage**

1. Storage

Fall protection equipment must be stored in a clean, dry location away from exposure to abrasive or cutting tools, equipment or materials, excessive heat, and chemicals.

2. Inspection

- a. All fall protection must be visually inspected by the employee before each use.



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- b. Inspections shall consist of an evaluation of the following areas:

Harnesses	Lanyards and Lifelines
Stitching	Frayed/Broken Strands
Rivets	Burns
Buckles	Cuts
Buckle Tabs	Tears
"D" Rings	Snap Hooks
Rust and Abrasion	Connectors
Burns, Cuts, Tears	Corrosion

- c. Any equipment found to be defective must be immediately removed from service, tagged and repaired, or destroyed and replaced.
- d. Documented inspections utilizing the **Fall Protection Inspection Log** shall be conducted on a monthly basis. Tape using the color coding scheme outlined in Section 4 shall be used to provide a visual confirmation that equipment inspection is current.
- e. Documented inspections shall be performed by a Competent Person knowledgeable of manufacturer's recommendations for equipment inspection.
- f. Some types of fall protection equipment including self-retracting lifelines require periodic recertification by the manufacturer.
- g. Fall protection equipment subjected to fall forces shall be immediately removed from service, destroyed, or recertified by the manufacturer.

## E. Safety Planning

- Potential fall hazards and preventative measures shall be fully addressed during all phases of safety planning. This may include pre-project safety planning, development of a Job Safety Analysis, Pre-Task Plan (PTP) and a

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Fall Protection Plan developed by a competent person familiar with the job-specific hazards of the workplace.

2. Safety planning includes considerations such as:
  - a. Safety resources and training required based on the nature and extent of anticipated fall exposures.
  - b. Fall protection supplies and equipment needs based on work methods selected to prevent falls.
  - c. Maximizing use of fall prevention measures such as guardrail systems, scaffolding, aerial lifts, etc., to minimize fall potentials.
  - d. Availability of suitable anchorage points for use with personal fall arrest systems.
  - e. Addressing inclement weather conditions such as rain, sleet, snow, ice, wind and mud.
  - f. Ensuring proper illumination.
  - g. Ensuring good housekeeping practices to prevent same level falls.
  - h. Expediting erection of permanent guardrail systems and stairways.
  - i. Layout and arrangement of tools, materials, and equipment.
  - j. Structural capability of walking and working surfaces to safely support employees and required tools, materials and equipment.
  - k. Methods to be used to assure 100% fall protection for employees working on unprotected roofs and designated material landing areas.
3. The foreman's Pre-Task Plans (PTP) and the work will be monitored on a daily basis to assure fall hazards are identified and appropriately addressed.

#### **F. Prevention of Same Level Falls**

Good housekeeping practices are the key to preventing same level falls.

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1. Materials must be stored in designated areas clear of passageways and should not be allowed to accumulate in work areas to the degree that they obstruct access to the work.
2. Waste materials, trash and debris must not be allowed to accumulate in work areas, aisles and stairways.
3. Surfaces must be kept free of slipping hazards such as oil, grease, shavings, conduit and pipe cut-offs, ice, etc.
4. The creation of uneven floor surfaces should be avoided, but if present, they should be marked to increase visibility.
5. Electrical cords, welding leads and hoses must be elevated to the maximum extent possible, and if not elevated, routed or positioned in a way that will not create a tripping hazard.
6. Floor holes and openings shall be covered and secured.

#### **G. Fall Prevention**

1. Fall prevention as defined, eliminates the potential for exposure to a fall from elevation. For this reason, it is preferred over fall protection devices that require a fall hazard.
2. Fall prevention methods may include the installation of standard guardrail systems on open sided floors and roofs, floor and hole covers, handrail systems on stairways, and scaffolds complete with standard guardrail systems. The use of aerial lifts to access elevated work areas can also be considered a form of fall prevention even though a body harness and secured lanyard is required.

#### **H. Controlled Access Zone (CAZ) and Safety Monitoring System**

1. In situations where use of guardrails systems, personal fall arrest systems, or safety net systems is not feasible, a controlled access zone may be established at unprotected or leading edges of a work surface (i.e. roof work).
2. Only employees directly involved with the work are allowed to enter this area.
3. A safety monitor must be assigned to the CAZ.

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4. A CAZ shall not be used for work activities done on a periodic or on-going basis. If work activities using a CAZ are repeated, a permanent fall protection solution shall be developed.
5. A written plan must be established for each CAZ and shall be reviewed by a competent person and the department manager.
6. Safety Monitor shall be performed by an authorized and trained person and shall be designated in the written Fall Protection Plan.
7. The CAZ shall be defined by a warning line or by any other means that shall be designated in the written plan.
8. The control lines shall be erected not less than 6 feet, nor more than 25 feet from the unprotected or leading edge.
9. The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.
10. The control line shall be connected on each side to a guardrail or wall.
11. Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions.
12. Each line shall be flagged or otherwise clearly marked at not more than 6-foot (1.8 meters) intervals with high-visibility material.
13. Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the walking or working surface and its highest point is not more than 45 inches from the walking or working surface.
14. Each line shall have a minimum breaking strength of 200 pounds.
15. On floors and roofs where guardrail systems are not in place prior to the beginning operations, CAZs shall be enlarged, as necessary, to enclose all points of access, material handling areas, and storage areas.
16. On floors and roofs where guardrail systems are in place, but need to be removed to allow leading edge work to take place, only that portion of guardrail necessary to accomplish that day's work shall be removed.

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17. A Safety Monitor shall:

- a. Be competent to recognize fall hazards.
- b. Shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner.
- c. Shall be on the same walking or working surface and within visual sighting distance of the employee being monitored.
- d. Shall be close enough to communicate orally with the employee.
- e. Shall not have other responsibilities, which could take the monitor's attention from the monitoring function.
- f. Not be in a location where mechanical equipment is being used or stored so as to interfere with a safety monitor's ability to observe employees engaged in roofing operations on low-slope roofs.
- g. Have authority to direct each employee working in the controlled access zone.

**I. Fall Protection**

1. General

- a. When employees are exposed to a falling hazard from a location 6 feet or more in height, a fall restraint or fall arrest system must be used.
- b. Only City approved fall protection equipment shall be allowed. All Fall Protection Equipment must meet applicable ANSI, ASTM and / or OSHA standards.
- c. Fall protection equipment is for fall protection use only and must not be used for any other purpose.
- d. All components of a fall protection system including anchorages, harnesses, lanyards, lifelines, and connectors shall have a minimum breaking strength of at least 5,000 pounds.
- e. Positioning devices shall be rigged to limit potential falls to no more than 2 feet. Anchorage for use with positioning devices shall be

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capable of supporting at least twice the potential impact load or 3,000 pounds whichever is greater.

- f. In hot work operations or operations involving chemical or other factors that could cause damage, fall protection equipment must be designed and/or protected to avoid burning or deterioration.

## 2. Use of Fall Protection Equipment

- a. An approved full body harness must be used when exposed to falls from elevation and guardrails or other City approved fall prevention means cannot be utilized.
- b. Full body harnesses must be worn and properly connected when employees are working from aerial lifts, scissor lifts, personnel baskets, and similar equipment.
- c. Full body harnesses must fit and be worn properly with the straps tucked in so as not to get caught on equipment or otherwise create a hazard. Chest straps must be worn between the chest and collarbone, with the rear D-ring worn between the shoulder blades.
- d. Full body harnesses must at minimum, be equipped with a D-ring located in the center of the back between the shoulder blades. Harnesses may be equipped with additional D-rings for various applications:
  - i. Back – general fall protection use.
  - ii. Front – used with climbing systems.
  - iii. Side – for use with positioning systems only.
  - iv. Shoulder – rigged for rescue.

## 3. Snaphooks

- a. Only self-closing, self-locking snaphooks are allowed for fall protection use.

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- b. Snaphooks must open and close properly, fully close around their anchorage point, and be compatible with the other components of the fall protection system.

#### 4. Anchorage Points

- a. Anchorage points must be capable of supporting at least a 5,000 load per employee attached.
- b. The anchorage point should be at least as high as the harness D-ring and preferably higher to minimize the free fall distance.

#### 5. Shock Absorbers

- a. Shock absorbers are required as part of the fall protection system.
- b. At a minimum, shock absorbers are required as part of fall protection lanyards.

#### 6. Lanyards

- a. The shortest length lanyard possible should always be used.
- b. Lanyards must have a maximum length to provide for a free fall distance of no more than six feet.
- c. Lanyards must be used in conjunction with a shock absorber.
- d. Lanyard must be maintained free of knots.
- e. Dual or "Y" lanyards shall be used as necessary to maintain 100 percent tie-off.
- f. When not in use, lanyards shall be secured in such a way as to eliminate tripping hazards or potential for becoming entangled in equipment.

#### 7. Retractable Devices

- a. Retractable devices are designed to limit free falls to less than two feet.
- b. Tag lines shall be used to prevent the uncontrolled retracting of cable.

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- c. Retractable devices must be used at less than a 45-degree angle to avoid the potential for injury due to a swing fall. Any manufacturer's instructions related to swing fall hazards shall be followed.
- d. Retractable devices must have current manufacturer's certification.

#### 8. Vertical Lifelines

- a. When vertical lifelines are used, each employee shall be attached to a separate lifeline.
- b. Lifelines shall be protected against being cut or abraded.
- c. Grab devices used for employee attachment shall be compatible with the size of rope and or cable used.
- d. The lower end of the vertical lifeline shall be attached to an anchor point or weighted down to provide stability.
- e. Vertical lifeline assemblies including anchorage point shall have a minimum breaking strength of 5,000 pounds.

#### 9. Horizontal Lifelines

- a. Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system.
- b. Horizontal lifelines must be capable of supporting 5,000 pounds per employee attached.

#### 10. Safety Nets

- a. Only safety nets designed by the manufacturer as fall protection nets shall be used. Safety nets must be installed in accordance with manufacturer's requirements and as close to the working level as possible.
- b. Safety net openings shall not exceed 6 inches in any direction.
- c. Safety net installations must be certified by a qualified person or pass a 400 pound drop test prior to use.



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- d. Safety nets shall be inspected by a competent person at least once a week for wear, damage, or other deterioration. Materials, scrap, pieces of equipment, and tools, which have fallen into the net, shall be removed as soon as possible and at the latest, before the start of the next shift.

## **J. Roofing Work**

1. Employees performing roofing work shall be protected by a standard guardrail system or personal fall arrest system.
2. If a Warning Line System has been installed on a low-slope roof and maintained at least six feet from the outside edges, employees working inside the established zone will not be required to wear personal fall arrest equipment.
3. When mechanical equipment is being used, warning lines shall be maintained at least ten feet from all roof edges.
4. All work performed outside the Warning Line System shall be performed in conjunction with a guardrail system or the use of personal fall arrest equipment.
5. All employees working on steep roofs shall be protected by a guardrail system or the use of personal fall arrest equipment.

## **K. Ladder Safety**

1. All ladders shall meet the OSHA 29 CFR 1926.1053, ladders that do not meet this standard and / or are damaged shall be red tagged, placed out of service in a location where the ladders cannot be accidentally placed back in service.
2. No "job site" manufactured ladders will be allowed unless designed by a registered engineer. Engineered ladders shall meet requirements as identified in section 1 of the listing.
3. Straight ladders shall be of the proper size and design for the intended application and equipped with safety shoes.
4. Straight ladders shall be firmly tied-off and secured and extend a minimum of 36 inches above any platform or landing that they are intended to serve.

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5. Straight ladders shall be placed with the feet of the ladder approximately one quarter of its supported length away from the vertical plane of its top support. (Maintain a 4:1 slope)
6. On extension ladders, the latches must be properly set and extension rope tied off to a rung near the base before initial use.
7. Stepladders shall be used with spreaders full spread and in the locked position.
8. Stepladders shall not be used as straight ladders and employees shall not work from the top two steps of a stepladder.
9. Stepladders shall be tied-off or an employee shall hold the ladder when the user is 8 feet or more above the base of the ladder.
10. The capacity of ladders shall not be exceeded by the combined weight of employee, tools, and materials.
11. Ladder feet shall be place on a firm base and the top and bottom landings shall be kept clear of materials and debris.
12. Ladders shall not be placed in front of doors that swing toward the ladder unless the door is locked or otherwise guarded.
13. Employees must maintain a three-point contact when ascending or descending a ladder. Hand lines must be used to move materials from one elevation to the next.
14. Metal ladders shall not be used when performing electrical work or when working near exposed electrical circuits.
15. Employees working from ladders shall not overreach or extend. If the belt buckle cannot be maintained inside the rail of the ladder, the ladder must be moved.
16. Ladders shall not be used on scaffold or aerial lift platforms.
17. Documented ladders inspections shall be conducted on a monthly basis utilizing the **Ladder Inspection Log**.

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## **L. Scaffold Safety**

1. A competent person shall supervise the erection, relocation, alteration and/or dismantling of scaffolds. Full fall protection shall be used during erection and/or dismantling of scaffolds.
2. Scaffolds shall be tagged and signed by competent person before use. Scaffold tagging shall be in accordance with Scaffold Tagging Procedures.
3. Footing or anchorage for scaffolds shall be sound, rigid and capable of supporting maximum intended load(s) without settling or displacement. Bricks, concrete blocks, boxes, 2 x 4's, etc. shall not be used to support scaffolds.
4. Guardrails and toe boards (4 inches) shall be installed on all open sides and ends of working platforms. Minimum top rail height shall be 38 inches with maximum height of 42 inches.
5. Scaffold cross bracing shall not be used for guardrails.
6. Working platforms shall be fully decked or covered.
7. Scaffolds shall be provided with an access ladder or equivalent safe means of access. Scaffold frames are not acceptable for access.
8. Scaffolds and components shall be capable of supporting 4 times the maximum intended load(s).
9. Scaffold frames, bracing, footings/ anchorage, brackets, ladders, trusses, etc. shall not be damaged or weakened from any cause. Damaged or weakened components shall be immediately repaired and/or replaced.
10. Only approved accessories and components shall be used in erection of scaffolds.
11. Scaffolds shall be plumb, securely and rigidly braced to prevent swaying and displacement.
12. All planking shall be scaffold grade or equal, overlapped a minimum of 12 inches and extended over end supports not less than 6 inches and not more than 12 inches.

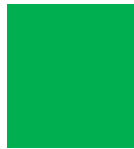
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13. Safe work zone(s) shall be provided and maintained around the base of scaffolds on all sides. Safe work zone shall be a minimum of 10 feet from scaffold and related construction activity.
14. Rolling scaffolds shall not be relocated while in use.
15. Rolling scaffolds shall be on level/firm surface and all wheels locked/secured to prevent movement.
16. Training – all affected City employees shall complete scaffold training in accordance with OSHA regulations prior to initial assignment and if conditions change. Training program shall include hazard identification i.e. falls, electrical, falling objects / tools, load capacity and required fall protection.
17. Scaffold inspection – Please see Scaffold Tagging Procedures below. A competent person shall conduct daily inspections prior to usage and periodically inspect throughout the shift. All inspections shall be documented and available for inspection as required. If a scaffold is found to be defective or unsafe, the competent person shall apply a red “do not use” tag and not remove the tag until the scaffold has been repaired and re-inspected.
18. NOTE: Reference 29 CFR 1926.451 (Subpart L) for detail requirements of the various types of scaffolds and their use.
19. Recommended Scaffold-Tagging Policy:
  - a. Intent: The intent of the scaffold tagging procedure is to ensure that personnel perform their work on a scaffold that is complete and constructed in accordance with project safety and health rules and/or OSHA Regulation; whichever is more restrictive.
  - b. Subcontractor Requirements: Contractors are responsible to ensure that their subcontractors tag their scaffolds in accordance with project scaffold tagging procedures.
  - c. Compliance: It is the policy of the City that all on-site personnel shall comply with this tagging procedure. Scaffolding not displaying a signed scaffold tag shall not be used. In addition to the procedures

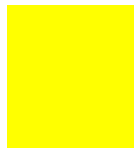
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contained within this procedure, all employees are subject to OSHA scaffold requirements contained in 29 CFR 1926.451.

- d. Procedure: Scaffold tags shall be provided by the contractor and shall conform to the following color codes and wording:



**Green Tag:** This scaffold was built to meet federal OSHA scaffold regulations; it is safe to use.



**Yellow Tag:** This scaffold does not meet federal OSHA scaffold regulations; full body harness/lanyard must be used



**Red Tag:** This scaffold is not complete; **DO NOT USE**

- e. An assigned competent person shall inspect the scaffold for compliance with project and OSHA requirements (1926.451), and shall sign his/her name to the tag. Scaffolding shall be erected and dismantled only under the direct supervision of a competent person in scaffold erection as defined by OSHA.
- f. All Scaffolding that cannot be equipped with standard top rail, mid rail, and toe-board because of interface with structures or equipment shall be marked with a yellow tag stating that "Full-Body Harness/Lanyard Must Be Used". Scaffolds shall be built complete when possible. Only when interfaces exist may the scaffold be built without complete handrail and tagged as such.
- g. Scaffolds being erected dismantled, or which are incomplete shall be marked with a red tag.

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h. Responsibilities:

- i. The competent person who constructs the scaffold or who has the scaffold constructed is responsible to ensure that the scaffold is built to project and OSHA standards.
- ii. Contractor competent personnel shall periodically inspect all scaffolds including inspection of all scaffolding prior to use. This shall ensure that all scaffolds are properly tagged and in accordance with project and OSHA standards.
- iii. In the event that a foreman wishes to use another contractor, or crew's scaffold, the foreman shall obtain permission to use the scaffold and shall have it inspected and tagged under the direction of the contractor's competent person.
- iv. Under no circumstance should non-qualified personnel attempt to modify scaffold systems. Non-qualified workers who are found modifying scaffolding shall be subject to disciplinary action.
- v. Any employee working from a scaffold that does not have a scaffolding tag or a supervisor assigning workers to work on untagged scaffolding shall be subject to disciplinary action.

**N. Incident/ Accident Investigation**

1. An incident investigation and analysis of all incidents shall be conducted regardless of severity of injury or amount of property damage. The primary purpose of incident investigation and analysis is to prevent accidents. As such, the investigation and/or analysis must produce factual information that will lead to corrective actions that will prevent reoccurrence or reduce the number of incidents utilizing fall protection.

**O. Forms**

1. Fall Protection Inspection Log
2. Ladder Inspection Log

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Fall Protection Inspection Log										
Project Name:				Employer Name:				Date:		
Inspected By:								Color Code:		
<b>Instructions:</b> 1. All parts of safety harness and attachments are to be checked for excessive wear and damage. 2. A ✓ symbol indicates YES or OK. An ✗ symbol indicates NO or REPLACE. 3. To be inspected monthly and report turned in at Safety Department.										
Employee Name/ Location	Badge Number	MFG's Serial #	Harness Webbing or Leather	All Stitching	Rivets & Eyelets	D-Ring(s) Buckle(s) (Include Tongue)	Body Pad (If Applicable)	Lanyard	Hook Safety Latch	Certification or Data Tag





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## **A. Purpose**

The purpose of this procedure is to establish a Hearing Loss Prevention Program to comply with, implement, and communicate the Washington State Department of Labor and Industries, Division of Occupational Safety and Health, WAC Chapter 296-817 and to provide workers protection against noise hazards in the workplace.

All City employees shall comply fully with the requirements for the Hearing Loss Prevention Program as outlined below.

## **B. General**

1. Excessive noise can cause both temporary and permanent changes in hearing sensitivity. Repeated exposures over time can result in hearing loss, physical and psychological disorders interfere with the detection of warning sounds, disruption of job performance, and more importantly, interfere with speech and communication.
2. Hearing sensitivity can be affected by inherited traits, aging, illness, and injuries to the ear structure, on – and off- the –job noise exposures. The damage caused by excessive noise exposure (above 80dB) is cumulative, progressively decreasing the sensitivity to higher frequencies. Any exposure to noise levels above 140 dB is very damaging and the ear must always be protected from this level of exposure. It is difficult, if not impossible; to distinguish between hearing damage caused by on – and off- the –job exposures and aging processes. As we age, even individuals who have not been exposed to industrial noise levels lose the ability to detect the higher frequency sounds; however, exposure to loud sounds can accelerate or enhance this loss.

## **C. Implementation**

1. This Hearing Loss Prevention Program will be implemented in work areas or for task where daily noise levels have been shown through measurements to exceed the action level of 85dBA TWA. Employees who work in the area or on tasks that exceed the action level will comply with the requirements of this program.

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2. Any employee who suspects they may be exposed to excessive noise levels should contact their supervisor for an evaluation of the noise levels and corrective actions.
3. Employees working in an area where the documented noise levels are below the action level are not subjected to the requirements of this Hearing Loss Prevention Program. The employees may voluntarily use hearing protection devices as needed.

#### **D. Administration Assignment**

1. The administration of this program will be the responsibility of Human Resources.
2. The administration responsibility includes:
  - a. Coordination of all noise exposure monitoring
  - b. Identification of employees to be included in the Hearing Loss Prevention Program
  - c. Training
  - d. Review the results of the audiometric testing program
  - e. Recommend appropriate hearing protection devices
  - f. Coordination of the employee training program
  - g. Maintain appropriate records
  - h. Program evaluation

#### **E. Administration**

1. Initial and annual training will be provided to employees covered by this Hearing Loss Prevention Program. Employees will be required to sign an attendance form following each training session. The training program will include information on:
  - a. The effects of noise on hearing
  - b. The purpose and use of hearing protection devices, the advantages and disadvantages of each
  - c. Instruction in the selection, fitting, use and care of hearing protection
  - d. The purpose of the audiometric testing and an explanation of the test procedures
2. During training, the Hearing Loss Prevention Program will be reviewed and made available to covered employees.

#### **F. Records Keeping**

*Always refer to the electronic version for the latest revision*

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1. Human Resources will maintain the following records:
  - a. Training records will be maintained for a minimum of 3 years
  - b. Audiometric test records will be retained for 30 years beyond the employee's last date of employment
  - c. Records of noise exposure measurements will be retained for a minimum of 2 years
2. Copies of all records will be provided to the employee upon request. Written reports will be sent to the employee within 15 working days following the completion of any noise exposure monitoring in which the noise level was found to be at or above the action level.

#### **G. Sound Level Surveys and Employee Monitoring**

1. Human Resources will arrange for personal noise exposure monitoring (dosimetry) or sound level surveys of areas and activities (a) when there is a reason to believe that employees are exposed to or in excess of 85dB, 8 hour TWA, or, (b) the result of an employee expressed concern.
2. Additional noise exposure measurements will be conducted whenever a change in equipment, production, process or controls are expected to change the noise exposure levels. All noise levels between 80dBA and 130dBA will be included in the sound measurements. (Noise levels less than 80dBA do not cause significant hearing damage even after long term exposure, and are therefore not included in the occupational noise exposure measurements or calculations).

#### **H. Audiometric Testing**

1. Employees who have an occupational noise exposure at or above the action level of 85dBA – 8 hours TWA will take part in annual audiometric testing after a baseline audiogram has been established. A certified or licensed individual designated and paid for by City will perform testing. New employees in the position descriptions or work area will be provided with an audiometric examination to establish a baseline within six months of assignment. Baseline audiogram shall allow a minimum of 14 hours without workplace noise.
2. If the standard threshold has shifted;
  - a. The affected employee shall be notified in writing within twenty-one days of the determination.

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- b. Annual audiograms shall be required along with re-evaluation and / or retrofitting of hearing protection and medical evaluation as required.

## **I. Hearing Protection Devices**

1. Hearing protection with suitable noise reduction rating (NRR) will be made available to workers in work areas with noise exposure above 85dBA, 8 hour TWA. The HPD's will be provided at no cost, and when requested in several options as to style and fit. Each location where employees are working shall be evaluated so as to ensure the proper hearing protection has been provided.
2. Employees that have a daily noise exposure below 85dBA, 8 hour TWA, may choose to wear hearing protection at any time, but will not be required to use HPD's unless unusual work conditions are expected to expose them to high noise levels.
3. Employees who have a daily noise exposure at or above 85dBA, 8 hour TWA but below 90dBA, 8 hour TWA will be encouraged to wear hearing protection at work, however, its use will not be mandatory unless unusual work conditions may expose them to high noise levels.
4. Any employee, who is exposed at or above 85dBA 8 hour TWA and has not completed a baseline audiogram, will be required to wear hearing protection until the baseline test can be completed.
5. An employee who has experienced a standard threshold shift (STS) will be required to wear hearing protection when noise exposures are at or above 85 dBA. The HPD will be made available at no cost to the employee. If requested, several types of HPD will be made available to insure proper fit and use.
6. Employees who have a noise exposure at or above 85 dBA 8 hour TWA are required to wear hearing protection that will reduce their exposure less than 90 dBA.
7. Employee noise exposure equal to or exceeding 90 dBA TWA<sub>8</sub> shall be reduced using feasible engineering controls.

## **J. Training**

1. For employees that have been identified to work in an area that exposes employees to noise at or above an 8-hour time-weighted average of 85 decibels, the training shall include but not be limited to:
  - a. The effects of noise on hearing

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- b. The DOSH standard
- c. The purpose of hearing protection, the advantages, disadvantages, and the attenuation of various types, and instruction on selection, fitting use, and care
- d. The purpose of the baseline data, audiometric testing and an explanation of the procedures
- e. Affected employees will be required to attend annual training.

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## A. Purpose

The purpose of this procedure is to provide requirements and guidelines concerning the safe use and inspection of electrical hand tools and equipment per WAC 296-155 Part I – Electrical.

All City employees shall comply fully with the requirements for Electrical Safety as outlined below.

## B. Definitions

- *Competent Person* is one who, through a combination of training and experience has sufficient knowledge to recognize hazards and has the authority to correct hazards, remove equipment for use if unsafe, and stop work if necessary. For the purposes of this policy, a Competent Person generally uses the equipment rather than repairs the equipment.
- *Equipment*: A general term including material, fittings, devices, appliances, fixtures, apparatus, and the like, used as a part of, or in connection with, an electrical installation.
- *Fire Resistant Clothing (FRC)* is a general term used for IFR and FTM fabrics that meet testing requirements as set by NFPA, ASTM, etc.
- *Fire Treated Material (FTM)* are fibers subjected to treatment with chemical additives to aid combustion resistance. Such treated materials have no inherent fire resistant properties and rely on the additives treatment for fire resistance.
- *Ground-fault circuit-interrupter (GFCI)*: A device intended for the protection of personnel that functions to deenergize a circuit or a portion of a circuit within an established period of time when a current to ground exceeds some predetermined value that is less than that required to operate the overcurrent protective device of the supply circuit.
- *Inherently Fire Resistant (IFR)* are fire resisting properties are an intrinsic property of the fibers. The garment will permanently retain its fire resistant properties provided the material is properly cared for and cleaned in accordance with the manufacturer’s instructions. Nomex, Kermel and Kryon brand fabrics are examples of IFR fabrics.

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- *Qualified Person* is one who is trained, and authorized by their department manager or director, to perform work on electrical equipment and components. A qualified person has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training on the hazards involved. Examples of safety training include, but are not limited to, training in the use of special precautionary techniques, personal protective equipment, including arc flash, insulating and shielding materials, and insulated tools and test equipment. A person can be considered qualified with respect to certain equipment, methods and tasks but still be unqualified for others. An employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those duties.

### **C. General**

1. This procedure outlines electrical safety procedures and the frequency of inspection for electrical tools, cord sets, and equipment.
2. Only qualified persons can perform electrical work and/or work near energized electrical conductors.
3. This procedure does not supersede the requirement to visually inspect electrical tools, cord sets, and equipment before and after each use. Every user shall inspect electrical tools and equipment as outlined in this procedure and maintain all required documentation.
4. Only qualified persons shall be approved to make necessary repairs on electrical components of electrical tools, cord sets, and equipment.

### **D. Ground Fault Circuit Interrupters (GFCI)**

The City has selected Ground Fault Circuit Interrupters (GFCI) as its standard method of protecting employees from the hazards associated with electrical shock.

1. GFCIs shall be used on all 120-volt, single phase 15 and 20-amphere receptacle outlets, which are not part of the permanent wiring of the building or structure.

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2. Temporary power panels providing 120-volt service shall be equipped with GFCI circuit breakers for optimum personnel protection. The same level of protection is afforded by the use of GFCI receptacles.
3. In cases where protection afforded by GFCI circuit breakers or GFCI receptacles is not readily available, portable plug-in GFCI's may be used.
4. GFCI's will be tested by a competent person at least quarterly for proper operation. If there are 2 or more receptacles on the same protected circuit downline from the "push to test" GFCI receptacle (or breaker) they will be tested individually once per year. A record of testing shall be maintained on file identifying the piece of equipment (for example the location of the equipment, and when available: make or model, serial number of unit) date of inspection, the person conducting the inspection and inspection results including any defects found and final status.
5. A receptacle/polarity test instrument which has a GFCI test feature shall be used annually to ensure trip current values and to test any satellite receptacles downstream from the receptacle or breaker containing the GFCI.

#### **E. Electrical Equipment Inspections**

1. In addition to the requirements concerning GFCI's, periodic inspections shall be conducted to assure the safe condition of small electric hand tools, cord sets, electrically powered shop equipment, light plants and all other temporary electrical circuits.
2. One or more competent individuals will be designated as inspectors to test equipment. Inspectors will identify existing and potential hazards in tools, cords, and other pieces of electrical equipment. They will also have the authority to take prompt, corrective measures to eliminate problems found. Any problem equipment, which cannot be repaired immediately, must be removed from service tagged "Defective - Do Not Use" and isolated until repairs are made.
3. Each employee using a piece of electrical equipment must perform a visual inspection of the cord set, attachment cap, plug, and receptacle of cord or tool sets, and any tool or equipment connected by cord and plug, except cord and receptacles which are fixed in place and not exposed to damage. Workers shall check for deformed or missing conductor and ground pins,



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insulation damage, and indications of possible internal damage. Damaged equipment will be tagged and removed from service. Cord and plug connected equipment and flexible cord sets (extension cords) which remain connected once they are put in place and are not exposed to damage need not be visually inspected until they are relocated. Workers shall check for deformed or missing conductor and ground pins, insulation damage, and indications of possible internal damage. Damaged equipment will be tagged and removed from service.

4. The designated inspector shall perform the following on all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and cord and/or plug-connected equipment required to be grounded:
  - a. Test all equipment grounding conductors for continuity; all conductors shall be electrically continuous.
  - b. Test each receptacle and attachment cap or plug for correct attachment of the equipment grounding conductor. The equipment grounding conductor shall be connected to its proper terminal.
  - c. Extension cords shall be rated to match the equipment they are being used for.
  - d. Inspect all double-insulated tools and equipment for physical and suspected damage.
  - e. Inspect plugs for intact strain relief.
5. All required tests shall be performed:
  - a. Before first use.
  - b. Before equipment is returned to service following any repairs. Cords with damaged (broken) insulation will not be used.
  - c. Before equipment is used after any incident which can be reasonably suspected to have caused damage (when a cord set is run over, for example).

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- d. At intervals not to exceed three months. (Note: Cord sets and receptacles, which are fixed and not exposed to damage, shall be tested at intervals of six months.)
6. The City shall not make available or permit any employee to use tools and equipment, which has not met the requirements of this procedure.
  - a. The test record shall identify each receptacle, cord set, and cord and/or plug connected equipment tool or piece of equipment that passed the test. This record shall be kept by means of logs, color coding, or other effective means and shall be maintained until replaced by a more current record. The record shall be made available on the jobsite for inspection by the director and any affected employees.
  - b. The City's Public Works Operations Managers are responsible for ensuring that cords, tools, and other equipment under their control are inspected prior to use by the workers in the crew.

#### **F. Working Near Energized Electrical Equipment**

1. Only qualified personnel who have the required training shall be authorized to work on electrical equipment.
2. Personnel without the required training and authorization shall not perform electrical work where they may be exposed to unguarded or uninsulated electrical conductors; even if the equipment is in a de-energized state.
3. Personnel without the required training and authorization may be affected by the Lockout/Tag-out of a piece of electrical equipment done by others and therefore must be trained to understand electrical equipment and LOTO, and be aware of the associated dangers and the need for additional training as required. (For more information on LOTO, see the City Accident Prevention Plan)
4. In the event that duties require that City personnel be in close proximity to energized equipment, the following safe work practices shall apply:
  - a. In the event that work needs to be performed in confined or enclosed work spaces where electrical hazards may exist, protective shields, protective barriers or insulating materials shall be provided.

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- b. City employees shall not enter spaces containing exposed, energized parts unless illumination is provided that allows employees to work safely.
- c. Employees subject to the handling of conductive tools and/or materials in close proximity to potentially energized equipment shall ensure by means of LOTO, distance requirements or via other means that arc potential is removed prior to working in that area.
- d. Personnel shall ensure that all items of conductive jewelry & clothing shall not be worn unless they are rendered non-conductive by covering, wrapping or via other means.
- e. When working on or near exposed de-energized parts, they shall be treated as live until verified otherwise.

## **G. Working Near Energized Electrical Lines**

1. In the event that workers are required to work in close proximity to energized lines, the following safe work procedures shall apply:
  - a. Clearance distances shall be provided or lines shall be de-energized and grounded.
  - b. In the event that workers are required to work in an elevated position near energized overhead lines, a minimum safe clearance distance of 10 feet shall be observed
  - c. Vehicular mechanical equipment shall be operated so that a minimum clearance distance of 10 feet be maintained from energized overhead lines.
  - d. The following safe distances shall be observed:

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Employees Working	Clearance
Voltage ("V")	Minimum Distance
50 kV or below	10- feet
More than 50 kV	10- feet plus .4 inches for each 1\kV > 50 kV

Vehicle in Transit	Clearance
Voltage ("V")	Minimum Distance
50 kV or below	10- feet (May be reduced to 4 feet. Refer to WAC 296-155-428 (20) (a) (i) )
More than 50 kV	10- feet plus .4 inches for each 1\kV > 50 kV

## H. Fire Resistant Clothing (FRC)

1. FRC shall be the outermost garment worn in the designated area of the work areas. Nylons or similar synthetic materials that could melt when exposed to heat or flame shall not be worn. This procedure applies to all personnel; employees; contractors, visitors and vendors who may enter designated hazard areas where FRC is required.

### a. Exceptions:

- i. Non FRC or synthetics may be worn over FRC garments in FRC designated areas for the following activities:
  - Emergency response vests
  - Inert entries

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- Tyvek suit specified for activities such as asbestos abatement, refractory repair work welding or incidental chemical contact.
  - Outside deliveries of acid/caustic bulk chemicals
  - Other activities on a case by case basis approved by the Safety Manager.
- b. FRC worn by city employees qualified to work on electrical equipment will be approved by city management including but not limited to:
- i. FRC full coveralls and /or long sleeve shirts and pants made of inherently fire resistant fabric or fire treated fabrics.
  - ii. Dielectric ARC rated safety prescription glasses.
  - iii. Dielectric ARC rated shield
  - iv. Two pair of properly rated ANSI/ASTM dielectric gloves for the voltage exposures in which an employee is working.
    - A glove integrity test will be run every six months by an external lab. Testing will be staggered every six months so that there will always be one pair available for use.
    - Each pair of gloves shall have a protective case.
    - Each pair of gloves shall have leather protectors.
- c. Contractor organizations are responsible for providing their personnel with FRC.

## I. Training

1. Only qualified persons shall work on electrical equipment or be permitted to perform any function in proximity to energized conductors.
2. The following training requirements apply:

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- a. Employees who face a risk of electric shock shall be trained and familiar with electrically-related safety practices including minimal approach distances.
- b. Employees shall be trained in safety-related work practices as pertaining to their respective job assignments.
- c. To assist in compliance, the City shall provide access to a copy of the current National Fire Protection Association (NFPA) 70 to use as a reference resource (such as an electronic/downloadable version).

## **J. Forms**

1. Assured Equipment Grounding Program Log



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## A. Introduction

The confined space program for The City of Port Townsend consists of a combination of Chapters 296-809 WAC, Revised Code of Washington (RCW), and previous city policy. The most stringent of the above sources have been applied for compliance and safety practices. This program shall apply to all persons working in confined spaces, including standby, and rescue personnel.

Confined spaces typically encountered, but are not limited to, sewer manholes, junction structures, valve vaults, metering vaults, pumping station wet wells, storage tanks, and trenches.

## B. PURPOSE

The purpose of this program is to provide safety procedures when entering a permit-required confined spaces and non-permit required confined spaces for routine maintenance or inspection. The program outlines definitions, required safety equipment, entry procedures, training, and associated information to prevent injury and fatalities.

## C. DEFINITIONS - (WAC 296-809-099)

*Acceptable entry conditions* - The conditions that must exist in a permit-required confined space to allow safe entry and work.

*Attendant* - An individual stationed outside one or more permit-required confined spaces to monitor the entrants.

*Authorized representatives* - Those persons who are responsible for the overall operation and safety of the workforce and the primary maintenance force will be given additional specific training and they are: The Crew Chiefs and Lead Operators, they are called "Authorized Employer Representatives."

In addition the following who have received specific training are identified as "Authorized Employees"

- Equipment operators
- Maintenance Workers
- Operations Managers



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*Blanking or blinding* - The absolute closure of a pipe, line, or duct by fastening a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore. It is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

*Confined space* - A space that is **all** of the following:

- Large enough and arranged so an employee could fully enter the space and work.
- Has limited or restricted entry or exit. Examples of spaces with limited or restricted entry are tanks, vessels, silos, storage bins, hoppers, vaults, excavations, and pits.
- Not primarily designed for human occupancy.

*Double block and bleed* - The closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

*Emergency* - Any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit-required confined space that could endanger authorized entrants.

*Engulfment* - The surrounding capture of a person by a liquid or finely divided ("flowable") solid substance that can be inhaled to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

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

Note: If the opening is large enough for the worker to fully enter the space, a permit is required even for partial body entry. Permits are not required for partial body entry where the opening is not large enough for full entry, although other rules such as **Lock out tag out; in the Accident Prevention Program notebook**, (control of hazardous energy), and chapter [296-841](#) WAC, Airborne Contaminants, may apply.

*Entrant* - An employee who is authorized by the employer to enter a permit-required confined space.

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*Entry permit (permit)* - The written or printed document that is provided to allow and control entry into a permit-required confined space and that contains the information required in WAC [296-809-500](#), Permit entry procedures.

*Entry supervisor* - The person (such as the employer, crew leader, or crew chief) responsible for:

- Determining if acceptable entry conditions are present at a permit-required confined space where entry is planned;
- Authorizing entry and overseeing entry operations; and
- Terminating entry as required.

*Hazardous atmosphere* - An atmosphere that may expose employees to the risk of death, incapacitation, and impairment of ability to self-rescue (that is, escape unaided from a permit-required confined space), injury, or acute illness caused by one or more of the following:

- Flammable gas, vapor, or mist in excess of ten percent of its lower flammable limit (LFL).
- Airborne combustible dust at a concentration that meets or exceeds its LFL.

Note: This concentration may be approximated as a condition in which the dust obscures vision at a distance of five feet (1.52 m) or less.

- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.
- Atmospheric concentration of any substance which may exceed a permissible exposure limit. For additional information about atmospheric concentration, see chapter [296-62](#) WAC, parts F, G, and I, General occupational health standards and chapter [296-841](#) WAC, Airborne contaminants.
- Any other atmospheric condition that is immediately dangerous to life or health.

*Hot work permit* - A written authorization to perform operations, for example, riveting, welding, cutting, burning, and heating, which can provide a source of ignition.

*Immediately dangerous to life or health (IDLH)* - Any of the following conditions:

- An immediate or delayed threat to life.
- Anything that would cause irreversible adverse health effects.

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- Anything that would interfere with an individual's ability to escape unaided from a permit-required confined space.

*Inerting* - The displacement of the atmosphere in a permit-required confined space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible. This procedure produces an IDLH oxygen-deficient atmosphere.

*Isolation* - The process by which a permit-required confined space is removed from service and completely protected against the release of energy and material into the space by such means as: Blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tag out of all sources of energy; or blocking or disconnecting all mechanical linkages.

*Line breaking* - The intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

*Non-permit confined space* - A confined space that does **not** contain actual hazards or potential hazards capable of causing death or serious physical harm.

*Oxygen deficient atmosphere* - An atmosphere containing less than 19.5 percent oxygen by volume.

*Oxygen enriched atmosphere* - An atmosphere containing more than 23.5 percent oxygen by volume.

*Permit-required confined space or permit space* - A confined space that has one or more of the following characteristics capable of causing death or serious physical harm:

- Contains or has a potential to contain a hazardous atmosphere;
- Contains a material with the potential for engulfing someone who enters;
- Has an internal configuration that could allow someone entering to be trapped or asphyxiated by inwardly converging walls or by a floor, which slopes downward and tapers to a smaller cross section;
- Contains any physical hazard. This includes any recognized health or safety hazards including engulfment in solid or liquid material, electrical shock, or moving parts;
- Contains any other recognized serious safety or health hazard that could either:

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- Impair the ability to self-rescue; or
- Result in a situation that presents an immediate danger to life or health.

*Permit-required confined space program* - An overall program for:

- Controlling and appropriately protecting employees from permit-required confined space hazards; and
- Regulating employee entry into permit-required confined spaces.

*Prohibited condition* - Any condition in a permit-required confined space that is not allowed by the permit during the authorized entry period.

*Rescue service* - The personnel designated to rescue employees from permit-required confined spaces.

*Retrieval system* - The equipment used for non-entry rescue of persons from permit-required confined spaces, such as a retrieval line, full-body harness or wristlets, and a lifting device or anchor.

*Testing* - The process of identifying and evaluating the hazards that entrants may be exposed to in a permit-required confined space. Testing includes specifying the tests that are to be performed in the permit-required confined space.

Note: Testing allows employers to devise and implement adequate controls to protect entrants during entry, and to determine if acceptable entry conditions are present.

[Statutory Authority: RCW [49.17.010](#), [49.17.040](#), [49.17.050](#), [49.17.060](#). WSR 15-24-102, § 296-809-099, filed 12/1/15, effective 1/5/16.]

## D. REQUIRED SAFETY EQUIPMENT

1. The supervisor must assure that the assigned employee have the PPE's required in their possession. The supervisor must assure the assigned employees are trained to operate all safety equipment and understands all safety procedures.

2. Personal Protective Equipment:

- Coveralls
- Tyvek suit
- Leather gloves Chemical Resistant gloves
- Welding gloves

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- Welding hood
- Eye protection
- Hearing protection
- Respiratory protection
- Safety shoes/boot
- Hard hat
- Multi-Gas meter
- Radio
- Phone

### 3. Fall Arrest Equipment:

- Blower and ventilation tube
- Harness/life line
- Lanyard 6' long
- Lanyard self-retracting
- Miller ¾ inch Grip Anchor (used at Gaines)
- Miller Durahoist (mounts to truck receiver)
- Tripod
- Self-retracting life line with emergency rescue
- Miller "Man-related work winch"
- Miller models 17D and 18D carabiners
- Body harness

NOTE: Operating instruction and specifications for fall arrest equipment are in the "Fall Arrest Equipment" section of the "Accident Protection Program" manual.

### 4. Traffic Control Equipment:

- Barricades
- Vests
- Flags
- Signs
- Radios

## E. PERMIT REQUIRED CONFINED SPACE ENTRY PROCEDURES

All confined spaces which have been designed to be entered for inspection and/ or maintenance on a regular basis, shall utilize the following procedures:

**1. Fill out the confined space entry permit.** When filling out the permit everyone involved should discuss the hazards, rescue process, and how to communicate. The

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“Entry Supervisor” bears the responsibility of completing the Confined Space Entry Permit.

**NOTE:** Each canceled entry permit shall be retained for at least 1 year to facilitate review of the permit-required confined space program. Used permits are placed in the Accident Prevention Program notebook under, “Confined Space Forms---Used”. Any problems encountered during an entry operation shall be noted on the pertinent permit so that appropriate revisions to the permit and/or confined space program can be made.

2. Prior to removing manhole or entrance covers, test the atmosphere inside the manhole by using a remote sampling probe or aspirator. If the lower explosive limit (LEL) is above 10% inside the manhole, do not remove the cover.

- Required when employee(s) suspects or conditions exist, that support a possible LEL above 10%.
- Required when responding to flammable odorous complaint calls. (For example odors may be described as gas, methane, propane, ethanol, or solvents.

3. **Atmospheric Testing:** Before allowing any personnel inside the confined space, test for all four atmospheric conditions, oxygen content, flammable or explosive gasses, hydrogen sulfide, and Carbon Monoxide. Testing is continuous and simultaneous for all gasses **at all levels (top, middle, and bottom).**

- **Oxygen content** must be at least 19.5% in the confined space, **measured at all levels.** The safe oxygen level is between 19.5% and 21%. **Do not enter the confined space if the oxygen level is below 19.5% or above 21%.** Due to the extreme danger of suffocation in confined spaces, constant and continuous oxygen monitoring is required throughout each work period. Oxygen content above 23% can cause explosions or vigorous burning of flammable materials, including hair or clothing.
- **Observe flammability at all levels of the confined space.** Flammability is measured in terms of the Lower Flammable Limit (LEL) or Lower Explosive Limit (LEL). This is the smallest concentration of a combustible gas in air that will explode when it contacts a spark or open flame.
- **Observe readings of the atmosphere for any toxic concentrations of vapors such as Carbon Monoxide (CO) and Hydrogen Sulfide (H2S).** Toxicity is measured in terms of the Threshold Limit Value (TLV). Use the detector to **measure toxicity at all levels of the confined space.** Since toxic

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concentrations may be lighter or heavier than air, they can be present at the top or the bottom of the confined space.

**Note:** The confined space must be tested at three levels for each atmospheric condition. Each level must be tested for a minimum of 60 seconds. The gas detector itself can be lowered into the confined space atmosphere with a safety line, or the detector may be used with an aspirator pump (so the detector is not lowered into the confined space), or if needed the entrant may wear a detector. Follow detector operating procedures manual if there are any operating questions.

**4. Ventilation:** A fresh air blower ventilation system shall be set up and in operation before and during all inspection and maintenance procedures.

- After the air blower ventilation system has been in operation and the confined air space has been tested and determined to have “acceptable entry conditions,” the operator shall be equipped with:
- Controlling atmospheric hazards through forced air ventilation does not eliminate all hazards. Evaluate the use of lockout-tag out (LOTO), as covered in chapter 296-803 WAC, to determine if using it fully eliminates the hazard. LOTO procedures are covered in the Accident Prevention Program binder.

**5. At least one “attendant” shall be stationed above ground** for support purposes whenever a confined space is entered. At times two attendants may be required so that one observes the entrant and another retrieves necessary equipment. An entry supervisor or authorized representative shall decide on the number of attendants necessary. Never enter a confined space unattended.

**6. Set-up and use all necessary equipment** listed in Section D of this document.

- Attendant(s) pull on and ensure connections of lifeline attachments to entrants’ body harness to the tripod safety retrieval system. Follow manufactures directions for set up, use, maintenance, and storage of tripod or Durahoist, and retrieval systems.
- Attendant(s) ensure that a **properly calibrated gas detector** is in operation during entrants’ time in confined spaces. This is necessary due to possibilities of rapid changes in a confined space atmosphere.

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**7. Entrants test each individual manhole step or rung carefully.** Be sure to check ladder for overall structural soundness and ability to support weight before using. If permanent ladder steps will not support weight or are not provided, a non-conductive extension ladder in good operating condition shall be used to enter the confined space.

**8. Entrants and trained attendants maintain contact at all times** either visually, by phone, or by two-way radio. This monitoring system enables the attendant(s), entry supervisor, and entrant to order evacuation and/or to alert appropriately trained rescue personnel if needed.

**9. Entering sanitary and storm sewer lift stations** that are designed to be entered regularly, shall have the power apparatus locked out (off) while entrant is working on the lift station. Locking out the power apparatuses prevents an accidental pump start during the systems repair or maintenance. If this is not possible then an attendant shall be dedicated for the sole purpose of controlling pumps. A second attendant shall constantly observe the entrant and confined space equipment while maintaining communications.

**10. Rescue and Emergency Action Plan - "911" is our emergency service for confined space rescue** to remove unconscious or injured entrants. No person shall enter a confined space (manhole, wet well, dry well, or underground vault) to retrieve someone who is unconscious without having additional trained personnel and equipment above ground to assist.

Where non-entry rescue is not possible, entry supervisor or attendant will coordinate rescue and emergency services with East Jefferson Fire and Rescue (EJFR). These rescue providers will be made aware of the hazards they may confront when called on to perform rescues. Entry supervisor or attendant shall provide access to all permit spaces from which rescue may be necessary so that EJFR can develop appropriate rescue plans and practices for rescue operations.

**11. Non-Entry Rescue Retrieval Systems shall meet the following requirements:**

- 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, or above the entrant's head. Wristlets may be used in lieu of the chest or full body harness if the employer can demonstrate that the use of a chest or full body harness is infeasible or creates a greater hazard.



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- Medical responders or medical facilities shall be provided with Safety Data Sheets (SDS) or similar written information for a substance exposure to an entrant. Copies of SDS's may be made from the SDS binder located at the employee's facility.

## 12. ADDITIONAL SAFETY PROCEDURES:

- An authorized representative shall inspect all safety devices and instruct all involved employees on proper confined space safety procedures. All defective safety devices shall be reported immediately, removed from service, and tagged as defective. It shall be the supervisor's responsibility to insure that crews assigned to enter confined spaces have the required safety devices in their possession.
- Do not smoke, light open flames, or produce sparks in the immediate vicinity of open manholes.
- Use picks and/or, hooks to open manhole covers. If combustible gas is suspected use non-sparking tools
- Lift manhole covers and heavy hatches with the legs. Never lift with only back muscles.
- Whenever possible lay removed manhole covers and heavy hatch covers flat on the ground several feet away from the opening to prevent tripping and falling in.
- When manhole or entrance covers are removed, the opening must be promptly guarded by a temporary railing cover, or other temporary barrier that will prevent an accidental fall through the opening and protect each employee working in the space from foreign objects entering the space.
- Use barricades and /or warning devices to direct traffic around open manholes.
- Wear protective clothing and nonslip, non-sparking shoes in a manhole.
- Watch out for slippery footing in a manhole.

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- Do not hand-carry tools and/or equipment while climbing up or down steps or a ladder. Raise or lower tools and/or equipment by using a rope, sling, or bucket.
- Use explosion-proof portable lighting and non-sparking tools in a manhole.
- Avoid using electrical tools in or near water. Never stand in water when using electrical tools. Use a Ground Fault and Circuit Interrupter (GFCI).
- Constant ventilation is required when performing “hot-work” within a manhole.
- Keep fuel burning engines away from a confined space manhole as Carbon Monoxide may flow into a confined space.
- If the “entrant” smells anything different or feels different – get out, now!

## F. NON-PERMIT CONFINED SPACE REQUIREMENTS

**Follow these requirements when classifying a confined space as a non-permit confined space:**

### 1. Post

You must make the certification available to each entrant, or their authorized representative.

- Sewers may be entered without the need for a written permit or attendant if the space can be maintained in a safe condition for entry by mechanical ventilation alone.
- All sewers are considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise.
- An authorized representative is required or permitted to pre-check or enter a sewer will have successfully completed, at a minimum, the training outlined in our training procedures.
- A written copy of operation and rescue procedures needs to be at the worksite for the duration of the job.
- The sewer pre-entry checklist is completed by the entry supervisor before entry into a sewer. This list verifies completion of items listed below. This checklist is kept at the job site for the duration of the job.

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- If circumstances dictate an interruption in the work, re-evaluate the sewer and complete anew checklist.

## 2. Control of atmospheric and engulfment hazards

- Pumps and lines:
  - ☐ All pumps and lines which may reasonably cause contaminants to flow into the sewer are disconnected, blinded and locked-out, or effectively isolated by other means to prevent development of dangerous air contamination or engulfment.
  - ☐ Not all lateral lines to sewers or storm drains require blocking. However, where experience or knowledge of use indicates a reasonable potential for contamination of air or engulfment into an occupied sewer, then all affected lateral lines are to be blocked.
  - ☐ If blocking or isolation requires entry into the sewer, the provisions for entry into a permit-required confined space are implemented.
- Surveillance:
  - ☐ The surrounding area is surveyed to avoid hazards such as drifting vapors from tanks, piping, or sewers.
- Testing:
  - ☐ The atmosphere within the sewer will be tested to determine whether dangerous air contamination or oxygen deficiency exists.
  - ☐ Alarmed gas monitors and explosion meters are examples of monitoring equipment that may be used to test sewer atmospheres.
  - ☐ Testing is performed by an authorized representative who has successfully completed the gas detector training for the monitoring method to be used.
  - ☐ The minimum parameters to be monitored are Oxygen deficiency, LEL, Carbon Monoxide and Hydrogen Sulfide concentrations.
  - ☐ The entry supervisor will certify in writing, based upon the results of the pre-entry testing, that all hazards have been eliminated or controlled.
  - ☐ Affected employees are able to review the testing results.
  - ☐ The most hazardous conditions will determine when work is being performed in two adjoining, connecting spaces.
- Entry procedures:
 

Entry into and work within a non-permit confined space may proceed if:

  - ☐ There are no non-atmospheric hazards present

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- ☐ The pre-entry tests show there is no dangerous air contamination or oxygen deficiency within the space; and there is no reason to believe that any is likely to develop.
- ☐ Continuous testing of the atmosphere in the immediate vicinity of the workers within the space is accomplished.
- ☐ Workers will immediately leave the sewer when any of the gas monitor alarm set points are reached as defined.
- ☐ Workers will not return to the area until an authorized representative supervisor who has completed the gas detector training has used a direct reading gas detector.

#### **G. FALL ARREST**

Fall arrest policy and procedures are covered in the, **Accident Prevention Program** binder. Equipment and operational instructions for equipment use is located in the **Fall Arrest Equipment** binder. Fall arrest training takes place annually.

#### **H. OTHER TRAINING ASSOCIATED WITH PERMIT-REQUIRED CONFINED SPACE**

1. Personal protection equipment
2. Confined space hazard recognition
3. Respirator training and fit test
4. Hazard communication standard
5. Lock out tag out
6. Use of power ventilation Equipment
7. Atmosphere sampling and testing devices
8. Use of all rescue and support equipment
9. Emergency rescue procedures
10. A thorough indoctrination on the purposes and intent of this policy and procedures.

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## A. Purpose

This procedure provides the minimum requirements to safeguard employees against health and safety effects associated with occupational exposure to blood-borne pathogens. This procedure is specifically intended to reduce the occupational exposure to and transmission of Hepatitis B Virus (HBV), Human Immunodeficiency Virus (HIV), and other infectious diseases.

All City employees shall comply fully with Washington State Labor and Industry, Division of Occupational Safety and Health, Chapter 296-823 WAC and City requirements for Blood-borne Pathogens as outlined below.

## B. Definitions

1. *Blood-borne Pathogens* – pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include but are not limited to Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV).
2. *Contaminated* – the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.
3. *Decontamination* – the use of physical or chemical means to remove, inactivate, or destroy blood-borne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use or disposal.
4. *Exposure Incident* – a specific eye, mouth, or other mucous membrane, non-intact skin, or parenteral (piercing mucous membranes or the skin barrier through such events as needle sticks, human bites, cuts, abrasions, and avulsion) contact with blood or other potentially infectious materials that result from the performance of an employee's duties.
5. *Occupational Exposure* – reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.
6. *Parenteral* – piercing mucous membranes or the skin barrier through such events as needle-sticks, human bites, cuts, and abrasions.
7. *Universal Precautions* – an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body

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fluids are treated as if known to be infectious for HIV, HBV, and other blood-borne pathogens.

### C. Occupational Exposure Determination

- a. Facility Determination – Human Resources will evaluate the workforce to identify those job classifications with potential for occupational exposure to blood or other potentially infectious materials (OPIM) during the course of their assigned duties. The exposure determination shall be made without regard to the use of personal protective equipment.
- b. The following considerations will be used to evaluate exposure to blood or other potentially infectious material (OPIM):
  - a. Employees assigned to perform emergency first aid and/or cardiopulmonary resuscitation (CPR). *NOTE: Employees who voluntarily give first aid and are not required to give first aid as part of their normal job duties are not considered to be occupationally exposed. This includes employees who participate on voluntary First Responder Teams (where such teams are not required by regulation). These employees may be included in the BBP program as a Best Practice, but are not required to be included by regulation.*
  - b. Potential for contact with contaminated laundry or regulated waste.

### D. Exposure Categories

- a. This exposure classification applies to tasks rather than individuals when, during their daily activities, individuals may move from one exposure category to another as they perform various tasks.
  - a. Tasks That Involve Exposure to Blood and Other Potentially Infectious Materials- Employees included in this category include first aid attendants and qualified safety representatives.
  - b. Tasks That Involve No Exposure to Blood and Other Potentially Infectious Materials but May Require Performing Unplanned Category 1 Tasks - Employees included in this category may include first responders, administrative assistants, and some safety professionals. The normal duties of individuals involve no exposure to blood, bodily fluids or tissues, but potential exposure may occur.

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#### **E. Personal Protective Equipment**

1. The City shall provide all necessary and appropriate PPE, including disposable latex gloves, utility gloves, eye protection, protective clothing, masks, mouthpieces, and ventilation devices. All required PPE shall be provided by the City at no cost to the employees.
2. When the potential exists for exposure to blood or other potentially infectious body fluids employee's shall use the appropriate PPE, such as, but not limited to, gloves, protective clothing, face shields, eye protection, masks, resuscitation bags, or other devices to form a protective barrier.
3. Masks and eye protection shall be worn whenever splashes, spray, droplets, or aerosols of blood or other potentially infectious materials may be generated and there is a potential for eye, nose, or mouth contamination.
4. Gloves shall be worn when the potential exists for the employee's hands to have direct skin contact with blood, other potentially infectious materials, mucous membranes, non-intact skin, and when handling items or surfaces soiled with blood or other potentially infectious materials.
5. Disposable single use gloves shall be replaced as soon as possible when visibly soiled, torn, punctured, or when their ability to function as a barrier has been compromised. Disposable gloves shall never be washed or disinfected for re-use.
6. Utility gloves may be disinfected for re-use if the integrity of the glove is not compromised.
7. Protective clothing may be either reusable or disposable, as long as it effectively prevents the pass-through of potentially contaminated body fluids. The City shall arrange for the cleaning, laundering, or disposal of required City furnished PPE as needed.
8. All PPE in need of repair or maintenance shall be removed from service until such repair and maintenance is completed.
9. All contaminated PPE shall be removed immediately upon leaving the work area or as soon as possible and placed in an appropriately designated area for decontamination or disposal.

#### **F. Environmental and Engineering Controls, Housekeeping**

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1. Where possible, engineering controls shall be put in place to eliminate or minimize exposure. These controls shall be evaluated for effectiveness and revised as needed to ensure effectiveness.
2. To the maximum extent possible, treatment areas will be established in such a way as to maintain isolation and containment of the hazard.
3. Disposable, puncture resistant containers that are closeable and leak-proof on the sides and bottom and properly labeled with the universal BIOHAZARD symbol, will be utilized for used needles, blades, sharps and other one-time use implements of treatment.
4. Hand-washing facilities with soap and running water will be made available. If running water cannot be supplied, germicide hand wipes will be supplied.
5. A written schedule for cleaning and methods of decontamination of areas of occupational exposure shall be developed. The schedule will include the following as a minimum:
  - a. Implements of treatment, pails, bins, containers, or similar receptacles (including protective coverings and work surfaces) must be cleaned and decontaminated after contact with blood or other potentially infectious material, and at the end of each work shift.
  - b. Glassware that has broken in the treatment area must be picked up mechanically and not by hand (i.e., dust pan and broom or brush with nylon bristles).
  - c. The mechanics of cleaning must be conducted using forceps-type implements.
  - d. All items and spills must be cleaned with a germicide or a solution of sodium hypochlorite ( a 1:8 dilution of household bleach).
6. The City shall make a determination based upon job scope with regards to employee exposure.

#### **G. Work Practice Controls**

1. Employees shall follow the “Universal Precautions.”



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2. Employees shall wash their hands immediately or as soon as possible after removal of gloves or other PPE and after hand contact with blood or other potentially infectious materials.
3. Used needles and other sharps shall be disposed of intact into properly labeled and designated puncture-proof containers. Used needles shall not be removed from disposable syringes. Recapping of needles or other sharps is not allowed.
4. Eating, drinking, smoking, applying cosmetics, and handling contact lenses is not permitted in any work area where there is a potential for occupational exposure to blood or other potentially infectious materials. Food, drink or personal items shall not be stored in refrigerators, freezers, or cabinets where blood or other potentially infectious materials are stored or in other areas of possible contamination.
5. Pipetting or suctioning by mouth (siphoning) is not permitted.

#### **H. Hepatitis B Vaccination**

- a. The City shall offer the hepatitis B vaccine and vaccination series to all employees occupationally exposed to blood-borne pathogens. The HBV vaccination shall be offered to affected employees after training and within 10 working days of initial assignment, unless the employee has had a previous HBV vaccination or unless antibody testing has revealed that the employee is immune or the vaccine is contraindicated for medical reasons.
- b. Employees accepting the offer of the hepatitis B vaccine shall sign the Offer of Hepatitis B Vaccination Form.
- c. A licensed physician shall perform Hepatitis B vaccinations and an accredited laboratory shall conduct all tests.
- d. Should a routine booster dose(s) of hepatitis B vaccine be recommended at a future date, such booster dose(s) shall also be provided.
- e. Employees that decline the hepatitis B vaccination must sign the Offer of Hepatitis B Vaccination Form. If an employee initially declines the HBV vaccination, but at a later date, decides to accept the vaccination, the City will make the hepatitis B vaccination available at that time.

#### **I. Incident Investigation**

- a. Exposure incidents shall be reported immediately to the immediate City supervisor, Human Resources and Department Manager. The supervisor or

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manager shall promptly conduct and document an exposure incident investigation containing the following information:

- a. The circumstances surrounding the exposure incident.
- b. The likely route(s) of entry.
- c. Engineering controls in place at the time of the incident.
- d. Work practices in place at the time of the incident.
- e. Personal protective equipment (PPE) in use at the time of the incident.
- f. Any failures of the above controls at the time of the incident.
- g. Identification if possible, of the source individual.
- h. Recommendations for avoidance of future exposure incidents based on lessons learned.

#### **J. Post-Exposure Evaluation and Follow-Up**

1. A confidential medical evaluation shall be made immediately available to an employee following an exposure incident.
2. Human Resources will ensure that the healthcare professional responsible for the employee's hepatitis B vaccination and exposure follow-up evaluation is provided the following information:
  - a. A copy of DOSH WAC 296-823 – Blood-borne Pathogens
  - b. A description of the exposed employee's duties as they relate to the exposure incident.
  - c. Documentation of the route(s) of entry and circumstances under which the exposure incident occurred.
  - d. Identification of the source individual unless prohibited by state or federal law.
  - e. Results of the source individual's blood testing, if available.

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- f. All medical records relevant to the appropriate treatment of the employee, including vaccination status.
3. Human Resources or designee will follow-up with the healthcare professional to assure that post-exposure evaluation and follow-up is provided in strict accordance with WAC 296-823-16030.
4. Human Resources or designee shall be responsible for obtaining and providing the employee with a copy of the evaluating licensed health care professional's written opinion within fifteen (15) days of completion of the evaluation. The original shall be placed in the employee's confidential medical file. The written opinion shall according to the requirements of WAC 296-823-16030.

#### **K. Recordkeeping**

1. The City shall establish and maintain medical records for each employee with an occupational exposure to blood-borne pathogens. These records shall include:
  - a. Name and social security number of the employee.
  - b. A copy of the employee's hepatitis B vaccination record.
  - c. A copy of all results and medical examinations related to an exposure incident.
  - d. A copy of the healthcare professional's written opinion.
  - e. A copy of all information provided to the healthcare professional.
2. The City shall maintain all records associated with an exposure incident for the duration of employment plus a minimum of thirty (30) years.
3. Training records shall be maintained on file for a minimum of three (3) years.

#### **L. Training**

1. Training on blood-borne pathogens shall be provided for all employees that can "reasonably be anticipated" to come into contact with blood or other potentially infectious materials as a result of performing their job duties.

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2. Annual refresher training shall be provided to all employees that can “reasonably be anticipated to be exposed to blood-borne pathogens.
3. The training program must at minimum contain the following elements:
  - a. Access to a copy of the Blood-borne Pathogens standard and an explanation of the contents of the standard.
  - b. General discussion of blood-borne diseases with emphasis on epidemiology, symptomatology, and modes of transmission of HIV and HBV.
  - c. A copy of the City’s Blood-borne Pathogens procedure and an explanation of the contents of the procedure.
  - d. Explanation of the methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious diseases.
  - e. Information on the types, selection, proper use, location, removal, handling, decontamination, and disposal of personal protective equipment.
  - f. Information on the Hepatitis B vaccine, its effect, safety, method of administration, benefits, and that it will be offered at City’s expense.
  - g. Instruction on appropriate actions to take, including emergency contacts, in event of an emergency involving blood or other potentially infectious material.
  - h. Instruction of appropriate actions in event of an exposure incident, including method of reporting and medical follow-up that will be available.
  - i. Information concerning post-exposure evaluation and follow-up after an exposure incident.
  - j. Explanation of BIOHAZARD labels and red bags.
  - k. Question and answer period following each training session.

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4. A record of each training session shall be maintained on file for at least three years and include date and contents of session, names of attendees and employee identification numbers.

#### **M. Forms**

- Offer of Hepatitis B Vaccination Form
- Exposure Incident Investigation
- Post-Exposure Evaluation and Follow-Up Checklist

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**BLOODBORNE PATHOGENS**  
***Offer of Hepatitis B Vaccination Form***

*Hepatitis B Vaccine Acceptance*

I understand that due to my occupational exposure to blood or other potentially infectious materials, I may be at risk of acquiring Hepatitis A and/or B Virus infection when responding to accidents, cleaning public restrooms and parks, and performing other public service functions.

I certify or request **one** of the following:

☐ I have completed the hepatitis B vaccine series.

☐ I desire to be administered the hepatitis B vaccine series of three injections, at no cost to me.

☐ I am declining to submit to the hepatitis B vaccine series at this time. However, if at a later date I desire to be vaccinated I shall continue to have this employer sponsored opportunity, provided I remain in the status of a full-time, regular employee of the City.

Signature: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Social Security Number (last 4 digits) \_\_\_\_\_

Date: \_\_\_\_\_

**If employee is under 18 years of age, the parent or legal guardian must read and sign below:**

I certify that I am the parent or legal guardian of the employee above named; that I have read and understood the form language; and that I grant my full consent and authorization for the (consent/refusal) of the Hepatitis B vaccination series.

Parent (or) Legal Guardian signature: \_\_\_\_\_

Date: \_\_\_\_\_

[Print Name) \_\_\_\_\_

Relationship to employee: \_\_\_\_\_

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VACCINE ADMINISTERED RECORD:

Type	Date	Lot #	Provider
Initial Vaccine			
2nd in series			
3rd in series			

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### EXPOSURE INCIDENT INVESTIGATION FORM

Date of Incident: \_\_\_\_\_ Time of Incident: \_\_\_\_\_

Location: \_\_\_\_\_

#### Potentially Infectious Materials Involved

Type: \_\_\_\_\_ Source: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Circumstances (Work being performed, etc.): \_\_\_\_\_

How Incident was Caused (Accident, equipment malfunction, etc.): \_\_\_\_\_

\_\_\_\_\_

Personal Protective Equipment Being Used: \_\_\_\_\_

Actions Taken (Decontamination, clean-up, reporting, etc.): \_\_\_\_\_

\_\_\_\_\_

Recommendations for Avoiding Repetition: \_\_\_\_\_

\_\_\_\_\_

Report Prepared By: \_\_\_\_\_

Job Title: \_\_\_\_\_

Date: \_\_\_\_\_



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## POST-EXPOSURE EVALUATION AND FOLLOW-UP CHECKLIST

The following steps must be taken and information transmitted in the case of an employee being exposed to blood-borne pathogens:

Activity	Completion Date
• Employee furnished with documentation regarding exposure incident	_____
• Source individual identified	_____
(Name)	
• Source individual's blood tested and results given to exposed employee	_____
<input type="checkbox"/> Consent could not be obtained	_____
• Exposed employee's blood collected and tested	_____
• Appointment arranged for employee with health-care Professional	_____
_____ Professional's Name	_____
• Documentation forwarded to healthcare professional	_____
 Blood-borne Pathogens Standard <input type="checkbox"/>	Description of exposed employee's duties
<input type="checkbox"/>	

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- |                          |                                  |                          |                                      |
|--------------------------|----------------------------------|--------------------------|--------------------------------------|
| <input type="checkbox"/> | Description of exposure incident | <input type="checkbox"/> | Result of source individual's blood  |
|                          |                                  | <input type="checkbox"/> | Testing including routes of exposure |
|                          |                                  | <input type="checkbox"/> | Employee's medical records           |

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## **A. Purpose**

The purpose of this procedure is to provide requirements and guidelines concerning the safe use and inspection of tools – power, electrical and hand. It is the City’s policy to take precautions to eliminate hazards associated with the use of hand and portable power tools; and to ensure that employees are properly trained to utilize these tools in a safe manner.

All City employees shall comply fully with the requirements for Tools – Hand, Power and Electrical as outlined below.

## **B. General Safety Requirements**

1. This procedure outlines Hand, Power and Electrical Tool safety procedures and the frequency of inspection for tools, cord sets, and equipment.
2. This procedure does not supersede the requirement to visually inspect of all tools, cord sets, and equipment before and after each use.
3. Only electrical competent persons shall inspect electrical tools and equipment as outlined in this procedure and maintain all required documentation.
4. Only qualified electricians shall be approved to make necessary repairs on electrical components of electrical tools, cord sets, and equipment.
5. City personnel shall not use tools of which they have not been trained on the safe use and care of.

## **C. Tool Safety**

1. The City has selected Ground Fault Circuit Interrupters (GFCI) as its standard method of protecting employees from the hazards associated with electrical shock.
2. If a tool has visible or suspected damage, DO NOT USE, red tag and place out of service until the tool is repaired or replaced.
3. Wear appropriate Personal Protective Equipment (PPE) as applicable.

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4. GFCIs shall be used on all 120-volt, single phase 15 and 20-ampere receptacle outlets, which are not part of the permanent wiring of the building or structure.
5. Temporary power panels providing 120-volt service shall be equipped with GFCI circuit breakers for optimum personnel protection. The same level of protection is afforded by the use of GFCI receptacles.
6. Disconnect tools before servicing and when changing accessories such as blades, bits, cutters, etc.
7. Do not carry power tools by the cord or hose, as this may damage the strain relief and/or connections.
8. When using air-operated tools, ensure that the source of the air supply pressure is adjusted to not exceed the working pressure of the tool.
9. All equipment guards shall remain in place. If it is believed that a task cannot be completed with the guard on, then stop your work and contact your supervisor.
10. Ensure that the grinding wheel RPM matches the RPM of the grinder.
11. Do not carry sharp, pointed tools or other objects in your pockets.

#### **D. The Right Tool for the Job**

1. Select the proper size hammer for the job. Soft hammers are to be used on machined parts, hardened parts and finish work.
2. Do not use a hammer with a cracked handle or loose head.
3. Oily hands or oily hammer handles will cause hammer to slip.
4. Hammers with chipped faces are not to be used.
5. The correct type and size screwdriver tip is important. Select the correct size for the job.
6. Use only the correct type and size wrench for the job.
7. "Double wrenching" or the use of a "cheater" on wrenches to gain more leverage or strength is not allowed. Use a manufactured "breaker bar" that

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is designed to provide additional leverage.

8. All air hose and other air connections used for cleaning must be equipped with a pressure reducing nozzle or device that will reduce the pressure to less than 30psi at the nozzle.
9. Compressed air shall not be used to clean particles from personal clothing.
10. On all hose to hose connections, airline “Whip-checks” must be used.

#### **E. Personal Protective Equipment**

1. Employees who use hand and portable power tools and are exposed to hazards, such as noise, vibration, particulate, sparks/chips, abrasive, splashing objects, harmful dusts, fumes, mists, vapors and/or gases must complete a JSA for the task and be provided with the appropriate personal protective equipment (PPE).
2. The following considerations should be evaluated at a minimum, in the selection and use of PPE when utilizing hand and portable power tools:
  - a. Eye Protection - Safety glasses or goggles must be worn at all times when using hand and portable power tools.
    - i. A face shield may be used, in addition, but not in place of safety glasses or goggles to protect the face and neck. Whenever a face shield is utilized, safety glasses or goggles must be worn in conjunction with the secondary protection.
  - b. Foot Protection – Appropriate construction type foot wear, which should include composite toe or steel-toed reinforcement and in some cases metatarsal protection may be necessary.
  - c. Hearing Protection– If the tool or equipment being utilized generates excessive noise, the use of hearing protection may be necessary. Follow the manufacturer’s recommendations for hearing protection and if necessary, personal noise dosimetry may be conducted to determine if employees must be enrolled in the hearing conservation program. *For more information on this program, please refer to Hearing Conservation Program.*

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- i. Hearing Protection is required during the use of certain hand tools and for all portable power tools.
- d. Respiratory Protection- Tools and equipment which generate excessive dust, mists, vapors and other particulate matter may require the use of a particulate filtering respirator. *For more information on respiratory protection requirements, please refer to Voluntary Respiratory Protection Program.*
- e. Hand Protection- Whenever there are sharp objects or elevated temperatures associated with the work being conducted, adequate hand protection for the task must be provided to the employee performing the work.
- f. Body Protection- Depending on the hazards present, appropriate clothing must be worn during the use of hand/portable power tools.
- g. Hair Protection- Long hair must be tied back and secured during the use of power tools to prevent hair from being caught in rotating parts.

## **F. Training Requirements**

- 1. Employees that are expected to utilize hand and portable power tools as part of their job duties must be adequately trained prior to using such tools.
- 2. Employees should be trained in the following areas:
  - a. Be able to recognize potential hazards associated with different types of tools and equipment; and the safety precautions necessary for proper use.
  - b. PPE required to be worn during the use of these tools.
  - c. The proper use of hand and power tools and, other hand-held equipment.
  - d. Be able to recognize damage and defects in tools which may render them out of service and in need of repair.
  - e. When applicable, provide access to the manufacturer specifications and manuals for specific equipment to be used.

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3. Retraining may be necessary to maintain employee knowledge of working with tools or for review if a near-miss or injury has occurred.

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Lock Out Tag Out-Control Hazardous Energy			Page 151 of 292

## A. Purpose

To establish minimum requirements for the control of hazardous energy sources to ensure the health and safety of personnel.

All City employees shall comply fully with the requirements for the Control of Hazardous Energy (Lockout/Tag-out -LOTO) WAC 296-803, as outlined below.

## B. Definitions

- *Affected Employee* - An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tag-out, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.
- *Authorized employee* - A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.
- *Capable of being locked out* - An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device or permanently alter its energy control capability.
- *Energized* - Connected to an energy source or containing residual or stored energy.
- *Energy isolating device* - A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker, a disconnect switch, a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductor and, in addition, no pole can be operated independently; a line valve; a block, and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are **not** energy



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isolating devices.

- *Energy source* - Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
- *Group Lockout* - Multiple employees, multi-crafts or combination of Company and contractor personnel working on locked out system.
- *Lock-out* - The placement of a lock-out device on an energy isolating device, in accordance with an established procedure, is ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lock-out device is removed.
- *Lock-out device* - A device that utilizes a positive means such as a lock and key, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.
- *Servicing and/or maintenance* - Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or un-jamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energizing or startup of the equipment or release of hazardous energy.
- *Tag-out* - The placement of a tag-out device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tag-out device is removed.
- *Try-out* - Prior to starting work on machines or equipment that have been locked out, the authorized employee shall verify that isolation and de-energizing of the machine or equipment has been accomplished

### C. Responsibilities

1. Site Manager: The senior on-site manager is responsible for assuring compliance with the requirements of this procedure.
2. Supervisors: Each supervisor is responsible for assuring that all

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employees comply with the requirements of this procedure.

3. Safety Manager: The safety manager shall assist site management in the effective implementation of this procedure, conduct training as required, and monitor compliance to verify full compliance.
4. Employees: Each employee is responsible for practicing safe work habits and complying with all requirements contained in this procedure.

#### **D. Energy Isolating Devices (Locks and Tags)**

##### **1. Locks**

- a. All energy isolating devices capable of being locked-out shall be locked-out. If an energy-isolating device is **not** capable of being locked-out, the energy control program shall utilize a tag-out system.
- b. Locks, chains, blinds, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware for lock-out shall be provided for isolating, securing or blocking of machines or equipment from energy sources.
- c. Lock-out locks be individually keyed and used exclusively for Energy Control. The City's senior onsite manager or designee shall control all Grand Master Keys for removing locks where the authorized person who applied them is not available to open lock.
- d. Lock-out devices must have a means of identification that distinguishes them from any other locking device.
- e. Lock-out devices shall be durable and able to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.
- f. A lock-out log should be used to identify the location of a lock-out lock and individual installing lock while it is in use.

##### **2. Tags**

- a. Tags used in conjunction with lock-out devices for the purpose of isolating an energy source shall be standardized in such a way

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to serve as a prominent warning: DANGER – DO NOT OPERATE.

- b. The tag must have information spaces available for date, identification of the energy source, and name of individual placing the tag.
- c. Tags shall be capable of withstanding the environment to which they will be exposed for the maximum period of time that exposure is expected.
- d. Tags, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tag-out device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.
- e. If an energy-isolating device is **not** capable of being locked out, the employer's energy control program shall utilize a tag-out system.
- f. In demonstrating that a level of safety is achieved in the tag-out system which is equivalent to the level of safety obtained by using a lock-out program the employer shall demonstrate full compliance with all tag-out-related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lock-out device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energizing.
- g. Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.
- h. When a tag is attached to an energy isolating means, it is not to be removed, without authorization of the authorized person(s)

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responsible for it, and it is never to be bypassed, ignored, or otherwise defeated.

- i. Tags are never to be re-used and destroyed immediately upon removal. No alterations to the tag are permitted.

#### **E. Periodic Audits**

1. A periodic audit of the Control of Hazardous Energy Procedure (Lockout/Tag-out -LOTO) shall be performed at least annually and also after any incident involving implementation of the LOTO procedure to ensure the requirements of the procedure are being followed.
2. Periodic audits will be conducted by the manager or designated authorized employee other than those utilizing the LOTO procedure.
3. Any deficiencies noted during an audit shall be promptly corrected.
4. Periodic audits shall be fully documented and include locations audited, persons interviewed, deficiencies noted, and corrective actions taken.

#### **F. Application of Energy Control**

1. The procedures for the application of energy control (lock-out/tag-out) shall include the following elements and shall be accomplished in the following sequence:
2. Preparation for shutdown: The impact of the shutdown on the system or processes shall be understood and communicated to those people who may be affected prior to the shutdown. Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.
3. Machine or equipment shutdown: The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.
4. Machine or equipment isolation: All energy isolating devices that are

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needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).

5. Lockout and Tag-out device application:

- a. The employer shall maintain a bulk supply of individually keyed locks, to be used only for locking out all energy isolating devices. Lockout and/or Tag-out devices shall be affixed to each energy-isolating device by authorized employees. This will include but not be limited to: electrical process, steam, lube oil, relief system hydraulic, and pneumatic. Small valves (gated or ¼ turn) that cannot be locked with lock and chain shall be locked out with “lockable covers”.
- b. Lockout devices, where used, shall be affixed in a manner that will hold the energy isolating devices in a “safe” or “off” position.
- c. The authorized person or designee will place the initial lockout and tag-out devices on a multi-lock device. Each employer with affected employees shall install its own lockout and tag-out devices on the multi-lock device.
- d. Employers may remove their lockout/tag-out devices once their work and exposures have been eliminated.
- e. The City’s multi-lock device and lock(s) and tag(s) shall be the last removed.
- f. Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

**G. Stored Energy**

1. Following the application of lockout or tag-out devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, depressurized or otherwise rendered safe.
2. If there is a possibility of re-accumulation of stored energy to a

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hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.

## **H. Verification of Isolation**

1. Prior to starting work on machines or equipment that have been locked out, the authorized employee shall verify that isolation and de-energizing of the machine or equipment has been accomplished.

## **I. Release from Lockout and Tag-out**

1. Before lockout and tag-out devices are removed and energy is restored to the machine or equipment, procedures shall be followed and actions taken by the authorized employee(s) to ensure the following:
  - a. The machine or equipment:
    - i. The work area shall be inspected to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.
  - b. Employees:
    - i. The work area shall be checked to ensure that all employees have been safely positioned or removed.
    - ii. Before lockout or tag-out devices are removed and before machines or equipment are energized, affected employees shall be notified that the lockout or tag-out devices will be removed.
    - iii. After lockout or tag-out devices have been removed and before a machine or equipment is started, affected employees shall be notified that the lockout or tag-out device(s) have been removed.

## **J. Lockout/Tag-out Devices Removal**

1. Each lockout or tag-out device shall be removed from each energy-isolating device by the person responsible for the machine or equipment. Personnel lock out locks applied by maintenance, contract or other

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authorized employees shall be removed by the person who applied the device.

2. Exception: When the authorized employee who applied the lockout or tag-out device is not available to remove it, that device may be removed by an authorized person only after the following safeguards have been met to protect all employees:
  - a. Verification by the employer that the authorized employee who applied the device is not at the facility.
  - b. Making all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout or tag-out device needs to be removed.
  - c. The equipment must be inspected to ensure it is safe.
  - d. The City's authorized person or his designee and the affected employee's supervisor concur that it is safe to remove the lockout/tag-out device.
  - e. Ensuring that the authorized employee has this knowledge before he/she resumes work at that facility.
  - f. The LOTO Emergency Lock Removal Procedure shall be followed with applicable forms completed documenting the removal.

#### **K. Testing or Positioning of Machines, Equipment, or Components**

1. In situations in which lockout or tag-out devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following sequence of actions shall be followed:
  - a. Clear the machine or equipment of tools and materials
  - b. Remove employees from the machine or equipment area
  - c. Remove the lockout or tag-out devices
  - d. Energized and proceed with testing or positioning.

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- e. De-energize all systems and reapply energy control measures to continue the servicing and/or maintenance.

#### **L. Outside Personnel (Contractors, Vendor Representatives)**

1. Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, the City and contractor employers shall inform each other of their respective lockout or tag-out procedures.

#### **M. Group Lockout/Tag-out**

1. When servicing and/or maintenance is performed by multiple employees, multi-crafts or combination of City and contractor personnel, the authorized unit operator will be responsible to assure that all employees are afforded a level of protection equivalent to that provided by the implementation of a personal lockout or tag-out device.

#### **N. Shift or Personnel Changes**

1. The keys that control access to the first unit lock attached to the multi-lock devices shall be controlled by each operations unit. These keys shall be controlled and accessed in a manner that will maintain protections to all employees for the duration of the locked out project.

#### **O. Training**

1. Each employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired by employees. The training shall include the following:
  - a. Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.
  - b. Each affected employee shall be instructed in the purpose and use of the energy control procedure.
  - c. All other employees whose work operations are or may be in an



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area where energy control procedures may be utilized, shall be instructed about the procedure, and about the prohibition relating to attempts to restart or re-energize machines or equipment which are locked out or tagged out.

- d. Training shall be conducted anytime this procedure is revised, when changes in job assignments occur, and when a change in machinery, equipment, or process present new hazards.
- e. If the employer has reason to believe retraining is necessary, retraining will occur to re-establish proficiency.
- f. Training shall be documented and maintained on file.

#### **P. Forms**

- LOTO Log
- Emergency Lock Removal Procedures

**LOCKOUT/TAGOUT LOG**

Project Site: \_\_\_\_\_ Page #: \_\_\_\_\_

Date Applied:	Authorized Employee:	Location:	System Locked Out:	Date Removed:	Authorized Employee:

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## EMERGENCY LOCK REMOVAL PROCEDURES

Date:		Time:	
1) Name of LOTO device owner whose Lock/Tag is to be removed:			
2) LOTO device owner's contact information:			
3) LOTO device owner's AWS Supervisor:			
4) Documented Attempt to Contact LOTO Device Owner:			
Date/Time:	Method of Contact:	Result:	
5) Purpose for LOTO Removal:			
<b>Evaluate the entire affected system to ensure employee's safety before LOT device is removed.</b>			
<b>Device Removal Verification</b>			
Removed By (Print):		Observed By (Print):	
Signature:		Signature:	
Date/Time:		Date/Time:	

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#### A. Purpose

To establish requirements for the development and implementation of mandatory and voluntary respiratory protection programs. Mandatory program is in effect when it is necessary for the health of employees or when required by the employer. Voluntary use is only permitted when the City or manager has determined that there are no air born hazards that would require mandatory use of a respirator.

All City employees shall comply fully with the requirements for Respiratory Protection as outlined below.

#### B. Definitions

- *Air-purifying respirator* – a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
- *Atmosphere-supplying respirator* – a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.
- *Competent person* – the person designated must meet two qualifications: they should have an excellent working knowledge of the respiratory protection procedures or methods and should have sufficient authority to promptly prevent and/or correct hazardous conditions.
- *Hazardous atmosphere* – an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury or acute illness.
- *Immediately Dangerous to Life or Health (IDLH)* – any atmosphere that poses an immediate hazard to life or produces immediate irreversible debilitating effects on health.
- *Oxygen deficiency* – the concentration of oxygen, by volume, below which atmosphere supplying respiratory protection must be provided. It exists in

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atmospheres where the percentage of oxygen, by volume, is less than 19.5 percent.

- *Permissible Exposure Limit (PEL)* – the OSHA established time-weighted average (TWA) concentration of a contaminant that shall not be exceeded.
- *Program administrator* – the qualified person assigned to administer or oversee the respiratory protection program and conduct the required evaluations of program effectiveness.
- *Qualitative fit test (QLFT)* – a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to a test agent.
- *Quantitative fit test (QNFT)* – an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.
- *Time-weighted average (TWA)* – the average concentration of a contaminant in air during a specific time period.
- *Voluntary use of a respirator* – the use of a respirator that is not required, based on documented exposure levels

### C. General

1. Every consideration will be given to the use of effective engineering controls to eliminate or reduce exposure to respiratory hazards to the point where respirators are not required. However, when feasible engineering controls are not effective in controlling toxic substances, the City will provide appropriate respiratory protective equipment.
2. Employees required to use respiratory protective devices because of exposure to toxic substances will wear respiratory protective devices as a condition of employment. Employee required to use respirators will be medically screened, thoroughly trained in their use, properly fitted, and appropriately tested. PPE shall be provided to the affected employee at no cost (same as all other PPE).

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3. This written respiratory protection procedure will be revised as necessary to address the specific respiratory hazards at each project or work location. The written plan will also include information such as name of program administrator and respirator models and sizes available for use.
4. All medical evaluations, training and respirators will be provided at no cost to the employee.

#### **D. Respirator Selection**

1. A summary diagram for selecting whether use of a respirator is required is presented in **Respirator Use Requirements Flow Chart**. This diagram provides an overview of the decision logic to be used to select respiratory protection equipment. The following is a listing of specific decision considerations:
  - a. All respirators shall be NIOSH certified and selection shall be based on the hazards that employees may/ will be exposed to.
  - b. Purchased respirators need to be able to be serviced/ tested by East Jefferson Fire Rescue or other local vendor.
  - c. Most respirator manufacturers now supply a given model respirator in different sizes so that workers can be fitted with the same brand of respirator.
  - d. What is the estimated contaminant concentration where the respirator will be used, as determined by industrial hygiene monitoring information?
  - e. What is the permissible exposure limit (PEL) to the contaminant, threshold limit value (TLV), and short-term exposure limit (STEL)? Health standards for many specific substances are available. Tables Z1, Z2, and Z3 of OSHA Standard 1910.1000 give the required PELs when no health standards supersede these tables. However, since these tables are established from the 1969 TLV list, good industrial hygiene practice should base respirator selection on current TLVs, if lower, or on other new toxicity data.
  - f. Is the contaminant gas, vapor, mist, dust, or fume? This information can be determined by studying the manufacturing or maintenance

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process: raw materials, intermediate products, by-products, and wastes. (See Material Safety Data Sheets when available.)

- g. Could the contaminant concentrations be termed immediately dangerous to life or health (IDLH)? This knowledge is derived from the manufacturer of raw materials, the process engineer or chemist, the company or plant industrial hygienist, and Safety Data Sheets, when available. In addition, consideration should be given to the potential for contamination of atmospheres under abnormal or emergency conditions.
- h. If the contaminant is flammable, does the estimated concentration approach the lower explosive limit (LEL), or do dust concentrations create a potential explosion problem? Besides creating a potential fire and explosion condition, in most situations flammable vapor or gas concentrations exceeding the LEL are IDLH. Plant gas or vapor levels can be determined with an explosion or combustible gas indicator (CGI). Here, too, consideration should be given to emergency conditions such as spills.
- i. Does the contaminant have adequate warning properties? Manufacturers can supply such information directly or through Safety Data Sheets. Warning properties such as odor, irritation, or taste should ideally be present at concentrations at or below the PEL.
- j. Will the contaminant irritate the eyes at the estimated concentration? Frequently, this will be self-evident if the operation is in progress. This information, too, is available from the Safety Data Sheets of raw materials. For irritant materials a full face-piece respirator should be used.
- k. If the contaminant is a gas or vapor, is there any available sorbent that traps it efficiently? Respirator manufacturers and/or industrial hygienists can provide this information.
- l. Can the contaminant be absorbed through the skin as a vapor or liquid? If so, will it significantly add to the worker's exposure and cause injury? Skin absorption is indicated in the OSHA Standard 1910.1000, Table Z1 by the notation "skin" after the material name. Safety Data Sheets will also indicate skin absorption potential.

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- m. What is the size of the worker's face? Some manufacturers offer the same model respirator in two or three sizes. This will help to fit most workers properly with one brand of respirator.
- n. What types of respirators will give the required maximum use concentration (MUC)? The MUC is a measure of the degree of protection provided by a respirator to the wearer. It also takes into account respirator limitations and the ability of a user to obtain a satisfactory fit. Multiplying the PEL (or STEL) by the protection factor assigned to a respirator gives the maximum use concentration (MUC) of the hazardous material for which the respirator can be used.

- i.  $MUC = PEL \times \text{Protection Factor}$

Respirator Type	Minimum Protection Factor
Negative Pressure- Filter Masks (N95, etc.)	100
Air Purifying Respirator (1/2 Mask)	100
Air Purifying Respirator (Full Facepiece)	500
SCBA/SABA (Tested in Negative Pressure Mode)	1000

- 2. Air Purifying Respirators
  - a. General Considerations and Limitations
  - b. Chemical cartridge respirators shall not be used in environments immediately dangerous to life or health (IDLH) or in atmospheres containing less than 19.5 percent oxygen.



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- c. Chemical cartridge respirators shall not be used for exposure to air contaminants that cannot be easily detected by odor or irritations. For example, cartridge respirators should not be used to protect against methyl chloride or hydrogen sulfide. The former is odorless and the latter, while foul smelling, paralyzes the olfactory nerve so quickly that odor detection is unreliable.
- d. Full face-piece respirators must be used when working in environments where concentrations are irritating to the eyes.
- e. Chemical cartridge respirators cannot be used for protection against gases that are not effectively stopped by chemical filters utilized (for example, carbon monoxide).

### 3. Cartridge Selection

- a. Select the cartridge or cartridge/filter group that best fits the type of exposure. Using the wrong cartridge and filter may be equivalent to using no respirator at all. For example, acid gas respirators cannot be used for protection against organic vapors. However, an organic vapor-acid gas respirator can be used for one or both these exposures. Check and recheck cartridge labels to ensure that the correct types are issued.

### 4. Respirator Use

- a. After correct cartridges have been selected, screw the cartridge into the face-piece after checking it for intactness (see Respirator Inspection, Care, Maintenance, and Storage procedure). Ensure that cartridge seals (usually part of the packaging) have been removed.
- b. Fit the respirator as outlined in Respirator Fit Testing procedure.
- c. The cartridges can be used until the contaminant can be smelled or tasted, or until irritation occurs.
- d. Do not use a cartridge after the expiration date printed on the label.
- e. If the face-piece and cartridge are used by only one employee and the cartridge has not been exhausted, it may be resealed by the worker and reused at a future time until cartridge exhaustion.
- f. Inspect, clean, and maintain respirators as outlined in the Respirator Inspection, Care, Maintenance, and Storage procedure.

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## 5. Self-Contained Breathing Apparatus

- a. The self-contained breathing apparatus (SCBA) affords complete respiratory protection in any atmosphere for which the lungs are the principal route of entry into the body. They supply the wearer with cool, non-contaminated breathing air, as required by the wearer, at approximately ambient atmospheric pressure. *(For specific instructions on SCBA units, consult the SCBA manufacturer's manual.)*
- b. Component Parts
  - i. A high-pressure, flexible hose that routes the compressed air from the cylinder to the regulator.
  - ii. An audible alarm that sounds to indicate low cylinder air pressure.
  - iii. A pressure-demand regulator that reduces the cylinder pressure to a breathable pressure and supplies the wearer with air in direct response to breathing requirements. Entry and re-entry into immediately dangerous or hazardous atmospheres requires a pressure-demand regulator.
  - iv. A face-piece assembly consisting of a rubber face-piece and lens with headband, exhalation valve, and breathing tube.
  - v. A carrier and harness on which the cylinder is mounted and by which the entire apparatus is worn.
- c. Breathing Air Quality & Use
  - i. A cylinder and valve to contain a supply of grade D or better compressed air.
  - ii. Cylinders must be stored in a clean atmosphere with in-line purification and must be tagged to indicate date of change out.
  - iii. Fittings must not be incompatible with non-respirable gasses and containers.
- d. General Check-out Procedure – follow manufacturer's instructions

## 6. Powered Air-Purifying Respirators

- a. Powered air-purifying respirators protect against particulates and/or gasses and vapors. A significant advantage of a powered air-

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purifying respirator is that it usually supplies air at a positive pressure so that any leakage is outward from the face-piece. It can be used with a helmet, hood, or face-piece. Air can be supplied by a user-mounted, battery-powered backpack purifier or by a stationary pump through up to 25 feet of low pressure hose. It has good applicability to abrasive blasting, grinding, pesticide spraying, and operations using asbestos.

- b. Generally, powered air-purifying units can be used for up to 100 times the PEL for dusts, mists, and fumes when used with filters approved for materials with PELs not less than 0.05 mg/m<sup>3</sup> or 2 mg/cf and nuisance dusts. Such respirators can be used for up to 3000 times the PEL when used with high-efficiency filters. For use in chemical vapor or gaseous atmospheres, the MUC depends on the chemical cartridge or canister used. In all cases check the manufacturer's specifications and the NIOSH/MSHA approval for the particular configuration used. Consideration should first be given to standard air-purifying units, supplied air devices, and SCBA.

## E. Medical Evaluation

This is required by employees for both the mandatory and voluntary use of respirators. Medical evaluations are completed only once for each employee. If there are changes in health and/or prescriptions that would affect use of a respirator then a second medical evaluation is required.

1. Using a respirator may place a physiological burden on employees that varies with the respirator type worn, the workplace conditions in which the respirator is used, and the medical status of the employee.
2. The City shall provide medical evaluations to employees prior to fit-testing, City issuance and use of respiratory protection devices. Medical evaluations shall be under the direct supervision of a licensed physician.
3. The employee shall be given the opportunity to discuss results of the medical evaluation with the licensed physician.
4. When conducting the initial medical evaluation respirator **Medical Evaluation Questionnaire, WAC 296-842-22005** or equivalent shall be used.

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Additional documentation **Employer Provided Information for Medical Evaluations** will be filled out by employees.

5. In addition to the standardized questionnaire, the physician must also be furnished with a copy of the latest OSHA Standard governing the type of exposure to which the employee will be subjected, a description of the employee's duties as they relate to the exposure, the anticipated exposure level, a description of the respiratory protective equipment and additional protective clothing and equipment to be used, any temperature and humidity extremes that may be encountered, and any available information from previous medical evaluations of the employee.
6. At the conclusion of the evaluation, the physician will submit a written opinion to the City that will include the results of the medical evaluation and any recommendations from the physician concerning the employee's limitations and follow-up examinations if required.
7. The City must furnish a copy of the physician's opinion to the affected employee within thirty (30) days.
8. Medical evaluations and questionnaires shall be administered confidentially during the employee's normal working hours; employees participating in the respirator protection program shall be provided an opportunity to discuss the results with the physician or other licensed health care professional.

#### **F. Warnings Related to Respirator Selection and Use**

1. Failure to properly select the appropriate respirator for all materials and concentrations to which the respirator wearer may be exposed may result in serious illness, disability, or death of the wearer.
2. Only self-contained positive-pressure breathing apparatus and full-face piece, pressure demand air-line respirator equipped with an auxiliary self-contained air supply are permitted for use:
  - a. In oxygen-deficient atmospheres (an atmosphere of less than 19.5 percent oxygen by volume at sea level);
  - b. In poorly-ventilated areas or confined spaces such as tanks, small rooms, tunnels, or vessels unless the confined space is well ventilated

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and the concentration of toxic contaminants is known to be below the upper limit recommended for the respirator;

3. In atmospheres where the concentrations of toxic contaminants are unknown or are IDLH; employee must immediately leave the area and evaluate proper respiratory considerations to take prior to continuing work.
4. Immediately leave the area and replace the respirator if:
  - a. Breathing becomes difficult;
    - i. Dizziness or other distress occur;
    - ii. Wearer senses irritation, or smells or tastes the contaminants;
    - iii. If the respirator becomes damaged.
5. The respirator selected must properly fit the wearer. To ensure that the respirator fits and operates properly, carefully follow fitting instructions, fit tests, and fit checks outlined in the instruction booklet that accompanies each respirator.
6. If the worker is exposed to two or more contaminants for which different air-purifying elements are recommended (such as ammonia and benzene), and if a combination element is not available, then an air-supplied respirator should be used.
7. Some toxic contaminants are readily absorbed through the skin. In such cases appropriate gloves and/or protective clothing may be required to protect other areas of the body that might be exposed to the contaminant.
8. Individuals with beards or other facial hair that passes between the sealing flange of the respirator face-piece and the wearer's face shall not use respirators. Facial hair may cause leakage or may interfere with proper operation of the respirator exhalation valve, thereby exposing the wearer to the hazardous contaminants.
9. Air-purifying respirators should not be used for sandblasting, or for gas or vapor contaminants with poor warning properties.
10. Any air-purifying respirator, when properly selected and fitted, will significantly reduce but not completely eliminate breathing of contaminant(s) by the respirator wearer. The wearer, when working in atmospheres containing substances such as asbestos (reputed to cause cancer in amounts

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below their TLV), will obtain better protection from a continuous-flow or positive-pressure air-supplied respirator.

#### G. IDLH Atmospheres

1. In the event that work is required to be performed in IDLH atmospheres, the following procedures shall apply:
  - a. At minimum, one employee shall be stationed outside of the IDLH atmosphere while work is being performed.
  - b. Visual, voice or signal line communication take place between the employee in the IDLH atmosphere and the worker stationed outside of the atmosphere.
  - c. The employee stationed outside of the atmosphere must be trained and equipped to provide emergency rescue and be equipped with:
    - i. Supplied-air respirator **and**
    - ii. Appropriate retrieval equipment

#### H. Special Respirator-Use Considerations

1. Facial hair lying between the sealing surface of a respirator face-piece and the wearer's skin will prevent a good seal. Except with positive-pressure air-line respirators, powered air-purifying respirators, and pressure-demand SCBA, a negative pressure exists within the mask upon inhalation; a poor seal will permit contaminated air to enter the face-piece. Even a few days' growth of beard can permit contaminant penetration. Respirators shall not be worn when conditions prevent a good seal of the face-piece to the face. Facial hair in the form of beards, long mustaches, long sideburns, and stubble should not be permitted on workers required to wear respirators if the hair comes between the face-piece sealing surface and the face.
2. Workers wearing corrective eye glasses present a special problem with respect to respiratory protection. Spectacle temple bars or straps that pass between the sealing surface of a full face-piece respirator and the wearer's face prevent a good seal and thus must not be worn.

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3. Spectacles with short temple bars that do not interfere with respirator sealing and are taped to the worker's face may be used temporarily. Special corrective lenses or spectacle inserts that can be permanently mounted inside a full face-piece respirator are available from most manufacturers. Such corrective lenses should be mounted in the face-piece so that it ensures good vision and comfort.
4. Spectacles or goggles may also interfere with quarter- or half-mask sealing; in this case a full face-piece respirator should be used.
5. Contact lenses shall not be worn while wearing a respirator in a contaminated atmosphere. Contaminants may get into the eyes and cause severe irritation and/or discomfort with quarter- or half-masks. Full face-pieces can pull at the side of the eye and cause the lens to pop out.
6. Under cold weather conditions a number of problems can develop, such as fogging of full face-piece respirators, valve sticking, and rubber stiffness that prevents a good facial seal.
7. Fogging of full face-piece respirators can be reduced by installing a nose-cup into the face-piece. This device, available from most manufacturers, deflects the exhalation breath away from the cold face-piece lens. Defogging solution should also be used.

Under some conditions it is necessary for respirator wearers to communicate with other personnel within or outside the contaminated area. When this is necessary, special communicating equipment, generally available from the respirator manufacturer, can be installed inside the face-piece. If it is necessary to penetrate the face-piece or alter the respirator in any way to install communications equipment, check with the respirator manufacturer to ensure that NIOSH/MSHA approval will not be voided by such installation.

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## I. Respirator Fit-Testing

Fit testing is required by employees for both the mandatory and voluntary use of respirators. Annual testing is required due to the changes in shape and bone structure of the face.

1. Prior to use of any respirator with a negative or positive pressure tight-fitting face-piece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used.
2. Employees using tight-fitting face-piece respirators shall pass the appropriate qualitative (QLFT) or quantitative (QNFT) fit test.
3. Employees may be provided with several different respirator models, and will be provided several different sizes so that the respirator is acceptable to, and correctly fits, the user.
4. Respirator fit testing shall be conducted in compliance with OSHA accepted fit test protocols, 1910.134, **Respiratory Protection Training & Fit Testing Checklist**.
5. Qualitative Fit Testing (QLFT)
  - a. One of the following protocols may be utilized when performing a QLFT. The protocol used must be appropriate for the respirator type being tested:
    - i. Isoamyl Acetate Protocol
      - The isoamyl acetate (banana oil) test relies on the employee's ability to detect odor inside the respirator. The test is performed by placing an isoamyl acetate saturated material near the respirator. If the wearer is unable to smell the chemical, then a satisfactory fit is assumed to be achieved.
      - This protocol is not appropriate for fit testing of particulate respirators. If used to fit test particulate respirators, the respirator must be equipped with an organic vapor filter.



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ii. Saccharin Solution Aerosol Protocol

- The saccharin solution test relies on the employee's ability to taste a saccharin solution sprayed around the outside of the respirator. The test is performed by placing an enclosure over the respirator wearer's head and shoulders and administering the solution from a nebulizer. If the wearer does not react to the chemical, then a satisfactory fit is assumed to be achieved.
- This test is dependent on the wearer's honest indication of taste. There is no involuntary response.
- The saccharin solution aerosol QLFT protocol is the only currently available validated test protocol for use with disposable particulate respirators not equipped with high-efficiency filters.

iii. Bitrex™ (Denatonium Benzoate) Solution Aerosol Protocol

- The Bitrex™ solution aerosol QLFT protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex is routinely used as a taste aversion agent in household liquids.

iv. Irritant Smoke (Stannic Chloride) Protocol

- The irritant smoke test is performed by directing an irritant smoke from a smoke tube towards the respirator being worn. If the wearer does not detect the irritant smoke, a satisfactory fit is assumed to be achieved.
- Since this type of test provokes an involuntary response from the employee, it is the preferred testing method when available.

6. Quantitative Fit Testing (QNFT)

- a. One of the following protocols may be utilized when performing a QNFT. Quantitative fit testing relies on instrumentation to provide a measurement of the volumetric leakage rate of a face-piece to quantify the respirator fit.

i. Generated Aerosol Quantitative Fit Testing Protocol

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- This protocol uses particulates such as corn oil, polyethylene glycol 400, di-2-ethyl hexyl sebacate or sodium chloride as test aerosols.
  - Quantitative fit testing using this protocol will be conducted in accordance with the protocols contained in Training & Fit Test Checklist & Record, 29 CFR 1910.134, Respiratory Protection.
- b. Ambient Aerosol Condensation Nuclei Counter (CNC) Quantitative Fit Testing Protocol
- i. This protocol (Portacount TM) uses a probe to sample air from inside the respirator to calculate the overall fit factor.
  - ii. Quantitative fit testing using this protocol will be conducted in accordance with the protocols contained in Training & Fit Test Checklist & Record, 29 CFR 1910.134, Respiratory Protection.
- c. Controlled Negative Pressure (CNP) Quantitative Fit Testing Protocol
- i. This protocol provides an alternative to aerosol fit testing methods. The CNP protocol fit test is based on exhausting air from a temporarily sealed respirator to generate and then maintain a constant negative pressure inside the face-piece.
  - iii. Quantitative fit testing using this protocol will be conducted in accordance with the protocols contained in Training & Fit Test Checklist & Record, 29 CFR 1910.134, Respiratory Protection.
7. Qualitative and/or qualitative fit testing must be repeated at least once every 12 months for routine use.

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8. The respirator wearer is required to conduct positive and negative pressure fit checks each time he or she dons a respirator and before entering a contaminated area.
  - a. In the positive pressure fit check, the wearer closes off the exhalation valve by gently placing a palm over the valve and gently exhaling into the face-piece. The fit is considered satisfactory if a slight pressure builds up in the face-piece without any evidence of outward leakage.
  - b. In the negative pressure fit check, the wearer closes of the inlet(s) with a palm(s) and inhaling gently so that the face-piece collapses slightly. The breath is held for about 10 seconds. If the face-piece remains slightly collapsed and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.
9. Respirator fit testing shall be documented and maintained on file for review.

**J. Respirator Inspection, Care, Maintenance & Storage**

**1. Inspection**

- a. All respirators shall be inspected by the user before each use, and at least monthly by a competent person to ensure that they remain in satisfactory working condition.
- b. Respirators shall be thoroughly inspected during and after each cleaning.
- c. Respirators maintained for use in emergency situations shall be inspected at least monthly and checked for proper function before and after each use.
- d. Respirator inspections must include a check of respirator function, tightness of connections, and the condition of various parts including, but not limited to, face-piece, head straps, valves, connecting tube, cartridges, canisters or filters, and a check of elastomeric parts for pliability and signs of deterioration.

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- e. Monthly inspections of emergency respirators shall be documented.
- f. Air-Purifying respirators should be inspected as follows before and after each use:
  - i. .Examine the face-piece for:
    1. Dirt
    2. Cracks, tears, holes, or physical distortion of shape from improper storage
    3. Inflexibility of rubber face-piece (stretch and knead to restore flexibility)
    4. Cracked or badly scratched lenses in full face-pieces
    5. Incorrectly mounted full face-piece lenses, or broken or missing mounting clips
    6. Cracked or broken air-purifying element holder(s), badly worn threads, or missing gasket(s), if required.
  - ii. Examine the head straps or head harness for:
    1. Breaks
    2. Loss of elasticity
    3. Broken or malfunctioning buckles and attachments
    4. Excessively worn serrations on head harness that might permit slippage (full face-piece only)
  - iii. Examine the exhalation valve for the following after removing its cover:
    - Foreign material, such as detergent residue, dust particles, or human hair under the valve seat
    - Cracks, tears, or distortion in the valve material
    - Improper insertion of the valve body in the face-piece
    - Cracks, breaks, or chips in the valve body, particularly in the sealing surface
    - Improper installation of the valve in the valve body

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iv. Examine the air-purifying element for:

- Incorrect cartridge, canister, or filter for the hazard
- Incorrect installation, loose connections, missing or worn gasket(s), or cross-threading in the holder
- Expired shelf-life date on the cartridge or canister
- Whether contaminant(s) can be smelled or tasted
- Cracks or dents in the outside case of the filter, cartridge, or canister, indicated by the absence of sealing material, tape, foil, etc. over the inlet

v. If the device has a corrugated breathing tube, examine it for:

- Broken or missing end connectors
- Missing or loose hose clamps
- Deterioration (determined by stretching the tube and looking for cracks)

vi. Examine the harness of a front- or back-mounted gas mask for:

- Damage or wear to the canister holder that may prevent its being held in place
- Broken harness straps for fastening
- Atmosphere-Supplying respirators should be inspected as follows before and after each use:
  - a. If the device is a tight-fitting face-piece, follow procedures outlined under air-purifying respirators, except for those pertaining to the air-purifying elements.
  - b. If the device is a hood, helmet, blouse, or full suit, follow these procedures:
    - i. Examine the hood, blouse, or full suit for rips and tears, seam integrity, etc.
    - ii. Examine the protective headgear, if required, for general condition with

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emphasis on the suspension inside the headgear

- iii. Examine the protective face shield, if any, for cracks, breaks, or impaired vision
- iv. Ensure that the protective screen is intact and secured correctly over the face shield
- c. Examine the air supply systems for:
  - i. Integrity and good condition of air supply lines and hoses, including attachment and end fittings
  - ii. Correct operation and condition of all regulators or other air flow regulators
- d. In addition to the above, for self-contained breathing apparatus (SCBA) units also determine that:
  - i. Breathing air cylinders are fully charged and recharged when the pressure falls to 90 percent of the manufacturer's recommended pressure level
  - ii. Low level alarms are functioning properly on closed-circuit SCBA, a fresh canister of CO<sub>2</sub> (carbon dioxide) sorbent is installed.

## 1. Care and Maintenance

### a. Cleaning the Respirator

- i. Respirators (except filtering face-pieces – dust masks) shall be cleaned and disinfected using procedures in WAC 296-842-22015 **Respirator Cleaning Procedures**. Respirator cleaning procedures recommended by the manufacturer are allowed, provided that such procedures are equivalent.
- ii. Respirators used should be clean, sanitary, and in good working order. Clean and sanitary respirators are essential in the prevention of dermatitis, skin irritation and communicable

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respiratory diseases. These requirements are a vital part of any successful respiratory protection program.

- iii. To ensure that the respirator does not create a health hazard (i.e., skin irritation) for users, a maintenance program must be in place prior to respirator use and must address proper cleaning and disinfecting procedures and proper storage. The manufacturer's instructions for inspection, cleaning, and maintenance of respirators should be consulted.
- iv. The Department Manager will oversee the maintenance and care program.
- v. Respirator wipes are not an adequate substitute for the cleaning and disinfecting process.

#### b. Maintenance and Repair

- i. Respirators that fail and inspection or are otherwise found to be defective shall be removed from service and discarded or repaired.
- ii. Employees involved in respirator maintenance and repair shall be thoroughly trained.
- iii. Repairs and adjustments shall never be made beyond the manufacturer's recommendations.
- iv. All replacement parts shall be supplied by the respirator manufacture. No substitutes shall be permitted.

#### c. Storing the Respirator

- i. When they are not being used, respirators shall be stored in individually sealed plastic bags and stored at locations established by project management in order to protect them against dust, sunlight, extreme temperatures, excessive moisture, or damaging chemicals.
- ii. Respirators should not be stored in tool boxes, gang boxes or any other location that might subject them to distortion or damage.

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**K. Program Evaluation**

1. Periodic evaluations shall be conducted and documented to ensure that this procedure is being implemented properly during all phases of operation involving the use of respiratory protective equipment.
2. This procedure shall be revised as necessary to incorporate process improvements based on program evaluations and employee feedback.

**L. Program Administrator**

1. The respirator program administrator for the City is:
  - Department Manager

**M. Training**

Training is required by employees for both the mandatory and voluntary use of respirators once per year.

1. The City shall provide training to all workers involved in respirator usage free of charge. The City shall certify that the training has been accomplished. This certification shall be available for inspection by workers and their authorized representatives.
2. The following training intervals shall be provided to each affected worker:
  - a. Before the worker's first duty.
  - b. Before any change in assigned duty.
  - c. When any change in operations occurs that presents a hazard in which the worker has not been trained.
  - d. Whenever there is reason to believe that there are deviations from entry procedures that could prove hazardous to workers.
  - e. All affected employees shall receive re-training annually.

**N. Recordkeeping**

1. All records pertaining to the employee's medical examination and evaluation shall be retained by the employer for a period of thirty (30) years plus the duration of employment. The following records shall be maintained on file:
  - a. Respirator training records – for duration of employment
  - b. Medical approval form (from the LHCP)

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- c. Fit test records – until next fit test is administered
- d. Maintenance and repair records
- e. A copy of the respiratory protection program
- f. Documented audits
- g. An employee signed copy of WAC 296-842-11005, **Advisory Information for Employees Who Voluntarily Use Respirators.**

## O. Supplement - Breathing Air Quality for Air Supplying Respirators

### 1. Breathing Air Quality for Air Supplying Respirators

Air for atmosphere-supplying respirators will be of high purity, meets quality levels for content, and does not exceed certain contaminant levels and moisture requirements.

Compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration must be in accordance with the specifications found in WAC 296-842-2005.

### 2. Air Supplied by Vendors

For supplied-air respirators (SARs), only Grade D breathing air shall be used in cylinders. The Program Administrator will coordinate refilling compressed air cylinders with East Jefferson Fire and Rescue and require their certification that the air in the cylinders meets the specifications of Grade D breathing air. Moisture content in the cylinders will not exceed a dew point of -50° F (-45.6° C) at 1 atmosphere pressure. ***Note:** This requirement will prevent respirator valves from freezing, which can occur when excess moisture accumulates on the valves.* All breathing gas containers must be marked in accordance with the NIOSH respirator certification standard, 42 CFR part 84.

### 3. Air Supplied by Compressors

Compressors used for supplying breathing air will be constructed and situated so contaminated air cannot enter the air-supply system. The location of the air intake will be in an uncontaminated area where exhaust gases from nearby vehicles, the internal combustion engine that is powering the compressor itself (*if applicable*), or other exhaust contaminants being ventilated will not be picked up by the compressor air intake.

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Compressors will be equipped with suitable in-line, air-purifying sorbent beds and filters to further ensure breathing air quality and to minimize moisture content so that the dew point at 1 atmosphere pressure is 10°F (5.56°C) below the ambient temperature. Sorbent beds and filters will be maintained and replaced or refurbished periodically according to the manufacturer's recommendations. An inspection tag will be kept at the compressor indicating the most recent change date and the signature of the Program Administrator or his/her designee authorized to perform the maintenance.

The Program Administrator will ensure that the compressor intake will not allow the introduction of carbon monoxide greater than 10 parts per million (ppm) into the system. ***Note:** This could be from sources other than the compressor such as forklifts or other gas powered equipment.* Where this is not possible or feasible, it may be necessary to combine the use of a carbon monoxide alarm with a carbon monoxide sorbent bed when conditions are such that a reliable carbon monoxide-free area for air intake cannot be found.

Where possible, non-oil-lubricated compressors will be used at our facilities or worksites.

If an oil-lubricated compressors are used, a high-temperature alarm or carbon monoxide alarm, or both, will be used to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply will be monitored at intervals sufficient to make sure the concentration of carbon monoxide in the breathing air does not exceed 10 ppm.

Breathing air couplings will be incompatible with outlets for non-respirable plant air or other gas systems to prevent accidental servicing of airline respirators with non-respirable gases or pure oxygen. No asphyxiating substance (*e.g., nitrogen, argon*) will be allowed in the breathing airlines.

#### P. Voluntary Program

The purpose of this program is to provide procedures and guidance for all employees who voluntarily choose to use a respirator and is designed to comply with Chapter 296-842 WAC. Employees will be processed in the identical procedures as mandatory respirator use. This includes:

1. Respirator selection,
2. Medical evaluation,

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3. Fit testing,
4. Training,
5. Record keeping

Each employee that voluntarily uses a respirator, including filter face-pieces – dust masks, will be given a copy of the advisory information contained in WAC 296-842-11005, **Advisory Information for Employees Who Voluntarily Use Respirators.** For employees speaking other languages, provisions shall be made to ensure that they understand the content.

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## MEDICAL QUESTIONNAIRE FORM (Mandatory)

WAC 296-842-22005

### **To the employer:**

- Must tell employee how to deliver or send the completed questionnaire to the health care provider.
- Will not review employee's questionnaire.

### **To the employee:** Can you read? (Circle one): Yes/ No

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

### **To the Health care provider:**

- Review information in this questionnaire and any additional information provided to you by the employer
- You may add questions to this questionnaire; HOWEVER, questions in Parts 1-3 may not be deleted or substantially altered.
- Follow-up evaluation is required for any positive response to questions 1-8 in Part 2, or questions 1-6 in Part 3. This might include: phone consultations to evaluate positive responses, medical tests, and diagnostic procedures
- When evaluation is complete, send a copy of your written recommendations to the employer and employee.

**Part 1. Employee Background Information (Mandatory)** All employees must complete this part.

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1. Today's date: \_\_\_\_\_
2. Your name: \_\_\_\_\_
3. Your age (to nearest year): \_\_\_\_\_
4. Sex (circle one): Male/ Female
5. Your height: \_\_\_\_\_ft. \_\_\_\_\_in.
6. Your weight: \_\_\_\_\_lbs
7. Your job title: \_\_\_\_\_
8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the area code): \_\_\_\_\_
9. The best time to reach you at this number: \_\_\_\_\_
10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/ No
11. Check the type of respirator you will use (you can check more than one category):
  - a. \_\_\_\_\_ N. R. or P. filtering-face piece respirator (for example, a dust mask, or an N95 filtering-face piece respirator)
  - b. Check all that apply
 

☐ Half Mask   ☐ Full face piece mask   ☐ Helmet hood   ☐ Escape  
☐ Nonpowered cartridge or canister   ☐ Powered air-purifying cartridge respirator (PAPR)  
☐

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Supplied air or Air-line

12. Have you worn a respirator (circle one): Yes/ No

If "yes" what type(s): \_\_\_\_\_

**Part 2. General Health Information (Mandatory)** All employees must complete this part.

**Please circle "Yes" or "No"**

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: Yes/  
No
2. Have you ever had any of the following conditions?
  - a. Seizures (fits): Yes/ No
  - b. Diabetes (sugar disease): Yes/ No
  - c. Allergic reactions that interfere with your breathing: Yes/ No
  - d. Claustrophobia (fear of enclosed spaces): Yes/ No
  - e. Trouble smelling odors: Yes/ No
3. Have you ever had any of the following pulmonary or lung problems?
  - a. Asbestosis: Yes/ No
  - b. Asthma: Yes/ No
  - c. Chronic bronchitis: Yes/ No
  - d. Emphysema: Yes/ No
  - e. Pneumonia: Yes/ No
  - f. Tuberculosis: Yes/ No
  - g. Silicosis: Yes/ No
  - h. Pneumothorax (collapsed lung): Yes/ No

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

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- d. Heart failure: Yes/ No
  - e. Swelling in your legs or feet (not caused by walking): Yes/ No
  - f. Heart arrhythmia (heart beating irregularity): Yes/ No
  - g. High blood pressure: Yes/ No
  - h. Any other heart problem that you've been told about: Yes/ No
6. Have you ever had any of the following cardiovascular or heart symptoms?
- a. Frequent pain or tightness in your chest: Yes/ No
  - b. Pain or tightness in your chest during physical activity: Yes/ No
  - c. Pain or tightness in your chest that interferes with your job: Yes/ No
  - d. In the past two years, have you noticed your heart skipping or missing a beat: Yes/ No
  - e. Heartburn or indigestion that is not related to eating: Yes/ No
  - f. Any other symptoms that you think may be related to heart or circulation problems: Yes/ No
7. Do you currently take medication for any of the following problems?
- a. Breathing or lung problems: Yes/ No
  - b. Heart Trouble: Yes/ No
  - c. Blood Pressure: Yes/ No
  - d. Seizures (fits): Yes/ No
8. If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, check the following space and got to question 9):
- a. Eye irritation: Yes/ No
  - b. Skin allergies or rashes: Yes/ No
  - c. Anxiety: Yes/ No
  - d. General weakness or fatigue: Yes/ No



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e. Any other problem that interferes with your use of a respirator: Yes/ No

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

### **Part 3. Additional Questions for Users of Full-Face Respirators or SCBAs**

**Please circle “Yes” or “No”**

1. Have you ever lost vision in either eye (temporarily or permanently): Yes/ No
2. Do you currently have any of the following vision problems?
  - a. Need to wear contact lenses: Yes/ No
  - b. Need to wear glasses: Yes/ No
  - c. Color blind: Yes/ No
  - d. Any other eye or vision problem: Yes/ No
3. Have you ever had an injury to your ears, including a broken eardrum: Yes/ No
4. Do you current have any of the following hearing problems?
  - a. Difficulty hearing: Yes/ No
  - b. Need to wear a hearing aid: Yes/ No
  - c. Any other hearing or ear problem: Yes/ No
5. Have you ever had a back injury: Yes/ No
6. Do you currently have any of the following musculoskeletal problems?
  - a. Weakness in any of your arms, hands legs or feet: Yes/ No
  - b. Back pain: Yes/ No

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- c. Difficulty fully moving your arms and legs: Yes/ No
- d. Pain or stiffness when you lean forward or backward at the waist: Yes/ No
- e. Difficulty fully moving your head up or down: Yes/ No
- f. Difficulty fully moving your head side to side: Yes/ No
- g. Difficulty bending at your knees: Yes/ No
- h. Difficulty squatting to the ground: Yes/ No
- i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: Yes/ No
- j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/ No

**Part 4. Discretionary Questions (Health Care Provider driven)** Questions in this section are only required if the health care provider says they are necessary.

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

If “yes”, do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you’re working under these conditions: Yes/ No

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

If “yes,” name the chemicals if you know them:

---

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

- a. Asbestos: Yes/ No
- b. Silica (e.g. in sandblasting): Yes/ No
- c. Tungsten/cobalt (e.g. grinding or welding this material): Yes/ No
- d. Beryllium: Yes/ No

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- e. Aluminum: Yes/ No
- f. Coal (for example, mining): Yes/ No
- g. Iron: Yes/ No
- h. Tin: Yes/ No
- i. Dusty environments: Yes/ No
- j. Any other hazardous exposures: Yes/ No

If "yes," describe these exposures: \_\_\_\_\_

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

5. List your previous occupations: \_\_\_\_\_

6. List your current and previous hobbies: \_\_\_\_\_

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

If "yes," were you exposed to biological or chemical agents (either in training or combat): Yes/ No

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

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

If "yes," name the medication if you know them: \_\_\_\_\_

10. Will you be using any of the following items with your respirator(s)?

- a. HEPA Filters: Yes/ No
- b. Canisters (for example, gas masks): Yes/ No
- c. Cartridges: Yes/ No

11. How often are you expected to use the respirator(s)? (Circle "yes" or "no" for all answers that apply to you)

- a. Escape only (no rescue): Yes/ No

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- b. Emergency rescue only: Yes/ No
- c. Less than 5 hours per week: Yes/ No
- d. Less than 2 hours per day: Yes/ No
- e. 2 to 4 hours per day: Yes/ No
- f. Over 4 hours per day: Yes/ No

12. During the period you are using the respirator(s), is you work effort:

- a. Light (less than 200kcal per hour): Yes/ No

If “yes,” how long does this period last during the average shift: \_\_\_\_hrs. \_\_\_\_mins.  
Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.

- b. Moderate (200 to 350 kcal per hour): Yes/ No

If “yes,” how long does this period last during the average shift: \_\_\_\_hrs. \_\_\_\_mins.  
Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling , nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade at 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

- c. Heavy (above 350 kcal per hour): Yes/ No

If “yes,” how long does this period last during the average shift: \_\_\_\_hrs. \_\_\_\_mins.  
Examples of heavy work are lifting a heavy load (about 50 lbs) from the floor to your waist or shoulder, working on a loading dock, shoveling, standing while bricklaying or chipping castings, walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you’re using your respirator: Yes/ No

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If "yes," describe this protective clothing and/or equipment:\_\_\_\_\_

14. Will you be working under hot conditions (greater than 77° F): Yes/ No

15. Will you working under humid conditions: Yes/ No

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

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

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

Name of the first toxic substance: \_\_\_\_\_

Estimated maximum exposure level per shift:  
\_\_\_\_\_

Duration of exposure per shift \_\_\_\_\_

Name of the second toxic substance: \_\_\_\_\_

Estimated maximum exposure level per shift:  
\_\_\_\_\_

Duration of exposure per shift \_\_\_\_\_

Name of the third toxic substance: \_\_\_\_\_

Estimated maximum exposure level per shift:  
\_\_\_\_\_

Duration of exposure per shift \_\_\_\_\_

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

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

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Signature

Date

### MEDICAL PROVIDER'S LETTERHEAD

To: The City of Port Townsend  
250 Madison St.  
City of Port Townsend, WA 98368

Date: \_\_\_\_\_

To whom it may concern:

I have reviewed \_\_\_\_\_

Questionnaire and he/she is: (CHECK THE APPROPRIATE BOX)

- ☐ CLEARED FOR RESPIRATOR USE
- ☐ NOT CLEARED FOR RESPIRATOR USE
- ☐ REQUIRES FURTHER MEDICAL EVALUATION BEFORE RESPIRATOR  
USAGE CAN BE DETERMINED

Sincerely,

\_\_\_\_\_  
Printed Name of Medical Professional

\_\_\_\_\_  
Signature of Medical Professional

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## EMPLOYER PROVIDED INFORMATION FOR MEDICAL EVALUATIONS

The WISHA Respirators Rule (WAC 296-842) requires that certain information regarding respirator use be provided by the employer to the licensed health care provider (LHCP). The following general information must be provided to the LHCP by the employer:

- A copy of our written respiratory protection program;
- A copy of the Respirators Rule WAC 296-842.

In addition, certain *respirator user-specific information* must be provided. This form may be used by the employer to provide the respirator user *specific information* to the LHCP, but is not a required form.

### **Specific Respirator Use Information for Respirator Use Medical Evaluation**

Employee Name: \_\_\_\_\_

Employer name: \_\_\_\_\_

Employee job title: \_\_\_\_\_

Employer Address: \_\_\_\_\_

City contact person and phone #: \_\_\_\_\_

1. Will the employee be wearing protective clothing and/or equipment (other than the respirator) when using the respirator?

Yes/No \_\_\_\_\_ If "yes," describe this protective clothing and/or equipment:

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Eye Protection, hearing protection, rain gear (pants and jacket), Hard Hat and Gloves. These are items that maybe used but all may not be used at the same time.

2. Will employee be working under hot conditions (temperature exceeding 77 degrees F)?

Yes/No \_\_\_\_\_ If "yes", describe temperature and duration.

---



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3. Will employee be working under humid conditions? Yes / No \_\_\_\_\_

4. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases). Can be used in Confined Spaces but not in life-threatening situations.

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### Specific Respirator Use Information, Continued

Table 1: Specific Respiratory Use Information					
Check Appropriate Box	Respirator Type	Face / Head Cover Type (i.e. 1/2 or full face, helmet, hood)	Frequency of Use (i.e. hours / day, week, month)	Work Effort Light, Moderate, Heavy  (see descriptions below)	Respirator Weight
√	Disposable face-piece particulate filter  (N, R or P series)	1/2 face-piece	Once or twice a year	Moderate	



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√	Mask with replaceable filter or cartridge	1/2 face-piece	Once or twice a year	Moderate	
	Mask with canister				
	Powered air-purifying respirator (PAPR)				
	Air-line, continuous flow				
	Air-line, negative pressure demand				
	Air-line, positive pressure demand				
	SCBA, negative pressure demand	Full face-piece			
	SCBA, positive pressure demand	Full face-piece			

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### **Work Effort Descriptions**

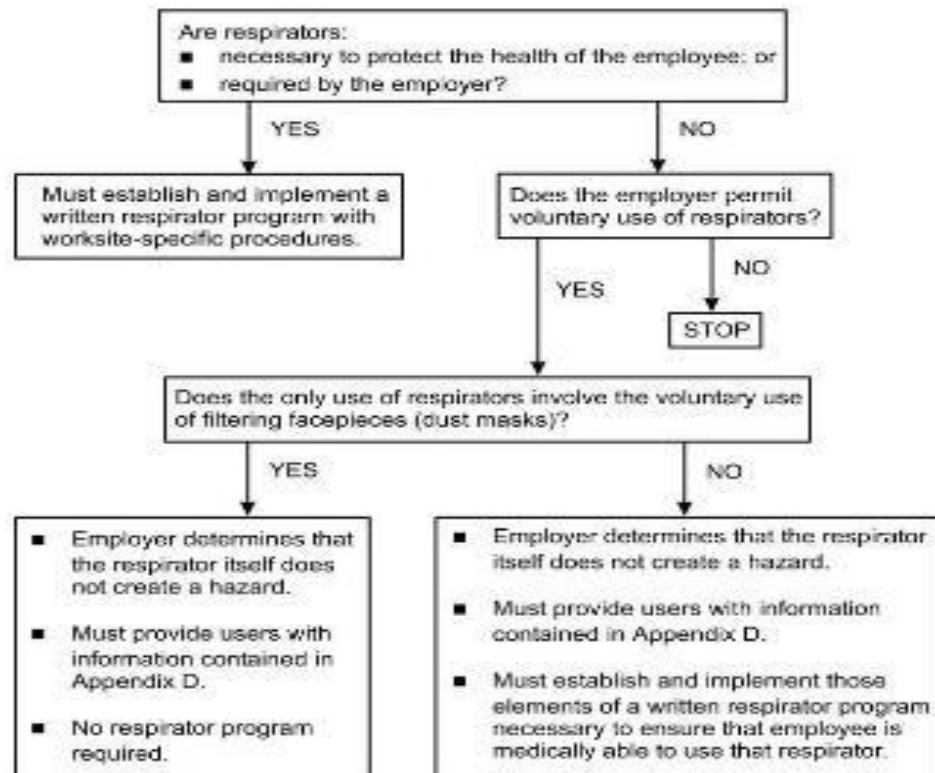
Examples of a **light work effort** are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.

Examples of **moderate work effort** are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

Examples of **heavy work effort** are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lb.).

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## Respirator-Use Requirements Flow Chart 29 CFR 1910.134(c)



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### WAC 296-842-11005

#### Advisory Information for Employees Who Voluntarily Use Respirators

- Respirators protect against airborne hazards when properly selected and used. WISHA recommends voluntary use of respirators when exposure to substances is below WISHA permissible exposure limits (PELs) because respirators can provide you an additional level of comfort and protection.
- If you choose to voluntarily use a respirator (whether it's provided by you or your employer) be aware that **respirators can create hazards for you**, the user. You can avoid these hazards if you know how to use your respirator properly **and** how to keep it clean. Take these steps:
  - Read and follow all instructions provided by the manufacturer about use, maintenance (cleaning and care), and warnings regarding the respirator's limitations.
  - Choose respirators that have been certified for use to protect against the substance of concern. The National Institute for Occupational Safety and Health (NIOSH) certifies respirators. If a respirator isn't certified by NIOSH, you have no guarantee that it meets minimum design and performance standards for workplace use.
  - A NIOSH approval label will appear on or in the respirator packaging. It will tell you what protection the respirator provides. Keep track of your respirator so you don't mistakenly use someone else's.

Do **not** wear your respirator into:

- Required use situations when you are only allowed voluntary use.
  - Atmospheres containing hazards that your respirator isn't designed to protect against. For example, a respirator designed to filter dust particles won't protect you against solvent vapor, smoke, or oxygen deficiency.
-

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Employee's Signature

Date

## Respiratory Protection Training & Fit Testing Checklist

To be completed prior to training and fit testing:

- ☐ Ensure that wearer has been medically cleared and approved to wear a respirator
- ☐ Ensure that wearer is clean shaven and is wearing the PPE that they would wear with the respirator (clean shaven means no more than a mustache to the corners of the mouth and a patch under the bottom lip, no facial hair can come into contact with the respirator seal)
  - ☐ Have wearer fill out fit test form (see Attached)
  - ☐ Hand wearer a respirator, show them how to conduct positive and negative pressure fit checks and have them check the size for proper fit
  - ☐ Once it is determined that the respirator appears to fit, have the wearer adjust the straps and put the respirator on their face ensuring that the straps are snug (not tight) and evenly adjusted
- ☐ Make sure wearer can demonstrate the following knowledge and skills are required by their duties:
  - ☐ Have wearer perform positive and negative pressure seal checks (instruct wearer that this is to be done each time the respirator is donned or adjusted)
    - ☐ Have wearer install P100 filters and wear the respirator while training ensues to warm up the seal on the face
    - ☐ Inform the user on the respirator's capabilities and limitations. Include, for example, how the respirator provides protection and why air-purifying respirators can't be used in oxygen-deficient conditions
    - ☐ Train wearer on proper fit and adjustment of the respirator
    - ☐ Train wearer on the inspection of the respirator for damage, wear or missing parts
  - ☐ Instruct wearer how to clean the respirator properly, both daily cleaning and a more comprehensive cleaning
    - ☐ Inform wearer of respirator storage requirements

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- ☐ Instruct wearer on cartridge or filter selection and change-out schedules
- ☐ Have wearer complete the remainder of the fit test form and sign in all three places upon completion of training and passing the fit testing exercises
- ☐ Double check paperwork to ensure that it is completed properly, make a copy for our records and give the original to the appropriate customer contact
- ☐ Important – Conduct sensitivity check using Bitrex or Stannic Chloride on user before and after test to ensure that they can sense the test agent

Make sure employees can demonstrate the following knowledge and skills as required by their duties: (each test should last one minute)

- 1 – Normal breathing
- 2 – Deep breathing
- 3 – Normal breathing while nodding head up and down
- 4 – Normal breathing while gently turning head from side to side
- 5 – Reading the “Rainbow Passage” or counting out loud backwards from 100
- 6 – Bend at the waist (Run in place if fit testing with anything other than irritant smoke)
- 7 – Normal breathing

## RESPIRATOR FIT TEST RECORD

EMPLOYEE HAS HAD A MEDICAL REVIEW AND HAS NO LIMITATIONS THAT WOULD PREVENT THE USE OF RESPIRATORY PROTECTION EQUIPMENT:

\_\_\_\_\_  
Signature of person tested

A. EMPLOYEE NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

EMPLOYEE JOB TITLE/DESCRIPTION: \_\_\_\_\_

B. EMPLOYER NAME:

\_\_\_\_\_  
LOCATION/ ADDRESS:

TELEPHONE: \_\_\_\_\_ FAX: \_\_\_\_\_

C. RESPIRATOR SELECTED:

\_\_\_\_\_

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MANUFACTURER: \_\_\_\_\_MODEL/SIZE:

NIOSH APPROVAL NUMBER: \_\_\_\_\_

D. CONDITIONS WHICH COULD AFFECT RESPIRATOR FIT:

CLEAN SHAVEN ☐ FACIAL SCAR ☐ PPE WORN ☐

COMMENTS/OTHER:

E. FIT CHECKS: NEGATIVE PRESSURE: ☐

POSITIVE PRESSURE: ☐

F. FIT TESTING QUALITATIVE: BITREX ☐ IRRITANT SMOKE ☐ SACCHARINE ☐

QUANTITATIVE: FIT FACTOR \_\_\_\_\_

PASSED ☐ FAILED ☐

F. EMPLOYEE ACKNOWLEDGEMENT OF TEST RESULTS:

EMPLOYEE SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

TEST CONDUCTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

-----  
DISCLAIMER: This respirator fit test(s) training was performed on and by the person listed. The results indicate the performance of the listed respiratory protective device under controlled conditions, as tested on the employee named. Fit testing, as performed, measures the ability of the respiratory protective device to provide protection to the individual tested. The manufacturer or test conductor express or imply no guarantee that this or any identical respiratory protective device will provide adequate protection under conditions other than were present when this test was performed. Improper use, maintenance, or application of this or any other respiratory protective device will reduce or eliminate protection.

\_\_\_\_\_  
Initials of person tested

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### Respirator Cleaning Procedure

Step	Task
1.	<p>Remove filters, cartridges, canisters, speaking diaphragms, demand and pressure valve assemblies, hoses, or any components recommended by the manufacturer.</p> <ul style="list-style-type: none"> <li>• Discard or repair any defective parts.</li> </ul>
2.	<p>Wash components in warm (43°C (110°F) maximum) water with a mild detergent or with a cleaner recommended by the manufacturer</p> <ul style="list-style-type: none"> <li>a. A stiff bristle (not wire) brush may be used to help remove the dirt</li> <li>b. If the detergent or cleaner does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following: <ul style="list-style-type: none"> <li>i. A bleach solution (concentration of 50 parts per million of chlorine). Make this by adding approximately one milliliter of laundry bleach to one liter of water at 43°C (110°F)</li> <li>ii. A solution of iodine (50 parts per million iodine). Make this in two steps: <ul style="list-style-type: none"> <li>A. First, make a tincture of iodine by adding 6-8 grams of solid ammonium iodide and/or potassium iodide to 100 cc of 45% alcohol approximately</li> <li>B. Second, add 0.8 milliliters of the tincture to one liter of water at 43°C (110°F) to get the final solution</li> </ul> </li> </ul> </li> <li>c. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.</li> </ul>
3.	<p>Rinse components thoroughly in clean, warm (43°C (110°F) maximum), preferably, running water.</p> <p><b>Note:</b> The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces could cause dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts, if not completely removed.</p>
4.	Drain components.
5.	Air-dry components or hand dry components with a clean, lint-free cloth.
6.	<p>Reassemble the face piece components.</p> <p>Replace filters, cartridges, and canisters, if necessary (for testing).</p>
7.	Test the respirator to make sure all components work properly.



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## A. Purpose

The purpose of this procedure is to reduce the potential for heat and cold illnesses through employee awareness, methods to prevent illness, and actions to take if symptoms occur. Any City employee participating in job tasks when environmental risk factors for heat illness are present will comply with the requirements for Heat & Cold Illness Prevention as outlined below.

## B. General

1. This procedure outlines the control of risk occurrence of heat & cold illnesses and applies to all outdoor places of employment and other work environments when the environmental risk factors for heat and cold illnesses are present.
2. The Occupational Safety & Health Administration does not currently have specific standards for heat and cold stress; however, the OSH Act of 1970 General Duty Clause (Section 5(a)(1)) states that *"Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."* The Outdoor Heat Exposure Rule WAC 296-62-095 applies from May 1 through September 30, every year, when exposures are at or above a specific temperature ([see Table 1 of the rule](#) (app.leg.wa.gov)).
3. In order to understand and mitigate the risks through training as well as through Engineering, Administrative and PPE methods, an assessment may be conducted to identify the types of jobs or employees who are at risk for exposure to both heat and cold illnesses.

## C. Heat Related Illnesses; Signs, Symptoms and Treatment

1. While working in hot weather conditions, the human body may not be able to maintain a normal temperature just by sweating. If this happens, heat-related illnesses may occur. The most common health problems caused by hot work environments include:
  - a. *Heat Stroke*- This is the most serious heat-related effect. Heat stroke occurs when the body temperature increases above 104°F. Signs and symptoms of heat stroke are confusion, loss of consciousness and lack of perspiration. This condition must be treated as a medical emergency and the employee must receive immediate medical attention.

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- b. *Heat Exhaustion*- Signs and symptoms of heat exhaustion include headache, nausea, dizziness, weakness, irritability, confusion, thirst, heavy perspiration and a body temperature greater than 100.4°F. Employees experiencing heat exhaustion should be moved to a cool area, given fluids to drink and given cold compresses for their head, face and neck. Employees should also be taken to a clinic or emergency room to be monitored by medical personnel.
    - c. *Heat Cramps*- Signs and symptoms of heat cramps include muscle pains usually caused by the loss of body salts/fluids. Employees should replace fluid loss by drinking water and/or carbohydrate-electrolyte replacement liquids (e.g. Gatorade) every 15 to 20 minutes.
    - d. *Heat Rash*- Heat rash is caused by excessive perspiration and looks like a red cluster of pimples or small blisters. Heat rash usually appears on the neck, upper chest, in the groin, under the breasts and in elbow creases. Treatment for heat rash is to provide a cooler, less humid environment.
    - e. *Dehydration*- Dehydration is a major factor in most heat disorders. Signs and symptoms of dehydration include increasing thirst, dry mouth, weakness or light-headedness (particularly if worse upon standing) and a darkening of the urine or a decrease in urination. Dehydration can be reversed or put back in balance by drinking fluids that contain electrolytes (i.e. Gatorade) that are lost during work related activities. Avoid caffeinated drinks.
2. While heat-related illness are dangerous and potentially life threatening, they can be prevented. Prevention methods include the following:
  - a. *Acclimation*- Acclimation is a process by which the physical processes of an employee's body adjusts to the environment over a period of time. Based upon data obtained from OSHA, this process usually takes five to seven days. This process could take up to three weeks depending upon the individual and their work environment. According to the American Industrial Hygiene Association, the process requires a consistent work level for at least two hours each day during the acclimation period in order for an employee to become acclimatized. Mere exposure to heat does not confer acclimatization, nor does acclimatization at one heat stress level confer resistance to heat stress at a higher temperature or more vigorous work load.

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Employees who are not adequately acclimatized to the heat may experience temporary heat fatigue resulting in a decline in performance, coordination or alertness. They may also become irritable or depressed. This can be prevented through gradual adjustment to the hot environment. People in good physical condition tend to acclimatize better because their cardiovascular systems respond better.

- b. Engineering Controls – For employees working indoors, the best way to prevent heat-related illness is to make the work environment cooler. Where and if possible, use air conditioning to cool the work area. Alternatively, increase the general ventilation as much as possible by opening windows or doors. When available, use cooling fans to aid in increasing ventilation.
- c. Safe Work Practices – For employees working outdoors or working indoors without air conditioning or ventilation, take scheduled breaks in cool areas. Ensure there is plenty of cool water to drink and take water breaks as needed. Immediately report any problems to a supervisor. Supervisors should consider scheduling the hottest work for the coolest part of day, assigning extra employees to high demand tasks, and using work-saving devices (e.g. power tools, hoists or lifting aids) to reduce the body's work load. All employees should watch out for the safety of their coworkers.

#### **D. Cold Related Illnesses and Injuries; Signs, Treatment and Prevention**

1. During cold weather, an employee's body will use energy to maintain a normal internal body temperature. This will result in a shift of blood flow from employee's extremities (hands, feet and legs) and outer skin to the employee's core (chest and abdomen). If this happens, cold-related illnesses and injuries may occur if exposed to cold conditions for an extended period of time. The most common health problems caused by cold work environments include:
  - a. *Hypothermia*– Hypothermia is a potentially serious health condition. Hypothermia occurs when body heat is lost faster than it can be replaced. When the core body temperature drops to approximately 95°F, the onset of symptoms normally begins. The employee may begin to shiver, lose coordination, have slurred speech, and fumble with items in the hand. The employee's skin will likely be pale and cold. As the body temperature continues to fall these symptoms will worsen and

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shivering will stop. Once the body temperature falls to around 85°F severe hypothermia will develop and the person may become unconscious, and at 78°F, vital organs may begin to fail.

Treatment depends on the severity of the hypothermia. For cases of mild hypothermia move to warm area and stay active. Remove wet clothes and replace with dry clothes or blankets, cover the head. To promote metabolism and assist in raising internal core temperature drink a warm (not hot) sugary drink. Avoid drinks with caffeine. For more severe cases do all the above, plus contact emergency medical personnel (Call 911 for an ambulance), cover all extremities completely, place very warm objects, such as hot packs or water bottles on the victim's head, neck, chest and groin. Arms and legs should be warmed last. In cases of severe hypothermia, treat the employee very gently and do not apply external heat to re-warm. Hospital treatment is required.

- b. *Frostbite*– Frostbite occurs when the skin actually freezes and loses water. In severe cases, amputation of the frostbitten area may be required. While frostbite usually occurs when the temperatures are 30° F or lower, wind chill factors can allow frostbite to occur in above freezing temperatures. Frostbite typically affects the extremities, particularly the feet and hands. The affected body part will be cold, tingling, stinging or aching followed by numbness. Skin color turns red, then purple, then white, and is cold to the touch. There may be blisters in severe cases.

Do not rub the area to warm it. Wrap the area in a soft cloth, move the employee to a warm area, and contact medical personnel. Do not leave the employee alone. If help is delayed, immerse in warm (maximum 105 °F), not hot, water. Do not pour water directly on affected part. If there is a chance that the affected part will get cold again do not warm. Repeated heating and cooling of the skin may cause severe tissue damage.

- c. *Trench Foot* – Trench Foot is caused by having feet exposed to damp, unsanitary and cold conditions including water at temperatures above freezing for long periods of time. It is similar to frostbite, but considered less severe. Symptoms usually consist of tingling, itching or burning sensation. Blisters may be present.

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For treatment, soak feet in warm water, then wrap with dry cloth bandages. Drink a warm, sugary drink. Seek medical attention if necessary.

- d. *Dehydration* – It is easy to become dehydrated during cold weather. Signs of dehydration include increasing thirst, dry mouth, weakness or light-headedness (particularly if worse upon standing), and a darkening of the urine or a decrease in urination. Dehydration can be reversed or put back in balance by drinking fluids that contain electrolytes (i.e. Gatorade) that are lost during work related activities. Avoid caffeinated drinks
2. Just as with heat related illness, cold related illnesses and injuries are dangerous and potentially life threatening, however, they can be prevented. Prevention methods include:
- a. *Acclimation* – Employees exposed to the cold should be physically fit, without any circulatory, metabolic, or neurologic diseases that may place them at increased risk for hypothermia. A new employee should not be required to work in the cold full time during the first days of employment until they become adjusted to the working conditions and required protective clothing. New employees should be introduced to the work schedule slowly and be trained accordingly.
  - b. *Engineering Controls* – For employees working indoors, the best way to prevent cold-related illness is to make the work environment warmer. Where and if possible, use heaters to warm the work area. Alternatively, decrease the general ventilation as much as possible by closing windows or doors.
  - c. *Safe Work Practices* – For employees working outdoors or working indoors without heat, take scheduled breaks in warm areas. If available, use wind barricades to block the wind from the employees. Ensure there is plenty of water to drink and take water breaks as needed. Immediately report any problems to a supervisor. Additional practices shall include the following:
    - i. For areas heavily traveled, walkways shall be sanded, salted or cleared of snow and ice as soon as practicable.
    - ii. Employees may be asked to work as a part of a “buddy system” during tasks where exposure to cold stress is high.

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- iii. Supervisors should consider scheduling the most work for the warmest part of day, assigning extra employees to high demand tasks that will require longer periods in cold areas.
  - iv. Employees will be informed of the dangers associated with working around unstable snow and ice build ups.
  - v. Cold weather supplies shall be regularly inspected and restocked when necessary.
- d. Personal Protective Equipment (PPE) – PPE is an important factor in preventing cold stress related illnesses and injuries. Employees should adhere to the following recommendations when dressing for work in a cold environment:
- i. Wear at least three layers of clothing; an inner layer of wool, silk or synthetic to wick moisture away from the body; a middle layer of wool or synthetic to provide insulation even when wet; an outer wind and rain protection layer that allows some ventilation to prevent overheating.
  - ii. Wear a hat or hood; up to 40% of body heat can be lost when the head is left exposed.
  - iii. Wear insulated boots or other footwear.
  - iv. Do not wear tight clothing; loose clothing provides better ventilation.
  - v. Keep a change of clothing available in case work clothes become wet.

#### **E. Training**

- 1. Supervisors shall be trained in the heat and cold illness procedures to follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures.
- 2. Employees shall be trained in identification and symptoms of heat and cold illness as well as procedures for treatment. This shall be conducted before beginning work involving risk of heat/cold illness.
  - a. Employee training may include first aid treatment for cold and heat-induced injuries/illnesses.

#### **F. Recordkeeping**

- 1. All training records shall be maintained in the employees personnel file and maintained by the supervisor.

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## Heat Index

The heat index is a simple tool and a useful guide for employers/employees making decisions about protecting employees in hot weather. It does not account for certain conditions that contribute additional risk, such as physical exertion. Consider taking the steps at the next highest risk level to protect employees from the added risks posed by:

- Working in the direct sun (can add up to 15°F to the heat index value)
- Wearing heavy clothing or protective gear

Under most circumstances, fluid intake should not exceed 6 cups per hour or 12 quarts per day. This makes it particularly important to reduce work rates, reschedule work, or enforce work/rest schedules.

Heat Index	Risk Level	Protective Measures
<91°F	Lower (Caution)	<ul style="list-style-type: none"> <li>• Provide plenty of drinking water</li> <li>• Ensure that adequate medical services are available</li> <li>• Plan ahead for times when heat index is higher, including worker heat safety training</li> <li>• Encourage workers to wear sunscreen</li> <li>• If workers must wear heavy protective clothing, perform strenuous activity or work in the direct sunlight, additional precautions are recommended.</li> </ul>

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91°F to 103°F	Moderate	<p>In addition to the steps listed above:</p> <ul style="list-style-type: none"> <li>• Remind workers to drink water often (4 cups per hour)</li> <li>• Review heat-related illness topics with workers such as recognition, prevention and first-aid</li> <li>• Schedule frequent breaks in cool, shaded areas</li> <li>• Acclimatize workers</li> <li>• Set up a buddy system and instruct workers and supervisors to watch for signs of heat-related illness</li> <li>• Schedule strenuous activities at a time when the heat index is lower</li> <li>• Develop work rest schedules</li> <li>• Monitor workers closely</li> <li>• If workers must wear heavy protective clothing , perform strenuous activity or work in the direct sun, addition precautions are recommended</li> </ul>
103°F to 115°F	High	<p>In addition to the steps listed above:</p> <ul style="list-style-type: none"> <li>• Alert workers of high risk conditions</li> <li>• Actively encourage workers to drink plenty of water (about 4 cups per hour)</li> <li>• Limit physical exertion</li> <li>• have a knowledgeable person at the work site who is well informed about heat related illness and able to determine appropriate work/rest schedules</li> <li>• Establish and enforce work/rest schedules</li> <li>• Adjust work activities (e.g. reschedule work, pace/rotate jobs)</li> <li>• Use cooling techniques</li> <li>• Watch/communicate with workers at all times</li> </ul>



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		<ul style="list-style-type: none"> <li>When possible, reschedule activities to a time when the heat index is lower</li> </ul>
115°F	Very High to Extreme	<p>If essential work must be done, in addition to the steps listed above:</p> <ul style="list-style-type: none"> <li>Alert workers of extreme heat hazards</li> <li>Establish water drinking schedule (about 4 cups per hour)</li> <li>Develop and enforce protective work/rest schedules</li> <li>Conduct physiological monitoring (e.g. pulse, temperature, etc.)</li> <li>Stop work if essential control methods are inadequate or unavailable</li> <li>Reschedule non-essential activities for days with a reduced heat index or to a time when the heat index is lower</li> <li>Move essential work tasks to the coolest part of the work shift</li> </ul>

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		<ul style="list-style-type: none"> <li>• Consider earlier start times, split shifts or evening/night shifts</li> <li>• Strenuous work tasks and those requiring the use of heavy or non-breathable clothing or impermeable chemical protective clothing should not be conducted when the heat index is at or above 115°F.</li> </ul>
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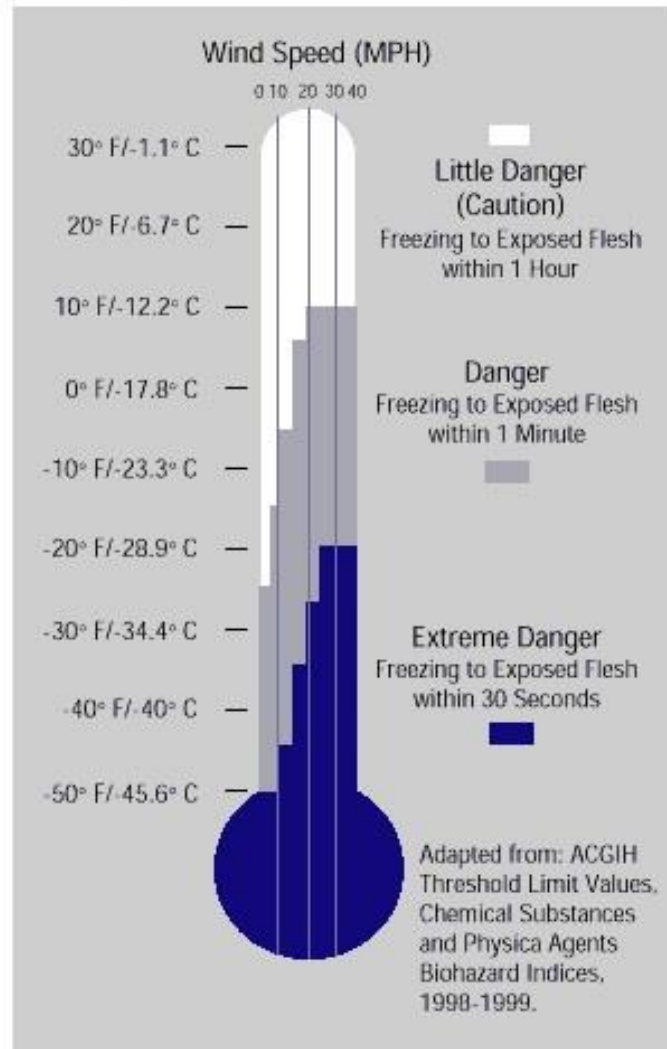
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## THE COLD STRESS EQUATION

### LOW TEMPERATURE + WIND SPEED + WETNESS = INJURIES & ILLNESS

When the body is unable to warm itself, serious cold-related illnesses and injuries may occur, and permanent tissue damage and death may result.

**Hypothermia** can occur when *land temperatures* are **above** freezing or *water temperatures* are below 98.6°F/ 37°C. Cold-related illnesses can slowly overcome a person who has been chilled by low temperatures, brisk winds, or wet clothing.



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## A. Purpose

The purpose of this procedure is to provide requirements and guidelines to protect employees from the hazards associated with Hydrogen Sulfide (H<sub>2</sub>S) exposures.

## B. General Scope

This program applies to all locations where City personnel may work with or around the use or production of H<sub>2</sub>S.

## C. Definitions

- a. *NIOSH*- National Institute for Occupational Safety & Health
- b. *PEL*- Permissible Exposure Limit, the legal limit in the United States for exposure of an employee to a chemical substance or physical agent
- c. *STEL*- Short-Term Exposure Limit, the acceptable average exposure over a short period of time, usually 15 minutes as long as the time-weighted average is not exceeded.

## D. Responsibilities

*Department Manager & Human Resources*

- a. Monitor compliance with this program and the OSHA Standard, as listed under 29 CFR 1910.1000 table Z-2 Toxic and Hazardous Substances
- b. Provide general H<sub>2</sub>S safety training and ensure employees with potential exposure receive the appropriate training prior to being assigned to an exposure area.
- c. Arrange for immediate emergency response, if necessary, for employee exposure to H<sub>2</sub>S.
- d. Conduct exposure assessments and evaluate exposure control measures as necessary.
- e. Investigate accidents.
- f. Coordinate the provision of medical exams, monitoring exposure and maintain employee exposure records.

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### *Employees*

- g. Know the provisions of the H<sub>2</sub>S Awareness Program.
- h. Report accidents, possible overexposures or unsafe conditions to your supervisor.
- i. Wear Personal Protective Equipment and use engineering control where recommended.

## **E. Hazard Data**

H<sub>2</sub>S exposures usually occur during the drilling for or production of natural gas, crude oil and petroleum products. H<sub>2</sub>S is also produced by the purifications of organic matter and may accumulate in sewers, sewage treatment plants or hide storage pits in the tanning industry. Well drillers and tunnel workers, as well as miners, may be exposed when underground pockets of H<sub>2</sub>S are encountered.

H<sub>2</sub>S may be used in the manufacture of inorganic sulfides, sulfuric acid and mercaptans.

## **E. Characteristics of H<sub>2</sub>S**

H<sub>2</sub>S is a colorless gas with a powerful nauseating smell of rotten eggs. The odor is a poor warning property because H<sub>2</sub>S exposure quickly deadens the sense of smell. The gas is heavier than air and may collect in low areas such as sewers, pits, tunnels or gullies. High airborne levels of H<sub>2</sub>S (between 4.3 and 46.0 percent of gas by volume in the air) may catch fire if there is a source of ignition. If the gas is burned, toxic products such as sulfur dioxide will be formed. H<sub>2</sub>S is incompatible with oxidizing agents, such as nitric acid and chlorine trifluoride, and may react violently or ignite spontaneously.

## **F. Health Effects on the Body**

H<sub>2</sub>S is extremely toxic. It may cause death instantaneously in high airborne concentrations. Low levels may be extremely irritating to the lungs, nose, throat and eyes.

H<sub>2</sub>S can be detected by smell at levels as low as 0.13 parts H<sub>2</sub>S per million parts air (ppm). Odor cannot be used as a warning because the gas can deaden the sense of smell within 2 to 15 minutes in exposures of approximately 100 ppm. A single breath of H<sub>2</sub>S at about 1000 ppm may paralyze the respiratory system and result in coma and death. Convulsions may also occur. Prolonged

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exposure at about 250 ppm H<sub>2</sub>S may cause the lung tissue to swell and fill up with water (pulmonary edema).

### **G. Permissible Exposure Limits (PEL)**

While not definitive, H<sub>2</sub>S levels below 10 ppm appear to cause little short term effects.

When H<sub>2</sub>S levels are unknown, respirators shall be used.

Current OSHA standards are:

- a. 20 ppm Ceiling Level (Level of audible alarm)
- b. 50 ppm Maximum allowable peak for 10 minutes STEL with no other exposure

Current NIOSH standards are:

- c. 10 ppm PEL averaged over 10 minute period
- d. 50 ppm Area shall be evacuated

29 CFR 1000(b)(2) which requires that an employee's exposure to any substance listed in Table Z-2 shall not exceed at any time the acceptable ceiling concentration limit, except for a time period and up to a concentration not exceeding the maximum duration and concentration allowed in the acceptable maximum peak.

### **H. Medical Surveillance**

Medical examinations should always supplement effective gas, vapor, fume, dust, and mist monitoring and controls, we will provide medical examinations for all workers who may be exposed to H<sub>2</sub>S at or above the respective PEL for greater than 30 days per year, found in 29 CFR 1926.55.

### **I. Records Keeping**

Exposure monitoring data – 30 Years

Medical surveillance data – Duration of employment plus 30 years

*See Reporting and Records Keeping section in this manual for additional information.*

### **J. Training and Information**

Occasionally workers will be assigned a task that is not routine. For example, workers may be required to work in an area that may have potential for H<sub>2</sub>S

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exposure. Before starting such work, every employee involved will be given such information as is necessary to enter and work safely within the work area. No employee is to begin work at a non-routine task without first being briefed on any hazards that may be involved in the performance of such an assignment. After receiving such training, workers are not to begin work unless their immediate supervisor is aware of their activity.

#### **K. Contingency / Emergency Plan**

Site / location specific contingency / emergency evacuation and medical response plans shall be developed and documenting prior to commencing any work in locations that may be affected by H<sub>2</sub>S. Plans shall include all information from the First Aid and Emergency Planning section of this Accident Prevention Program.

#### **L. H<sub>2</sub>S Monitoring**

City employees shall utilize portable monitors with alarms set at the permissible exposure limits (PEL) of 20 ppm for 29CFR1910 and 10 ppm for 29CFR1926 for the detection of H<sub>2</sub>S. Employees shall receive initial monitor training prior to deployment to their assignment, when assignment and / or monitors change and annually. Monitors shall be used in strict accordance with manufacturer's specifications.

#### **M. H<sub>2</sub>S Detection & Safety Precautions**

In the event that an audible alarm sounds while monitoring for H<sub>2</sub>S, immediately evacuate the area and suspend operations until:

- a. The hazard can be abated **or**
- b. If the hazard cannot be abated, proper respiratory protection is in use

#### **N. Emergency Breathing Apparatus**

In certain situation you may require a Self-Contained Breathing Apparatus (SCBA) to exit area that may have levels of H<sub>2</sub>S. The self-contained breathing apparatus (SCBA) affords complete respiratory protection in any atmosphere for which the lungs are the principal route of entry into the body. They supply the wearer with cool, non-contaminated breathing air, as required by the wearer, at approximately ambient atmospheric pressure. *NOTE: Prior to utilizing an SCBA employees must be in full compliance with the Respiratory Protection Section of this Illness and Accident Prevention Plan.*

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## **A. Purpose**

The purpose of this procedure is to comply with Washington State Labor and Industry, Division of Occupational Safety and Health Chapter 296-824 WAC, and to provide the necessary requirements to prevent the spillage of toxic and hazardous materials that may adversely affect the health and safety of personnel and contaminate the air, water, or land. This procedure also identifies steps to be taken in the event of a spill to minimize adverse effect on personnel and the environment.

All City employees shall comply fully with the requirements for Spill Prevention and Response as outlined below.

## **B. Emergency Spill Response Plan**

1. An Emergency Response Plan shall be developed and implemented to handle anticipated emergencies prior to the commencement of emergency response operations. The plan shall be in writing and available for inspection by all employees, their representatives and OSHA.
  - a. The written plan shall include the elements listed in the WAC 296-824 and 29 CFR 1910.120(q)(2) requirements:
    - i. Pre-emergency planning and coordination with outside parties
    - ii. Personnel roles including line of authority, training and communication
    - iii. Emergency recognition and prevention
    - iv. Safe distances and places of refuge
    - v. Site Security and control
    - vi. Evacuation routes and procedures
    - vii. Decontamination
    - viii. Emergency medical treatment procedures
    - ix. Emergency alerting and response procedures
    - x. Critique of response and follow-up



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xi. PPE and emergency equipment.

- b. Emergency response program may use the local emergency response plan or the state emergency response plan or both, as part of their emergency response plan to avoid duplication. Those items of the emergency response plan that are being properly addressed by the SARA Title III plans may be substituted into The City's emergency plan or otherwise kept together for the employer and employee's use.

## 2. Medical Surveillance Procedures

- a. Employees who may have been injured, received a health impairment, developed signs or symptoms which may have resulted from exposure to hazardous substances resulting from an emergency incident, or exposed during an emergency incident to hazardous substances at concentrations above the permissible exposure limits or the published exposure levels without the necessary personal protective equipment being shall undergo medical surveillance as soon as possible following the incident or development of signs or symptoms, and at additional times, if the physician determines follow-up is medically necessary.

## 3. General Spill Procedures

- a. Site specific procedures for spill response shall be developed and address incident reporting, roles and responsibilities, spill containment, clean-up and disposal methods, spill response supplies and equipment, required notifications, and incident investigation.
- b. The individual discovering the spill will immediately make notification to the City and may call 911 or the Chemical Alert number for large hazardous spills.
- c. The first emergency response team member responding to the scene will make an initial assessment to determine the hazard to personnel and environment. The first consideration during every response situation will be the safety and health of employees including members of the emergency response team. First aid or other medical treatment will be provided as needed, and proper protective clothing and equipment used to remove injured personnel from the contaminated area. A review of any applicable Material Safety Data Sheets should be initiated at the earliest possible moment during the response.

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- d. All non-essential personnel should be safely evacuated from the area.
- e. The initial assessment and review of available information on the nature of the spill will help in determining the need for notifications to the local HAZMAT organization, local agencies and general public.
- f. The next effort shall be directed to limiting the extent of the spill source if such action can be taken safely. This may involve closing an upstream valve, placing boom or sleeves to re-route a spill to a collection area, digging a trench, etc.
- g. Once containment has been achieved, the appropriate measures shall be taken to clean-up the spill and any associated contaminated soil, water, etc., decontaminate materials and equipment as needed, and package for proper disposal.

#### 4. Incident Investigation

- a. All incidents involving accidental spills related to hazardous chemicals /materials shall be investigated to determine root cause(s) and lessons learned will be communicated to prevent future occurrences.

#### 5. Reportable Quantities

- a. In the event of a spill or release of hazardous materials in excess of Reportable Quantities, notification must be made immediately to the agencies or authorities having jurisdiction over the site.

### C. Spill Prevention

#### 1. General

- a. Management shall designate appropriate individuals to make evaluations and decisions on matters of regulatory compliance as well as compliance with the City requirements related to spill prevention and response.
- b. All project employees shall receive instruction on the City's requirements related to spill prevention and response during new hire orientation.
- c. Management shall ensure that personnel charged with decision making during a spill event and all emergency response team

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members have received sufficient training to make initial assessments and notifications, take appropriate actions to contain spills, and the take the steps necessary to achieve clean-up and proper disposal of spill materials.

- d. Management shall conduct an assessment to determine the types and quantities of spill response containment and clean-up supplies needed for spill response.
- e. A master Safety Data Sheet (SDS) file shall be maintained and contain all City and contractor SDS's for all hazardous chemicals and materials in use or in storage on-site.
- f. Routine storage of small quantities of liquids shall be accomplished in such a manner as to prevent a spill by providing a flat surface for storage and where necessary containment deemed shall be constructed around the storage area to contain any possible spill.
- g. Hazardous chemicals and products shall be left in their original sealed containers until their use is required. When not being used, hazardous chemicals will be returned to storage and not left in open containers. During use or application, dispensing containers with self-closing lids shall be used to the maximum extent possible.

## 2. Bulk Storage Areas

- a. Bulk storage will only be permitted in designated areas. Designated areas shall be isolated to the maximum possible extent from operations and traffic. Bulk storage areas shall also be located in areas that will limit the potential contamination of waterways in event of a spill.
- b. Bulk storage tanks use for the storage and dispensing of flammable and combustible liquids shall to the maximum possible extent, be protected by a means of secondary containment.
- c. Above ground storage tanks shall be inspected weekly for leakage or spillage.

### Recommended:

- i. Bulk storage tanks not protected by a means of secondary

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containment are protected by a dike or berm lined with 3 layers of 6 mil plastic. Seams are sealed to prevent the leakage of fluid.

- ii. Hoses used to dispense liquids are equipped with a means of automatic shut-off.

## 2. Maintenance and Servicing of Equipment

- a. All motorized equipment shall be properly maintained to prevent the leakage of oil, grease, and hydraulic fluid.
- b. Equipment maintenance shall be conducted in designated equipment areas except for approved field servicing.
- c. Equipment used to prevent and contain spills during servicing shall include, but not be limited to drip pans for changing oil and filters and plastic sheeting to prevent contact of liquids with the ground.
- d. All waste oils and fluids shall be recovered and disposed of in accordance with all applicable City, Client, and regulatory requirements.

## D. Training Requirements

- 1. No workers shall perform emergency spill response duties outside of the scope of their specified training or engage in the cleanup of any spill, no matter how small, unless they are adequately trained to perform such functions.

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## **A. Purpose**

To provide minimum requirements for safety to be followed by employees in office locations.

## **B. Safety Notices and Posting Requirements**

1. A copy of each notice described below must be posted at each work establishment, preferably a bulletin board, providing the greatest exposure to employees.
  - a. Poster – “Health and Safety Protection on the Job” (the OSHA poster)
  - b. Summary of Work-Related Injuries and Illnesses (OSHA Form 300A)- This summary shall be completed, signed, and posted on an annual basis no later than February 1<sup>st</sup>, and remain in place through April 30<sup>th</sup> of the year following the year covered by the form. This is in addition to the OSHA reporting requirement as outlined under the City Reporting & Recordkeeping policy.
  - c. Emergency Phone Number List- Post this list in conspicuous locations such as near telephones and show current emergency numbers for medical assistance, ambulance, fire, police, and hospital.
  - d. Emergency Exit Plans- Routes for emergency exit/evacuation shall be posted in visible locations to aid employee exit/evacuation during an emergency.
  - e. Workers’ Compensation Notices- Post notices as required by applicable State requirements to inform employees of worker’s compensation coverage for occupational injury and illness.
2. Additional safety related items such as safety posters and general safety informational materials may be posted in all offices to promote safety awareness.

## **C. Work Practices**

1. General
  - a. Practice good housekeeping practices to avoid injury and fire risk.

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- b. Each employee is empowered to stop any activity or operation that he or she observes to be unsafe. The appropriate supervisor should be contacted immediately.

## 2. Back Injury Prevention

- a. The following safe lifting techniques are essential to preventing back injury:
  - i. Think about what you intend to lift and how it can be done safely.
  - ii. Bend your knees, keeping the lower back straight, and use the legs to lift.
  - iii. When lifting, use the pelvic tilt, do not twist the torso, move feet in the direction of hands at the same time. Never twist sideways to lift an object.
  - iv. Ensure that item contents are not going to shift during lifting. This could cause loss of balance resulting in an accident or injury.
  - v. Push, Pull, Reach – Lock or stabilize the lower back using the pelvic tilt prior to lifting an object. Never reach over or out to lift a heavy object.
  - vi. Get help with heavy objects. Know your body and its capabilities. No one should attempt to lift without assistance an object weighing more than 50 pounds, and in some cases, less.
  - vii. Wear gloves to protect your hands if you are handling an object that can cause cuts or splinters.

## 3. Exits

- a. Every building designed for human occupancy shall be provided with exits sufficient to permit the prompt escape of occupants in case of emergency.
- b. Exits and the way of approach and travel from exits shall be maintained so that they are unobstructed and accessible at all times.

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- c. Know ahead of time where exits are and where they go.

#### 4. Portable Fire Extinguishers

- a. Portable fire extinguishers suitable to the conditions and hazards involved shall be provided and maintained in an effective operating condition.
- b. Portable fire extinguishers shall be conspicuously located and mounted where they will be readily accessible. They may not be obstructed or obscured from view and extinguisher shall be identified by signs.

#### 5. Aisles Corridors

- a. A minimum of four feet should be established for aisles. Obstructions such as wastebaskets, low tables, boxes, cords, etc., must be placed where they do not create a trip hazard.
- b. Use caution when walking around blind corners. Avoid collisions by keeping to the right when walking in hallways or aisles, especially when approaching doorways and blind corners.
- c. The installation of wall-mounted mirrors at high traffic blind corners should be considered.
- d. Doors should not open into the path of employee travel. However, if they do, the floor should be marked identifying the swing path of the door.

#### 6. Floors – General Conditions

- a. All floor surfaces shall be kept clean, dry, and free from protruding nails, splinters, loose boards, holes, or projections.
- b. Clean up liquid spills immediately, especially on stairs and tile floors.
- c. Floor finishes and/or carpets should be selected for anti-slip qualities.
- d. Keep electric cord sets off floors and out of aisles to eliminate a tripping hazards
- e. When cord sets must strung across floors on a temporary basis a cord concealer or strip shall be used.

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## 7. Stairways

- a. Stairways should be protected with an anti-slip material.
- b. Use handrails, take one step at a time, keep to the right, and do not hurry.
- c. Don't store or throw anything on steps or stairways.

## 8. Elevators

- a. In the event of a fire, never use an elevator for emergency egress.

## 9. File Cabinets

- a. When possible, filing cabinets should be arranged side-by-side and bolted together to prevent a cabinet from toppling forward when one of the high drawers are opened.
- b. When possible, anchor single file cabinets to the wall.
- c. Where there is a single filing cabinet, great care must be taken to prevent toppling when a high drawer is opened. Arrange the files so that the lower drawers bear the heaviest load and pull out only one drawer at a time to avoid over-balancing.
- d. Keep drawers of file cabinets closed when not in use.

## 10. Office Equipment/Supplies

- a. Do not tilt back when sitting in a straight chair.
- b. Use only an approved type ladder or another safe support when reaching for material on high shelves or at other elevated positions. Do not stand on chairs, boxes or any other makeshift device.
- c. Furniture and other office equipment that is defective or hazardous shall be removed from service immediately.
- d. Do not use ventilation fans or space heaters unless they are Underwriter-Laboratories (UL) approved and guarded.

## 11. Ergonomics



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- a. Make sure your chair is adjusted so you can sit with your feet flat on the floor and your thighs parallel to the floor. Your core/trunk should be straight but inclined slightly forward at the hip.
- b. Assure that there is good support for your hands and forearms when you are typing. You should be able to rest them on a tabletop, a wrist rest, or the arms of your chair.
- c. While typing, try to avoid bending your wrists. A flat or wrist “neutral” position should be maintained and elbows should be bent at 90 degrees, with forearms parallel to the floor.
- d. Don’t strike the keys too hard. Try to develop a light touch, and adjust the keyboard to that end if possible.
- e. Take regular breaks. Get up, stretch, and move around. Avoid remaining in the same position for long periods of time.

## 12. Hazards Chemicals

- a. All chemical containers shall be properly labeled and must not be left uncapped.
- b. Safety Data Sheets (SDS) for all chemicals must be maintained in the office’s Hazard Communication file.
- c. Chemicals, other than small amounts of household cleaners, should not be stored in offices. Approved storage cabinets should be utilized outside of the office.
- d. Gasoline, thinners, or other flammable materials should not be stored in the office. Appropriate outside storage should be provided.

## 13. Electrical Safety

- i. Turn off all electrical equipment when not in use
- ii. Cords must be properly equipped with grounding prongs
- iii. Electrical cords should be visually inspected on a periodic basis to identify frayed and worn cords
- iv. Keep all electrical cords out of walkways and passageways

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- v. Use approved surge protectors. Never plug extension cords into surge protectors or “daisy chain” surge protectors (surge protectors plugged into each other)
- vi. Don’t overload or split outlets and surge protectors
- vii. Combustible material, such as paper, should not be stored on or in close proximity to electrical outlets and connections
- viii. Nothing should be stored within 30" of electrical panels.

#### **D. Emergency Procedures**

1. Each employee working in an office environment must be able to respond properly in the event of an emergency. Employees must:
  - a. Know how to report a fire or medical emergency
  - b. Know evacuation/escape routes in case of fire and remember to avoid elevators.
  - c. Become familiar with the location of the emergency exits and emergency evacuation routes and the evacuation meeting place. Know the location of emergency equipment such as fire extinguishers and fire alarms.
  - d. Know the name of the emergency response team member if the office has such personnel assignments.
  - e. Immediately report any suspicious package(s) or letter(s) found in the work area to the immediate supervisor or other designated individuals.
  - f. Know the location of the office first aid cabinet.
  - g. Participate in emergency drills.

#### **E. Training**

1. Employees shall receive office safety training in their new employee orientation.

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## A. Purpose

To identify and provide recognition related to safe and “at-risk” behaviors and evaluate the effectiveness of pre-task safety planning.

## B. General

1. The Safe Behavior Observation process enables trained personnel to observe workers to identify safe and “at-risk” behavior; discuss the observations with the crew and receive feedback from the workers about the observation. The observation process allows an observer to view a job without being involved in it. **The observer is not there to "catch" anyone doing something wrong, but simply to watch, listen, and provide feedback.** Observations are systematic and standardized to sample behavior, not individuals.
2. The program is non-disciplinary in nature. No one is singled out and the names of those observed are not entered on the SBO form. Each observer is responsible for implementing corrective action with respect to “at-risk” behaviors and conditions that they observe during the SBO activity.

## C. Conducting Quality Observations

1. It is important that each observer fully understands the Safe Behavior Observation process and be prepared to use it effectively. Some observation tips:
  - a. Be able to explain the program
  - b. Have prior knowledge of the job being observed
  - c. Treat workers with respect; do not preach or lecture,, avoid arguments
  - d. Show the crew members the SBO form
  - e. Focus on behaviors, tasks, and specific actions
  - f. Focus on the positive aspect of what the crew is doing, then discuss improvements
  - g. If a work process is not understood by the observer, ask the crew to explain it
  - h. Write any comments on the SBO form that crew members discuss
  - i. If a worker is performing an “at-risk” behavior or if an unsafe condition is observed, address the situation with the worker and immediate supervisor to ensure prompt corrective action
2. Obstacles to Safe Behavior
  - a. Most individuals work “at-risk” because there is some type of obstacle in their way. An obstacle may be lack of proper tools, equipment, or knowledge. Perhaps the employee has

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learned to do it that way and feels that his or her safety is not “at-risk”. An observer can do the following:

- i. Discover the obstacles preventing the employee from working safely.
- ii. Discuss with the employee ways to eliminate the obstacle
- iii. "Sell" the philosophy that there is value in doing the job safely
- iv. Record the observation and obstacle on the SBO form for management review.

#### **D. Documentation and Report**

- a. Observers shall return all completed Safe Behavior Observation cards to the manager or designated safety representative for review
2. Behaviors and/or Conditions
  - a. Eye/Face PPE
    - i. Is the appropriate eye and face protection worn for the task being performed?
    - ii. Is the eye/face protection appropriate for the risk?
    - iii. Is the equipment in good condition?
    - iv. Is the equipment being worn as designed?
  - b. Foot PPE
    - i. Is the appropriate foot protection worn for the job?
    - ii. Is the foot protection appropriate for the risk?
    - iii. Is the foot protection in good condition?
    - iv. Is the foot protection worn correctly and as designed?
  - c. Hand/Arm PPE
    - i. Is the appropriate hand protection worn for the task being performed?
    - ii. Are the gloves in good condition?
    - iii. Is arm protection appropriate for the task being performed?
  - d. Head PPE
    - i. Is the appropriate head protection worn for the task being performed?
    - ii. Is the head protection in good condition?
    - iii. Is it being worn as designed?
  - e. Hearing PPE
    - i. Is hearing protection worn in high noise areas?
    - ii. Is hearing protection appropriate for the risk?
    - iii. Is the equipment in good condition and clean?
    - iv. Is the equipment worn correctly and as designed?
  - f. Respiratory PPE

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- i. Is the appropriate respiratory protection worn for the job?
  - ii. Are the respirators appropriate for the risk?
  - iii. Is the equipment in good condition and worn as designed?
  - iv. Is the worker properly trained in the use of respiratory protection equipment?
  - v. Has the worker been medically qualified to use a respirator?
  - vi. Is the worker clean-shaven if using a respirator?
- g. Fall Protection PPE
  - i. Is a body harness worn when work is done over 6 feet in height?
  - ii. Is the lanyard properly attached to a secure anchorage?
  - iii. Is the harness and lanyard in good condition?
  - iv. Does the harness fit correctly?
  - v. Has the worker been trained on the proper use of fall protection equipment?
  - vi. Have the body harness and lanyard been inspected within the last month?
- h. Mobile Equipment
  - i. Has the proper mobile equipment been selected for the job?
  - ii. Is the mobile equipment in good working order and free from obvious defects?
  - iii. Is the mobile equipment free of non-approved modifications?
  - iv. Is the worker operating the mobile equipment qualified?
  - v. Is the mobile equipment used as it was designed?
  - vi. Has the mobile equipment been inspected prior to use?
- i. Electrical/GFCI
  - i. Are all cord sets and electrical tools used protected by GFCI's?
  - ii. Are all electrical cords in good condition and free of any damage to the insulation.
  - iii. Is the ground prong firmly attached?
  - iv. Is the lighting in the area sufficient to safely perform the task?
- j. Lockout/Tagout (LOTO)
  - i. Is the equipment worked on in an energy-free state?
  - ii. Is the source of electrical energy isolated and locked out when working on electrical equipment?
  - iii. Is the source of pressurized fluids and gases isolated, locked out, and lines depressurized before opening lines?
  - iv. Has a lock and tag been placed on all energy isolating points?
  - v. Has the system been rendered and verified inoperable and appropriately locked and tagged?

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- vi. Has the system been mechanically tested prior to commencing work?
- vii. Have all affected employees performing work under lockout/tagout been trained?
- k. Work Permits
  - i. Have the appropriate work permits been obtained for the task?
  - ii. Does the work permit contain all required signatures?
  - iii. Is the crew following all permit requirements?
  - iv. Are work permits readily available for review?
- l. Excavations
  - i. Is the excavation inspected daily by a competent person?
  - ii. Is sloping or shoring adequate?
  - iii. Is proper access provided?
  - iv. Is this a confined space?
  - v. Is the excavation properly barricaded?
  - vi. Are spoils at least two feet from edge?
  - vii. Is the excavation free of standing water?
- m. Manual Lifting
  - i. Does the worker use the legs and keep the back straight?
  - ii. Is the worker bending at the knees?
  - iii. Is the load held close to the body?
  - iv. Is the weight of the load known?
  - v. Is the load too heavy to lift without assistance?
- n. Ladders
  - i. Is the right ladder for the task used?
  - ii. Is the ladder in good conditions and free of defects?
  - iii. Is the ladder being used properly?
  - iv. Are straight ladders secured?
  - v. Do ladders used for access extend at least three feet above the landing?
  - vi. Are stepladders fully extended and locked into position?
- o. Scaffolds
  - i. Is the scaffold erected by a competent person?
  - ii. Is it inspected daily by a competent person?
  - iii. Is proper access provided?
  - iv. Are guardrails and toe-boards in place?
  - v. Is it tagged?
- p. Body Positioning
  - i. Does the worker place all parts of their body so that it will not be contacted, sprayed, or struck by an energy release of any

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kind?

- ii. Does the worker keep body parts and clothing away from moving or stationary parts that are closing or may close together?
- iii. Does the worker avoid placing their hands into blind areas?
- iv. Does the worker keep his or her eyes on the task and avoid distractions?

q. Aerial Lifts

- i. Are all aerial lifts used (boom and scissors) inspected prior to use?
- ii. Has the employee been trained and is verification of training on file?
- iii. Are workers using aerial lifts using a body harness and lanyard?
- iv. Are workers avoiding possible pinch points?
- v. Are surface conditions in the immediate area safe for aerial lift use?
- vi. Is the aerial lift load including workers and materials within load capacity?
- vii. Do workers remain on the platform floor during use?

r. Barricading

- i. Are barricades and warnings in place to prevent entry into temporary hazards?
- ii. Are barricades around permanent hazards effective and maintained in good condition?
- iii. Is the proper type of barricade used?
- iv. Does barricading include the name and company of the individual responsible?
- v. Is the correct color of barricade tape used to protect personnel from the hazard present?

s. Slip/Trip/Fall

- i. Is the surface from which the worker is performing a task stable, level, solid, and provide good traction?
- ii. Does the worker use the walkway provided for access to the work area and avoid short cuts, uneven, or slippery surfaces?
- iii. Is the walkway and work area free of cords and hoses?

t. Rigging

- i. Is rigging in good condition?
- ii. Is rigging appropriate for the load to be lifted?
- iii. Has a documented inspection of all rigging been conducted within the last month?

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u. Confined Space

- i. Has the confined space been prepared for entry according to the Confined Space Entry Permit?
- ii. Is the permit posted at the confined space?
- iii. Has the atmosphere been tested?
- iv. Is the worker wearing appropriate PPE?
- v. Is entry/rescue equipment present and in good working condition?
- vi. Is the confined space attendant in place at the point of entry and in communication with entrants and emergency personnel?
- vii. Has everyone involved in the entry been properly trained?

v. Tools in Use

- i. Has the worker selected the proper tool for the task?
- ii. Are hand tools clean and free of obvious defects and in good working order with no damage?
- iii. Are hand tools free of non-approved modifications?
- iv. Is the worker using the tool as it was designed to be used?
- v. Are fire extinguishers available if required?

w. Housekeeping

- i. Is the work area free of debris and loose objects?
- ii. Does the worker maintain the workspace in a neat and orderly condition?
- iii. Does the worker place equipment, tools, supplies, and materials to avoid creating clutter or obstructions in the work area?
- iv. Does the worker clean and organize the work area before departing?

3. Pre Task Planning (PTP) Audit

a. Good PTP

- i. Does the completed PTP effectively address the hazards associated with the task being performed?
- ii. Have all sections of the PTP been completed?

b. Inadequate PTP

- i. Have significant hazards been overlooked and not identified and addressed in the PTP?
- ii. Are there some sections of the PTP that have not been completed?
- iii. Is this PTP appropriate for the task being performed?

c. No PTP

- i. Did the foreman and crew fail to complete a PTP for this task?



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- d. PTP Not Audited
  - i. Was the PTP not reviewed during this observation?
- e. Work Area Evaluation Completed
  - i. Is the Evaluating Your Work Area section of the PTP completed?
  - ii. Do the Yes or No responses correspond with the nature of the task being performed?
- f. Potential Hazard Checklist Completed
  - i. Is the Potential Hazard Checklist section of the PTP completed?
  - ii. Do the potential hazards checked correspond to the hazards present for this task?
- g. Required PPE Listed
  - i. Has all required PPE for the task identified in this section?
- h. Steps to Complete Task Identified
  - i. Are the major work steps listed in this section?
  - ii. Are any significant work steps not listed?
- i. Hazards for Steps Identified
  - i. Has the foreman listed all significant hazards in this section?
  - ii. Do they correspond with the work step breakdown?
- j. Identified Hazards Adequately Mitigated
  - i. Has the foreman listed the required actions to eliminate or control the hazards that have been identified?
  - ii. Can you think of any other actions that the foreman and crew can take to safely execute the assigned task?
- k. Appropriately Signed
  - i. Has the PTP been signed by all members of the work crew?
- l. PTP is Posted
  - i. Is the completed PTP posted in the work area?
  - ii. Did you have any difficulty in locating the PTP?
- m. PTP is Followed
  - i. Is the crew performing the task in accordance with the PTP?
  - ii. Does the PTP need to be revised to address any hazards not identified during its development?
- 4. List "at-risk" Behaviors Observed/Other Comments
  - a. Provide additional detail on all "at-risk behaviors or PTP deficiencies observed.
  - b. Include positive comments that are warranted.

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## E. Forms

### 1. Safe Behavior Observation Card

#### Safe Behavior Observation Card

<b>Observer's Name:</b>		<b>Time &amp; Date:</b>	
<b>Project Name:</b>			
<b>Location of Work</b>			

*Place a checkmark next to "At Risk" Behaviors and/or Conditions*

At Risk	Behavior or Condition	Please Describe "At Risk" Behavior/Condition:
<input type="checkbox"/>	PPE in use for task	
<input type="checkbox"/>	Mobile Equipment	
<input type="checkbox"/>	Electrical	
<input type="checkbox"/>	Lockout/Tagout	
<input type="checkbox"/>	Work Permits	
<input type="checkbox"/>	Excavations	
<input type="checkbox"/>	Manual Lifting	
<input type="checkbox"/>	Ladders	
<input type="checkbox"/>	Scaffolding	
<input type="checkbox"/>	Body Positioning	

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<input type="checkbox"/>	Aerial Lifts	
<input type="checkbox"/>	Barricading	
<input type="checkbox"/>	Slips/Trips/Falls	
<input type="checkbox"/>	Rigging	
<input type="checkbox"/>	Crane Operations	
<input type="checkbox"/>	Confined Spaces	
<input type="checkbox"/>	Tooling	
<input type="checkbox"/>	Housekeeping	
<input type="checkbox"/>	Pre-Task Planning	

☐ Follow-Up Required

**Potential Severity (if applicable):** ☐ Serious ☐ Minor ☐ Minimal ☐ Ergonomic

#### Significant Aspects of Observation and Discussion with Employees

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**Observer Signature:**

**Supervisor Signature:**

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Gas Hazard Awareness			Page 243 of 292

## A. Purpose

The purpose of this procedure is to provide requirements, guidelines, training and detection equipment to protect employees from the hazards associated with gas. Note: This procedure is associated and incorporates the Voluntary Respiratory Protection of this Accident Prevention Program. All City employees shall comply fully with the requirements for gas awareness as outlined below.

## B. Definitions

- *Action Level*- Level of exposure to a harmful substance (present in a work environment or situation) at which an employer must take the required precautions to protect the workers. This is normally one half of the permissible exposure limit.
- *Bump Test*- A brief exposure of the monitor to gas in order to verify that the sensors respond and the instrument alarms function accordingly.
- *Calibration*- Exposing the monitor to a certified concentration of gas for a particular time to verify that it provides an accurate reading.
- *Permissible Exposure Limit (PEL)* - The legal limit in the US by which an employee may be exposed to a chemical substance or physical agent such as noise. These limits are established by the Washington State Department of Labor and Industries, Division of Occupational Safety and Health and the Occupational Safety & Health Administration.
- *Safety Data Sheets (SDS)* - A technical document that provides detailed and comprehensive information on a controlled product including information relating to health effects of exposure, hazard evaluation, measures to protect workers and emergency procedures.
- *Short-Term Exposure Limit (STEL)* - Maximum permissible concentration of a substance (expressed usually in parts per million or ppm) in air for a defined short period (typically 5 minutes).

## C. Responsibilities

1. Public Works Operations Manager
  - a. Monitor compliance with this program, Chapter 296-841 WAC Safety Standards for Airborne Contaminants WAC, and 296-24-680 WAC,

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Welding, Cutting and Brazing and the OSHA Standard, 29 CFR 1910.134 Respiratory Protection and 1910.101 Compressed Gases, general requirements.

- b. Provide general gas safety training and ensure employees with potential exposure receive the appropriate training prior to being assigned to the exposure area.
- c. Arrange for immediate emergency response, if necessary, for spills, injuries and overexposures.
- d. Conduct exposure assessments and evaluate exposure control measures as necessary.
- e. Investigate all accidents, incidents and / or near misses.
- f. Coordinate the provision of medical exams, monitoring exposure and maintain employee exposure records.
- g. Maintain an SDS file for the gas product(s) in use and all other hazardous chemicals in the work area.

## 2. Employees

- a. Know the provisions of the gas awareness program.
- b. Report accidents, possible overexposures or unsafe conditions to your supervisor.
- c. Wear Personal Protective Equipment and use engineering controls where recommended.

## D. Contingency Plan Awareness

1. City management shall ensure that all employees are aware of the City's contingency plan provisions, including but not limited to knowledge of evacuation routes and alarms. All affected City employees shall participate in emergency evacuation drills and practice rescue procedures

## E. Employee Exposure Assessment

1. Whenever gases are in our work area, the City will monitor the air to determine employee exposures. Measurements of employee

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exposures will be representative of a full shift or STEL, and will be taken for each job classification in each work area.

2. If employee exposures are found to be at or above the action level but below the PEL, the City will repeat air monitoring annually for those spaces routinely exposed to gases.
3. If exposures are above the PEL, air monitoring will be conducted every month for the duration of the job. If exposures are above the STEL, air monitoring will be conducted at least once per year. Monitoring will continue until the exposures can be reduced below these levels by engineering or administrative controls.
4. Air monitoring will be conducted promptly in a work area if employees are experiencing signs or symptoms of exposure. Air monitoring will be repeated in an area each time there is a change in equipment, processes or controls which may result in additional exposure to gases.

#### **F. Gas Hazard Monitoring Equipment**

1. Each employee shall use a portable gas monitor as required in all high gas or potentially high hazard areas.
2. The gas monitor(s) must be calibrated prior to each use in accordance with the manufacturer's recommendations and contain a current calibration sticker on the monitor providing the previous calibration date.
3. Bump Testing should be completed at the beginning of each day that each monitor is in use. The Bump Test is utilized to establish that the monitor is functioning in accordance with the manufacturer's specifications.

#### **G. Use, Maintenance and Care of Gas Monitors**

1. City employees shall only utilize gas monitors issued by the City. Personal monitors are not allowed.
2. Personal Gas monitor(s) shall be located on the outside of all clothing.
3. Employee(s) shall check calibration date prior to conducting a Bump Test. If the calibration date has passed, the monitor shall not be used

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and turned into your immediate supervisor immediately.

4. When there are multiple work shifts, a bump test shall be performed by each shift prior to utilizing the monitor.
5. Avoid physical or sensor damage, monitors are sensitive equipment; report any monitor that does not appear to be functioning as expected.

## **H. Hygiene**

1. To prevent the accidental ingestion of gases; eating, drinking and smoking are prohibited in areas where gases are used. In addition, employees must wash their hands before eating, drinking and smoking.

## **I. Employee Information and Training**

1. Every employee working around potential gas must receive training on its hazards. Supervisors should review this information with employees before their initial assignment, annually and when conditions change at the work location. This information contains the following:
  - a. Gas Hazards – Characteristics of gases, including oxygen deficiency, oxygen or nitrogen enrichment, carbon monoxide and hydrogen sulfide
  - b. Gas Alarms – type and location of alarm stations
  - c. Contents of the Safety Data Sheets (SDS)
  - d. Gas Monitoring Equipment – Portable and Fixed detection systems
  - e. Evacuation Procedures – Site / location specific
  - f. Staging Areas – Primary and secondary
  - g. Personnel rescue plan, plant Emergency Response Team (ERT)
  - h. Instructions for emergency procedures
  - i. Description of the health hazards associated with exposure

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- j. Signs and Symptoms of exposure
  - k. Description of the operations in the work area (building) where specific gases are present and of concern
  - l. Work practices to reduce exposure, including engineering and administrative controls and personal protective equipment required; use and care of Self Contained Breathing Apparatus (SCBA) emergency procedures as applicable
2. This training must be conducted whenever a new hazard is introduced into the work area, when the employee transfers to another job, and whenever the employee demonstrates behavior that indicates a lack of understanding of the safety requirements when working in areas where gases are present.
  3. All training must be documented by the individual presenting the training session and a copy of the training records will be kept on file in Human Resources and be available for review.



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Fatigue Management			Page 248 of 292

## A. Purpose

The purpose of this procedure is to ensure that all City of Port Townsend employees recognize the effects of fatigue as related to safely being able to perform work and reduce or eliminate the potential of accidents, incidents and/or near miss events caused by fatigue. All City employees shall comply fully with the requirements for Heat Prevention as outlined below.

## B. Definitions

1. *Fatigue*- the state of being exhausted. It may be caused by long hours of sedentary work, long hours of physical or mental activity, inadequate rest, excessive stress, or a combination of these factors.
  - a. The signs, symptoms and affect fatigue has on individual adults may vary from person to person; fatigue may affect the individual worker's ability to perform mental and physical tasks, including driving and working with tools & equipment.
  - b. The results of fatigue may lead to any or all of the following hazardous conditions effects or behaviors:
    - i. Decreases alertness and watchfulness
    - ii. Inability to see properly
    - iii. Slower reflexes and reactions
    - iv. Micro sleep – up to sixty seconds where the brain goes to sleep and the person blacks out no matter what they are doing
    - v. Automatic behavior – where a person does routine tasks but is not having any conscious thoughts
    - vi. Inability to make a good decision or plan
    - vii. Inability to concentrate, including wandering thoughts
    - viii. Inability to remember things that have just been completed, seen or heard
    - ix. Inability to notice things a person would usually notice

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- x. Inability to respond quickly or correctly to changes
- xi. Inability to communicate effectively or handle stressful situations
- xii. Poor logic and judgment, including taking risks that the person would not usually take
- xiii. Mood changes – depressed, irritable, impatient or bored

### C. Responsibilities

#### 1. Supervisors

- a. Relay fatigue management information to staff.
- b. Be aware of the possible risks associated with extended hours and/or consecutive work days. When practical, use short-term help to minimize the need for extended hours work.
- c. Recognize individual and crew fatigue; report any fatigue management problems, issues or concerns.
- d. Assess and control hazards and risks and take prompt actions when risks develop.
- e. Account for workers returning from sickness, absences and/or modified work days and consider any factors that may affect a worker's ability to maintain an extended work schedule.
- f. Ensure workers take rest breaks.

#### 2. Employees

- a. Recognize symptoms of fatigue and promptly report any fatigue related concerns to your immediate supervisor.
- b. Take breaks during work and get proper rest during time off
- c. Rotate and perform various functions of short duration during extended hours as directed by your supervisor.

#### 3. Human Resources

- a. Provide information to employees about the fatigue management.

### D. Program Procedure

- 1. *Identification* - all employees must be identified who are required to work where an extended hours and/or consecutive work days schedule may be in effect.
- 2. *Training*- all potentially impacted employees and their supervisors working where extended hours and/or consecutive work days scheduled may be in effect. *Work Analysis* – management may conduct analysis of

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each individual work task / assignment to control fatigue utilizing: weather, time of day, temperature, crew size, repetitive functions or type of work, length and frequency of breaks, duration and extent, hours of consecutive work; days off, and other applicable factors.

3. *Mitigation Measures*– whenever possible ensure sufficient resources of personnel, equipment and support are available; set work hour limitations and control job rotation. *Personal Protective Equipment (PPE)* - select personal protective equipment (PPE) appropriate to the conditions that exist including weather and environment and limit the duration of the tasks requiring PPE that may affect the performance or that places additional physical demands on the workers.
4. *Ergonomics* - Utilize ergonomic equipment and proper lighting for repetitive tasks; control temperature if possible and develop a worker rotation similar to a manufacturing environment.
5. *Staff/Work Balance* – utilize optimum scheduling whenever possible to execute work schedules that allow for effective fatigue risk management.

#### **E. Factors the May Influence Fatigue**

1. Medication, over the counter and/or prescription drugs may affect a worker's fatigue factor.

#### **F. Training**

1. City employees that may be potentially impacted will be trained to recognize the dangers of fatigue issues in the workplace. Supervisors should review this information with employees before their initial assignment, and when schedule conditions change at the work location.

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Asbestos Awareness			Page 251 of 292

## A. Purpose

The purpose of this procedure is to establish the requirements for asbestos exposure protection for employees of the City of Port Townsend and to inform City employees about possible and associated hazards. This document has been established to ensure the health and safety of employees who may encounter asbestos-containing-materials (ACM) in their work environment and who may be required to work with or around these materials and shall apply to all City projects where the presence of asbestos containing materials is known or suspected and where Employees may encounter these substances as part of their work activities.

## B. Definitions

1. *Amended Water (Wetting Agent)* - Water to which a surfactant has been added to increase the ability of the liquid to coat, penetrate and stick to ACM.
2. *Asbestos*- Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos and any of these minerals that has been chemically treated and/or altered. For purposes of this policy, "asbestos" includes PACM listed below.
3. *Asbestos Containing Material (ACM)* - any material containing more than 1% asbestos.
4. *Asbestos Work*- Any work with ACM as defined/covered by Asbestos Work Classes I through IV below.
5. *Asbestos Work Classes*- OSHA divides ACM work into four classes as follows:
  - a. Class I - Activities involving the removal of thermal system insulation (TSI) and surfacing asbestos containing materials or presumed asbestos-containing materials (PACM).
  - b. Class II - Activities involving removal of asbestos-containing material which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos containing wall board, floor tile and sheeting, roofing and siding shingles, construction mastics, gaskets and leak sealant materials.

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- c. Class III - Repair and maintenance operations where ACM including thermal system insulation and surfacing material is likely to be disturbed.
  - d. Class IV - Maintenance and custodial activities during which employees contact ACM and PACM and activities to clean-up waste and debris.
- 6. *Bulk Sample*- A process of collecting samples of materials to be sent to a laboratory for analysis to determine whether or not the material contains asbestos, and if so, what types and percentages.
- 7. *Competent Person*- One who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, and who has the authority to take prompt corrective measures.
- 8. *Excursion Limit*- 1.0 fibers per cubic centimeter (1.0 f/cc) averaged over a 30 minute period. This is the maximum concentration of airborne asbestos an employee may be exposed to during any 30 minute period during a work shift without the use of protective measures such as respirators or protective clothing.
- 9. *Exposure Assessment*- Air monitoring done to determine employee exposure to airborne asbestos, which is compared to the PEL and Excursion Limit.
- 10. *High Efficiency Particulate Air (HEPA or P100) Filter*- A filter capable of trapping and retaining at least 99.97 of all single dispensed particles of 0.3 micrometers in diameter.
- 11. *Negative Exposure Assessment*- A demonstration by the employer that employee exposure during an activity is expected to be consistently below the PEL.
- 12. *Permissible Exposure Limit (PEL)*- 0.1 fibers per cubic centimeter (0.1 f/cc) Time weighted average (TWA) for an eight hour period. The maximum concentration of airborne asbestos an employee may be exposed to during an 8 hour work shift without the use of protective measures such as respirators or protective clothing.
- 13. *Presumed Asbestos Containing Material (PACM)*- Materials suspected of containing asbestos that have not been positively identified as not

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containing asbestos. These are normally sprayed or troweled on materials in buildings and facilities constructed prior to 1980. These materials must be treated as asbestos containing material until they are determined to not contain asbestos.

14. *Regulated Area*- an area established to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulates; and any work area which exceeds, or where there is a reasonable possibility to exceed the Permissible Exposure Limit.
15. *Surfacing Materials*- asbestos containing material sprayed or troweled on surfaces (walls, ceilings, structural members) for acoustical, decorative or fireproofing purposes.
16. *Thermal System Insulation (TSI)*- *Insulation used to inhibit heat transfer or prevent condensation on pipes, boilers, tanks, ducts, and various other components of hot. This includes pipe lagging, pipe wrap, block, batt and blanket insulation, cements and "muds" and a variety of other products.*
17. *Wetting Agent*- See "Amended Water" in this Section

### **C. Responsibilities**

#### *1. Management*

City Management is responsible for ensuring compliance with this procedure and that all site specific asbestos hazards have been properly addressed and effectively communicated to all Employees assigned to the site.

#### *2. Supervisor*

City Supervisors responsible for Employees performing work covered by the City's Asbestos Exposure Protection guideline must:

- a. Ensure Employees are properly trained on the applicable contents of this procedure and any site specific asbestos programs.
- b. Ensure Employees are trained in the recognition of asbestos containing materials and the method and means to protect themselves from these hazards.

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- c. Continuously monitor the work to assure compliance with this procedure and any site asbestos program requirements.
- d. Confirm each job is properly prepared and that Employees are aware of any asbestos hazards that may be encountered as part of their work or as a result of someone else's work in the area.

### 3. *Employee*

City Employees who may encounter asbestos-containing-materials (ACM) in their work environment and who may be required to work with or around these materials must know the hazards associated with asbestos and ensure these hazards are properly addressed according to training received. Such Employees are responsible for implementing the safe work procedures contained in this procedure.

### 4. *Competent Person*

- a. A Competent Person must be assigned to supervise all asbestos work (abatement projects and maintenance/construction activity) performed by City Employees.
- b. The Competent Person must ensure the job is conducted in compliance with this guideline and applicable OSHA regulations; 1926.1101 and 1910.1001.
- c. At a minimum, the Competent Person must:
  - Review the job for compliance issues, and assist Management in developing site specific asbestos plans/procedures.
  - Perform Exposure Assessments (air monitoring).
  - Perform jobsite inspections as required by OSHA to monitor job compliance and respond to any Employee questions/requests.

## **D. Program Procedures**

All City employees engaged in operations or activities where asbestos containing materials may be encountered shall receive the proper procedures, training, and equipment necessary to protect themselves from harmful exposure to these materials.

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#### **E. Exposure Assessments and Permissible Exposure Limits**

1. Each workplace or job task with asbestos work must perform exposure assessments (air monitoring) to accurately determine airborne concentrations of asbestos to which Employees are exposed.
2. A designated Competent Person will perform the initial and subsequent daily monitoring as required by Chapter 296-62-077 WAC, and OSHA 29 CFR 1926.11011.
3. Representative exposure assessments of each Employee shall be made.
4. The results of exposure assessments shall be made on the basis of representative 8 hour time weighted averaging (TWA).
5. The results of exposure assessments shall be maintained with the Employees medical records for retention purposes.
6. All Employees who participated in personal exposure assessment monitoring will be notified of the results upon receipt, regardless of the fiber count.
7. Chapter 296-62-07705 WAC, and OSHA 29 CFR 1926.1101 establishes two exposure limits for employees whose work involves asbestos containing materials:
8. Permissible Exposure Limit (PEL): 0.1 Fibers per cubic centimeter (0.1 f/cc) averaged over and eight (8) hour day. This is the maximum concentration of airborne asbestos an employee may be exposed to during and 8 hour work shift without the use of protective measures such as respirators or protective clothing.
9. Excursion limit: 1.0 f/cc averaged over a 30 minute period. This is the maximum concentration of airborne asbestos an employee may be exposed to during any 30 minute period during a work shift without the use of protective measures such as respirators or protective clothing.
10. A documented assessment of the expected level of asbestos exposure must be conducted by a Competent Person for each asbestos job to be undertaken. This would include even short duration jobs such as the removal of an intact asbestos gasket.

#### **F. Training**



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1. Training is required for City employees prior to initial assignment and annually thereafter for Employees engaged in asbestos work activity, or who may encounter asbestos containing materials as part of their routine work activities.
2. Initial training for asbestos workers will consist of an EPA accredited course appropriate for the class of work being performed; or conform with the policy set below for Class IV, and special cases of Class II work activities:
3. Class I and Class II\* workers: 32 hours training
4. Class II: Training may only be 8 hours, or equivalent in length with part of that being hands-on training if the employee will remove only one type of Class II material. (See section 7.3\*\* below for additional requirements.)\*
5. Class III: 16 hours training
6. Class IV: Training must be 2 hours in length. Process Safety Management Training may be used for this purpose, provided job/site specific procedures and protective measures are added to the training and covered as part of the instruction.
7. Competent Persons at a minimum must take the 40 hour EPA accredited course for asbestos supervisors, and can only be designated as such by Management and Human Resources.
8. Awareness level training consisting of a Process Safety Management Training Course must be completed by all Employees who may encounter asbestos containing materials as part of their work activities.
9. Records of all training and copies of medical examination results must be maintained as part of the Employee's file.

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## A. Purpose

This document establishes the requirements for lead exposure protection for City personnel and notification of City employees about possible lead-related hazards in their work areas. It applies to all City employees who perform construction or maintenance work where the employee may be occupationally exposed to lead. The intent of this procedure is to comply with Chapter 296-62-07521 WAC.

## B. Definitions

1. *Project* - is used in its broadest sense and includes all land, property, building, structures, installations, employee lockers, cars, trucks and all other equipment being utilized for Project business.
2. *Action Level* - means Employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30ug/m<sup>3</sup>) calculated as an 8-hour time-weighted average (TWA).
3. *Competent Person* - means one who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.
4. *Lead* - means metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.
5. *Permissible Exposure Limit* - an airborne concentration of lead at concentrations greater than fifty micrograms per cubic meter of air (50ug/m<sup>3</sup>) averaged over an 8-hour period.
6. *Prophylactic Chelation* - Giving a person an agent (normally containing a calcium derivative, such as milk) to aid one's body in expelling metals as a treatment or preventive measure against the effects of "metal poisoning", such as lead.

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### C. Responsibilities

#### Management:

1. If lead is present in any quantities in locations where City employees may be expected to enter, the Manager is responsible for ensuring that an initial determination is completed on whether any employee's exposure to lead exceeds the action level of 30 µg/m<sup>3</sup>.
2. Whenever the results indicate that the representative employee exposure, without regard to respirators, is at or above the PEL, the Manager shall include, in the written notice, a statement that the employee's exposure was at or above the PEL and a description of the corrective action taken or to be taken to reduce the exposure to or below that level.
3. All Medical Surveillance Programs must be in accordance with CFR 1926.62. Human Resources shall be notified by the Manager when any Employee is placed on medical surveillance.
4. The Manager shall not order prophylactic chelation for any employee. If chelation is used, it must be supervised by a licensed physician in a clinical setting.
5. The Manager must notify Human Resources when an employee is put under temporary medical removal protection.

#### Supervisor Responsibilities

1. City Supervisors responsible for employees performing work covered by the City Lead guideline must:
  - a. Confirm each job has been properly evaluated for lead hazards, and that these hazards have been properly eliminated or controlled.
  - b. Ensure employees are aware of any hazards associated with their work.
  - c. Continuously monitor the work to assure compliance with this guideline.

#### Employee Responsibilities

1. City employees performing work tasks covered by this Lead guideline must:
  - a. Comply with the provisions of this guideline as per training and instructions received.

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b. Wear the required personal protective equipment.

#### **D. Program Requirements**

1. All City employees shall be protected against exposure to lead hazards in the workplace.
2. Exposure to lead occurs in at least 120 different occupations, including lead smelting, battery manufacturing, lead pigment manufacturing and use, solder manufacturing and use, and many others.
3. The primary source for exposure on construction and maintenance work sites would be lead base paint, and the removal of this paint from existing piping and structures.
4. The purpose of this document is to provide those employees, who may be exposed to airborne lead, with the proper safety guidelines to avoid any hazards associated with airborne lead.
5. Occupational exposure to lead includes all of the following operations:
  - Demolition or salvage
  - Construction, alteration, repair or renovation
  - Installation of products containing lead
  - Painting and decorating
  - Maintenance operations

#### **E. Guidelines**

1. Interim Requirements
  - a. This section provides specific requirements for protecting employees from possible lead exposure. During the interim period, while the assessment is being done, it must be assumed the exposure levels are consistent with the levels stated in this guideline.
  - b. Interim protective measures that are required, pending completion of the employee monitoring shall include:
    - Respiratory Protection
    - Protective Clothing and Equipment
    - Hygiene Facilities
    - Biological Monitoring
  - c. The following tasks are affected by the interim requirements and the specific work practices listed below:
    - Abrasive blasting on painted surfaces
    - Clean-up of abrasive blast material

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- Welding, grinding, sanding, needle gun or cold cutting on painted surfaces
- Work on lead-based metals
- Carpentry work on material coated with lead base paint

d. The following specific work procedures must be followed until it is established by either exposure monitoring, previous exposure monitoring done within 12 months, or objective data, that the exposure levels generated are below the action level.

- Analysis to determine activities involving lead base paints
- All employees involved with the task must have received the City Lead Awareness Training Course.

e. Exposure Prevention Training Course. See Section: Training.

- Exposure Assessment and Air Monitoring.
- Create a project specific written compliance plan.
- Provide change rooms, hand washing facilities and showers (if feasible) for all employees involved with the task.
- Install barricade with the appropriate signs around all work areas. Evaluate the need for a full or partial enclosure.
- Conduct biological monitoring on all Employees working within the barricaded area.
- Place employees into the medical surveillance program once they reach thirty (30) days of possible exposure within 12 consecutive months.

## 2. Lead Identification

- a. According to the Lead Paint Act of 1971 a paint is defined as lead containing if it contains more than 0.06% lead by weight. This level was established for consumer use, however it is the most commonly used threshold for establishing if industrial paint should be considered lead containing.
- b. Even though the most common colors associated with lead containing pigments is orange or red, lead can be present in all different colors of pigment. Laboratory testing is the only way to positively determine if a paint in question contains lead.

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- c. Positive identification of lead containing paint should be made prior to any work being done that may cause airborne concentrations of lead. If a positive identification cannot be accomplished it must be assumed it contains lead and take the necessary precautions.

### 3. Health Hazards

- a. Lead can be absorbed into the body by inhalation and ingestion. Lead compounds covered by this guideline cannot be absorbed through the skin. If exposure to lead above the PEL continues without the proper protective equipment, the amount of lead stored in the body will increase because one is absorbing more lead than the body is able to excrete.
- b. Short-term (acute) overexposure to extremely high doses of lead may lead to acute encephalopathy. Encephalopathy is a condition affecting the brain that develops quickly into seizures, coma and possibly death from cardiorespiratory arrest. Prior to developing encephalopathy, Employees may experience abdominal pain. Short term occupational exposures of this magnitude are highly unusual.
- c. Long-term (chronic) over exposure to lead may result in severe damage to the blood forming, nervous, urinary and reproductive systems.
- d. Common symptoms of chronic over-exposure include loss of appetite, anxiety, constipation, nausea, headache, muscle and joint pain, nervous irritability, numbness, dizziness, and the presence of a lead line on the gums.
- e. If an employee is showing symptoms that may be attributable to lead exposure they must be enrolled in the Medical Surveillance Plan.

### 4. Allowable Levels of Exposure

- a. The action level established by OSHA is at  $30 \mu\text{g}/\text{m}^3$ , calculated as an 8 hour Time Weighted Average (TWA). This action level must be observed even if respirator protection is provided to Employees.
- b. The Permissible Exposure Limit (PEL) is established at  $50 \mu\text{g}/\text{m}^3$ . No employee shall be exposed to lead at concentrations above the PEL averaged over an 8 hour period.

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- c. If an employee works more than 8 hours in one day, the PEL shall be reduced according to the following formula.
- d. Allowable Employee Exposure ( $\mu\text{g}/\text{m}^3$ ) =  $400 \text{ Number of hours worked}$

#### 5. Exposure Assessment

- a. If lead is present in any quantities, where our employees may be expected to enter, the Manager is responsible for assuring that an initial determination is completed on whether any employee's exposure to lead exceeds the action level of  $30 \mu\text{g}/\text{m}^3$ .
- b. This initial determination must include instrument monitoring of employee's exposures unless there is objective data, done within the last twelve (12) months, which can demonstrate conclusively that no employee will be exposed to lead in excess of the action level.
- c. If objective data is used to determine the amount of exposure, the Safety Department must be notified as to the contents of the objective data. This data must be maintained for at least 30 years.
- d. The exposure assessment must represent the employee exposure which would occur without the use of a respirator.

#### 6. Exposure Monitoring

- a. When using exposure monitoring to complete the exposure assessment, the instrument monitoring must be done for a full shift (at least 7 hours). The monitoring must be performed for each job classification in the work area, and the samples must be representative of the employee's regular daily exposure to lead.
- b. The initial monitoring can be accomplished by representative sampling of the employees who are reasonably believed to be exposed to the greatest concentrations of lead.
- c. If initial monitoring results are below the action level of  $30 \mu\text{g}/\text{m}^3$ , the results must be well documented and the measurements typically do not have to be repeated, unless the nature of the operation changes.

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- d. When exposure levels from monitoring are higher than 30  $\mu\text{g}/\text{m}^3$ , but less than 50  $\mu\text{g}/\text{m}^3$ , an exposure monitoring program must be set up with monitoring repeated at least every six (6) months. Monitoring can be discontinued when two (2) consecutive measurements, taken at least seven (7) days apart are below the action level.
- e. When the initial monitoring reveals that the exposure is above the PEL of 50  $\mu\text{g}/\text{m}^3$ , a monitoring program must be developed that includes quarterly monitoring of affected Employees.
- f. If monitoring results indicate levels above the PEL, corrective action must be pursued (i.e., engineering controls, better abatement practices) to drop the levels of exposure two (2) consecutive measurements taken at least seven (7) days apart are below the PEL, the monitoring can be reduced to every six (6) months. If engineering controls are improved further and the two (2) consecutive measurements drop below the action level the monitoring may be discontinued.
- g. Whenever the results indicate that the representative employee exposure, without regard to respirators, is at or above the PEL, the Manager shall include, in the written notice, a statement that the Employee's exposure was at or above the PEL and a description of the corrective action taken or to be taken to reduce the exposure to or below that level.

## **F. Training**

1. All City employees must be apprised to the general hazards associated with lead in their work environments and the protective measures in place.
2. All employees working on sites where the City is performing work around lead work activities must attend the City Lead Awareness Training Course.
3. All employees exposed to airborne lead above the action level must notify management so that a determination can be made concerning the exposure. Note that the affected employee will likely be removed from the area of operations involving the lead exposure or safeguards will be provided to include comprehensive training, a means of protection and medical monitoring.



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## **A. Purpose**

The purpose of this procedure is to provide a guideline for safe lifting and manual materials handling operations at the City of Port Townsend facilities and projects.

## **B. General**

The City of Port Townsend and its employees must take effective action to prevent injuries associated with material handling at all times by utilizing a positive safety work culture of risk mitigation and control. Wherever possible, employees are encouraged to avoid the need for hazardous manual handling (so far as reasonably practicable), assess the risk of injury from hazardous manual handling that cannot be avoided, and reduce the risk of injury from hazardous manual handling (so far as it is practical).

## **C. Program Requirements**

### **1. Hazard Assessment**

Prior to conducting any manual material handling operations, a dynamic hazard assessment may be conducted considering the load, the task, the environment in which the task is to be performed and the operator. When these factors interact with each other, they can create hazards that result in injuries.

- a. A load may be hazardous because of:
  - Weight
  - Size
  - Shape (making it awkward to handle)
  - Coupling (type of grip on the load)
  - Unsecure, slippery or damaged surfaces
  - Absent or inappropriate handles
  - Imbalance (i.e. changing center of gravity)
- b. The task or method of handling may be hazardous when it involves:
  - Lifting or lowering repetitively, quickly, for extended periods of time, while seated or kneeling, immediately after prolonged flexion or shorting after periods of rest.
  - An inability to get close to the load
  - Moving the load over large distances

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- Accuracy and precision required because of either fragile loads or specific unloading locations
  - Materials positioned too low or too high
  - Hazardous movements or postures (e.g. twisting, extended bending and reaching)
  - Multiple handling requirements (e.g. lifting, carrying, unloading)
- c. Environmental factors could include
- Temperature changes
  - Precipitation, as well as relative humidity (generally beyond a 35-50% range)
  - Lighting
  - Noise
  - Time constraints
  - Physical conditions such as obstacles or floor surfaces that are slippery, uneven or damaged

## 2. Implementing Control Measures

The best control measure is to eliminate the need for workers to perform manual handling tasks. Since this is not always feasible, tasks should be designed so that they are within the worker's capabilities. Considerations should include the load itself, the design of the work station and work practices. Providing mechanical handling devices or aids is always the preferred method whenever possible and can often eliminate the task itself or ease physical demands on the worker.

- a. Task Design
- i. The load
- Reduce the weight of the load by decreasing the size of the object, weight of the container, capacity of the container or load in the container.
  - Conversely, consider increasing the weight of the load so that it may only be handled mechanically. This can be done by use of palletized loads and larger bins or containers.
- b. Work Station Design
- i. Reduce the distance over which the load has to be moved by relocating production and storage areas.
- ii. Design work stations so that workers:
- Can store and handle all material between knuckle and shoulder height; waist height is most desirable
  - Can begin and end handling material at the same height

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- Can face the load and handle materials as close to the body as possible
- Do not have to handle loads using awkward postures or an extended reach
- Do not handle loads in confined spaces that prevent them from using good body mechanics

c. Work Practices

### General Lifting Techniques

- Whether it is during leisure activities or as a part of paid work, everyone lifts, holds, carries, pushes and pulls on a daily basis. Manual material handling involves lifting light, heavy and awkward objects. Safe lifting is a critical aspect of daily activities and should be the focus of any manual material handling.
- Before you lift**, remember the following:
  - Wear supportive shoes;
  - Use lift assist devices (hand dollies, carts, lift tables, forklifts);
  - Carry all movements out horizontally (e.g., push and pull rather than lift and lower);
  - Always use your body weight and not your feet when pushing;
  - Try to have most workplace deliveries placed at hip height;
  - Always keep objects in the comfort zone (between hip and shoulder height);
  - Keep all loads close to and in front of the body;
  - Keep the back aligned while lifting;
  - Maintain the center of balance;
  - Let the legs do the actual lifting; and
  - Reduce the size of the material to keep it light, compact and safe to grasp
- Plan the Lift** prior to lifting as follows:
  - Size up the load, its weight, shape and position;
  - Determine if the load is too large, too heavy or too awkward to move alone;

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- Get help from a coworker or use a mechanical aid device to help with the lift when necessary;
- Decide on the route to take;
- Check for any problems or obstacles such as slippery or cluttered floors;
- Investigate the location where the load is going to be placed in order to anticipate any difficulties; and
- Always exercise or warm-up the back prior to lifting.

iv. **Squat Lifting** should be done for a majority of all lifts. Squat lifting should be performed as follows:

- Stand as close to the load as possible;
- Move your feet shoulder width apart;
- Tighten your stomach muscles so you can tuck your pelvis;
- Bend at the knees, keeping your back straight and stomach tucked;
- Get a good firm grip on the load;
- Hug the load close to the center of your body;
- Lift smoothly with your legs gradually straightening the knees and hips into a standing position; and
- Avoid twisting your body as you lift.

v. **Carrying Loads** should be done as follows:

- Keep the load close to the center of your body to take full advantage of the mechanical leverage of your body;
- Do not change your grip on the load unless it is weight supported;
- Avoid twisting your body without pivoting your feet at the same time;
- If you must change direction, move your feet in that direction instead of twisting your trunk in that direction;
- Make sure you can see over the load;
- Move carefully toward your destination; and
- If a heavier load is carried for some distance, consider storing it closer.
- 

vi. **Unloading Objects** should be done the same way as lifting objects, but in the reverse order as follows:

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- Slowly bend your knees to lower the load;
- Keep your back straight and the weight close to the center of your body;
- Allow enough room for fingers and toes when the load is set down;
- Place the load on a bench or table by resting it on the edge and pushing it forward with your arms and body; and
- Secure the load to ensure that it will not fall, tip over, roll or block someone's way.
- 

vii. **One-Arm Loads** are used when carrying items such as pails or buckets. Lifting and carrying one-arm loads should be performed as follows:

- Bend the knees and at the waist keeping your back straight;
- Reach for the load;
- Grasp the handle of the load firmly;
- Lift with your legs not your shoulders and upper back; and
- Keep your shoulders level while switching hands regularly to reduce overexertion on one side of the body while carrying the load.

viii. **Team Lifts** are highly encouraged when objects are too heavy, too large or too awkward for one person to lift. Team lifts should be performed as follows:

- Work with someone of similar build and height, if possible;
- Choose one person to direct the lift (e.g., "lift on the count of three");
- Lift with your legs and raise the load to the desired level at the same time;
- Always keep the load at the same level while carrying;
- Move smoothly and in unison; and
- Set the load down together.

ix. **Overhead Lifts** should be conducted as follows:

- When lifting or lowering objects from above the shoulders, lighten the load whenever possible;
- Stand on something sturdy such as a step stool or platform to decrease the vertical distance; and

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- When you are lowering objects from above the shoulders, slide the load close to your body, grasp the object firmly, slide it down your body and proceed with your move.

x. **Mechanical Aids**

- Alternative material-handling techniques for carrying or moving loads are to be used whenever possible to minimize lifting and bending requirements.
- These alternate techniques include the use of: hand trucks, carts, dollies, forklifts, hoists and wheelbarrows.
- Although mechanical aids are used, safe lifting procedures should still be followed by maintaining the natural curvature of the back, using the legs for any lifting that is encountered and avoid twisting the back.

xi. **Lifting/Lowering**

- Lifting weights greater than 60 lbs. may necessitate the use of either a team lift, or lift-rated powered hoist or other equipment designed for the task.
- All manual handling conducted vertically shall be conducted using a mechanical advantage system with an automatic capture mechanism to prevent the potential of dropped objects
- All lifts conducted at height within a fall arrest zone must be conducted within a work positioning stance (PPE) to ensure correct lifting posture.
- Dynamic Risk Assessments shall be conducted before, during and after any manual lift exercise.

## D. Training

City employees who regularly perform manual handling activities as part of their essential job duties shall be trained in the following precautions:

- How to identify hazardous loads or handling tasks
- The proper selection and use of mechanical handling aids
- Safe postures and manual lifting techniques to minimize strain
- Safe lifting techniques

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Welding, Cutting & Hot Work			Page 270 of 292

## A. Purpose

The purpose of this procedure is to provide requirements and guidelines to protect employees from the hazards associated with welding, cutting and comply with Chapter 296-24-680 WAC, Cutting, Welding and Brazing.

All City of Port Townsend employees shall comply fully with the requirements for welding, cutting and hot work as outlined below.

## B. Definitions

- *Job Hazard Analysis (JHA)* – A risk assessment tool used to identify and control workplace hazards.
- *Permissible Exposure Limit (PEL)* – The legal limit in the US by which an employee may be exposed to a chemical substance or physical agent such as noise. These limits are established by the Washington State Department of Labor and Industries, Division of Occupational Safety and Health (DOSH).
- *Safety Data Sheets (SDS)* – A technical document that provides detailed and comprehensive information on a controlled product including information relating to health effects of exposure, hazard evaluation, measures to protect workers and emergency procedures.
- *Short Term Exposure Limit* - Maximum permissible concentration of a substance (expressed usually in parts per million or ppm) in air for a defined short period (typically 5 minutes).

## C. Responsibilities

### 1. Public Works Operations Manager

- a. Monitor compliance with this program and the OHHSA Standard, 29 CFR 1910.252.
- b. Provide adequate welding, cutting and hot work safety training and ensure employees with potential exposure receive the appropriate training prior to being assigned to the exposure area.
- c. May assist in conducting pre-job hazard analysis including the identification for potential welding, cutting and hot work, assist

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in modifying work practices to address risks, and providing any unique safety equipment and Personal Protective Equipment required to safely perform tasks involving welding, cutting and hot work.

- d. Arrange for immediate emergency response, if necessary, for spills, injuries and overexposures.
- e. Conduct exposure assessments and evaluate exposure control measures as necessary.
- f. Investigate accidents, incident and near-misses.
- g. Maintain a SDS for all welding product(s) used and all other hazardous chemicals in the work area.
- h. Ensure that fire extinguishers or other methods be made available to extinguish flames in the event of a fire.

## 2. Employees

- a. Know the provisions of the welding, cutting and hot work program.
- b. Report accidents, possible overexposures or unsafe conditions to your supervisor.
- c. Wear Personal Protective Equipment and use engineering control where recommended.
- d. Inspect all hot work equipment before use.
- e. Report any equipment problems immediately and do not use damaged equipment until equipment has been repaired by an authorized technician or replaced.

## 3. Supervisors

- a. Know the provisions of the welding, cutting and hot work program.
- b. Ensure employees have been trained on the task they are going to perform.



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- c. Develop and monitor site-specific hot work procedures.
- d. Provide fire extinguishers and safe equipment for hot work.
- e. Provide proper and effective personal protective equipment (PPE) for all hot work.
- f. Monitor all hot work.
- g. Ensure all hot work equipment and personal protective equipment (PPE) is in safe working order.
- h. Allow only trained and authorized employees to conduct hot work, cutting, welding and fire extinguisher use.
- i. Ensure permits are used for all hot work; hot work permits must be completed and approved by the employee in charge prior to the start of the welding operation.
- j. Inspect the area, provide written permits to employees.
- k. Post area or use shields for ongoing hot work and follow all shop requirements.

#### **D. General Scope**

- 1. This program applies to all locations that the City may work at or in and that perform welding, cutting and hot work including construction work in which welding, in any amount is conducted. Construction work is defined as work involving building, alteration and / or repair, painting and decorating.

#### **E. Common Hazards**

- 1. Common health and safety hazards, inherent in metal welding and cutting operations, include exposures to fumes, gases, high noise levels, radiation, fire and electricity. The severity of these hazards relate to:
  - a. The materials used in the process;
  - b. The characteristics of the by-products which evolve;
  - c. The specific process utilized;

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d. The conditions which exist at the workplace; and the concentration and duration of employee exposure.

2. The potential hazards can be minimized through implementation of appropriate administrative controls i.e., employee training, the use of engineering controls i.e., ventilation, process improvement, etc., and through complete planning of each job to ensure that all hazards are defined and controlled.

**F. Safe Welding and Cutting Procedures:**

1. The supervisor in charge of the job shall brief the welder(s) on the potential hazards of the specific job.
2. All welding and burning equipment shall be chosen to provide the safest operation and installed by qualified technicians. If the welding operation cannot be performed in a safe manner work must stop and not continue until it can be performed in a safe manner, NO exceptions.
3. Welders are responsible for the proper maintenance and safe operations of their equipment. Welders shall be familiar with 29CFR1910.252 – 254 sections (a) (b) (c) and shall be familiar with the requirements of the American Welding Society Standards appropriate to their position. Supervisors shall ensure welders are trained in the type of procedures they will be performing.
4. Only qualified and properly instructed employees shall operate welding or burning equipment after they have received approval from their Supervisor.
5. When welding or burning is to be performed in an enclosed or limited space, where natural ventilation is minimal, mechanical ventilation shall be provided.
6. Employee performing the welding or burning operation, or those assisting, shall wear appropriate shielding and eye protection to prevent exposure from welding hazards.
7. Where there is a potential for exposure to persons in adjacent areas, a non- combustible screen, which will protect against ultraviolet radiation, shall be installed between them.

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8. No welding or burning shall be performed without first ensuring that all combustibles have been removed from the immediate location. This applies to objects that require welding but cannot be moved and / or objects that can be located to a suitable location.
9. Fire Watch requirements shall be as outlined:
  - a. When welding, cutting or heating operation is such that normal fire prevention precautions are not sufficient, an additional person may be assigned as "Fire Watch" in the immediate area where the operation is conducted.
  - b. The fire watch shall have in their possession, or immediate reach, a 20lb ABC rated fire extinguisher in good operating order.
  - c. Their sole responsibility shall be to guard against fire while the operation is being performed, and for a minimum of thirty (30) minutes or as determined by the on-site manager, to ensure that no possibility of fire exists.
  - d. Fire Watch Responsibilities – specifically what the fire watch must know:
    - i. That their only duty is fire watch
    - ii. When they can terminate the watch
    - iii. How to use the fire extinguisher provided
    - iv. How to activate the fire alarm / plant fire emergency system
10. Fire extinguisher training – all employees working on welding, cutting and hot work shall receive annual training on the proper use fire extinguishers including:
  - a. Type of fire extinguishers
  - b. Location and markings
  - c. Use of extinguishers
  - d. Inspection and maintenance of fire extinguishers

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e. Types and classes of fires

f. Facility alarm / notification system (site specific)

11. All welding lead cables shall be inspected prior to each welding operation. Cables with damaged insulation, or exposed bare connections, shall be replaced or repaired immediately.
12. All flames, sparks, molten slag, and hot metal shall be kept from coming in contact with equipment or combustible materials. To ensure this, fire blankets, catch pans, or other suitable means to catch hot slag or sparks may be necessary.
13. Job Hazard Analysis (JHA) may be completed for all operations, signed by all members of the crew and approved by the supervisor. If hazardous fumes, gases and / or dust are possible during the welding/cutting operations the JHA must include mitigating protocols in accordance with Section G – Reducing Employee Exposure to Hazardous Fumes, Gases or Dust of this procedure.

#### **G. Reducing Employee Exposure to Hazardous Fumes, Gases or Dust**

1. Substitution - whenever possible, substitution of a less hazardous process will be used to reduce or eliminate hazardous fumes, gases and / or dust exposures.
2. Engineering Controls - whenever possible, local exhaust ventilation will be used to reduce exposures to hazardous fumes, gases and / or dust. Local exhaust is used to capture and exhaust fumes, gases, or dust particles, preventing high exposures in the worker breathing space.
3. Administrative Controls - If engineering controls cannot be implemented, alteration of work practices will be used to reduce exposure to hazardous fumes, gases and/or dust. This could include limiting the amount of time employees spend working in high exposure areas by rotating personnel.
4. Personal Protective Equipment (PPE) - will be used to prevent exposure to hazardous fumes, gases and/or dust; the use of protective garments and equipment which are impervious to hazardous fumes, gases and / or dust. The type of personal protective equipment necessary will vary depending on the concentration amount used and the potential

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for exposure. The supervisor will provide guidance on the appropriate equipment. All personal protective equipment (PPE) must be inspected by employees prior to each use. Personal protective equipment must be stored in a clean and sanitary manner. Respirators shall be inspected weekly by supervisors to ensure they are being used, stored and cleaned properly.

## **H. Respirators**

1. If employee exposures are found to exceed the PEL or STEL, respirators will be provided until feasible engineering or administrative controls can be implemented. Respirator use and type will be determined by the Supervisor based on air sampling results. If respirator use is necessary, employees must be medically cleared by a physician to wear a respirator in accordance with City Respiratory Protection Program.
2. In areas where hazardous fumes, gases and/or dust concentration are unknown City employees shall not be allowed to enter the area until a job hazard assessment is conducted and training has been completed.

## **I. Hygiene**

1. To prevent the accidental ingestion of hazardous fumes or gas residue or dust; eating, drinking and smoking are prohibited in areas where hazardous fumes, gases and/or dust or operations are being conducted. In addition, employees must wash their hands before eating, drinking and smoking.

## **J. Employee Information and Training**

1. Supervisors are responsible for ensuring that employees with potential exposure to welding, cutting and hot work receive the appropriate training prior to working with material. Every employee working around welding, cutting and hot work must receive training on its hazards. Only employees who have been trained in the safe operations of cutting and welding equipment may use the equipment.
2. Employees that have successfully completed training on the use of cutting and welding equipment will be deemed qualified to use the equipment. All employees including the supervisor must be familiar with the requirements of Chapter 296-24-680 WAC and 29 CFR 1910.254

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and 29 CFR 1910.252 sections (a), (b) and (c).

3. Supervisors should train employees on the following:
  - a. Requirements of the Chapter 296-24-680 WAC and OSHA Standard, 29 CFR 1910.252;
  - b. Contents of the Safety Data Sheets (SDS)
  - c. Review of the Hot Work Permit system
  - d. Welding and Hot Work Hazards
  - e. Personal Protective Equipment (PPE) and limitations
  - f. Fire extinguisher training
  - g. Description of the operations in the work area where welding, cutting and hot work is present
  - h. Work practices to reduce exposure, including engineering and administrative controls and personal protective equipment required; and
  - i. Instructions for emergency procedures
  - j. Fire watch responsibilities for site specific work:
    - i. Fire watch is the only responsibility
    - ii. When the watch can be terminated
    - iii. How to use fire extinguishers
    - iv. How to activate the fire/plant/construction site fire emergency system
4. All training must be documented by the individual presenting the training session and a copy of the training records will be kept on file in Human Resources.

## **K. Forms**

1. *Hot Work Permit*
2. *Job Hazard Analysis*

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### HOT WORK PERMIT

Time Hot Work Allowed \_\_\_\_\_ To \_\_\_\_\_ Date \_\_\_\_\_

Job Description \_\_\_\_\_

Type Of Work

- ☐ Electric Welding  
☐ Red Heading  
☐ Powder Gun  
☐ Hammering  
☐ Gas Welding/Burning  
☐ Other \_\_\_\_\_

- ☐ Melting Pot  
☐ Chiseling  
☐ Grinding  
☐ Brazing  
☐ Soldering  
☐ Drilling

- Alarms Must Be Cut Off ☐ Yes ☐ No  
 Fire Watch Required ☐ Yes ☐ No  
 Vapor/Gas Combustion Test Required ☐ Yes ☐ No

Special Instructions

\_\_\_\_\_

Approvals (Signatures)

<u>Shift</u>	<u>Supervisor</u>	<u>Foreman</u>
Day	_____	_____
Swing	_____	_____
Night	_____	_____

Person Doing The Work Must Check  
Items and Sign Below

- Hand Fire Extinguisher In Area  
 Yes ☐  
 Combustible Materials Removed From Area  
 Yes ☐  
 Combustible Materials Removed From Area Below  
 Yes ☐  
 All Flammable Liquids Removed From Area  
 Yes ☐  
 All Flammable Gas Shut-Off And Isolated  
 Yes ☐  
 Welding Screens Positioned Where Needed  
 Yes ☐  
 Sheathing Provided Where Needed  
 Yes ☐  
 Welding Cables And Hoses Out Of Travel  
 Areas Or Secured At Least 7' Overhead  
 Yes ☐  
 Vapor Combustion Test Conducted  
 Yes ☐  
 Vapor Combustion Test Conducted  
 Where Necessary  
 Yes ☐  
 If Tested, Who Conducted Test? \_\_\_\_\_  
 Test Results \_\_\_\_\_  
 Using Pipe as Required on Special Work Permit  
 Yes ☐

\_\_\_\_\_  
Signature of Person Performing The Hot Work





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## A. Purpose

The policy intention is to ensure the safety of lone workers or staff who sometimes work alone, by minimizing risks they face and instituting appropriate measures to improve their safety. This procedure is to be used as guidance for mitigating health and safety risks while working alone. For specific work processes, a Job Hazard Analysis and a detailed Hazard Assessment and Risk Control study may be necessary to assess the likelihood and severity of a specific activity. All City employees shall comply fully with the requirements for Lone Work.

## B. Definitions

1. *Lone Workers*- those who work by themselves without close or direct supervision.
2. *Hazard*- A condition or set of circumstances that present a potential for harm. Hazards are divided into two broad categories:
  - a. Health hazards (cause occupational illnesses)
  - b. Safety hazards (cause physical harm- injuries)
3. *Hazard Identification*- The process of examining each work area and work task for the purpose of identifying all the hazards which are “inherent in the job”. Work areas include but are not limited to machine workshops, office areas, stores and transport, maintenance and grounds, and teaching spaces. Tasks can include (but may not be limited to) using screen based equipment, audio and visual equipment, industrial equipment, hazardous substances and/or dangerous goods, teaching/dealing with people, driving a vehicle, dealing with emergency situations, construction.
4. *Risk*- The likelihood or probability that a hazardous event (with a given outcome or consequence) will occur.

## C. Responsibilities

1. Supervisors
  - a. City supervisors may have the affected employee complete a JHA and Risk Assessment.
  - b. Will communicate with the affected employee on a regular basis.

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- c. Should the affected employee not respond, the supervisor will immediately make their way to the affected employee's location and be capable of activating the Emergency Response Plan (ERP), as necessary.

## 2. Employees

- a. Employees shall inform their supervisor prior to performing non-routine or unplanned lone work activities.
- b. Lone work employees will periodically "check in", communicating with their supervisor of their status.

## D. Program Requirements

1. Should a City employee find themselves unexpectedly working alone the employee shall:
  - a. Notify their immediate supervisor as to their work activity and location.
  - b. Have a reliable means of communication. (i.e. Radio, cell phone, monitoring device) A secondary means of communication is recommended for lone work.
  - c. Inform the City supervisor of the approximate time they will complete the task and the return time.

## E. Training

1. Lone work requirements shall be communicated to all employees prior to being assigned to work activities.

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## A. Purpose

It is City of Port Townsend's policy to take precautions to eliminate potential exposure to respirable crystalline silica in the workplace. The purpose of this Silica Awareness Program is to provide training on the hazards associated with silica dust and outline steps to ensure employees who work with, or around materials that contain silica are protected from hazardous levels of silica dust. This program addresses common silica-related work and procedures to minimize exposure, in accordance with the Chapter 296-818, Blasting, Chapter 296-901 WAC Hazard Communication, and OSHA Respirable Crystalline Silica standard as outlined under [29 CFR 1926.1153](#).

## B. Definitions

- *Action Level*- Employee exposure, without regard to use of respirators, to an airborne concentration of silica of 25µg/m<sup>3</sup> averaged over an 8-hour work period (TWA).
- *Authorized Person*- An employee who has received proper training and exposure monitoring skills to safely work with silica-containing materials.
- *Crystalline Silica*- Naturally occurring component in earth soils, sand, granite and many other materials resulting in many building materials containing silica.
- *Exposure Assessment*- The initial determination to find if any employee may be exposed to lead at or above the permissible exposure limit (PEL). Until the assessment is completed, employees shall take all necessary precautions to maintain exposures below the PEL.
- *HEPA*- High Efficiency Particulate Air. A filtering system capable of trapping and retaining at least 99.97% of all particles of 0.3 micron in diameter and larger.
- *Permissible Exposure Limit* - (PEL) The legal regulatory limit in the United States on the amount or concentration of a substance in the air. The PEL for silica dust exposure is set at and will remain below 50 micrograms per cubic meter of air (50µg/m<sup>3</sup>) as an 8-hour TWA under any foreseeable conditions.
- *Silica-Containing Material* - Any material, which has the potential to contain silica at levels, which may pose a hazard to employees when the material is manipulated to create airborne particles.
- *Silicosis*- A lung disease caused by inhalation of silica dust. Silica dust can cause fluid buildup and scar tissue in the lungs that cuts down the ability for the lungs to fully function. The disease is not curable, but can be prevented through the use of protective systems.

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- *Time-Weighted Average (TWA)* - The average exposure to any regulated hazardous substance in the workplace based on an eight-hour workday or 40-hour workweek. It is the maximum amount one may be exposed to without experiencing significant adverse health effects over said period.

### C. Responsibilities

1. Public Works Operations Manager
  - a. Responsible for providing program oversight and consultation to City employees regarding potential risks, exposure prevention and training relating to silica dust exposure.
  - b. Conduct building/material assessments for silica-containing materials and perform employee silica hazard assessments/monitoring upon request.
2. Supervisors
  - a. City employees responsible for supervising personnel with responsibilities where workers may come into contact and where there is a risk of exposure to silica dust must ensure that employees are properly trained on the applicable contents of the Silica Awareness Program and are provided appropriate personal protective equipment (PPE) when conducting such work.
3. Authorized Person
  - a. Employees working in areas where there is an identified risk of silica dust exposure must be properly trained on all applicable elements of the City Silica Awareness Program and be provided, and utilize the appropriate PPE for the task being performed.

### D. General

1. Crystalline silica is a basic component of soil, sand, granite and many other minerals. Quartz is the most common form of crystalline silica. All materials containing silica can result in the presence of respirable silica particles when chipping, cutting, drilling or grinding takes place. Silica exposure occurs through inhalation of silica containing particles and occurs through many construction and general industry methods. The most severe exposures generally occur during abrasive blasting with sand to remove paint and rust from bridges, tanks, concrete structures and other surfaces. Other activities that may result in severe silica exposure include jack hammering, rock/well drilling, concrete mixing, concrete drilling, brick and concrete cutting/sawing, tuck pointing and tunneling operations.
2. Exposure to excessive silica dust over long periods of time can lead to lung diseases such as silicosis or lung cancer.

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- a. Silicosis is often a disabling, progressive, and sometimes fatal disease. Symptoms of silicosis include coughing, difficulty in breathing, bluish skin and shortness of breath. There are three types of silicosis that a worker can develop:
  - i. Chronic Silicosis- This usually occurs after 10 or more years of exposure to crystalline silica at relatively low concentrations.
  - ii. Accelerated Silicosis- This results from exposure to high concentrations of crystalline silica and develops 5-10 years after the initial exposure.
  - iii. Acute Silicosis- This occurs where exposure concentrations are the highest and can cause symptoms to develop within a few weeks to 4-5 years after the initial exposure.
3. This Silica Dust Safety Program applies to City employees who are expected to be exposed to silica dust through the methods outlined above; or through other means, which are determined by their supervisor.

#### **E. Material Assessment**

1. Any time there is a potential for silica-containing materials to be involved in a project, sources of silica must be assessed prior to disturbing. Supervisors may perform this assessment to determine silica content in materials or the assessment may be performed by a 3<sup>rd</sup> party contractor as appropriate.
2. Crystalline silica occurs naturally in the earth's crust and is a basic component of sand, concrete, brick, asphalt, granite, some blasting grit as well as wall spackling materials. Employees can be exposed to silica when conducting activities such as:
  - a. Jack hammering
  - b. Moving/dumping piles of concrete, rock or sand
  - c. Demolition of concrete or brick
  - d. Using coatings containing silica
  - e. Removing coatings containing silica
  - f. Mixing of concrete or grout
  - g. Concrete drilling

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- h. Sawing concrete or bricks
- i. Chipping or scarifying concrete

- 3. If airborne silica is expected to be generated during the project, the supervisor shall be contacted to conduct exposure monitoring and to ensure that all safety precautions are followed to minimize employee exposure to airborne silica dust.

## **F. Exposure Monitoring**

### **1. Initial Exposure Monitoring**

- a. Where City employees are expected to come into contact/work with silica-containing materials, and where there is a risk of exposure through inhalation of dust, City Supervision shall develop an exposure monitoring program.
- b. Initial exposure monitoring may be conducted by Supervisors or a member of the Safety Committee to quantitatively evaluate the exposure to airborne silica.
- c. Exposure monitoring shall be conducted on any employee exposed to airborne silica dust as levels may vary based on job duty within a project. For example, the employee performing concrete cutting vs an employee providing supervision during the work.

### **2. Periodic Monitoring**

- a. Whenever silica exposure levels are greater than, or equal to the action level of  $25\mu\text{g}/\text{m}^3$ , periodic exposure monitoring will be required. It is the responsibility of the Supervisor to work with the Public Works Director to develop a periodic exposure monitoring schedule.
- b. Exposure monitoring is not required by every employee at risk of airborne silica exposure. Sufficient sampling must be conducted to enable the employee's exposure level to be accurately represented.

### **3. Termination of Exposure Monitoring**

- a. Periodic exposure monitoring may be discontinued if results from two consecutive sampling periods taken at least 7 days apart show that employee exposure is below the PEL.
- b. If initial monitoring indicates that City employee exposures are below the action level of  $25\mu\text{g}/\text{m}^3$ , monitoring may be discontinued for those employees represented by such monitoring.

### **4. Sampling Methods**

- a. Personal monitoring shall be conducted using an approved NIOSH method. Monitoring records shall include the following:

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- i. The date, number, duration, location and results of each of the samples taken, including a description of the sampling procedure used to determine representative employee exposure where applicable.
- ii. A description of the sampling and analytical methods used.
- iii. The type of respiratory protective devices, if any.
- iv. Name and job classification of the employee being monitored.
- v. Any environmental variables that could affect the measurement of the employee exposure.

5. Reassessment of Exposure Data

- a. Exposures shall be reassessed whenever a change in the production, process, control equipment, personnel, or work practices may reasonably be expected to result in new or additional exposures at or above the action level, or where the Supervisor has any reason to believe that new or additional exposures at or above the action level are or have occurred.

6. Reporting of Exposure Monitoring Results

- a. Exposure monitoring results will be communicated to the Supervisor and the Public Works Director as soon as final laboratory analysis is completed. The Supervisor must provide this analysis to affected employees within 5 working days.
- b. If levels are measured during the exposure monitoring exceeding the PEL, steps and controls to reduce exposure below the PEL will be provided.
- c. Follow up exposure monitoring may be necessary if engineering or administrative controls are put into place to reduce hazardous exposures.

**G. Exposure Control**

1. For each employee engaged in a task where exposure to respirable crystalline silica is likely, City shall fully and properly implement engineering controls, work practices and respiratory protection as outlined under [29 CFR 1926.1153](#) Table 1 unless the Supervisor is able to limit employee exposure below the PEL of 50µg/m<sup>3</sup>.
2. Engineering/Administrative Controls
  - a. Where silica exposures at or above the PEL have been documented or are expected, appropriate engineering or administrative controls will be implemented where feasible. Follow-up exposure monitoring may be necessary when administrative or engineering exposure controls are utilized.

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- b. Typical controls may include the following:
  - i. Substituting non-silica-containing materials for use while abrasive blasting.
  - ii. Alternative methods such as pre-ordering grout already mixed instead of onsite mixing in bulk.
  - iii. Local exhaust ventilation
  - iv. Use of wet methods to keep respirable dust down
  - v. General ventilation
  - vi. Vacuum methods with HEPA filters
  - vii. Distance
  - viii. Dust control practices
  - ix. Containment
  - x. General work practices such as good housekeeping, worker rotation, development of specific SOP's to minimize exposure.
  - xi. Any additional controls as outlined under Table 1 as referenced above.
  - xii. Use an outside vendor whenever possible.

### 3. Personal Protective Equipment

- a. In addition to administrative or engineering controls, employees may be required to wear specific PPE during the disturbance of silica-containing materials and/or when airborne silica is present. The level of protection will depend on the task being conducted and the tools being utilized to complete the task.
- b. Recommended PPE may include the following:
  - i. Respiratory protection as outlined below
  - ii. Disposable or reusable work clothing to keep from spreading or bringing dust home.
  - iii. Leather gloves
  - iv. Safety glasses or goggles
  - v. Face shield
  - vi. Boot covers or rubber boots
- c. The following table provides recommended respiratory protection levels based on the measured or anticipated exposure levels:



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Recommended Respiratory Protection Levels		
Respirator Type	Protection Factor	Typical Silica Activity
N95 Particulate	Less than 25µg/m <sup>3</sup>	Used on voluntary basis to control low exposures
Half-Face with HEPA Filter	25 – 500µg/m <sup>3</sup>	Housekeeping (wet method), saw cutting (wet method), drilling concrete (wet method), power tools with dust collection, equipment operating with open cab
Full-Face with HEPA Filter	500 – 5,000µg/m <sup>3</sup>	Chipping concrete, jack hammering, power tools without dust collection, mixing grout in bulk, vacuum abrasive blasting
SCBA	Above 5,000 g/m <sup>3</sup>	Abrasive blasting

- d. Where employees perform more than one task as outlined under Table 1 as referenced above and where the total duration of all tasks combined is more than four hours per shift, the applicable respiratory protection shall be utilized as outlined under the standard. Where exposure levels are less than 25 µg/m<sup>3</sup>, respiratory protection shall be voluntary.

## H. Housekeeping

1. In areas where silica containing dust may be present, all surfaces must be maintained free from accumulations of dust to minimize potential silica exposure. Dust and other silica containing debris must be removed from the work area as soon as possible.
2. Acceptable method of silica dust removal includes the use of HEPA vacuum or wet methods such as wet mopping.
3. Unacceptable methods of silica dust removal include dry sweeping, vacuum cleaners, shop vacuums, and compressed air.
4. Follow all required procedures and utilize required PPE during silica-containing debris cleanup activities.

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5. Where silica-containing materials are used, impacted, or being removed; the following requirements must be met:
  - a. PPE should be removed upon work completion and disposed of after each use.
  - b. Employees must wash hands; showers are recommended prior to leaving work.
  - c. Ensure contaminated PPE, including footwear is not worn outside of the work area.

#### **I. Medical Surveillance Program**

1. For City Employees that are required to use a respirator for protection against silica dust for 30 days or more per year, and where exposure monitoring has shown exposure levels to be within the 25µg/m<sup>3</sup> action level, the City shall make medical surveillance available at no cost to the employee and at a reasonable time and place.
  - a. Medical examinations and procedures required under this section shall be performed by a Physician or other Licensed Health Care Professional (PLHCP).
  - b. An initial baseline medical examination shall be conducted within 30 days after initial assignment. The examination shall consist of the following elements:
    - i. A medical work history, with emphasis on; past, present and anticipated exposure to respirable crystalline silica, dust and other agents affecting the respiratory system.
    - ii. Any history of respiratory system dysfunction including signs and symptoms of respiratory disease, history of tuberculosis and smoking status and history.
    - iii. A physical examination with special emphasis on the respiratory system.
    - iv. A chest X-ray
    - v. A pulmonary function test
    - vi. Any additional elements as outlined under the standard

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2. Follow up examinations shall be conducted no less than every 3 years. It may be conducted more frequently upon recommendation by the PLHCP.
3. The results of the examination shall be provided to the City employee along with a copy of the written medical report no less than 30 days following the examination.
4. The report shall detail any recommended limitations on the employee's use of respirators or on the employee's exposure to silica dust.

#### J. Signage

1. In areas where exposure to silica dust may exceed the PEL, the following types of signage must be in place to warn employees of the hazards present:



#### K. Employee Training

1. City employees shall be trained regarding the hazards of respirable silica dust prior to being assigned to a task where the exposure levels are at or above the OSHA PEL.
2. Additional training may be required based upon task. This may include but not limited to the following:
  - a. Hazard Communication Training
  - b. Use and Care of PPE
  - c. The use of engineering controls, administrative controls and good housekeeping to control silica exposure
  - d. Respiratory protection training including medical clearance and fit testing as outlined under section 2- City Respiratory Protection Program
3. The City shall maintain all training, confidential medical surveillance and exposure monitoring results.

