CITY OF FLAGSTAFF MANAGEMENT SAFETY HANDBOOK

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- GENERAL

- A. PURPOSE: These regulations establish the City of Flagstaff Health and Safety program and set forth policies, directives, organizational responsibilities and reporting requirements for their implementation.
- B. SCOPE: These regulations are applicable to *all* City employees while on duty and to contractor personnel doing business with the City.
- C. POLICY:
 - (1) The Risk Manager is the Designated Responsible Party to represent the City during announced or unannounced inspections by initial ADOSH inspections.
 - (2) Employees will be provided an effective Health & Safety Program consistent with federal and state OSHA Standards.
 - (3) Prompt attention will be given to reports by employees of noncompliance or unsafe or unhealthy working conditions in accordance with the procedures specified in these regulations. All reports of the above conditions will be routed through supervisory channels to the Risk Management Division (RMD).
 - (4) The manner in which a supervisor or employee executes their safety responsibility will be an item of consideration in accordance with their performance appraisal.
 - (5) Supervisors will provide orientation for newly assigned personnel and maintain records of such training.
- D. RESPONSIBILITIES:
 - (1) All personnel will be responsible for compliance with these regulations.
 - (2) The City Manager has final authority over the Health & Safety Program.
 - (3) The Risk Manager will provide general direction to the Health & Safety Program and will:

- (a) Be the City's point of contact with all regulatory agencies regarding safety inspections.
- (b) Initiate, respond to or review all written communications with regulatory agencies from all City departments for all but routine activities.
- (c) Oversee City-wide risk assessments of operations and implement appropriate risk management standards in conjunction with operating departments.
- (4) The Risk Manager is the designated Occupational Safety and Health (OSHA) official for the City of Flagstaff, oversees implementation of the Health & Safety Program and will:
 - (a) Develop and implement policies and procedures pertaining to Health & Safety programs.
 - (b) Establish and maintain a comprehensive health and safety program.
 - (c) Provide technical guidance with Occupational Safety and Health Act standards and regulatory safety guidelines.
 - (d) Ensure City compliance with federal and state regulations.
 - (e) Represent the City on occupational safety and health matters.
 - (f) Provide health & safety training and educational resources to City employees.
 - (g) Assist in the conduct of the City's Loss Prevention program.
 - (h) Perform safety inspections and investigations.
- (6) Department Heads will:
 - (a) Appoint employees to serve as department safety coordinators.
 - (b) Evaluate operations to determine existing safety or health hazards and request assistance as necessary. Such evaluations may come from, and not be limited to, one or more of the following:
 - i. Personal knowledge
 - ii. Safety inspections
 - iii. Environmental audits

- iv. Fire Marshal inspections
- v. Industry standards
- (c) Provide orientation for all employees as to the hazards present within the work areas, and the procedures used to avoid such hazards.
- (d) Ensure timely inspections of workspaces and equipment, so that all safety deficiencies are identified and action is taken to correct them.
- (e) Review accidents and assist the Risk Manager with the investigation.
- (f) Conduct meetings and ensure attendance for training.
- (g) Immediately notify the Risk Manager of the presence of any outside regulatory inspector.
- (h) Ensure work areas have up-to-date, accurate MSDS records.
- (7) Employees will:
 - (a) Comply with regulations identified in this document, City policies and guidelines.
 - (b) Utilize proper protective measures for the task to be performed.
 - (c) Follow policies and procedures of their department regarding protective clothing and equipment.
 - (d) Report to their immediate supervisor any unsafe or unhealthy conditions they detect.
 - (e) Perform their work in a safe and environmentally sound manner.
 - (f) Utilize the Hazardous Material Purchasing Procedures when requesting new chemicals and replacement materials which require Materials Safety Data Sheets (MSDS).
- E. SAFETY INSPECTIONS: Safety inspections will be conducted for City facilities and reports of noncompliance will be documented. Follow-up corrective action will be taken by responsible Departments and reported to RMD within the specified time frame. A master inspection schedule will be developed each calendar year.
- F. SAFETY MEETINGS: City departments will schedule and conduct periodic safety meetings as necessary. Training documentation will be retained and available in the event of audit.

Automobile and Driver Safety

I. <u>OBJECTIVES:</u>

The City of Flagstaff will provide leadership in traffic safety through the highest possible performance from those who operate vehicles and equipment. The City values its employees and strives to provide a safe work environment. Accident prevention will help the city to control equipment costs and protect financial assets. Fewer accidents mean lower costs, and a stronger budget helps us all. Working safely and efficiently helps us enhance the quality of life of our citizens and supports the values of our community. The City of Flagstaff will achieve success through Defensive Driving principles.

The City of Flagstaff will achieve these goals through diligent adherence to this policy, and observance of all traffic laws and signals. City management will review the driving records of all new applicants and existing employees, reward those who perform safely, and discipline those who do not. Employees, collectively as a team, will recognize safe vehicle operation as their number one priority when behind the wheel of motor vehicle.

II. <u>APPLICABILITY:</u>

This policy applies to all departments, divisions, full and part-time employees, temporary employees, volunteers, contractors and contract employees, consultants and any other non-employees operating vehicles or equipment on city business. It applies to all City of Flagstaff owned vehicles, equipment, personal vehicles and rented vehicles when used on city business, on private or public property, on or off road.

Where there may be differences in this policy with any other agency such as the Federal or Arizona Department of Transportation, Federal Motor Carrier Safety Regulations, OSHA/ADOSH, etc., the more stringent policy or regulation will take precedence.

III. <u>POLICY:</u>

All drivers of City vehicles, and those using their personal vehicles in pursuit of City business must have the appropriate license in their possession and have acceptable driving records. Drivers will comply with all applicable federal, state and local regulations. Emergency vehicles under pressing emergency situations are exempt from the usual motor vehicle laws but are required to follow department protocol and exercise due caution and care in travel.

IV. <u>ELIGIBILITY:</u> Employee Responsibilities

- 1) An employee in a driving position must be able to drive as a job function. Drivers are responsible for:
 - a) Ensuring that the privilege to drive is maintained. Drivers with suspended or revoked licenses will not be permitted to drive on City business.
 - b) Being aware of, understanding, and complying with the federal, state, and local laws and City policies applying to the operation of vehicles on City business.
 - c) Carrying the appropriate Arizona State driver's license at all times while driving on City business.
 - d) Immediately notifying his/her supervisor of an arrest or citation for a violation of any Serious Violations. The notification must be made as soon as the employee becomes aware of and no later than before the start of the employee's next scheduled work shift.
 - e) City vehicles may only be operated by City employees, unless authorization is received from department head.
- 2) An employee in a non-driving position must:
 - a) Comply with federal, state and local driving laws.
 - b) Follow all regulations pertaining to driving on City business if requested to drive a vehicle on City business
 - c) Immediately notify his/her supervisor if the employee is requested to drive a vehicle on city business and the employee does not have the appropriate driver's license on his/her possession.
 - d) Immediately report any suspension or revocation of his license to his supervisor. Failure of any employee to report a change in license status will result in disciplinary action.
- 3) Consumption of alcoholic beverages or narcotics prior to or while operating a vehicle is strictly prohibited.
- 4) Drivers failing to make the necessary reports will receive disciplinary action based on the severity of the offense, up to and including termination.

V. VEHICLES AND EQUIPMENT

1) <u>General</u>

a) Employees must not attempt the operation of any type or class of vehicle or equipment that they are not properly licensed or trained for. Supervisors shall closely monitor the qualifications and training of drivers, and strictly enforce this policy.

b) Vehicles or equipment that do not pass their pre-trip or post-trip inspections, or exhibit serious defect during operation, will not be operated until repairs can be made.

c) Vehicles or equipment with defects that affect safe operation, will be parked until they can be safely towed.

2) Pre-Trip (Non-CDL)

a) Before initial use of any vehicle each day, the driver will walk around and inspect the vehicle for damage, inoperable lights, loose hardware, under-inflated tires, brakes, or any other condition which may create an unsafe condition and report it to your supervisor, or Fleet Services.

b) Drivers will ensure that the windows, headlights, taillights and windshield wipers are clean and operational at all times.

c) Position seat, and adjust head restraint so that the top of the restraint is at or above the ears.

d) Adjust and buckle seat belts!

3) <u>Loads</u>

a) All loads will be suitable for the vehicle and within its rated capacity, as determined by the lesser of the vehicle, axle, or tire ratings. When carrying loads at the maximum tire rating, tires must be inflated to the pressure specified for that rated load carrying capacity. Tire pressures are calculated when cold.

b) No vehicle is to be driven or operated unless it is constructed or loaded to prevent any of its load from dropping, shifting, leaking or otherwise escaping from the vehicle.

c) No employee or person will operate any vehicle with a load unless the load and any covering is securely fastened so as to prevent the load or its covering from becoming loose, detached or in any manner a hazard to others.

d) On flatbed trailers and trucks without sides, cargo must be secured to keep it from shifting or falling off. In closed trucks or beds with sides, tiedowns can also be important to prevent cargo shifting that may effect the handling of the vehicle. Tiedowns must be of the proper type and strength. The combined strength of all cargo tiedowns must be strong enough to lift 11/2 times the weight of the piece of cargo tied down. Proper tiedown equipment must be used, including ropes, straps, chains, and tensioning devices (winches, ratchets, clinching components). Load binders and hardware that are part of, or used in conjunction with, a tiedown assembly must be equal to, or greater than the minimum strength specified for tiedown Tiedowns must be attached to the vehicle correctly assemblies. (hook, bolt, rails, rings). The hook, bolt, weld, or other connector which secures a tiedown assembly to a vehicle, and the mounting place and means of mounting the connector must be at least as strong as the tiedown assembly when the connector is loaded in any direction. Cargo should have at least one tiedown for each 10 feet of cargo and enough tiedowns to meet this need.

<u>Regardless of how small the cargo, it must have at least two tiedowns securing it.</u>

The following is a listing of working load limits for chains and binders used by the City of Flagstaff.

3/8 in. chain = 5,400 lbs. $\frac{1}{2}$ in. chain = 9,200 lbs. $\frac{1}{2}$ in. transport chain (black) = 13,000 lbs. $\frac{3}{8} - \frac{1}{2}$ in. clamp down boomer = 5,400 lbs. $\frac{3}{8} - \frac{1}{2}$ in. ratchet boomer = 9,200 lbs. $\frac{1}{2} - \frac{5}{8}$ in. transport ratchet boomer - 13,000 lbs.

Supervisor are responsible to train drivers and employees in these practices.

4) <u>Trailers and Towing</u>

a) Inspect all vehicles and equipment for proper operation and safety equipment before (and after) each trip.

b) Pintle type hitches must be checked for proper lock/latch operation. Safety pins are to be of the correct material, hardness, strength, and diameter as the original pin. Safety pins must have a means to prevent them from falling out. On each trip safety pins are

to be inspected for nicks, bends, corrosion or any other defects that could cause them to fail. On each trip safety pins will be checked that they are installed and that they prevent the latch from unlocking and the hitch from opening.

c) Two safety chains or cables are to be used between the towing and towed vehicles. Each chain or cable and their attaching devices are to have an ultimate strength equal or greater than the gross vehicle weight of the towed vehicle. Open hooks are not permitted as attaching devices for safety chains. Attachment of chains and cables will be at differing points of both vehicles, and attachment at the hitch is not permitted. Chains or cables will be installed to allow vehicles to turn freely at the hitch.

5) Hazardous Materials

Drivers of vehicles that may transport hazardous materials must maintain the appropriate licenses and training, vehicle specifications, placarding, and unique operational procedures for hazardous materials. Supervisors will stay current with CDL requirements, hazardous materials regulations, departmental and divisional procedures in order to assure regulatory compliance and safe operation.

6) <u>Fuel</u>

No vehicles will carry extra fuel of any type except in containers that are thoroughly secured and meet the requirements of DOT and OSHA. No fuels will be stored in closed trunks or inside passenger compartments. This applies to small containers used for refueling small gasoline powered equipment.

7) Fifteen Passenger Vans

Fifteen passenger vans have a propensity to rollover due to a high center of gravity and the stability of this type of vehicle based on warnings by the National Highway Traffic Safety Administration. The NHTSA says vans with more than 10 passengers have a rollover ration 3 times greater than vans that are lightly loaded. These vans do not pass the same government safety tests that passenger vehicles or school buses do. The city seeks to eliminate the use of 15 passenger vans, but until it can achieve this goal equitably, the following must be followed:

- 1. Do not fill van to capacity 10 passengers or less.
- 2. Seat passenger toward the front of the van.
- 3. Make sure all passengers are wearing seatbelts.

- 4. Remove roof racks, or simply do not use.
- 5. Check that the fuel tank is less than half-full to lower the van's center of gravity.
- 6. Complete a maintenance check for tire pressure and tire condition before use.
- 7. Do not tow a trailer.
- 8. Hire experienced drivers.
- 9. Instruct drivers to never drive more than 60 MPH.
- 10. Do not use a cell phone while driving.

VI <u>REQUIRED PRACTICES</u>

A <u>Driver Safety Attitude</u>

Driver attitude is one of the most important factors in accident prevention today. The work ethics and business habits of our employees may be more important than any piece of safety equipment or safety regulation. One of the biggest mistakes we can make is not allowing enough time. Do our drivers have enough time to complete the tasks that they are assigned? Do you as an employee leave your work area for an appointment across town with plenty of time to spare? Or are you one to wait until the last minute and try to make up time on the road? Your day is almost done and if you hurry, you can still catch the Diamondbacks' opening pitch. Make sure you plan carefully, and allow yourself plenty of time to get to your destination.

Instead of driving just to get in front of everyone else, drive with the flow of traffic, and anticipate accidents before they actually happen. Plan your trip or route so that you can avoid dangerous intersections, or unnecessary left hand turns. Make your stops and park in a way to minimize or avoid difficult maneuvers like backing.

B <u>General</u>

- 1) Obey all traffic laws and signal devices.
- 2) Operate vehicle and equipment with courtesy and patience.
- 3) Turn signals will be utilized by all drivers at all times in ample time but not less than the last 100 feet before turning, to warn oncoming traffic or following vehicles of the intent.
- 4) In any case, the driver of the vehicle is responsible to see that all necessary conditions are met on his/her vehicle before he operates it. Any deficiency encountered will be reported to a supervisor immediately. It will be the supervisor's responsibility to ensure that appropriate action is taken to correct the problem.

- 5) Except for emergency vehicles, posted speed limits will be strictly adhered to. Excess speed wastes gas, increases wear and tear, and increases the risk and the severity of a vehicle accident.
- 6) Allow at least a two-second following distance between other vehicles (four seconds when operating trucks). Always leave yourself a way out.
- 7) During periods of limited visibility or adverse weather conditions such as rain, sleet, snow, ice, or fog vehicle headlights will be turned on. Adjust your speed to these conditions and increase your following distance. Be prepared to stop within the area illuminated by your headlights.
- 8) Always come to a complete stop at controlled intersections, as vehicles or pedestrians may be hidden in blind spots. Prepare to stop far enough behind other vehicles so that you can see the rear wheels.
- 9) Drivers will direct their full attention to driving only. Inspections of streets, trees, signs, etc. will be made by a second person other than the driver.
- 10)No more than three (3) persons will ride in the front seat of any vehicle. Where only two single seats exist, there is to be only one rider per seat.
- 11)No City vehicle is to be left unattended with ignition key left in the ignition.

12)All City vehicles should be locked when not in use.

C <u>Seat Belts</u>

- All City of Flagstaff employees occupying any seating position in a motor vehicle on official business, whose seat is equipped with a seat belt, must have the seat belt properly fastened at all times when the vehicle is in motion. See paragraph f. below for possible exceptions for employees engaged in law enforcement duties.
- 2) In contracts, subcontracts, and grants, entered into after the date of this policy, City officials shall encourage contractors, subcontractors, and grantees to adopt and enforce on-the-job seat belt policies and programs for their employees when operating company-owned, rented, or personally owned vehicles.
- 3) Where feasible, City Departments are encouraged to consider retrofitting motor vehicles not presently equipped with seat belts and, when purchasing or leasing such vehicles in the future, to require they be fitted with seat belts.
- 4) Consistent with security and personal safety considerations, the Police Chief shall have the discretion to determine how this seat belt policy will be applied while their employees are engaged in mission-related protective or law enforcement duties. Under the provisions of this

paragraph, the Police Chief will require prisoners or detainees to use seat belts if a vehicle used to transport them is so equipped, or to retrofit a vehicle with seat belts for the use of prisoners or detainees.

5) Children under the age of 5 years will be transported in an approved child restraint system. The only exceptions would occur under emergency situation such as the Fire Department transporting a child after and emergency services call.

D Backing Up

A very high percentage, perhaps 50%, of all minor accidents involving City of Flagstaff vehicle involve backing up the vehicle. Some Departments/Divisions have policies that prohibit backing whatsoever, and those will take precedence over the following guidelines.

a) Whenever possible avoid backing altogether, through managing and planning your trip.

b) If you must back a vehicle, when additional employees are present, use them as 'spotters'.

c) If there is nobody to spot, the driver should get out of the vehicle and check for clearance at the sides and underneath the vehicle and check for any obstructions like rocks, holes, or posts that could damage the equipment

VII. PROCEDURES FOR REPORTING ACCIDENTS OF CITY VEHICLES

In the event a driver of a City vehicle is involved in an accident regardless of the severity or fault, the police department and driver's supervisor shall be notified immediately. The driver shall not leave the scene of the accident until the investigation is completed, unless the accident involves injury to that employee. The operator of the City vehicle involved in the accident should provide all the necessary identification and insurance information to the other party involved. An accident report should be completed and given to your Department Head immediately. Accident reports are to be received in the Risk Management office within 48 hours.

These rules may be updated periodically and may be amended as necessary.

City of Flagstaff

Bloodborne Pathogens Exposure Control Plan

The City of Flagstaff Bloodborne Pathogens Exposure Control Plan applies to all affected departments except for Fire and Police Departments.

The Fire Department has developed an infection control plan (which includes bloodborne pathogens) for Fire Department employees only.

The Police Department has developed an exposure control plan for bloodborne pathogens for Police Department employees only.

I. PURPOSE

The purpose of this program is to eliminate or minimize employee exposure to bloodborne pathogens and to comply with Title 29 Code of Federal Regulations Part 1910.1030.

- II. EXPOSURE DETERMINATION
 - A. The following job classifications have been determined to have occupational exposure, that is reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials (hereinafter referred to as OPIM) that may result from the performance of an employee's duties.
 - 1. All Parks Department workers.
 - 2. All Parks Department swimming pool managers, assistant managers, and lifeguards.
 - 3. All Utilities Department employees who have occupational contact with untreated wastewater. This identified group includes:
 - a. Wastewater Collection maintenance workers, leadworkers, and supervisors
 - b. Sewer Services T. V. Operators
 - c. Water Quality Inspectors
 - d. Employees who operate and maintain sewage treatment plants and raw sewage pumping facilities

- 1. Maintenance workers
- 2. Semi-skilled workers/temporaries
- 3. Equipment operators
- 4. Lab technicians/chemists
- 5. Water and WastewaterTreatment Facilities Supervisors
- 6. Water and Wastewater Plant Operators
- 4. Custodial workers whose duties include cleaning surfaces which are contaminated with blood or OPIM and/or picking up blood/OPIM contaminated items or sharps.
- 5. Custodial supervisors whose duties include cleaning surfaces which are contaminated with blood or OPIM and/or picking up blood/OPIM contaminated sharps.
- 6. Custodial supervisors whose duties include cleaning surfaces which are contaminated with blood or OPIM and/or picking up blood/OPIM contaminated items or sharps.
- 7. Any City of Flagstaff employee who performs first aid as part of their job duties.

III. DEFINITIONS

- A. AIDS—Acquired immune deficiency syndrome.
- B. Blood—Human blood, human blood components, and products made from human blood.
- C. Bloodborne 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).
- D. Contaminated—the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.
- E. Contaminated laundry—laundry which has been soiled with blood or other potentially infectious materials or may contain sharps.

- F. Contaminated sharps—any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, or broken capillary tubes.
- G. Decontamination—the use of physical or chemical means to remove, inactivate, or destroy bloodborne 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.
- H. Engineering controls—controls (i.e., sharps disposal containers) that isolate or remove the bloodborne pathogens hazard from the workplace.
- I. Exposure incident—a specific eye. mouth, other mucous membrane, nonintact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.
- J. HBV—hepatitis B virus.
- K. HIV—human immunodeficiency virus.
- L. 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.
- M. Other potentially infectious materials (OPIM):
 - 1. The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids.
 - 2. Any unfixed tissue or organ (other than intact skin) from a human (living or dead).
- N. Parenteral—piercing mucous membranes or the skin barrier through such events as needle sticks, human bites, cuts, and abrasions.
- O. Personal protective equipment—specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (i.e., uniforms, pants, shirts, or blouses) not intended to function as protection against a hazard, are not considered to be PPE.
- P. Reasonably anticipated occupational exposure—contact with blood and/or OPIM which averages one such incident per month or those occupations such as lifeguards or park rangers where occupational exposure is highly probable and the circumstances of the exposure require emergency response or are uncontrollable.

- Q. Regulated waste—liquid or semi-liquid blood or OPIM, contaminated items that would release blood or OPIM in a liquid or semi-liquid state if compressed; items that are caked with dried blood or OPIM and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.
- R. Source individual—any individual living or dead, whose blood or OPIM may be a source of occupational exposure to the employee.
- S. Universal precautions—an approach to infection control. According to the concept of universal precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.
- T. Workplace controls—controls that reduce the likelihood of exposure by altering the manner in which a task is performed.

III. IMPLEMENTATION SCHEDULE

- A. Universal precautions shall be observed to prevent contact with blood or potentially infectious materials. Where it is difficult to differentiate between body fluid types, all such body fluids shall be considered potentially infectious materials.
- B. The following engineering and work practice controls have been established to eliminate or minimize exposure.
 - 1. Hand-washing facilities or antiseptic soap is provided for immediate use after contamination.
 - 2. Employee shall wash hands immediately after removing gloves.
 - 3. Contaminated needles or other sharps shall not be bent, recapped, or removed.
 - a. If not properly trained in handling contaminated sharps, CONTACT YOUR SUPERVISOR FOR ASSISTANCE.
 - b. If properly trained and equipped with a sharps container, the contaminated sharp may be properly handled using universal precautions and placed in a sharps container.
 - 4. Contaminated sharps shall be placed in approved sharps containers meeting the specifications of 1910.1030(d)(2)(viii).

- 5. Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in work areas where there is a likelihood of occupational exposure.
- 6. All procedures involving blood or other potentially infectious materials shall be performed in such a manner as to minimize splashing, spattering, spraying, or generation of droplets of these substances.
- C. Personal protective equipment
 - 1. All personal protective equipment including, but not limited to, gloves, gowns, face shields, goggles, eye glass side shields, and/or shoe covers or boots where gross contamination can be anticipated, shall be provided to the employee by the City of Flagstaff at no cost to the employee.
 - 2. Employees shall wear appropriate personal protective equipment in those areas where exposure to blood or other potentially infectious materials is likely to occur. In rare circumstances, if in the employee's professional judgment the use of the personal protective equipment will prevent the delivery of public safety services or increase the hazard to the employee, existing policies and procedures will be reviewed and evaluated accordingly.
 - 3. Any personal protective equipment contaminated with blood or OPIM which is not soaked or saturated, likely to release fluid if compressed shall be removed immediately or as soon as possible and disposed of as non-regulated waste. (See F.3. of this program).
 - 4. Any damaged, torn, broken or leaking, etc., personal protective equipment will be replaced or repaired by the City of Flagstaff at no cost to the employee
 - 5. Any personal protective equipment that becomes saturated or penetrated by blood or OPIM shall be removed immediately or as soon as feasible and <u>placed in a red bag for proper disposal</u>?
 - 6. Gloves
 - a. Gloves shall be worn when it is reasonably anticipated that the employee may have <u>hand</u> contact with blood or OPIM, mucous membranes or non-intact skin.
 - 1. Disposable single use gloves such as surgical or examination gloves shall be replaced as soon as

feasible or when their ability to function as a barrier is compromised.

- 2. Disposable single use gloves shall <u>not</u> be washed or reused.
- 3. Utility, multi-use gloves shall be used for handling contaminated waste, cleanup procedures, etc. These gloves shall be washed, disinfected, and allowed to dry before reuse. They shall be replaced as soon as their integrity is compromised.
- 7. Masks, Eye Protection, and Face Shields

Whenever splashes, spray, spatter, or droplets of blood or other potentially infectious materials are expected to be generated, the appropriate masks, eye protection, or face shields shall be used.

8. Gowns, Aprons, and Other Protective Body Clothing

Appropriate protective clothing including, but not limited to, gowns, aprons, and other protective body clothing, will be used depending on the task and the degree of exposure anticipated.

- D. Housekeeping
 - 1. All equipment and work surfaces that have become contaminated with blood or OPIM shall be cleaned and disinfected as soon as feasible and at the end of the work shift if the surfaces may have been contaminated since the last cleaning.
 - 2. All pails, cans, bins, or smaller receptacles intended for reuse shall be decontaminated immediately or as soon as feasible when visibly contaminated with blood or OPIM.
 - 3. Broken glass shall not be picked up by hand but shall be swept up or picked up with tongs.
 - 4. Bags to be used for non-sharp regulated waste must be <u>red</u> designating biohazard or a placard, sign, or tag shall be affixed to the bag pursuant to 1910.1030(g)(1).
- E. Regulated Waste
 - 1. Contaminated sharps shall be placed in appropriate labeled sharps containers. The sharps containers shall be located as close as feasible to the immediate area where sharps are found.

- 2. Sharps containers will not be filled past ³/₄ full. They shall be checked periodically to ensure that the sharps containers are not filled past ³/₄ full.
- 3. All other non-sharp regulated waste material shall be placed in containers which are properly labeled or color-coded leak-proof and closable in accordance with 29CFR1910.1030.
- 4. All regulated waste shall be properly disposed of in accordance with applicable county and state rules and regulations. If you have questions, contact Human Resources, Risk Management at 779-7685, extension 297.
- F. Decontamination and Disposal

Disinfection and decontamination of work surfaces must be accomplished as soon as possible after contamination with blood or OPIM. Surfaces shall be contaminated with an EPA registered tuberculocidal or household bleach in a dilution of one part bleach to 9 parts water. Alcohol shall not be used to decontaminate surfaces.

- 1. Hands or other body parts which become contaminated with blood or OPIM shall be washed immediately with soap and warm water.
- 2. If blood or body fluids make direct contact with the mouth or eyes, immediately flush to affected area thoroughly with water.
- 3. All items that are to be reused shall be decontaminated and/or disinfected using the dilute solution of bleach in water referenced above. Wear latex gloves and use disposable paper towels to remove contamination. After removal of visible material, decontaminate with dilute bleach solution. Wipe with clean paper towels and allow to air dry.

All non-sharp items that are not soaked and saturated, likely to release fluid if compressed, may be disposed of as office trash requiring no special bagging or labeling and immediately removed to the outside trash dumpster.

- 4. Always wash hands thoroughly with soap and warm water after removing latex gloves.
- 5. If there are any questions regarding decontamination procedures, contact Human Resources, Risk Manager at 779-7685, extension 297.

G. Hepatitis B Vaccination

Hepatitis B is a viral infection that can result in jaundice, cirrhosis, and cancer of the liver. There is no specific treatment for hepatitis B. The incubation period is relatively long: six weeks to six months from exposure to onset of symptoms. Chronic carriers may appear well yet can transmit the virus to others. Hepatitis B is a bloodborne pathogen and can be transmitted via infected blood and OPIM through several routes: parenteral contact (see definition at III.N); mucous membranes (blood or OPIM contamination of the eyes, nose, or mouth), and by unprotected contact with blood or OPIM with non-intact skin, i.e., blood gets on a rash, scratch, or open sore. Non-occupational transmission of hepatitis B occurs through sexual transmission, from an infected mother to her newborn, and through intravenous drug use.

Hepatitis B is considered a major health risk and an effective vaccination program is available. The OSHA regulation requires employees with reasonably anticipated occupational exposure be offered the opportunity to be vaccinated against hepatitis B at no cost to the employee.

- 1. The hepatitis B vaccination series is a set of three shots administered at zero-, one-, and six-month intervals.
- 2. Vaccinations will be administered by a licensed health care professional.

Employees may decline to receive the series of hepatitis B vaccinations at the time offered. Employees who decline the vaccinations may take the shots at a later date if they so desire and if they are still in a job classification which has reasonably anticipated occupational exposure to blood or OPIM. If an employee declines to receive the vaccinations, then the employee must complete an "HBV Vaccination Declination Form" (see Appendix C attached) for inclusion in the employee's records.

- H. Acquired Immune Deficiency Syndrome (AIDS)
 - 1. AIDS is a disease that results from infection by the human immunodeficiency virus (HIV). HIV attacks a person's immune system which reduces the body's ability to fight other illnesses or diseases. This condition is called AIDS. It makes the infected person vulnerable to life-threatening illnesses such as pneumonia, meningitis, and cancer.
 - 2. HIV is a bloodborne pathogen and is transmitted by the same body fluids as hepatitis B virus, that is, infected blood and OPIM (see

definition at III.M.). It is also transmitted via the same routes as hepatitis B virus.

- 3. HIV is not spread through casual contact such as shaking hands, coughing, or sneezing.
- 4. At present, there is no known vaccine or cure for HIV or AIDS.
- I. Exposure Incident

In the event of an exposure incident (i.e., a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral (needle stick) contact with blood or OPIM) that results from the performance of an employee's duties, the following procedures must be followed:

- 1. The employee must report the exposure incident immediately to his/her supervisor.
- 2. The employee shall complete a "Communicable Disease Exposure Incident Form" (Found by accessing the City's Accident/Incident Report and Investigation Form, page 11: <u>http://www.flagstaff.az.gov/index.aspx?nid=1742</u>) and a "Report of Significant Work Exposure to Bodily Fluids" (Appendix B). Forward the original copy of each to Human Resources no later than three calendar days after the exposure incident. Employees may request copies of these forms.
- 3. An industrial injury report will be completed for the following circumstances ONLY:
 - a. If the exposed employee requires medical treatment for the injury (i.e., the employee receives an injury which requires medical attention. Industrial injury paperwork will not include the blood or OPIM exposure).
 - b. If the exposed employee contracts HBV or HIV as a result of the documented exposure
- 4. The exposed employee shall be scheduled for a confidential medical examination, follow-up, and counseling at a facility designated by the City at no cost to the employee
- 5. The post-exposure evaluation shall include, but not be limited to, the following (see Appendix A):
 - a. Documentation of the route(s) of exposure and the circumstances under which the exposure incident occurred.

- b. Documentation of the Personal Protective Equipment (PPE) that the employee was wearing at the time of the exposure.
- c. What engineering controls (i.e. used sharps containers) were in place at the time of the incident?
- d. What established work practices (i.e. hand washing) were in place at the time of the incident?
- e. Could the incident have been avoided?
- f. Identification and documentation of the source individual (i.e. name, address of the source individual must be included on the Communicable Disease Exposure Incident Form), unless it can be established that identification is not feasible or is prohibited by state or local law.
 - 1. The source individual's blood shall be tested for hepatitis B virus and HIV at the expense of the City as soon as feasible and after consent is obtained.
 - 2. Results of the source individual's blood tests shall be made available to the exposed employee.
- g. Collection and testing of blood for HBV and HIV serological status.

OSHA requires that a blood draw (referred to as a baseline blood draw) be made available to the exposed employee as soon as feasible.

- 1. The exposed employee's blood shall be collected as soon as feasible and tested after consent is obtained for HBV and HIV at no cost to the employee.
- 2. Workers' Compensation requires that blood be drawn within 10 days after exposure incident and tested within 30 days after the exposure incident.
- 3. If the employee consents to a baseline blood draw for HBV but does not consent at that time for HIV serologic testing, OSHA requires that the sample be preserved for at least 90 days. If within 90 days of the exposure incident the employee elects to have the

baseline blood draw tested for HIV, such testing shall be done as soon as feasible.

- h. Post-exposure prophylaxis, such as immunoglobulin (ig) and/or hepatitis B immunoglobulin (Hbig) shall be provided to the employee at no cost when medically indicated.
- i. All test results will be maintained confidential.
- J. Information and Training
 - 1. Training will be provided by competent personnel who are knowledgeable in the subject matter as it relates to the workplace that the training will address. The training program shall include:
 - a. An accessible copy of the regulatory text of Title 29 Code of Federal Regulations Part 1910.1030, (the Bloodborne Pathogens standard) and an explanation of its contents.
 - b. A general explanation of the epidemiology and symptoms of bloodborne diseases.
 - c. An explanation of the modes of transmission of bloodborne pathogens.
 - d. An explanation of the employer's exposure control plan and the means by which the employee can obtain a copy of the written plan.
 - e. An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials.
 - f. An explanation of the use and limitations of methods that will prevent or reduce exposure including appropriate engineering controls, work practices, and personal protective equipment.
 - g. Information on the types, proper use, location, removal, handling, decontamination, and disposal of personal protective equipment.
 - h. An explanation of the basis for selection of personal protective equipment.
 - i. Information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits

of being vaccinated, and that the vaccine and vaccination will be offered free of charge.

- j. Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials.
- k. An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.
- I. Information on the post-exposure evaluation and follow-up that the employer is required to provide for the employee following an exposure incident.
- m. An explanation of the signs and labels and/or color coding required by the standard.
- n. An opportunity for interactive questions and answers with the person conducting the training session.
- 2. This training shall be provided to all employees who have been determined to have reasonably anticipated occupational exposure to blood and/or OPIM prior to assignment in which they will have contact with blood and/or OPIM. This training must be repeated annually thereafter as long as the employee remains in a job classification which has reasonably anticipated occupational exposure to blood/OPIM.
- K. Record Keeping
- 1. Medical records for employees covered under the Bloodborne Pathogens Standard will be maintained for the period of employment plus thirty (30) years. These records are confidential.
- 2. Training records required under the Bloodborne Pathogens Standard will be maintained for at least three (3) years and are not confidential.

CONFINED SPACES

I. Policy Statement:

- A. To assure compliance with 29CFR1910.146 Permit Required Confined Spaces (OSHA).
- B. No employee will enter a manhole or other confined space without the expressed permission of their supervisor and permit authorizing supervisor. Entry procedures for all confined spaces or suspected confined spaces will follow the entry protocol for permit-required spaces up to the point that they are proven other than permit-required confined spaces.

II. <u>General</u>

A. Responsibilities

- Risk Manager: Permit Required Confined Space Program Manager, responsible for the direction, implementation and oversight of the Program.
- Department and Division Heads: Responsible to see that supervisors, watch personnel, rescue personnel and all employees operate within the rules of this program, OSHA, and any other laws or regulations that apply to confined spaces. Maintenance of budgets and funding for required safety equipment, and employee certifications and training. Locations, identification, and securing of confined spaces.
- Supervisors: Training of employees and contractors on the requirements of the Confined Space Program. Providing information to employees and contractors about the locations, types, hazards, and protection requirements for entering confined spaces. Where confined spaces exist, Supervisors will carry the responsibilities of Permit Authorizing Supervisors and Entry Supervisors, obtain and maintain the necessary training and certifications for those responsibilities. Provide permits and supervision for confined space entries.
- Employees: Demonstrate knowledge of the requirements of the Confined Space Program. Will not enter a confined space without following the required protocol of this program. Those employees who are designated as **Attendants**, **Rescuers**, and **Entrants** will obtain and maintain the necessary training and certifications for the responsibilities of those positions.

B. Definitions

- Acceptable entry conditions means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.
- Attendant means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.
- Authorized entrant means an employee who is authorized by the employer to enter a permit space.
- **Blanking or blinding** means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.
- **Confined space** means a space that:

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

(2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and

(3) Is not designed for continuous employee occupancy.

- **Double block and bleed** means 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** means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.
- **Engulfment** means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated 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.

- Entry means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.
- Entry permit means the written or printed document that is provided by the employer to allow and control entry into a permit space and that contains the information specified in paragraph (f) of this section.
- Entry supervisor means the person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

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

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

(1) Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);

(2) Airborne combustible dust at a concentration that meets or exceeds its LFL;

NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less.

(3) Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

(4) Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this Part and which could result in employee exposure in excess of its dose or permissible exposure limit;

NOTE: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-

rescue, injury, or acute illness due to its health effects is not covered by this provision.

(5) Any other atmospheric condition that is immediately dangerous to life or health.

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

- Hot work permit means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.
- Immediately dangerous to life or health (IDLH) means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

NOTE: Some materials -- hydrogen fluoride gas and cadmium vapor, for example -- may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

• **Inerting** means the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

NOTE: This procedure produces an IDLH oxygen-deficient atmosphere.

- Isolation means the process by which a permit 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 tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.
- Line breaking means 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** means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.
- **Oxygen deficient atmosphere** means an atmosphere containing less than 19.5 percent oxygen by volume.
- **Oxygen enriched atmosphere** means an atmosphere containing more than 23.5 percent oxygen by volume.
- **Permit-required confined space (permit space)** means a confined space that has one or more of the following characteristics:

(1) Contains or has a potential to contain a hazardous atmosphere;

(2) Contains a material that has the potential for engulfing an entrant;

(3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or

(4) Contains any other recognized serious safety or health hazard.

- **Permit-required confined space program (permit space program)** means the employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.
- **Permit system** means the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.
- **Prohibited condition** means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.
- **Rescue service** means the personnel designated to rescue employees from permit spaces.
- **Retrieval system** means the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.
- **Testing** means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing

includes specifying the tests that are to be performed in the permit space.

NOTE: Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during, entry.

III. Written Confined Space Entry Program

A. General

- All Divisions and Departments will evaluate their workplace confined spaces. This will be done by developing Confined Space Data Sheets. Confined Space Data Sheets will provide management, employees and rescue teams with general information such as location and name of the confined space. It will also indicate the classification of the confined space. The Confined Space Data Sheet will also indicate a historical record of atmospheric conditions and list safety considerations required for safe entry.
- Exposed employees will be informed of permit require confined spaces and those confined spaces will be labeled with signs stating to the effect: DANGER-PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER.

B. Confined Space Pre-Entry Procedures

- Any unsafe conditions to removing a cover to a PRCS will be eliminated prior to opening the entrance.
- Entrances will be promptly guarded by a railing, temporary cover or other barrier that will prevent an accidental fall through the opening and will protect entrants working in the space from foreign objects.
- Prior to entry, the internal atmosphere will be tested with a calibrated direct-reading instrument, for:
 - 1. Oxygen content.
 - 2. Flammable gases and vapors.
 - 3. Potential toxic air contaminants
- If the test results indicate that the internal atmosphere is acceptable and that the risk of hazardous atmosphere developing is not reasonably anticipated, and there are no hazards of engulfment, entrapment, or other recognized hazards, the space is not a confined space and may be entered without further restrictions. The Entry

Supervisor will instruct the Entrants on other hazards associated with the confined space prior to entry.

- If the atmosphere does not test within acceptable ranges, but can be brought and maintained to safe levels by means of continuous forced air ventilation as documented by at least 3 consecutive previous permit entries; and there are no hazards of engulfment, entrapment, or other recognized hazards, continue to C. Confined Space Alternate Permit Required Procedures.
- If the atmosphere does not test within acceptable ranges, but can be brought and maintained to safe level by continuous forced air ventilation; and there are actual or reasonably anticipated hazards of engulfment, entrapment, or other recognized hazards, continue to D. Confined Space Permit Required Entry Procedures.

C. Confined Space Alternate Permit-Required Entry Procedures

• Prior to Any employee entering the confined space::

1. Continuous forced air ventilation has operated a sufficient length of time to eliminate the hazardous atmosphere.

2. The Entry Supervisor will provide testing results to the Entrants or their representatives.

3. The Entry Supervisor will certify in writing that the confined space is safe for entry and that the pre-entry measures required by OSHA and this program have been taken. The certification will contain the date, the location of the confined space, and the signature of the Entry Supervisor. The Certification will be made available to Entrants or their representative prior to entry.

- Continuous forced air ventilation will be so directed to ventilate the immediate areas where Entrants will be present within the confined space.. Continuous forced air ventilation will operate during the entire time the Entrant(s) occupy the confined space, and after all Entrants have exited the confined space. The air supply for the forced air ventilation will be from a clean source and will not increase the hazards in the confined space.
- The atmosphere within the confined space will be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Results of periodic testing will be available to Entrants or their representatives.
- Detection of a hazardous atmosphere during periodic testing.

1. The Entrants will exit the confined space immediately, no exceptions.

2. The confined space will be re-evaluated to determine how the hazardous atmosphere developed.

3. The appropriate measures will be implemented to eliminate the hazardous atmosphere.

4. The Entry Supervisor will re-certify the confined space prior to reentry.

D..Permit-Required Confined Space Entry Procedures

• The Entry Supervisor will complete the Confined Space Pre-Entry Procedures outlined in Section B.

1. Develop and implement additional means, procedures, and practices necessary for safe Permit Required Confined Space entry (PRCS) including but not limited to:

A. Acceptable entry conditions.

B. Providing each authorized entrant or their authorized representatives with the opportunity to observe any monitoring or testing of permit spaces.

C. Isolating the permit space

D. Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards.

E. Providing pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards.

F. Verifying that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry.

G. Provide all equipment necessary to evaluate the confined space, provide equipment to maintain acceptable entry conditions, and provide any other equipment required to work safely within the confined space. Maintain the equipment, and ensure that employees use the equipment properly.

H. Reevaluate in the presence of authorized Entrants or their representatives who believe that the evaluation of the space may

have not been adequate and immediately provide results of any testing conducted as a result of the reevaluation.

I. Provide at least one Attendant outside the confined space.

J. Designate Entrants, Attendants, Entry Supervisors, identify the duties of each employee and verify that each has the appropriate training to undertake their duties.

K. Develop and implement procedures for summoning rescue and emergency services, for rescuing entrants, providing necessary emergency services to rescued employees, and preventing unauthorized personnel form attempting rescue.

L. Coordinate multiple employer procedures to prevent employees from one employer endangering the employees of another employer working within the same confined space.

M. Develop and implement procedures to conclude work in a confined space and to exit the confined space, and canceling the permit.

2. The supervisor will then document that the above have been completed and authorize entry by signing the permit.

3. The permit will be available at the time of entry to all authorized entrants or their authorized representatives by posting it at the entry portal or by any other equally effective means.

4. Duration of the permit will not be longer than required to complete the tasks or jobs.

E. Prohibited Conditions Requiring Immediate Exit From Confined Spaces

• The following detected hazardous atmospheres:

1. Oxygen content less than 19.5% or greater than 23.5%

2. Any concentrations of 10% or greater of LFLs of any flammable gas, vapor, or mist.

3. Any concentrations of combustible dusts that equals or exceeds the LFL.

4. Hydrogen Sulfide (H2S) at 10 ppm or greater.

- 5. Carbon Monoxide (CO) at 35 ppm or greater.
- 6. Ammonia at 50 ppm or greater.
- 7. Any other toxic chemical that equals or exceeds its OSHA PEL.

• Any other recognized safety hazard or condition outside of the acceptable entry conditions spelled out in the entry permit or that could result in injuries to employees.

F. Rescue and Emergency Services

1. No PRCS entries, or entries into any areas with IDLH atmospheres or where IDLH atmospheres could be reasonably anticipated will be permitted by any City of Flagstaff employees. Exceptions: City employees who have the appropriate training, respiratory protection equipment, and stand-by rescue teams. Or employees are connected by harness and retrieval system that can be used safely in the confined space or area without entanglement. Fire Department personnel specially trained in the performance of their duties such as firefighting or confined space rescue.

2. The fact that PRCS or other areas with IDLH atmospheres or reasonably anticipated IDLH atmospheres will not be permitted, does not eliminate all possibilities of IDLH accidents. Therefore all personnel who are certified in Self-Contained-Breathing-Apparatus, and meet the appropriate physical requirements will also be certified and trained in IDLH rescue procedures.

3. Employees who will have rescue duties that do not involve IDLH rescue or duties outside of the confined space will be appropriately trained in first aid and CPR.

4. For all other PRCS rescue and emergency services, the entry supervisor or attendant will contact the Flagstaff Fire Department.

5. Rescue and emergency services teams and fire department teams will be evaluated on their abilities and proficiencies to effectively carry out a rescue including (but not limited to): timeliness, equipment, etc., by the City.

6. Rescue and emergency service teams and fire department teams will practice emergency confined space rescues at each City of Flagstaff site that has PRCSs at least once every 12 months.

7. Every Supervisor who oversees confined spaces must train employees that unauthorized and untrained employees are not to attempt a confined space rescue.

8. Although employees will not enter confined spaces with IDLH or hazardous atmospheres or confined spaces where IDLH or hazardous atmospheres may be reasonably anticipated, it is strongly recommended that employees be trained in IDLH and hazardous atmosphere rescue operation for situations that could arise other than confined spaces.

G. Employee Information and Training

1. Employees will be provided training based on their individual needs. Supervisors, Division Heads, and Department heads should closely monitor closely training requirements and to see that employees receive proper training.

2. Employees also have a responsibility to the City of Flagstaff to maintain training certifications current and to notify their supervisors in a timely manner when training requirements need to be fulfilled.

3. Specialized training required under this section include:

a. Permit Authorizing Supervisors and Entry

Supervisors.

- b. Entrants
- c. Attendants
- d. Rescuers

4. Other related training may or may not require (depending on circumstances): Respiratory Protection and Fit Test, HazWoper, First Aid, CPR.

H. Contractors

 Contractors who may perform work in confined spaces will be required to follow the same confined space entry procedures. Permit-Authorizing Supervisors and Entry Supervisors will follow the exact same procedures as with city employees. Permit-Authorizing Supervisors and Entry Supervisors will inform contractors of the hazards and precautions necessary to protect employees from those hazards. The contractor and their employees will be evaluated for their qualifications to enter the confined space as well as the type of work that they are doing. (Hot work, Lockout/Tagout)

I. Evaluation Of The Confined Space Program

- Any employee who chooses to ignore or violate the requirements of this program could face reprimand, loss of privileges, sanctions, or termination of employment.
- Employees, on completion of all phases of training, may be required to demonstrate Confined Space knowledge in an effort to improve this program and its training component.

- This program will be reviewed, and revised as required by changes in the OSHA Standard, City of Flagstaff operations, confined space hazards, or as conditions warrant, but not greater than annually.
- All City of Flagstaff facilities and locations, Departments and Divisions may be audited by Risk Management, Environmental Services, or independent consultants to evaluate compliance and make recommendations for improvement of this program.
- Suggestions, opinions, criticisms, and any recommendations to improve this program are welcome, and should be directed to the attention of Risk Management.
CONTROL OF HAZARDOUS ENERGY (Lockout/Tagout)

Purpose: Minimum procedures to prevent unexpected energization, start-up or release of stored energy to be implemented prior to employees engaging work on electrical, mechanical, hydraulic, pneumatic, or chemical equipment.

Scope: All Departments (where applicable).

Regulation: 1910.147 OSHA Control of Hazardous Energy and 1910 Subpart S OSHA Electrical

RESPONSIBILITIES

The Risk Manager is the Program Administrator and will supervise the program to assure that it is implemented, and update and review the program at least annually. The Administrator will identify training needs and assure that all employees who require training will be provided with the appropriate training.

The Human Resources Manager will keep the required training records of employees, and assist Department and Division Heads with notification of required training.

Department Heads, Division Heads and Supervisors will develop and implement Lockout/Tagout procedures and training specific to equipment within their areas. Appropriate locks and devices necessary under this program to isolate hazardous energy will be obtained and maintained by each Department.

Supervisors will maintain a written survey that locates and identifies all isolating devices, noting which devices (switch, valve, etc.) or other energy isolating devices apply to equipment to be locked or tagged out. Each supervisor will be knowledgeable of the types and location of energy isolating means for equipment and machines in his/her work area.

Employees, once trained will adhere to the minimum procedures outlined in this program, or OSHA 1910.147, or more stringent requirements.

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 tagout, 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 conductors, 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 isolating devices.

Energy source-Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Hot tap-A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. it is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

Lockout-The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout device-A device that utilizes a positive means such as a lock, either key or combination type, 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.

Normal production operations-The utilization of a machine or equipment to perform its intended production function.

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 unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

Setting up-Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout-The placement of a tagout 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 tagout device is removed.

Tagout device-A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to 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 tagout device is removed.

Training

Training will be provided after initial hire or transfer and prior to any work requiring lock out/tagout procedures. Training will include recognition of applicable hazardous energy sources, that type and magnitude of energy in the workplace, and methods necessary for energy isolation and control.

Retraining will be provided for all authorized and affected employees whenever there is a change in job assignment; machinery, equipment or process that presents a new hazard; or when there is a change in energy procedures; or when an inspection reveals or when there is reason to believe that there are deviations from-or inadequacies in-the employee's knowledge or use of procedures. As a minimum, retraining in lockout/tagout procedures will occur at least annually.

BASIC RULES FOR LOCKOUT/TAGOUT

Only authorized employees will perform work on power circuits or electrically powered equipment that is properly locked out.

All energy isolating devices will be locked out with lock out devices separately keyed. Where equipment cannot be locked out, tagging devices will be acceptable with at least one additional safety measure that provides a level of safety equivalent to that of a lock. Examples: Removal of an isolating circuit element; blocking of a controlling switch; opening of an extra disconnecting device.

Approved lockout, tagout, and block out devices will be specifically identified for controlling energy and will not be used for other purposes.

All locks and tags will be color coded and inscribed or otherwise marked with the employee's name. A lock bar or clamp may also be used to affix the lock to the power source. The lock will serve to identify the person performing the work. To prevent others from removing an employee's personal lock, each lock will be keyed separately. A lock will be removed only by the person who installed it. Exception: An authorized Supervisor may remove the lock ONLY after verifying that the employee is not working

on the equipment, every effort to contact the authorized employee has been made, and that safety, equivalent to having only the installer remove the lock, is maintained.

Only one person per crew will attach a lockout. When more than one crew is working on the same equipment, each crew will attach a lockout device.

When shift work is involved, authorized employees leaving the worksite will remove their lockouts, and authorized employees entering the worksite will immediately attach their lockouts. Where no work is being performed over a shift change (ie, awaiting parts) the authorized employee will attach a special "ALERT" tag which provides the following information:

Name of Employee Date Reason Locked Out Estimated date/time of job completion

"AREA LOCKOUTS" will be used to lockout more than one piece of equipment. Area Lockouts will be provided at key locations for temporary use. Area Lockouts will indicate the authorized employee using the Area Lockout. Only the employee on the Area Lockout will remove that lock.

LOCKOUT/TAGOUT PROCEDURE

All Affected Employees will be notified that a lockout/tagout system is going to be utilized and the reason. Notification will be given before controls are applied and after they are removed from the machine or equipment.

Shut down machines or equipment that are operating by normal procedures prior to lockout/tagout.

Operate the switch, button, valve, or other energy isolating device(s) so that the equipment is located from its energy source(s). Stored energy must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, etc. The authorized employee will know the type and magnitude of energy that the machine or equipment utilizes and will understand the hazards involved.

Lockout and tagout the energy isolating devices with assigned individual locks(s) or tag(s). Supervisor will note method selected: ie, locks, tags, and other safety measures.

After ensuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the normal operating controls to make certain equipment will not operate. Return operating control(s) to the "OFF" position after the test.

Restoring Machines or Equipment to Normal Operations

Upon completion of the service or repairs, check the surrounding areas to assure that no other employees or persons are exposed.

Remove all tools, reinstall all guards, check once again to assure no employees or persons are exposed, remove all lockout or tagout devices. Operate the energy isolating devices to restore energy to the machine or equipment.

Procedure Involving More Than One Person

When more than one person is required to lockout or tagout equipment, each will place their own personal lockout or tagout device on the energy isolating device(s). When an energy-isolating device cannot accept multiple locks or tags, a multi-lock hasp may be used. As each person no longer needs to maintain their own lockout protections, that person will remove their lock from the multiple lockout device.

Mechanical Lock and Tag Procedures

Persons working on mechanical type equipment will take any means necessary to prevent accidental start-up of equipment, such as disconnecting battery cables, removing keys, blocking, etc.

Outside Personnel, Contractors

When outside contractors and their servicing personnel are to work on city projects, Department Head, Division Head or Authorized Supervisor will meet with the outside contractor's Authorized Supervisor to inform each other of their respective lockout/tagout procedures.

The City of Flagstaff Authorized Supervisor will assure that City personnel understand and comply with restrictions and prohibitions of the outside contractor's lockout/tagout and energy control procedures.

ELECTRICAL HAZARDS

Appropriate personal protective equipment and clothing designed for electrical hazards will be used by employees to prevent electric shock or other injuries resulting from direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized.

Live parts will be deenergized before working on or near them, unless deenergizing creates increased hazards or is not feasible due to equipment design or operational limitations or if deenergized parts are under 50 to ground and there is no increased exposure to electrical burns or to explosion due to electric arcs.

Control circuit devices such as push buttons, selector switches, and interlocks, may not be used as the sole means for deenergizing circuits or equipment. Interlocks may not be used as a substitute for lockout tagout procedures.

Stored electric energy will be released, capacitors will be discharged and high capacitance elements will be short-circuited and grounded whenever stored energy might endanger personnel.

Stored non-electrical energy in devices that could reenergize electric circuit parts will be blocked or relieved to the extent that the circuit parts cannot be accidentally energized by the device.

A lock may be placed without a tag when only one circuit or piece of equipment is deenergized, the lockout period does not extend beyond the workshift, and the affected employees exposed to the hazards of reenergizing the circuit are familiar with the procedure.

Before a circuit or equipment is considered as deenergized, the following must be done:

A qualified person will operate the equipment controls or otherwise verify that the equipment cannot be restarted.

A qualified person will use test equipment to verify that circuit elements and equipment parts are deenergized. Tests will also determine if energized conditions exist as a result of inadvertently induced voltage or unrelated voltage backfeed.

If the circuit tested is over 600 volts nominal, the test equipment is to be checked for proper operation immediately after the test.

Before reenergization, a qualified person will conduct tests and visual inspections to verify all tools, electrical jumpers, shorts, grounds and other devices have been removed.

Employees exposed to the hazards associated with reenergizing the circuit or equipment will be warned to stay clear.

Each lock and tag will be removed by the employee who applied it, or under his or her direct supervision. Should the employee be absent from the workplace, the lock or tag may be removed by a qualified person provided that:

The employer assures that the employee who applied the lock or tag is not available at the workplace;

The employer assures that the employee is aware that the lock or tag has been removed before he or she resumes work at the workplace.

There will be a visual determination that all employees are clear of the circuits and equipment.

Working On or Near Exposed Energized Parts

Overhead lines will be deenegized and grounded or other protective measures such as guarding, isolating, insulating will be provided to prevent employees from contacting lines directly or indirectly through conductive materials, tools or equipment.

For unguarded energized overhead lines of up to 50 KV to ground, unqualified persons working in an elevated position near overhead lines must maintain a distance of at least 10 feet between the employee or the longest conductive object that they may come into contact with. Unqualified employees working on the ground may not bring any conductive object within 10 feet of an unguarded energized overhead line. The distance requirement will increase by 4 inches for every 10 KV over 50 KV.

A qualified person working near overhead lines may not take a conductive object without an approved insulated handle closer than the distances shown in the table below unless:

The person is insulated from the energized part (gloves, with sleeves if necessary, rated for the voltage involved are considered to be insulation of the person from the energized part on which work is performed), or

The energized part is insulated both from all other conductive objects at a different potential and from the person, or

The person is insulated from all conductive objects at a potential different from that of the energized part.

APPROACH DISTANCES FOR QUALIFIED EMPLOYEES-ALTERNATING CURRENT	
Voltage range (phase to phase)	Minimum approach distance
Up to 300 V	Avoid contact
Over 300 V to 750 V	1 ft. 0 in. (30.5 cm)
Over 750 V to 2 kV	1 ft. 6 in. (46 cm)
Over 2 kV to 15 kV	2 ft. 0 in. (61 cm)
Over 15 kV to 37 kV	3 ft. 0 in. (91 cm)
Over 37 kV to 87.5 kV	3 ft. 6 in. (107 cm)
Over 87.5 kV to 121 kV	4 ft. 0 in. (122 cm)
Over 121 kV to 140 kV	4 ft. 6 in. (137 cm)

Vehicles or Mechanical Equipment

Any vehicle or mechanical equipment with parts near unguarded energized overhead lines will maintain a minimum clearance of at least 10 feet for lines up to 50 kV. Additional clearance of 4 inches for every 10 kV over 50 kV is required.

The clearance may be reduced if:

The vehicle is in transit with its structure lowered, the clearance may be reduced to 4 ft. (122 cm). For voltages higher than 50 kV, the clearance must be increased by 4 in. (10 cm) for every 10 kV over that voltage.

Clearances may be reduced within the designed working dimensions of rated insulating barriers that are installed to prevent contact with the lines, rated for the voltage of the line, not part of or an attachment to the vehicle or its raised structure.

Aerial lifts insulated for the voltage involved, and work is being performed by a qualified person, the clearance (between the uninsulated portion of the aerial lift and the power line) may be reduced to those distances listed in the table above.

Employees standing on the ground may not contact the vehicle or mechanical equipment or any of its attachments unless:

The employee is using personal protective equipment rated for the voltage; or

No uninsulated part of the vehicle or its structure (that portion of the structure that provides a conductive path to employees on the ground) can come closer to the line than permitted in the first paragraph of this section.

Where a vehicle or mechanical equipment or parts are intentionally grounded, and the vehicle or mechanical equipment or its structure is elevated near unguarded energized overhead lines and contact is possible, employees may not stand at the point of grounding. Additional precautions such as barricades and insulation will be taken to protect employees from hazardous ground potentials which could develop within the first few feet or more outward from the grounding point.

Illumination

No work will be authorized in spaces containing exposed energized parts unless illumination is sufficient for employees to perform the work safely.

Confined or Enclosed Work Spaces

When an employee works in a confined or enclosed space (such as a manhole or vault) that contains exposed energized parts, the employer shall provide, and the employee will use, protective shields, protective barriers, or insulating materials as necessary to avoid inadvertent contact with these parts. Doors, hinged panels, and the like will be

secured to prevent their swinging into an employee and causing the employee to contact exposed energized parts.

Conductive Materials and Equipment

Conductive materials and equipment that are in contact with any part of an employee's body shall be handled in a manner that will prevent them from contacting exposed energized conductors or circuit parts. If an employee must handle long dimensional conductive objects (such as ducts and pipes) in areas with exposed live parts, the City will institute work practices (such as the use of insulation, guarding, and material handling techniques) which will minimize the hazard.

Portable Ladders

Portable ladders must have nonconductive siderails if they are used where the employee or the ladder could contact exposed energized parts.

Conductive Apparel

Conductive articles of jewelry and clothing (such a watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear) may not be worn if they might contact exposed energized parts. However, such articles may be worn if they are rendered nonconductive by covering, wrapping, or other insulating means.

.Housekeeping Duties

Where live parts present an electrical contact hazard, employees may not perform housekeeping duties at such close distances to the parts that there is a possibility of contact, unless adequate safeguards (such as insulating equipment or barriers) are provided. Electrically conductive cleaning materials (including conductive solids such as steel wool, metalized cloth, and silicon carbide, as well as conductive liquid solutions) may not be used in proximity to energized parts unless procedures are followed which will prevent electrical contact.

Interlocks

Only a qualified person may defeat an electrical safety interlock, and then only temporarily while he or she is working on the equipment. The interlock system shall be returned to its operable condition when this work is completed.

EXCAVATIONS

Policy Statement: No city employee or city contractor will excavate prior to determining the location of underground utilities. No employee of the city or of a contractor of the city will enter an excavation prior to inspection by "competent person". Excavations will be provided with adequate safeguards to protect the public.

Purpose: To educate all employees who may supervise or work in excavations about safe work procedures.

Regulation: OSHA 1926 Subpart P Excavations

RESPONSIBILITIES

Risk Manager: Program Administrator. To assure implementation of the program. To update the program at least annually.

Department and Division Heads: To inform supervisors and employees of the program. Maintain budgets for required safety equipment and employee training.

Supervisor: Fulfill the duties and requirements of the "Competent Person".

Employees: Follow rules of this program and the OSHA standards requiring personal protective equipment, ladders, and to recognize and report any associated hazards.

DEFINITIONS

"Accepted engineering practices" means those requirements which are compatible with standards of practice required by a registered professional engineer.

"Aluminum Hydraulic Shoring" means a pre-engineered shoring system comprised of aluminum hydraulic cylinders (crossbraces) used in conjunction with vertical rails (uprights) or horizontal rails (wales). Such system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.

"Bell-bottom pier hole" means a type of shaft or footing excavation, the bottom of which is made larger than the cross section above to form a belled shape.

"Benching (Benching system)" means a method of protecting employees from caveins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

"**Cave-in**" means the separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or other wise injure and immobilize a person.

"Competent person" means 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.

"Cross braces" mean the horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.

"Excavation" means any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

"Faces" or "sides" means the vertical or inclined earth surfaces formed as a result of excavation work.

"Failure" means the breakage, displacement, or permanent deformation of a structural member or connection so as to reduce its structural integrity and its supportive capabilities.

"Hazardous atmosphere" means an atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.

"Kickout" means the accidental release or failure of a cross brace.

"**Protective system**" means a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

"**Ramp**" means an inclined walking or working surface that is used to gain access to one point from another, and is constructed from earth or from structural materials such as steel or wood.

"Registered Professional Engineer" means a person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.

"Sheeting" means the members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

"Shield (Shield system)" means a structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either premanufactured or job-built in accordance with 1926.652(c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields."

"Shoring (Shoring system)" means a structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

"Sides". See "Faces."

"Sloping (Sloping system)" means a method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

"Stable rock" means natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against cavingin or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.

"Structural ramp" means a ramp built of steel or wood, usually used for vehicle access. Ramps made of soil or rock are not considered structural ramps.

"**Support system**" means a structure such as underpinning, bracing, or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

"Tabulated data" means tables and charts approved by a registered professional engineer and used to design and construct a protective system.

"Trench (Trench excavation)" means a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m). If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet (4.6 m) or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.

"Trench box." See "Shield"

"Trench shield." See "Shield."

"Uprights" means the vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each

other. Uprights placed so that individual members are closely spaced, in contact with or interconnected to each other, are often called "sheeting."

"Wales" means horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth.

GENERAL

Surface Encumbrances

All surface encumbrances that create a hazard to employees will be removed or supported as necessary prior to excavating.

Underground Utilities

All utility installations, such as sewer, telephone, fuel, electric, water lines, cable television any other underground installations, whether on public or private property, that are likely to be encountered during excavation will be properly located by safe means prior to excavating.

While the excavation is open, underground installations will be protected supported or removed as necessary to prevent damage, and to protect employees.

Access and Egress

A stairway, ladder, or ramp must be provided in trenches four feet or deeper and at least one for every 25 feet.

Employees who may be exposed to vehicular or equipment traffic will be provided with and wear warning vests with reflective material.

Employees will be protected from excavated or other material or equipment from falling or rolling into the excavation by keeping such materials at least 2 feet from the edge of the excavation, or by installation of a retaining device, or both.

Personal Protective Equipment

While working in excavations, employees will be provided with and will wear appropriate personal protective equipment such as approved hard hats, safety glasses or goggles and safety shoes or boots.

Stability of Adjacent Structures

Excavations are not permitted when:

The stability of adjoining buildings, walls or other structures is endangered by excavating operations.

When any excavation below the level of the base or footing of any foundation or retaining wall could be reasonably expected to pose a hazard to employees.

Where sidewalks or pavements or any attached structures would be undermined.

Exception: An approved support structure or underpinning system design by a registered professional engineer can be built to support the structure and protect employees against the hazard.

Fall Protection

Where employees or equipment will cross over excavations, walkways or bridges with standard guardrails will be provided.

Hazards Associated with Water Accumulation

Employees will not work in excavations with water accumulation unless adequate precautions have been taken to protect employees.

Water removal equipment will be monitored by the "Competent Person" for proper operation at all times.

Suitable means will be provided to prevent surface water from entering into the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to heavy rains will require an inspection by "Competent Person".

Falling Loads

Employees will not be permitted to stand under loads suspended by lifting or excavating equipment.

Equipment Warning Systems

Where operators of mobile equipment do not have a clear or direct view of the edge of an excavation, a warning system such as barricades, hand or mechanical signals or stop logs will be used. When possible, grades will be away from excavations.

Hazardous Atmospheres

Atmospheric conditions will be tested in excavations 4 feet or deeper prior to employees entering. Testing will be done for oxygen less than 19.5% oxygen content, and flammable gases in excess of 20% of their lower flammable limits. Ventilation controls to remove hazardous atmospheres will be installed before employees enter excavations. While employees remain in excavations, atmospheric conditions will be

tested as frequently as necessary to assure that hazardous atmospheres do not develop.

NOTE: Employees will not enter any excavations where hazardous atmospheres can be reasonably anticipated to occur (and cannot be removed through engineering controls). Employees will not enter any excavations with hazardous atmospheres with respirators as the sole means to control the hazardous atmospheres.

EMERGENCY RESCUE EQUIPMENT

Employees entering bell-bottom pier holes, or other similar deep and confined footing excavations, will wear a harness with a lifeline securely attached. The lifeline will be separate from any other line used to handle materials. The excavation will be attended by another employee on the outside of the excavation at all times that employees are inside of the excavation.

INSPECTIONS

The "Competent Person" will inspect excavations daily for:

Evidence of a situation that could result in a possible cave-in.

Indications of shoring failure.

Hazardous atmospheres.

Other hazardous conditions.

The "Competent Person" will inspect excavations:

Prior to the start of work.

As needed throughout the shift.

After every rainstorm.

After any occurrence that increases the hazard.

When a "Competent Person" finds evidence of a hazardous condition, exposed employees will be removed from the excavation until the hazards have been removed and necessary precautions have been taken to ensure safety.

PROTECTIVE SYSTEMS

Any excavation that will be entered by employees will first be inspected by the "Competent Person" to determine the requirements for protective systems.

Acceptable protective systems may include mechanical shoring, timber shoring, benching, sloping or shielding.

All systems must be designed by the "Competent Person" in compliance with Sub Part P. Exception: Systems may be designed by a Registered Professional Engineer.

Soil Classifications

Soil Classifications, soil types, and stability of soils determined for the purpose of designing protective systems, will follow the procedures and definitions outlined in OSHA 1926 Subpart P Appendix A.

Installation and Removal

Members of protective systems will be securely connected together to prevent sliding, falling, kickouts, or other predictable failures.

Protective systems must be removed in a manner that protects employees from caveins, structural collapses, and from being struck by parts of the shoring systems.

Individual members of protective systems will not be subjected to loads beyond their intended design.

Additional precautions such as installing of structural members to carry the loads of protective systems before removal of the individual members will be taken.

Removal will begin at and progress from the bottom of the excavation. Members will be released slowly so as to note any indication of failure of the remaining members or possible cave-in of the sides of the excavation.

Backfilling will progress together with the removal of protective systems from excavations.

The following figures are a graphic summary of the requirements contained in Subpart P for excavations 20 feet or less in depth. Protective systems for use in excavations more than 20 feet in depth must be designed by a registered professional engineer in accordance with 1926.652(b) and (c).



FIGURE 1 - PRELIMINARY DECISIONS





Shoring or shielding selected as the method of protection.

Soil Classification is required when shoring or shielding is used. The excavation must comply with one of the following four options:

Option 1

Sec. 1926.652(c)(1) which requires Appendices A and C to be followed (e.g. timber shoring).

Option 2

Sec. 1926.652(c)(2) which requires manufacturers data to be followed (e.g. hydraulic shoring, trench jacks, air shores, shields).

Option 3

Sec. 1926.652(c)(3) which requires tabulated data (see definition) to be followed (e.g. any system as per the tabulated data).

Option 4

Sec. 1926.652(c)(4) which requires the excavation to be designed by a registered professional engineer (e.g. any designed system).

FIGURE 3 - SHORING AND SHIELDING OPTIONS

AFTER HOURS PROTECTION

Excavations made by city employees or contractors' employees on city projects that are not backfilled in the same shift will be covered with hard covers or provided with rigid perimeter protection system.

HAZARD COMMUNICATION

I. Policy Statement:

To assure compliance with 29CFR1910.1200, Hazard Communication (OSHA) which requires employers to evaluate the potential hazards of chemicals, and to communicate information concerning chemical hazards and appropriate protective methods to employees and contractors.

II. <u>General</u>

A. Responsibilities

- Risk Manger: Designated as the Hazard Communication Program Manager, responsible for the direction, implementation and oversight of the Hazard Communication Program.
- Department Heads: Designation of a HAZCOM Coordinator at each facility or location where chemicals are received, stored, transported, transferred, handled, or used. Responsible for maintaining an accurate Chemical Inventory, Material Safety Data Sheets, maintenance of HAZCOM related equipment such as personal protective equipment, and specific chemical/hazard training of employees and contractors.
- HAZCOM Coordinator: Responsible for one or more facilities or locations where chemical hazards are present. Maintains a chemical inventory for facilities and locations, and updates the inventory at least monthly. Receives, maintains, and updates Material Safety Data Sheets for each chemical. MSDSs are updated at least monthly. Assures that containers are properly labeled. Manages the disposal of waste materials.
- Supervisors: Training of employees on specific chemicals, physical and health hazards, protective measures, personal protective equipment, accident and spill procedures.
- Employees: Know the location of the Hazard Communication Program, Hazard Communication Standard, Chemical Inventory and MSDSs in the workplace. Read and understand MSDSs for each chemical before use. Maintain HAZCOM equipment and personal protective equipment in good condition. Understand and follow requirements for container labeling, waste generation and disposal, and accident and spill procedures.

B. <u>Definitions</u>

- "Article" means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.
- "Assistant Secretary" means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.
- "Carcinogen:" A chemical is considered to be a carcinogen if:

(a) It has been evaluated by the International Agency for Research on Cancer (IARC), and found to be a carcinogen or potential carcinogen; or

(b) It is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or,

(c) It is regulated by OSHA as a carcinogen.

- "Chemical" means any element, chemical compound or mixture of elements and/or compounds.
- "Chemical manufacturer" means an employer with a workplace where chemical(s) are produced for use or distribution.
- "Chemical name" means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.
- "Combustible liquid" means any liquid having a flashpoint at or above 100 deg. F (37.8 deg. C), but below 200 deg. F (93.3 deg. C), except any mixture having components with flashpoints of 200 deg. F (93.3 deg. C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.
- "Commercial account" means an arrangement whereby a retail distributor sells hazardous chemicals to an employer, generally in large

quantities over time and/or at costs that are below the regular retail price.

- "Common name" means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.
- "Compressed gas" means:

(i) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70 deg. F (21.1 deg. C); or

(ii) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130 deg. F (54.4 deg. C) regardless of the pressure at 70 deg. F (21.1 deg. C); or

(iii) A liquid having a vapor pressure exceeding 40 psi at 100 deg. F (37.8 deg. C) as determined by ASTM D-323-72.

- "Container" means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.
- "Corrosive:" A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a chemical is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in appendix A to 49 CFR part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. This term shall not refer to action on inanimate surfaces.
- "Designated representative" means any individual or organization to whom an employee gives written authorization to exercise such employee's rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.
- "Director" means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

- "Distributor" means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers.
- "Employee" means a worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.
- "Employer" means a person engaged in a business where chemicals are either used, distributed, or are produced for use or distribution, including a contractor or subcontractor.
- "Explosive" means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.
- "Exposure or exposed" means that an employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure.
 "Subjected" in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption.)
- "Flammable" means a chemical that falls into one of the following categories:

(i) "Aerosol, flammable" means an aerosol that, when tested by the method described in 16 CFR1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;

(ii) "Gas, flammable" means:

(A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent by volume or less; or

(B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit;

(iii) "Liquid, flammable" means any liquid having a flashpoint below 100 deg. F (37.8 deg. C), except any mixture having components with flashpoints of 100 deg. F (37.8 deg. C) or higher, the total of which make up 99 percent or more of the total volume of the mixture.

(iv) "Solid, flammable" means a solid, other than a blasting agent or explosive as defined in 1910.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

• "Flashpoint" means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(i) Tagliabue Closed Tester (See American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24-1979 (ASTM D 56-79)) for liquids with a viscosity of less than 45 Saybolt Universal Seconds (SUS) at 100 deg. F (37.8 deg. C), that do not contain suspended solids and do not have a tendency to form a surface film under test; or

(ii) Pensky-Martens Closed Tester (see American National Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7-1979 (ASTM D 93-79)) for liquids with a viscosity equal to or greater than 45 SUS at 100 deg. F (37.8 deg. C), or that contain suspended solids, or that have a tendency to form a surface film under test; or

(iii) Setaflash Closed Tester (see American National Standard Method of Test for Flash Point by Setaflash Closed Tester (ASTM D 3278-78)).

Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified above.

- "Foreseeable emergency" means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.
- "Hazardous chemical" means any chemical which is a physical hazard or a health hazard.
- "Hazard warning" means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the specific physical and health hazard(s), including target organ effects, of the chemical(s) in the container(s). (See the

definitions for "physical hazard" and "health hazard" to determine the hazards which must be covered.)

- "Health hazard" means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes.
- "Highly toxic:" A chemical falling within any of the following categories:

(a) A chemical that has a median lethal dose (LD(50)) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(b) A chemical that has a median lethal dose (LD(50)) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.

(c) A chemical that has a median lethal concentration (LC(50)) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

- "Identity" means any chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.
- "Immediate use" means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.
- "Importer" means the first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or employers within the United States.
- "Irritant:" A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the

site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for four hours exposure or by other appropriate techniques, it results in an empirical score of five or more. A chemical is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques."Label" means any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

- "Material safety data sheet (MSDS)" means written or printed material concerning a hazardous chemical which is prepared in accordance with paragraph (g) of this section.
- "Mixture" means any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.
- "Organic peroxide" means an organic compound that contains the bivalent -O-O-structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.
- "Oxidizer" means a chemical other than a blasting agent or explosive as defined in 1910.109(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.
- "Physical hazard" means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.
- "Produce" means to manufacture, process, formulate, blend, extract, generate, emit, or repackage.
- "Pyrophoric" means a chemical that will ignite spontaneously in air at a temperature of 130 deg. F (54.4 deg. C) or below.
- "Responsible party" means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.
- "Sensitizer:" A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical.
- "Specific chemical identity" means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

• "Target organ effects."

The following is a target organ categorization of effects which may occur, including examples of signs and symptoms and chemicals which have been found to cause such effects. These examples are presented to illustrate the range and diversity of effects and hazards found in the workplace, and the broad scope employers must consider in this area, but are not intended to be all-inclusive.

- a. Hepatotoxins: Chemicals which produce liver damage Signs & Symptoms: Jaundice; liver enlargement Chemicals: Carbon tetrachloride; nitrosamines
- b. Nephrotoxins: Chemicals which produce kidney damage Signs & Symptoms: Edema; proteinuria Chemicals: Halogenated hydrocarbons; uranium
- c. Neurotoxins: Chemicals which produce their primary toxic effects on the nervous system.

Signs & Symptoms: Narcosis; behavioral changes; decrease in motor functions

Chemicals: Mercury; carbon disulfide

- d. Agents which act on the blood or hemato-poietic system: Decrease hemoglobin function; deprive the body tissues of oxygen Signs & Symptoms: Cyanosis; loss of consciousness Chemicals: Carbon monoxide; cyanides
- e. Agents which damage the lung: Chemicals which irritate or damage pulmonary tissue
 Signs & Symptoms: Cough; tightness in chest; shortness of breath
 - Chemicals: Silica; asbestos
- f. Reproductive toxins: Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis) Signs & Symptoms: Birth defects; sterility
 - Chemicals: Lead; DBCP
- g. Cutaneous hazards: Chemicals which affect the dermal layer of the body

Signs & Symptoms: Defatting of the skin; rashes; irritation Chemicals: Ketones; chlorinated compounds

- h. Eye hazards: Chemicals which affect the eye or visual capacity Signs & Symptoms: Conjunctivitis; corneal damage Chemicals: Organic solvents; acids
- "Toxic." A chemical falling within any of the following categories:

(a) A chemical that has a median lethal dose (LD(50)) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram

of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(b) A chemical that has a median lethal dose (LD(50)) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.

(c) A chemical that has a median lethal concentration (LC(50)) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

- "Trade secret" means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Appendix D sets out the criteria to be used in evaluating trade secrets.
- "Unstable (reactive)" means a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.
- "Use" means to package, handle, react, emit, extract, generate as a byproduct, or transfer.
- "Water-reactive" means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.
- "Work area" means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.
- "Workplace" means an establishment, job site, or project, at one geographical location containing one or more work areas.

III. Written Hazard Communication Program

• This document will serve as the City of Flagstaff written Hazard Communication Program. This document, along with the Hazard Communication Poster, Hazard Communication Standard, Chemical Inventory, and MSDSs will be available for all employees, contractors, and visitors for review. It should be placed in a conspicuous location.

A. Chemical Inventory

• As part of the City of Flagstaff Hazard Communication Program, each facility or location will maintain a list of hazardous chemicals, or Chemical Inventory. The Chemical Inventory will be maintained and updated by the HAZCOM Coordinator for that facility or location. The Chemical Inventory will be updated monthly.

B. Non-Routine Tasks

• Employees may be required to perform non-routine tasks such as cleaning tanks or entering confined spaces. Supervisors will provide specialized training for these non-routine tasks. Supervisors will also develop and use a system of Hazard Assessments, Job Safety Analysis, and/or Standard Operating Procedures to inform and educate employees and others about chemical hazards of non-routine tasks.

C. Multi-Employer Workplaces

- The facility or location HAZCOM Coordinator must be notified prior to a contractor's employees or other persons enter a City of Flagstaff facility or location.
- The HAZCOM Coordinator will review the type of work or activity of the contractor's employees or other persons prior to the visit. The HAZCOM Coordinator will determine what if any chemical hazards the contractor's employees or other persons could be exposed to and provide appropriate information and education to those employees prior to the beginning of the work or activity.
- The HAZCOM Coordinator will notify the contractor's employees or other persons of the location of the City of Flagstaff Hazard Communication Program, Chemical Inventory, MSDSs, and provide information on the City of Flagstaff labeling system.
- The City of Flagstaff Employee responsible for the contract with an outside contractor's employees or other persons and the HAZCOM Coordinator, will assure that contractor or provider is in compliance with 29CFR1910.1200, and that adequate information and hazard warnings, MSDSs of chemicals and materials are readily available.

D. Labels and Other Forms of Warning

- Labeling. In most cases, manufacturer's original labels on new products coming into the City of Flagstaff will adequately meet the requirements of this standard. Employees who receive new products, will check to assure that original containers are adequately labeled. At minimum, labels must contain the Chemical Identity, Hazard Warnings, First Aid Instructions, Address and Telephone of the Manufacturer or Supplier, and the CAS Number. In the event labels are missing, illegible, or covered up, employees will have these options: 1. Refuse delivery of the chemical; 2. Obtain an original replacement label from the manufacturer; 3. Make a label that contains the required information.
- Secondary Container Labeling: Any containers used to transfer chemicals from their original containers must be labeled in order to adequately communicate the hazards to others. Secondary container labels must also include the Chemical Identity and Appropriate Hazard Warnings. The City of Flagstaff labels also incorporates the NFPA Hazardous Materials Identification System. The only exception to labeling of secondary containers would be where chemicals were for immediate use. Labeling for those containers should include markings that indicate the Chemical Identity so that MSDSs are easily referenced. Empty containers should also be marked as EMPTY.
- Labels on original containers should not be removed, defaced, or covered, unless they will be relabeled immediately with the required information.
- Additional information regarding labeling and hazard warnings may be obtained from Risk Management, Environmental Services, Flagstaff Fire Department, your HAZCOM Coordinator, or your supervisor.

E. Material Safety Data Sheets

- MSDSs will be ordered at the same time as chemical products are ordered. Those employees who receive chemical products must verify that the MSDS is either already on file, or a new MSDS accompanies the product at the time of receipt. If there is no MSDS with the product and no MSDS is already on file, the person receiving the product may:
 Refuse the product from the supplier; or 2. Receive the product, order an MSDS directly from the manufacturer, and hold the product for final distribution until the MSDS arrives.
- Employees transferring chemicals in original containers from the warehouse or other point of origin to a facility or location will do so only with the MSDSs accompanying the chemical product.

- MSDSs will be kept at each City of Flagstaff facility or location along with the Hazard Communication Program, Hazard Communication Standard and Chemical Inventories.
- The MSDSs will be reviewed and updated as necessary at least annually by the HAZCOM Coordinator.

F. Employee Information and Training

- All City of Flagstaff employees will receive training as to the requirements of the Hazard Communication Standard, and an explanation of the labeling system. This information will be presented by Human Resources in a handout on or before the employee's initial assignment. The employee will sign and date a form acknowledging that they understand the basics of the City of Flagstaff Hazard Communication Program, and original will be maintained in the employee's 201 File.
- The HAZCOM Coordinator and/or Supervisor at the employee's work facility or location will provide site specific training to include: 1. Operations in the work area where hazardous chemicals are present;
 The location and availability of the written Hazard Communication, Chemical Inventory, and MSDSs; 3. Methods and observations used to detect the presence or release of hazardous chemicals; 4. Appearance and odors of hazardous chemicals; 5. Physical and health hazards of chemicals in the work area; and 6. Measures to protect themselves from chemicals. The employee will sign and date a form indicating that they have received this training.
- Risk Management will provide additional training on the City of Flagstaff Hazard Communication Program with primary information on MSDSs, terminology, physical and health hazards of chemicals, basic personal protective equipment, first aid procedures, accident and spill control. This training will be documented on the employees electronic H.T.E. file.
- Employees will be trained by their supervisors on specific chemicals using the MSDSs prior to using any chemicals.
- Training will be provided at the time of initial assignment, on site, for specific chemicals and any time a new chemical is introduced, in the event of process change, or physical or chemical hazard change.

G. Evaluation Of The Hazard Communication Program

- Any employee who chooses to ignore or violate the requirements of this program could face reprimand, loss of privileges, sanctions, or termination of employment.
- Employees, on completion of all phases of training, may be required to demonstrate Hazard Communication knowledge in an effort to improve this program and its training component.
- This program will be reviewed, and revised as required by changes in the OSHA Standard, City of Flagstaff operations, chemical hazards, or as conditions warrant, but not greater than annually.
- All City of Flagstaff facilities and locations, Departments and Divisions may be audited by Risk Management, Environmental Services, or independent consultants to evaluate compliance and make recommendations for improvement of this program.
- Suggestions, opinions, criticisms, and any recommendations to improve this program are welcome, and should be directed to the attention of Risk Management.

HEARING CONSERVATION

I. Policy Statement:

To prevent employee hearing loss due to occupational noise exposure. This program will accomplish this through sound level monitoring, audiometric testing, engineering and personal protective equipment, and employee training, where employees are exposed to noise levels of 85 dBA, 8 hour TWA, or greater..

The policies and procedures contained in this section are intended to assist in identifying and complying with OSHA Safety Standards. In all cases where there is a difference between specific OSHA standards and the Hearing Conservation policies set forth in this chapter, the stricter of the two shall apply.

II. Procedures

Responsibilities

- Risk Manger: Designated as the Hearing Conservation Program Manager, responsible for the direction, implementation and oversight of the overall program. Risk Management will establish and implement Citywide safety procedures and programs to increase safety awareness to all employees.
- Department Heads: Department Heads are responsible for implementing the Hearing Conservation Program and distributing this procedure.
- Division Heads must designate a Hearing Conservation Administrator.
- Supervisors administer the Hearing Conservation Program.
- Employee must comply with the Hearing Conservation Program and must use the approved hearing protective equipment where required...

III. References

 Occupational Safety and Health Act 29CFR1910.95 Occupational Noise Exposure.

IV. OSHA Permissible Noise Exposure Limits

• Table 1 indicates the duration and sound levels to which employees may be exposed to occupational noise without experiencing hearing loss. Employees must not be exposed to impact noise greater than 140 dBA peak.

Duration per day, hours	Sound level dBA slow response
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 or less	115

Footnote: When the daily noise exposure is composed of two or mor periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: C(1)/T(1) + C(2)/T(2) = C(n)/T(n) exceeds unity, then, the mixed exposure should be considered to exceed the limit value. Cn indicates the total time of exposure at a specified noise level, and Tn indicates the total time of exposure permitted at that level. Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

V. Noise Control Measures

- When noise levels equal or exceed a time weighted average of 85 dBA for an eight-hour day, a Hearing Conservation Program must be implemented. The program shall contain the following components.
 - a. Noise Monitoring
 - b. Noise Control
 - c. Audiometric Testing
 - d. Hearing Protection
 - e. Employee Education
- When employees are subjected to noise levels exceeding an eighthour TWA of 90 dBA, feasible engineering and or administrative controls must be taken to reduce employee noise exposure.

VI. Identification of High Noise Areas

• The Department Program Administrators shall contact Risk Management for monitoring of suspected high noise level areas.

A. Area Monitoring

- Noise surveys will be conducted by Risk Management at the request of each Hearing Program administrator.
- Risk Management shall provide affected employees or their representatives with an opportunity to observe any noise measurements.
- The Hearing Conservation Program Administrator shall notify each employee in writing of the results of monitoring and the area monitored will also be posted.
- Monitoring will be repeated whenever a change in production, process, equipment or controls increases noise exposures to the extent that additional employees may be exposed at or above 85 dBA, or hearing protectors may not be adequate.

B. Personal Monitoring (Dosimetry)

- Noise dosimetry will be performed to determine what work areas, or employees may have exposures 85 dBA 8 hour TWA or greater.
- Dosimetry studies will be conducted by Risk Management or their designated consultants.
- The affected department will be notified in writing of recommendations and required action.
- Employees will be notified when exposures are equal to or greater than 85 dBA.

C. Sound Level Meters

- All sound equipment and noise meters will be calibrated by Risk Management, or retained Industrial Hygienist.
- Any questions concerning equipment calibration can be directed to Risk Management.

VII. High Noise Area Inspections

• Periodic inspections of high noise areas by the department will be performed to monitor the use of hearing protection. Departments shall

ensure that required posting is done and check changes in area noise levels.

• Risk Management shall be notified of problem areas so that further evaluation can be made.

VIII. Warning Signs and Posters

- Signs and Occupational Noise Standard posters indicating equipment and areas of high noise shall be posted conspicuously to ensure that employees are aware where hearing protection must be worn. This will be the responsibility of each Department Hearing Conservation Program Administrator.
- To ensure complete visibility, signs must be kept clean and unobstructed.
- Departments will be responsible for obtaining the required signs. OSHA required Hearing and Conservation posters may be obtained from Risk Management.

IX. Personal Protection Devices

- If engineering controls cannot reduce the noise exposure or administrative controls are not feasible, hearing protection shall be worn. Personal Hearing Protection Devices shall be worn while engineering controls are being studied or evaluated.
- Departments shall make hearing protection available to all employees exposed to an eight hour TWA of 85 dBA or greater at no cost to the employees. Hearing protection shall be replaced as necessary.
- It is the direct responsibility of supervisors to ensure that employees properly use hearing protection whenever working in high noise environments.
- Department Hearing Conservation Program Administrators shall establish policies concerning hearing protection for other persons not specifically covered by this program (i.e., visitors).
- Employees shall be given the opportunity to select their hearing protection from a variety of suitable hearing protection provided by the Department Hearing Conservation Program Administrators.
- The Hearing Conservation Program Administrators shall provide or coordinate training in occupational noise procedures with the assistance of Risk Management.
- The Hearing Program Administrator shall ensure proper initial fitting and supervise the correct use of all hearing protection.
- Supervisors are responsible to ensure that employees use only authorized hearing protection devices.
- Supervisors are responsible to ensure that all unauthorized hearing protection devices are removed from City premises.

X. Audiometric Testing

- Each Department shall establish and maintain an audiometric testing program. Audiometric testing will be made available to all employees whose exposures equal or exceed an eight hour time weighted average of 82 decibels.
- All applicants will be given a hearing screening as a standard part of the pre-employment examination.
- Annual audiometric examinations are given to all employees working regularly in areas where the noise level is at or above 85 dBA for eight hours or where employees have a diagnosed occupational hearing loss.
- The departments will be responsible for scheduling their employees for annual hearing testing and ensuring that the appointments are kept.
- The Hearing Conservation Program Administrator shall notify employees of the need to avoid high levels of non-occupational noise exposure during the 14-hour period immediately preceding the audiometric examination.
- It is the responsibility of the direct line supervisor to ensure that employees observe the 14-hour rule above by not working in or around high noise environments prior to testing. "Hearing protectors may be used as a substitute for the requirement that baseline audiograms be preceded by 14 hours without exposure to work place noise."
- Written notice will be sent to the employees when they are diagnosed with occupation al hearing loss.
- Concentra, is the designated provider for audiometric examinations.

XI. Employee Training

- A Training program will be administered under the guidance of Risk Management to all employees exposed to noise levels at or above an eight hour TWA of 85 dBA or have a diagnosed occupational hearing loss. This program will be repeated annually.
- Hearing Conservation Program Administrators or the designees are responsible for the actual training.
- Human Resources will keep a record of all employees trained in hearing conservation. The record shall include:
 - a. employee name;
 - b. employee SS number;
 - c. date of training
 - d. course content, and
 - e. instructor's name.
- All participants shall sign an attendance sheet.

XII. Recordkeeping

- Records of audiograms will be retained for the duration of the affected employee's employment plus thirty years; these records shall be retained by the City of Flagstaff Human Resources. These records will be made available to the employee, employee's representative, or OSHA upon request.
- Noise dosimetry monitoring results will be retained for at least two years by the City of Flagstaff, Risk Management, and will be available for inspection by authorized personnel.
- Information and Training Materials
 - 1. Division administrations must have on hand a copy of the OSHA Standard 29CFR1910.95 (revised September 1994). This standard shall be made available to any employee requesting it.
 - 2. A copy of the standard must be posted in all areas where noise levels equal or exceed and eight-hour TWA of 82 dBA.
 - 3. A list of those employees requiring annual hearing testing and hearing conservation training shall be made available by the Department to Risk Management upon request.

XIII. Definitions

- Action level an 8-hour time-weighted average of 82 decibels measured on the A-scale, slow response, or equivalently a dose of 33 percent.
- Audiogram A chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold level as a function of frequency.
- Audiologist A professional, specializing in the study and rehabilitation of hearing who is certified by the American Speech-Language-Hearing Association or licensed by a state board of examiners.
- Base Line audiogram The audiogram against which future audiograms are compared.
- Criterion Sound level A sound level of 90 decibels
- Decibel (dB)- Unit of measurement of sound level.
- Hearing Conservation Program Administrator (HCPA) A person assigned by the Department Head to administer the Hearing Conservation Program for the department.
- Hertz (Hz) Unit of measurement of frequency, numerically equal to cycles per second.
- Medical pathology a disorder or disease. For purpose of this regulation, a condition or disease affecting the ear, which should be treated by a physician specialist.
- Noise dose The time-weighted average noise exposure expressed as a percentage of the permissible exposure limit. A dose of 100% equals and 8-hour time-weighted average of 90 dBA.
- Noise Dosimeter An instrument that integrates a function of sound pressure over a period of time in such a manner that it directly indicates a noise dose.
- Otolaryngologists A physician specializing in diagnosis and treatment of disorders of the ear, nose and throat.
- Representative exposure Measurement of an employee's noise dose or 8-hour time weighted average sound level that the employers deem to be representative of the exposure of other employees in the work place.

- Sound Level- The intensity of Sound as measured by an instrument and reported in decibels.
- Sound level meter An instrument for the measurement of sound level. Time weighted average sound level That sound level, which if constant over an 8-hour exposure would result in the same noise does as is measured.
- Sound pressure Pressure oscillations generated by a vibrating surface or turbulent fluid flow causing high and low pressure areas to be formed which propagate from the source as sound.

XIV. Responsibility for Review

• Risk Management and Hearing Conservation Program Administrators will review this procedure periodically.

PERSONAL PROTECTIVE EQUIPMENT

I. Policy Statement:

To assure compliance with 29CFR1910.132, Personal Protective Equipment (OSHA) This standard requires employers to perform a Hazard Assessment to identify hazard present or likely to be present in the workplace that require PPE. A Certification process is required to document that each employee understands and has been trained on PPE. The standard also covers employer's requirements for inspection, maintenance and care, disinfection and sanitation of PPE.

II. Procedures

A. Responsibilities

- Risk Manger: Designated as the Personal Protection Equipment Program Manager, responsible for the direction, implementation and oversight of the overall program.
- Department Heads: Responsible for Hazard Assessments, evaluation, selection, maintenance and inspection of PPE. Training of employees on the program. Part or all of these responsibilities may be delegated to Division Heads and Supervisors.
- Division Heads and Supervisors: Assignment of PPE. Observations of employees to assure that the program is being followed. Enforcement of mandatory use of PPE. Identification of changes in hazards, workplace procedures, employees that may require retraining or additional training, inappropriate or damaged equipment.
- Employees: Know the hazards present or likely to be present that could result in injuries. Know the correct types of PPE appropriate to protect against hazards. Understand and perform periodic inspection, maintenance, disinfection and storage of PPE. Correct and train coworkers about the program. Recommend improvements in engineering controls that may improve safety, cost effectiveness, or eliminate the need for PPE.

B. General

• Employee-Owned PPE must be approved by the Division Head to assure that the quality of the equipment meets the requirements of this standard. All other requirements of this standard will apply to Employee-Owned PPE.

- Hazard Assessment and Equipment Selection. Department Head (or designee) will perform a Hazard Assessment of each workplace to determine the hazards present, or likely to be present. Based on the Hazard Assessment, the Department Head will select appropriate PPE to protect against those hazards, taking into consideration individual fit requirements, and communicate its selection decisions to each affected employee. A written certification of the Hazard Assessment will identify the workplace evaluated, the person perfoming the assessment, and the date.
- Defective, damaged, or any equipment that otherwise fails standards will be removed from service immediately.
- Training. The Department Head will train each employee required to use PPE:
 - 1. When PPE is necessary
 - 2. What PPE is necessary
 - 3. How to properly don, doff, adjust, and wear PPE;
 - 4. limitations of the PPE
 - 5. Proper care, maintenance, useful life and disposal of the PPE

Employees will be required to demonstrate and understanding of this training and the ability to use PPE properly, before performing work requiring PPE.

Employees will be retrained:

1. When a supervisor has reason to believe that the employee does not have the understanding and skill to use PPE even if previously trained..

- 2. Changes in the workplace or hazards.
- 3. Changes in the types of PPE.

Departments will verify that each employee receives and understands the required training by certificates that include the names of the employee, dates of the training, and the subject of the certification.

C. Eye and Face Protection

• Eye or Face protection is required whenever hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation are present.

Side protection is required whenever flying particles are present. Detachable (clip-on or slide-on) side protectors must meet the standards of this requirement. Prescription lenses may be used where they meet the requirements of this standard. Where eye protection covers prescription lenses, they must be capable of providing protection without disturbing the correct position of either the prescription or protective lenses.

Eye and Face PPE must be marked with the identification of the manufacturer.

OPERATION	ELECTRODE SIZE 1/32 IN.	ARC CURRENT	MINIMUM * PROTECTIVE SHADE
Shielded Metal Arc Welding	Less than 3 3-5 5-8 More than 8	Less than 60 60-160 160-250 250-550	7 8 10 11
Gas Metal Arc Welding and Flux Cored Arc Welding		Less than 60 60-160 160-250 250-500	7 10 10 10
Gas Tungsten Arc Welding		Less than 50 50-150 150-500	8 8 10
Air Carbon Air Cutting	Light Heavy	Less than 500 500-1000	10 11
Plasma Arc Welding		Less than 20 20-100 100-400 400-800	6 8 10 11
Plasma Arc Cutting	Light ** Medium ** Heavy **	Less than 300 300-400 400-800	8 9 10
Torch Brazing Torch Soldering			3
Carbon Arc Welding			14

• Table 1 Filter Lenses for Protection Against Radiant Energy

OPERATION	PLATE	PLATE	MINIMUM *
	THICKNESS	THICKNESS	PROTECTIVE
	INCHES	MM	SHADE
Gas Welding:			
Light	Under 1/8	Under 3.2	4
Medium	1/8 to 1/2	3.2-12.7	5
Heavy	Over 1/2	Over 12.7	6
Oxygen			
Cutting:			
Light	Under 1	Under 25	3
Medium	1 to 6	25 to 150	4
Heavy	Over 6	Over 150	5

• Table 2 Filter Lenses for Protection Against Radiant Energy

* As a rule of thumb, start with a shade that is too darkto see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation.

** These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the workpiece.

• Protective eye and face devices purchased after July 5, 1994 shall comply with ANSI Z87.1-1989, "American National Standard Practice for Occupational and Educational Eye and Face Protection.

D. Head Protection

- Whenever a Hazard Assessment identifies a hazard or hazards likely to be present that could result injuries from falling objects, the City of Flagstaff will provide employees with protective helmets or 'hard hats', and their use will be mandatory in those workplaces.
- Protective helmets or 'hard hats' will be designed to reduce electric shock hazards in workplaces where identified hazards or likely hazards include exposed electrical conductors which could contact the head.
- Protective helmets will comply with ANSI Z89.1-1986, "American National Standard for Personnel Protection-Protective Headwear for Industrial Workers.

E. Foot Protection

- Whenever a Hazard Assessment identifies a hazard present or likely to be present that could result injuries to the foot or feet, such as from falling objects, rolling objects, objects piercing the sole, or contact with electrical hazards, the City of Flagstaff will provide employees with protective footwear, and their use will be mandatory in those workplaces.
- Protective footwear will comply with ANSI Z41-1991, "American National Standard for Personal Protection-Protective Footwear".

F. Electrical Personal Protective Equipment

- Design, marking, electrical requirements, workmanship and finish of insulating blankets, matting, covers, line hose, gloves, and sleeves made of rubber will meet the requirements of OSHA and ASTM. Equipment will only be used within the intended Classifications.
- PPE used for insulating will be inspected prior to and after each use. Equipment found to have holes, tears, punctures, or cuts; ozone cutting or checking; embedded foreign object(s); texture changes including swelling, softening, hardening; or becoming sticky or inelastic; or any other defect that damages the insulating properties will be removed from service and destroyed. Gloves suspected of being damaged by accident will be tested for leaks by air. Other defects found in PPE will be subjected to test protocol outlined in OSHA 1910.137, or removed from service and destroyed.
- Electrical PPE used for insulating will be stored to protect it from light, temperature extremes, excessive humidity, ozone, and other injurious substances and conditions.
- Protector gloves will be worn over insulating gloves except:

1. When used with Class 0 gloves, under limited-use conditions, where small equipment and parts manipulation necessitate unusually high finger dexterity. (Extra care is needed in the visual examination of the glove and in the avoidance of handling sharp objects.)

2. Any other class of glove may be used for similar work without protector gloves if the possibility of physical damage to the gloves is small and the class of glove is higher than that required for the voltage. Insulating gloves that have been used without protectors cannot be used at a higher voltage until they have been tested under the OSHA/ASTM protocol.

• Electrical PPE used for insulating that fails inspection or tests will be taken out of service and destroyed. Repairs of defects may be

acceptable in some cases, but must meet the requirements of the OSHA standard for the repair, and must be pass the OSHA/ASTM testing protocol before being returned to service.

- Line hose and covers will be tested upon indication that insulating values are suspect. Blankets and sleeves will be tested prior to issue and every 12 months. Gloves will be tested prior to issue and every 6 months.
- Each division assigned electrical PPE for insulating must either mark the equipment or maintain a log that indicates the dates and results of testing.

G. Hand Protection

- Where a Hazard Assessment identifies a hazard is present or likely to be present that could result in injuries to hands, including absorption of harmful substances; sever cuts or lacerations; severe abrasions; punctures; chemical burns; and harmful temperature extremes, the City of Flagstaff will supply appropriate protective equipment for hands, and their use will be mandatory in those workplaces.
- Hand protection equipment will be selected on the evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified.

Blankets, gloves, and sleeves will be seamless. Each item will be marked as to Class 1, 2, 3, or 4. Non-ozone-resistant equipment will be marked Type I Ozone-resistant equipment will be marked Type II. Other relevant markings such as Manufacturers ID and Size. Markings will be non-conductive and will not impair insulating qualities of the equipment. Markings on gloves will be confined to the cuff of the glove. • A-C Proof Test Requirements

Class of Equipment	Proof-Test Voltage	Maximum Proof-Test Current mA (Gloves Only)			
	rms V	267 mm	356 mm	406 mm	457 mm
		10.5 in	14 in	16 in	18 in
0	5,000	8	12	14	16
1	10,000		14	16	18
2	20,000		16	18	20
3	30,000		18	20	22
4	40,000			22	24

• D-C Proof Test Requirements

Class of Equipment	Proof-Test Voltage	
0	20,000	
1	40,000	
2	50,000	
3	60,000	
4	70,000	

• Glove Tests – Water Level (1)(2)

Class of	AC Proof Test		DC Proof Test	
Glove	Mm	In.	Mm	In.
0	38	1.5	38	1.5
1	38	1.5	51	2.0
2	64	2.5	76	3.0
3	89	3.5	102	4.0
4	127	5.0	153	6.0

Footnote(1) The water level is given as the clearance from the cuff of the glove to the water line, with a tolerance of + or - 13 mm. (+or - 0.5 in.).

Footnote(2) If atmospheric conditions make the specified clearances impractical, the clearances may be increased by a maximum of 25 mm. (1 in.).

RESPIRATORY PROTECTION

I. Policy Statement:

- A. To assure compliance with 29CFR1910.134 Respiratory Protection (OSHA) which requires employers to establish a written respiratory protection program where employees are required to use respirators and to ensure safe use of respirators.
- B. Respirators will only be used as protection whenever engineering, administrative or substitution controls are not feasible.

II. Procedures

A. Responsibilities

- Risk Manger: Respiratory Protection Program Manager, responsible for the direction, implementation and oversight of the Respiratory Protection Program.
- Human Resource Manager: Scheduling and maintenance of initial and periodic required medical evaluations, medical examinations, and medical surveillance for newly hired employees and existing employees that will use respirators in the course of their employment.
- Department and Division Heads: Scheduling and maintenance of initial and periodic required medical evaluations, medical examinations, and medical surveillance for newly hired employees and existing employees that will use respirators in the course of their employment. Conducting workplace hazard assessments, employee exposure monitoring, job safety analysis and other studies for each workplace and job task to determine types, adequacy, and effectiveness of respiratory protection.
- Supervisors: Training of employees on the requirements of the Respiratory Protection Program, types of respirators, uses and limitations of respirators, putting respirators on and off, how to fit and check the seals of respirators, inspection and maintenance, emergency situations and respirator malfunctions, maintenance and storage of respirators, medical signs and symptoms that may limit or prevent the use of respirators. Fit testing.
- Employees: Demonstrate knowledge of the requirements of this program. Inform supervisors and management of individual interval requirements for medical evaluations, examinations and surveillance,

and fit testing in a timely manner to avoid lapses in Respirator Certification. Inspect, repair, clean and sanitize, maintain and store assigned respiratory protection equipment to ensure good working condition and efficiency. Use respiratory equipment whenever management has identified mandatory use by means of hazard assessments, employee monitoring, or job safety analysis for a given workplace or job task. Maintain facial hair to less than one day's growth where a respirator seal meets the employees' skin.

B. Definitions

- **Air-purifying respirator** means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
- Assigned protection factor (APF) [Reserved]
- Atmosphere-supplying respirator means 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.
- **Canister or cartridge** means a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.
- **Demand respirator** means an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.
- Emergency situation means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.
- **Employee exposure** means exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.
- End-of-service-life indicator (ESLI) means a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.
- **Escape-only respirator** means a respirator intended to be used only for emergency exit.

- Filter or air purifying element means a component used in respirators to remove solid or liquid aerosols from the inspired air.
- Filtering facepiece (dust mask) means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.
- Fit factor means a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.
- Fit test means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)
- **Helmet** means a rigid respiratory inlet covering that also provides head protection against impact and penetration.
- High efficiency particulate air (HEPA) filter means a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.
- **Hood** means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.
- Immediately dangerous to life or health (IDLH) means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.
- Interior structural firefighting means the physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage. (See 29CFR 1910.155)
- **Loose-fitting facepiece** means a respiratory inlet covering that is designed to form a partial seal with the face.
- Maximum use concentration (MUC) [Reserved].
- **Negative pressure respirator (tight fitting)** means a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

- **Oxygen deficient atmosphere** means an atmosphere with an oxygen content below 19.5% by volume.
- Physician or other licensed health care professional (PLHCP) means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e) of this section.
- **Positive pressure respirator** means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.
- **Powered air-purifying respirator (PAPR)** means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.
- **Pressure demand respirator** means a positive pressure atmospheresupplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.
- Qualitative fit test (QLFT) means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.
- Quantitative fit test (QNFT) means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.
- **Respiratory inlet covering** means that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.
- Self-contained breathing apparatus (SCBA) means an atmospheresupplying respirator for which the breathing air source is designed to be carried by the user.
- Service life means the period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.

- **Supplied-air respirator (SAR)** or airline respirator means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.
- **Tight-fitting facepiece** means a respiratory inlet covering that forms a complete seal with the face.
- **User seal check** means an action conducted by the respirator user to determine if the respirator is properly seated to the face.

III. Written Respiratory Protection Program

• This document will serve as the City of Flagstaff written Respiratory Protection Program. This document, along with the Respiratory Protection Standard, will be available for all employees, contractors, and visitors for review. It should be placed in a conspicuous location.

A. Selection of Respirators

- The selection of respirators to control exposures or health hazards will always be secondary to preferred engineering, administrative, or substitution controls.
- Workplace hazard assessments of respiratory hazards and job safety analysis as well as user factors will determine base respirator selection.
- Respirators must be NIOSH certified.
- Hazard Assessments will identify and evaluate respiratory hazards which will include a reasonable estimate of employee exposures to the respiratory hazards, and an identification of contaminant's chemical state and physical form. Whenever a hazard assessment of a respiratory hazard cannot reasonably estimate employee exposure, the hazard will be considered as IDLH.
- The City of Flagstaff will make a sufficient number of respirator models and sizes available to employees to make sure respirators are acceptable and fit correctly.
- In IDLH atmospheres, a full facepiece SCBA with a minimum service life of thirty minutes, or a combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply will be provided.

- Escape-only respirators for IDLH atmospheres must be NIOSH-certified for the atmospheres in which they will be used.
- Oxygen-deficient atmospheres will be considered IDLH, except where oxygen concentrations can be maintained within the ranges specified in the following table under all foreseeable conditions in these instances, any atmosphere-supplying respirators may be used.:

ALTITUDE IN FEET	OXYGEN DEFICIENT ATMOSPHERE IN PERCENT
Less than 3.001	16.0-19.5
3,001-4,000	16.4-19.5
4,001-5,000	17.1-19.5
5,001-6,000	17.8-19.5
6,001-7,000	18.5-19.5
7,001-8,000	19.3-19.5

Exception does not apply above 8,000 feet. Oxygen-enriched breathing air must be supplied above 14,000 feet.

- The City of Flagstaff will provide respirators adequate to protect the health of employees and will comply with all other OSHA statutory and regulatory requirements, under routine and reasonably foreseeable emergency situations.
- Respirators will be appropriate for the chemical state and physical form of the contaminants. Respirators will be atmosphere-supplying; or airpurifying respirators equipped with ESLI certified by NIOSH. Where ESLIs are not practical, management will develop a change schedule based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life.
- For protection against particulates, an atmosphere-supplying respirator; or air-purifying respirator certified by NIOSH with HEPA efficiency, or an air-purifying respirator equipped with a filter certified for particulates by NIOSH under 42CFR part 84; or for contaminants consisting primarily of particles with mass median aerodynamic diameters (MADD) of at least 2 micrometer, an air-purifying respirator equipped with any filter certified for particulates by NIOSH.

B. Medical Evaluations

• Prior to any employee using a respirator to perform their duties, the City of Flagstaff will determine the employee's ability to use a respirator. This process will be initiated by a medical evaluation to be initiated by Concentra, the City's designated physician or licensed health care professional.

- Concentra will administer a follow-up medical examination for employees who answer yes to any questions 1 through 8 in Section 2, Part A of Appendix C or whose initial medical examination demonstrates the need. Concentra will administer any medical tests, consultations, or diagnostic procedures necessary to make a final determination. All medical evaluations will be conducted confidentially, during normal working hours at a time and place convenient to the employee. Employees will be provided the opportunity to discuss medical evaluation and examination results with Concentra.
- Prior to medical evaluations and examinations, the employee's supervisor will provide the following information to Concentra: A. The type and weight of the respirator(s); B. Duration and frequency of respirator use (including use for rescue and escape); C. Expected physical work effort; E. Temperature and humidity extremes. City of Flagstaff will also provide a copy of this standard to Concentra.
- In making a determination of an employee's ability to use a respirator, the City of Flagstaff will obtain the following information from Concentra: A. Any limitations on respirator use related to the medical conditon of the employee, or relation to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator; :B. The need, if any, for follow-up medical evaluations; C. A statement that Concentra has provided the employee with a copy of their written recommendations.
- In the event that Concentra finds that an employee has a medical condition that the use of a negative pressure respirator may put the employee at an increased health risk, the City will provide a PAPR subject to Concentra's approval. Should the employee medically qualify use of a negative pressure respirator during a subsequent evaluation, the City will no longer provide a PAPR.
- Additional medical evaluations will be provided when: A. An employee reports medical signs and symptoms that are related to the ability to use a respirator; B. A PLHCP, Supervisor, or the Respirator Program Administer informs the City of Flagstaff that the employee needs to be reevaluated; C. Information from the Respiratory Protection Program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation; or D. A change occurs in workplace conditions (e.g., physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed on the employee.

C. Fit Testing

- Once an employee is medically qualified to wear a respirator, it is up to the employee's supervisor to see that the employee is properly fit tested for each make, model, style, and size of negative or positive pressure respirator with a tight fitting facepiece that will be used.
- Each employee must pass a qualitative fit test (QLFT) at least annually, and whenever a different respirator facepiece (size, style, model or make) is used. A QLFT will also be administered whenever the City of Flagstaff, PLHCP, supervisor, or program administrator makes visual observations of, changes in the employee's physical condition that could affect respirator fit. These conditions include but are not limited to: Facial scarring; dental changes; cosmetic surgery; or an obvious change in body weight.
- Upon passing a fit test, if the employee notifies the City of Flagstaff, supervisor, program administrator, or PLHCP that the fit of the respirator is unacceptable, the employee will be given a reasonable opportunity to select a different respirator facepiece and a new fit test.
- All tight-fitting atmosphere-supplying and air-purifying respirator fit tests will be administered with respirators in the negative pressure mode, regardless of the mode of operation (negative or positive pressure). QLFT for these respirators will be performed by temporarily converting the actual facepiece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure airpurifying respirator facepiece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator facepiece.

D. Respirator Use

- Respirators will not be used by employees who have: Facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function; or any condition that interferes with the face-to-facepiece seal or valve function. Corrective glasses, goggles or other personal protective equipment must not interfere with the seal of the facepiece to the face. Each time a tight-fitting respirator is donned, employees will perform a seal check by using a method approved by OSHA or the manufacturer.
- Respirators will be reevaluated for effectiveness through surveillance designed to detect changes in work area conditions, degree of employee exposure or stress. Employees will exit respirator use areas to wash their faces and respirator facepieces as necessary to prevent eye or skin irritation; whenever they detect vapor or gas breakthrough,

changes in breathing resistance, or leakage of the facepiece; or to replace filter, cartridge, or canister elements.

- When an employee must work in an atmosphere that is IDLH, at least one employee will be located outside the IDLH atmosphere who will be in visual, voice, or signal line communication with the respirator user. The outside person will be trained in emergency rescue appropriate for the situation. The outside person will be equipped with pressure demand or other positive pressure SCBAs, or pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and, if required, appropriate retrieval equipment for removing the employee from the hazardous atmosphere.
- In interior structural fires, there will be at least two employees enter the IDLH atmosphere and remain in visual or voice contact with each other at all times; and at least two employees outside the IDLH.

E. Respirator Care

- Respirators must be cleaned and disinfected by employees after each use. Methods to clean and disinfect respirators must follow those of the manufacturer or OSHA.
- Emergency respirators will be stored in clearly marked compartments, and maintained for easy access for the workplaces that they are intended. All respirators must be stored so as to protect them from the elements, chemicals, and in such a way to prevent deformation of the equipment.
- All mergency respirators and SCBA's will be inspected at least monthly and in accordance with manufacturer's recommendations. Escapeonly respirators will be inspected prior to being placed in the work area. All respirators will be inspected before and after each use. Inspections will include respirator function, tightness of connections, condition of facepiece, head straps, valves, connecting tube, cartridges, canisters, filters, elastomeric parts for pliability and signs of deterioration as a minimum.
- SCBA's will also be inspected for a fully charged state, and will be recharged when pressure falls below 90% of the manufacturer's recommended level. Any regulators and warning devices will also be inspected for proper function.
- Emergency respirator inspections will be certified with the certification indicating the date, name of the person making the inspection, findings, required remedial action, and serial number or other method

to ID the equipment. Certifications should be placed with the respirator(s) and maintained until the next inspection certification.

- Any respirator failing to meet inspection requirements will be removed from service and repaired, or destroyed.
- Repairs and adjustments must only be made by trained persons, and parts must be from the original manufacturer of the respirator and approved by NIOSH.
- Reducing and admission valves, regulators, and alarms will only be adjusted or repaired by the manufacturer or a technician trained by the manufacturer.

F. Breathing Air Quality and Use

- Compressed and liquid oxygen will meet the minimum requirements of the United States Pharmacopoeia for medical or breathing oxygen. Compressed air will meet the minimum requirements for Grade D breathing air per ANSI G-7.1-1989 including oxygen content 19.5-23.5%; hydrocarbon (condensed) content of 5 mg/m3 of air or less; carbon monoxide (CO) content of 10 ppm or less; carbon dioxide of 1,000 ppm or less; and lack of noticeable odor.
- Compressed oxygen cannot be used in atmosphere-supplying respirators that previously used compressed air. Oxygen concentrations greater than 23.5% will only be used in equipment designed for oxygen service or distribution.
- Cylinders will be tested and maintained per Shipping Container Specification Regulations of the DOT (49CFR173 and 178). Cylinders of breathing air purchased from suppliers must have a certificate of analysis that it meets the requirements of Grade D breathing air. The moisture content of the air must not exceed a dew point of -50 degrees F (-45.6 degrees C) at 1 atmosphere.
- Compressors that supply breathing air to respirators will be constructed and situated so as to prevent entry of contaminated air into the air supply; minimize moisture so that the dew point at 1 atmosphere is 10 degrees below ambient temperature; and be equipped with in-line air-purifying sorbent beds and filters maintained and replaced or refurbished by the manufacturer's instructions. A tag will be maintained at the compressor indicating the most recent change, and the person authorized by the City to perform the change.
- Non-oil lubricated compressors will not exceed carbon monoxide levels of 10 ppm. Oil-lubricated compressors will use either a high-

temperature or carbon monoxide alarm, or both, to monitor carbon monoxide.

- Breathing air couplings will be incompatible with other outlets for nonrespirable air, or other gas systems. Asphyxiating substances will not be introduced into any breathing air lines.
- Breathing gas containers will be certified and marked in accordance with the NIOSH respirator certification standard 42CFR part 84.

G. Identification of Filters, Cartridges, and Canisters

• All filters, cartridges, and canisters will be color coded and labeled per NIOSH.

H. Training and Information

- The City of Flagstaff will provide training before any employee uses a respirator in the workplace. Respiratory Protection training will be repeated at least annually, more often in the event that there is a change in the program; change in respirator type; employee(s) has not retained the requisite understanding or skill; or any other situation in which retraining appears necessary to ensure safe respirator use.
- Training will include at a minimum: A. Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator; B. Limitations and capabilities of the respirator; C. Using the respirator effectively in emergency situations, including situations in which the respirator fails; D. Inspection, put on and remove, use, and check seals of the respirator; E. How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and, F. The general requirements of the OSHA Respiratory Protection Standard.

I. Program Evaluation

- This program will be reviewed for effectiveness periodically through hazard assessments, job safety analysis, management and employee consultations. These reviews will be performed by the Respiratory Protection Program Administrator, Risk Manager, and as necessary, outside consultants.
- Reviews and evaluations will assess respirator fit; appropriateness of respirator types and canisters cartridges and filters; proper use; and maintenance.

• The City of Flagstaff, Risk Management, and the Program Administrator welcomes questions, input, and suggestions regarding this program.

J. Recordkeeping

• The City of Flagstaff will comply with OSHA requirements regarding records of employee medical evaluations and examinations, fit testing, and training.