# Safety Manual

*Updated 12/12/2016*

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POLICY STATEMENT

# *SAFETY AND WELLNESS: A CITY PRIORITY*

Employees are our most valuable resource. You – your experience, education, knowledge, and most of all your health and safety – are more important than just quickly completing a task.

For this reason The City of Grand Junction will strive to provide the safest possible working conditions for our employees and will provide appropriate medical care to minimize the effect of injuries when they occur.

Department Heads and Managers: Occupational safety and health shall be given full consideration in the planning, development, and operation of every program and activity throughout the City. Support and assist supervisors in their safety efforts and reward them for attention to safety planning, equipping and training of staff.

Supervisors and Lead Workers: Encourage involvement of all employees in safety awareness, and make sure that each job activity is done safely. Plan ahead to anticipate safety and health hazards for each activity. Train and equip workers appropriately for the specific activities of their jobs. Inspect and update facilities and equipment as needed. Utilize the safety resources provided by the City, and communicate any safety needs. Promptly investigate and report accidents and "near-misses" that could contribute to future injuries. Finally, ensure that every employee is empowered and rewarded for participation in the Department's safety and health programs.

Employees: Take responsibility for your own safety. Report safety hazards that you encounter in your work. Make use of safety equipment that is needed for your job. Always be on the alert for the safety of your fellow workers, and work together to promote safe and healthy work practices. Make use of safety training opportunities that are offered in your work group, and communicate any safety needs that you see.

Accident prevention and efficient production go hand in hand. All employees, supervisors and managers must work together continuously to promote the safety and wellness of our workforce.

**Greg Caton, City Manager**

## GENERAL SAFETY RULES

1. Use caution when lifting. Bend knees, and keep back straight. Leg muscles, not your back, should do the work. When lifting heavy loads, use lifting devices such as forklift, pallet truck, etc. or get help from other employees. Do not lift large objects in high winds. DO NOT ATTEMPT TO LIFT LARGE/HEAVY LOADS BY YOURSELF. Supervisors should provide appropriate equipment to assist employees in managing heavy loads.
2. Fighting or horseplay is strictly prohibited.
3. Smoking is permitted only in designated areas.
4. Personal protective equipment shall be worn at all times when required by your supervisor or safety regulations. All PPE must be maintained in good condition.
5. Tools and equipment shall be kept in proper working condition, and proper electrical grounding and guards in place before use.
6. Good housekeeping practices shall be maintained at all times in all City work areas and vehicles.
7. All employees should familiarize themselves with the nearest fire extinguisher and first aid kit and know the proper use of each.
8. Report missing or damaged equipment immediately to your supervisor.
9. All equipment used during the work day shall be de-energized and secured at the end of the day.
10. Hazardous wastes such as waste oils, hydraulic fluids, cleaning fluids etc. shall be disposed in a proper manner. Contact your supervisor for proper disposal procedures. Consult with the Fire Department Hazardous Materials Division for disposal problems.
11. All city speed limits and traffic signs shall be observed.
12. Report accidents immediately to your supervisor and complete accident forms promptly.
13. Report unsafe work situations to your supervisor.
14. Frequently review and be aware of the requirements of the emergency evacuation plan for your building.
15. Do not interfere with other employees while they are using power tools, motorized equipment, or when they are working near electrical lines and equipment.
16. Use equipment with safeguards that are adequately designed and intended for normal operations.
17. Wrist watches, metal wrist bands, rings, or other jewelry shall not be worn while working near moving parts of machines or energized circuits.
18. Clean clothes are essential in preventing skin irritations. Clothing saturated with solvents or other materials shall be removed and shall not be worn until properly cleaned. It is recommended that employees working in areas of high contamination keep an extra set of work clothes on the job.
19. When in doubt about safety regulations consult the appropriate OSHA standard.

## FIRE FIGHTING EQUIPMENT

1. Use fire extinguishers for emergencies only, unless otherwise approved for training purposes. If used for training, make sure that extinguishers are recharged.
2. Report all fires immediately to your supervisor and call 911.
3. Personnel shall be trained in the proper use of fire extinguishers.
4. Keep fire equipment and exit routes free from obstructions.
5. Inspect fire extinguishers on a monthly basis.
6. Inspect buildings at least annually for presence of fire hazards, and review emergency evacuation routes and procedures.
7. For further guidance on fire protection, consult OSHA standard 29 CFR 1910 subpart L.

## PERSONAL PROTECTIVE EQUIPMENT

1. Personnel shall wear personal protective equipment that is consistent with the type of work conducted. This may include but is not limited to eye protection, hand protection, head protection, skin protection, hearing protection or respiratory protection. Use appropriate Material Safety Data Sheets, and contact your supervisor to determine what personal protective equipment is required.
2. Approved clothing (including city issue clothing, caps, etc.) shall be worn and maintained in good repair. Loose sleeves, tails, ties, lapels, cuffs, or other loose clothing which can become entangled shall not be worn. Working without shirts is not permitted. See Page 17 for work zone apparel requirements.
3. Any employee not using the personal protective equipment required by the City, who is injured on the job and whose injury was caused by failure to use prescribed personal protective equipment, shall forfeit 50% of his/her workers' compensation benefits, pursuant to the Colorado Workers' Compensation Act, section 8-52-104.
4. Employees will wear hearing protection when working in areas marked with appropriate warning signs or upon instructions to do so by their supervisor.
5. Welders and their assistants shall wear approved eye protection during cutting, welding or brazing operations. See page 21 for welding & cutting requirements.
6. Respirators shall be worn as necessary. Supervisors shall ensure that employees are properly fitted and trained in the use of respiratory equipment.
7. Per the OSHA construction standard 29 CFR 1926.502, each employee on a walking/working surface with an unprotected side or edge which is 6 feet or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems. Some City operations may fall under the OSHA general industry standard 29 CFR 1910.23, which requires open-sided floors or platforms 4 feet or more above adjacent floor or ground level to be guarded by a standard railing (guardrail) or equivalent.

8. Hard Hats:

   A. OSHA approved hard hats that meet the ANSI Z89.1 Standard, along with proper Class and Type are required as minimum standards for the following jobs:

1. On all contractor construction sites where there is danger of overhead impact or where contractor employees are required to wear hard hats.
2. All job sites with heavy equipment in use or present on the job, such as backhoe, loaders, skid Steers, dump trucks, etc.
3. By all employees working in or near excavations 4' deep or greater.
4. Where danger from electrical hazards exist, such as working out of a bucket on boom truck or working in an electrical panel.
    a. Class G hard hat is required up to 2200 volts
    b. Class E hard hat is required up to 20000 volts
5. Where there is a risk of an overhead impact.
6. A class II type hardhat is required where there is a risk of a side impact.
7. Where workers are working in or underneath vertical lift devices such as bucket trucks, man lifts and personnel baskets for forklifts.
8. Supervisors and Crew Leaders in charge of a work site will be responsible for wearing of personal protective equipment in the work zone.

B. Requirements

1. Hard hats must be in good condition and free of physical defects.
2. Hard hats should be worn and maintained according to manufacturer recommendations.
3. Bump caps are not acceptable head protection.
4. Hard hats should be inspected before each use. Damaged hats or those that have sustained a heavy impact should be removed from service and replaced.
5. Hard hats should be identified with a City of Grand Junction logo.

C. Remember the goal of wearing a hard hat is to provide a safe working environment and reduce injuries to employees and job site visitors. It also provides recognition that you are a City of Grand Junction employee and demonstrates safety consciousness.

9. Footwear:

A. Sturdy work boots are required and safety toed boots are encouraged. No open toed or tennis type shoes are allowed except when special operations specify non-hard soled footwear.

B. Safety toed boots are required when working with equipment or material that could pose a risk of foot injury.

C. Metatarsal foot protectors or safety toed boots are required when operating jackhammer or compaction equipment.

D. Each Division should create a list of safety shoe required and safety shoe exempted routine tasks. For non-routine tasks supervisory discretion should be exercised according to the above guidelines.

10. Gloves shall be worn during any work where there is danger of hand injury.
11. High Visibility Safety Apparel: See page 12 for safety apparel requirements in work zones exposed to traffic hazards.
12. All personal protective equipment shall be kept clean, in good repair, and ready for use.

13. If in doubt, wear protective equipment for your safety!

## VEHICLE AND EQUIPMENT OPERATION

1. Employees operating motor vehicles will carry a current driver's license that is valid for the type of vehicle driven.
2. Personnel operating motorized equipment will be adequately trained in its use and operation. Equipment operation should not be assigned to an untrained member of a crew.
3. All employees operating forklifts shall maintain proof of training.
4. Lift trucks will be attended at all times when running.
5. Pedestrians will be given right-of-way in all cases.
6. Equipment operators shall obey all speed limit and warning signs, drive at reasonable speeds for the type of equipment driven with due regard for weather, traffic conditions, and intersections.
7. Tank trucks and semi trucks will be braked and the engine turned off during loading or unloading operations unless otherwise required for specific equipment operation.
8. All safety and emergency equipment will be in proper working order on vehicles or moving equipment currently in use.
9. Vehicles must meet all DOT requirements before use. Deficiencies must be reported immediately to your supervisor.
10. The brakes and other safety systems shall be tested by the operator before leaving on the first trip of the day and any deficiencies noted and corrected. When required, DOT inspection logs shall be properly filled out and kept in the vehicle.
11. Employees will have their entire body inside the moving equipment at all times and shall not enter or exit a vehicle while it is moving.
12. Drivers shall make certain that all loads are properly loaded and secure. Employees must position themselves properly to avoid being exposed to loads shifting or falling from the sides or end of the vehicle.
13. Employees will not ride in buckets, Hi-Ranger lift baskets, forks (of lift trucks), etc. not designed to transport personnel while the vehicle or equipment is in motion.
14. Seat belts will be used in all vehicles except as permitted by Colorado law for emergency vehicles, sanitation vehicles, and meter reading operations.
15. The driver shall inspect their footwear before driving a vehicle to ensure their footwear is free of mud, excessive water, oil or grease to prevent a slippery contact with brake and/or clutch pedals.
16. Vehicles shall not be operated with dirty or damaged windshields, mirrors, inadequate brakes, faulty steering gear, horn or lights.
17. The severe application of brakes, especially booster brakes, shall be avoided except in an emergency. The operator must at all times have the vehicle under control so as to be able to bring it to a complete stop within the assured clear distance ahead.
18. No vehicle shall be parked on a hill or grade unless the front wheels are turned into the curb or the wheels securely chocked.
19. No vehicle shall be driven on a downgrade with gears in neutral or clutch disengaged.

20. Employee drivers shall not permit more employees to ride in the vehicle than the number of seat belts provided.
21. All tools and equipment shall be properly guarded, stowed, and securely fastened when transported.
22. All doors of cabinets, lockers, and tail gates must be latched before moving the vehicle.
23. All trucks except those equipped with closed circuit camera systems shall have someone directing during backing. See "Vehicle Backing" below for specifics.
24. When possible do not load and unload a vehicle from the street side of the load.
25. Special regulations and instructions governing the loading and unloading of poles, pipes, etc., shall be strictly observed in every case.
26. The vehicle hood shall be secure at all times when it is raised. When it has been lowered into position it shall be checked to determine that it is completely latched.

## VEHICLE BACKING OPERATIONS

Driving large trucks, in general, is a challenge to any professional driver -- but backing is the toughest and most hazardous operation. Backing accidents are the source of some of the most costly and heartbreaking accidents in the workplace. City employees consequently should use extra care and precaution in backing.

### *Backing*

1. Prior to backing, check the path of your truck to make sure the way is clear. If you can't see where you are going, get out and look. Check all clearances, on the right side, left side, front, back, and top of your truck. Do this as often as is necessary to do a safe job of backing.
2. Back your vehicle slowly and cautiously. Make sure you have absolute control of your vehicle at all times.
3. Alert other drivers or pedestrians who may be in, or about to cross your path of travel by blowing your horn. Be careful, though. They may not understand your intentions.
4. If you have a loader or helper working on your crew, always have the helper direct you in the backing up operation. Only one person, however, should be giving the backing signals.
5. It is both the Driver and the Helper's responsibility to have a clear understanding of the signals that will be used for direction. Even though there is someone directing, drivers are not relieved of their responsibility. It is still up to them to see that the backing operation is done safely.
6. If there is any other way of driving to your objective, do it rather than by backing. Plan or help management to plan your route to eliminate all unnecessary backing.

### *Helper's position*

1. The helper must be on the ground in a position that gives them an unobstructed view of the ground over which the truck is about to be moved, with their body facing the driver, and visible to the driver at all times either directly or through rear or side mirrors.
2. Wherever possible, the helper should station himself at the point where the backing maneuver is to end, so that he avoids the hazards of walking backward over the surfaces he does not see. This may require stopping the truck and changing positions several times.

Final Note: Bad weather can reduce visibility, or cause a slippery road surface from rain, snow, or ice, presenting a greater hazard in backing operations.

## MATERIAL HANDLING AND STORAGE

1. Store and stack material so that the load is stable.
2. Floors and platforms supporting loads must be properly constructed to support the weight of the load, particularly on upper level floors.
3. When moving material with a lift truck, make sure the load is balanced and stable.
4. Do not exceed load carrying capacity of vehicles being used.
5. Store and stack material in approved locations. Make sure all aisle widths conform to Fire and Building Codes.
6. Keep aisles, stairways, exits, fire equipment, water heaters, boilers, electric panels and switch boxes well marked.
7. Do not store materials where exits, firefighting equipment, emergency equipment, ladders, walkways or roadways may be obstructed.
8. Do not store materials near sources of combustion or electrical equipment.
9. Maintain a clear view when moving loads.
10. Use caution to prevent contact of sharp or pointy materials with other items or people. Remove packing nails and/or wire if they are not necessary for storage.
11. Flammables must be stored a safe distance from regularly occupied office areas.
12. Materials hauled in a dump truck must be secured with a tarp in accordance with Colorado law to prevent materials from falling or blowing off the truck.
13. Consult OSHA Construction standard 26 CFR 1926.953 for material handling safety issues on jobsites.

## HOUSEKEEPING

1. Keep all work areas orderly and clean. (See OSHA Standard 26 CFR 1910.22)
2. Keep aisles, passageways and stairways clear and accessible.
3. Clean up all spills and/or leaks.
4. Place rags and other materials in approved containers.
5. At the end of the work day or upon completion of a job, remove all tools and excess materials and barricade the area if necessary.

## HAND TOOLS

1. Select the proper tool for the job.
2. Use tools that are in good repair. Replace any broken tools immediately.
3. Tools should be inspected before each use.
4. Secure tools when transporting them in vehicles.

## POWER TOOLS

1. Carefully read instructions before using power tools.
2. Ground all tools before using them, and do not alter three prong grounding plugs.
3. Powered electrical tools are required to have a grounding plug or be double insulated.
4. All tools must have a "dead man" switch.
5. Use the correct tool for the job.
6. Do not disconnect tools by pulling on the cord.
7. Do not use equipment with frayed or damaged cords.
8. Avoid using power tools in wet situations whenever possible; otherwise be sure GFI (Ground Fault Interrupter) protection is in place and functioning properly.
9. Do not change bits, blades, etc. when the tool is energized. Unplug the tool before making changes.
10. Do not operate power tools without guards.
11. Wear eye protection when using power tools.
12. Breakers, fuses and other over-current protection shall be maintained in all circuits. Power tools should not be used on circuits exceeding 20 amperes rating unless otherwise approved in the Uniform Building Code.
13. Extension cords shall not be used as a substitute for fixed wiring of a structure or building. Electrical outlets should be installed where needed.
14. Do not leave cords of portable electric tools where cars or trucks will run over them.
15. Consult OSHA standard 26 CFR 1910 subpart P for hand and power tool safety.

## LADDERS

1. Ladders shall be in good repair and used in their intended manner.
2. Wooden ladders shall not be painted.
3. Ladders shall be placed so that the base is one (1) foot out for every four (4) feet of height.
4. Ladders shall be properly secured and equipped with shoes at the bottom to prevent slippage.
5. Always climb and descend facing the ladder. Ladders are not to be used as scaffolds.
6. Only one (1) person shall work on a ladder at a time.
7. Metal ladders shall not be used near electrical lines, electrical cabinets, or energized equipment.
8. Benches, boxes and other materials shall not be used in place of a ladder.

9. Damaged ladders will be repaired or discarded.
10. Ladders should be inspected prior to each use, and repaired or taken out of service if not up to standards. Weight limits should be observed for each ladder used.
11. Ladders should not be placed in front of doors unless the door can be and is secured.
12. Materials should not be carried by hand when ascending and descending a ladder.
13. Use 3 points of contact when going up or down a ladder.
14. When using a ladder to gain access and dismount onto a higher surface, be sure the top of the ladder extends 3 ft above top surface and the ladder is firmly anchored.
15. Consult OSHA Ladder Safety E-Tool for guidance regarding ladder safety.

## SCAFFOLDS

1. All scaffolding shall be installed by qualified individuals.
2. All scaffolding shall be constructed of approved materials in an approved manner, in accordance with applicable OSHA Standards.
3. Scaffolding shall be equipped with toe boards and guardrails in locations greater than ten (10) feet.
4. A personal fall arrest system per OSHA Standard 29 CFR 1926.502 shall be used if scaffolding cannot be provided with guardrails.
5. Scaffolding shall be equipped with a ladder to facilitate access.
6. Scaffold boards shall not be painted.
7. Mobile scaffolds shall not be moved while personnel are located on them.
8. Metal scaffolds shall not be used in or near electrical lines or equipment.
9. Consult OSHA standard 26 CFR 1910.28 for guidance on scaffold safety.

## BARRICADES AND WORK AREA PROTECTION

1. Working in traffic exposes employees to extreme danger. Construction, maintenance, utility and incident zones on streets and roadways can result in hazards to workers, motorists, and citizens alike. Since the risk of injury or death in such work is significant, certain safeguards must be instituted to minimize the risks. Temporary traffic control can compensate for the unusual or unexpected situations faced by road users.

### Manual on Uniform Traffic Control Devices (MUTCD)

2. All City temporary traffic control work zone set-ups must conform to the current Manual on Uniform Traffic Control Devices, MUTCD 2009 Edition (Published by the Federal Highway Administration).

## Planning

3. It is very important to pay special attention to the safety and accessibility of all pedestrians, bicyclists, motorists, and workers during each step of the planning process. Coordinate with transit, other highway agencies, law enforcement and other emergency units, utilities, schools and railroad companies to reduce unexpected and unusual road user operation situations. Commercial vehicles may need to follow a different route than passenger vehicles because of bridge, weight, clearance or geometric restrictions. Follow the fundamental principles of the Temporary Traffic Control chapter in the MUTCD to assist road users and protect workers.

## Training

4. Temporary traffic control work zones shall be designed and set up under the supervision of a person possessing an American Traffic Safety Services Association (ATSSA) certification as a traffic control supervisor. The traffic control design and set up may be accomplished in-house by qualified City personnel or by contracting with a traffic control company.

   Prior to their assignment, all workers will be trained on how to work next to motor vehicle traffic in a way that minimizes their vulnerability. Workers having specific temporary traffic control responsibilities will be trained in temporary traffic control techniques, device usage and placement.

## Personal Protective Equipment in Traffic Zones

***High Visibility Safety Apparel:***

1. Night Hours: When working at night on streets, roads, or highways employees are required to wear class III ANSI #107 approved apparel.

2. Daytime:
   A. On State and Federal Highways, or roads with posted speed limit of 50 mph or higher, employees are required to wear class III ANSI #107 approved apparel.
   B. Employees shall also wear class III ANSI #107 approved apparel on traffic arterials with high traffic volume. Examples: 1st, 7th & 12th Streets and 28 Road.
   C. Class II apparel is required for streets and roads with posted speed limits between 26 mph and 49 mph.

D. Low traffic side streets with speed limits marked 25 mph or less will only require the employee to wear the standard City-issued lime green upper attire.

To keep costs down for the city, class III apparel should be worn by all employees who have already been issued such attire, even when working in lower speed limit or traffic volume areas. Class II ANSI #107 approved apparel may be used in areas indicated by 2 C above if Class III is not available. It is always acceptable to wear a higher class than specified for conditions.

3. Hard Hats: See Hard Hat guidelines under Personal Protective Equipment on page 7. Hats shall conform to ANSI Z89.1 and be of the appropriate type and class for the hazard that may potentially be encountered in the work zone.

4. Other personal protective equipment may be required depending on the type of work being done, including but not limited to hearing, eye, and respiratory protection.

## WORKING OVERHEAD

1. When working overhead, take precautions to protect personnel working below. Loose materials, tools and the like must not be left in places where they can be knocked, blown or vibrated off balance and fall.
2. Rope off or barricade the area below the overhead work to prevent access to non-working personnel.
3. Do not drop or throw material, tools or supplies from overhead work areas.
4. Use a tag line to lift heavy or awkward loads.

## CRANES, HOISTS, ETC.

1. Inspect the hoist or crane before work begins.
2. Inspect chains, chocks, etc. before securing to load.
3. Fasten chains, chocks, etc. securely to the load.
4. Use tag lines for heavy or awkward loads.
5. Keep all personnel away from the area below the boom or load and barricade off the area.
6. Only one person shall give directions to the equipment operator.
7. When equipment is left unattended, its block and load shall be secured and the equipment de-energized.
8. Personnel shall be adequately trained in the use of hoists, cranes, etc.
9. Repair and/or maintenance of chains, chokers, hoists, etc. shall be conducted by a qualified individual.
10. Personnel shall not be lifted or lowered with a crane unless proper equipment is utilized. Contact your supervisor for additional instructions.

11. For Safety guidance, consult OSHA Construction standard 26 CFR 1926.550 or General Industry standard 26 CFR 1910.175.

## MANUAL LIFTING

1. Inspect the path to be traveled prior to lifting and carrying heavy objects. Where possible, remove obstacles from path.
2. Back support belts will be made available to employees and should be used when lifting. In certain situations, belt use is mandatory: consult your supervisor.
3. Use powered equipment whenever possible to avoid unnecessary back strain.
4. When you must lift heavy materials, use the following procedures:
   A. Separate and place both feet close to the object lifted.
   B. Bend knees and squat down to the object to be lifted.
   C. Grip the object with the palms of the hands.
   D. Position the arms and elbows close to the body.
   E. Draw the chin towards the chest to straighten the back and lift with the back in a vertical position.
   F. When shifting a load, turn the feet but do not twist the trunk.
5. When two or more individuals are lifting a load, use signals to coordinate the lift so that an injury does not result.

## LOCKOUT / TAGOUT

1. Review the specific **Lockout/Tagout Procedure** of your specific facility before beginning work. Consult OSHA Standard 29 CFR 1910.147.
2. All types of electrical wiring and equipment regardless of voltage shall be handled properly and safely.
3. Only qualified individuals will work on live or energized equipment.
4. When working on live equipment, work on only one (1) wire at a time and insulate all conductors which may come in contact with the live circuit.
5. Adequate personal protective equipment must be used when working on live circuits.
6. Use only **nonconductive** ladders and hard hats when working near energized circuits.
7. Treat all electrical equipment as though it is live.
8. Shut off power before removing guards from motor driven equipment.
9. Keep the work area as dry as possible.
10. Fuses shall be replaced with fuses of the same capacity as the ones removed.
11. Finger rings, bracelets or metal watch bands shall not be worn when working with electrical equipment.
12. When opening disconnects, wear proper eye protection to shield the eyes from the flash or sparks and approved hand protection, such as linesman gloves.
13. After repairs, replace cover plates on lighting and power cabinets or electrical enclosures.
14. All portable tools and equipment shall be grounded by means of a three wire cord and polarized plug or wire leading from the frame of a machine to a good return ground, or

OSHA approved insulated portable power tools may be used. Grounding plugs shall not be altered.

15. Consult OSHA Lockout/Tagout E-Tool and section on Power Tools Pg 11 for further training and guidance.

## COMPRESSED GAS CYLINDERS

1. Store all cylinders in upright and fastened positions. (Except 1 ton cylinders designed for horizontal storage.)
2. Place the protective cap on cylinders when they are not being used.
3. Keep stored oxygen cylinders at least twenty (20) feet from acetylene cylinders and other flammables.
4. Always check the label or stencil on the cylinder to make certain you have the proper gas.
5. Never use oil or grease as a lubricant on valves or attachments of oxygen cylinders.
6. Do not store cylinders next to heat sources.
7. Always transport cylinders in a secured, upright manner.
8. Tag or label all cylinders that are empty and remove them from the workplace.
9. Unless cylinders are firmly secured on a special carrier intended for this purpose, regulators shall be removed and valve protection caps put in place before cylinders are moved or transported.
10. Consult OSHA Standard 26 CFR 1926.153 and Safety Manual Page 66 LPG for safety information on handling of Liquefied Petroleum Gases. (Propane)

## WELDING, CUTTING OR BRAZING

1. Inspect the area to ensure that flammable or combustible materials are not present.
2. Inspect the equipment to be worked upon before the work begins. Drums, barrels or small containers shall be thoroughly cleaned before the work begins.
3. All storage tanks or vessels must be clean, gas free, and blinded before the work begins. Mechanical ventilation shall be provided in any space less than 10 cubic feet per welder or any other confined space where natural cross ventilation is restricted. Ventilation shall be at a rate of at least 2,000 cubic feet per minute.
4. When working inside a vessel, welding gases which are not in current use shall be turned off both at the nozzles and the cylinders to prevent leakage and gas buildup.
5. Test the area for flammable or combustible materials before re-entering after taking any breaks.
6. Test the area for flammable or combustible materials at the beginning of each shift if work is going on continuously.
7. A firewatcher shall be assigned to all cutting or welding operations that are conducted outdoors or in the vicinity of any flammables.
8. A fire extinguisher shall be made readily available during all cutting or welding operations. The firewatcher and employees doing welding or cutting shall be familiar with the operation of a fire extinguisher.

9. Report any fire that results during a cutting or welding operation.
10. Welding shields shall be used if the work is conducted in a high activity area, for protection of passersby. Avoid looking at an electric arc without eye protection; serious eye injury could result.
11. Personnel will wear appropriate eye and skin protection, including gloves, and approved helmet or goggles for the type of operation performed.
12. Welding and/or cutting cylinders will be operated in a standing position, with cylinders properly secured.
13. Keep grease and oil away from oxygen cylinders. Also be cautious of grease or oil your hands when turning on or off cylinders; the combination forms a highly explosive mixture.
14. Open valves on welding and/or cutting cylinders slowly. Before connecting a regulator to a cylinder valve, the valve should be opened slightly and closed immediately. (This is termed "cracking" and is done to purge the valve of dust or dirt that might enter the regulator.) Stand to one side of the outlet, not in front of it, when cracking the valve.
15. When an oxygen cylinder is in use, valves shall always be opened completely. Valves shall be turned "OFF" when not in use.
16. Replace caps and properly store empty welding and/or cutting cylinders. Oxygen cylinders in storage shall be separated from fuel gas cylinders (and other combustibles) by at least 20 feet or separated by a 30 minute fire resistive barrier of at least 5 feet high.
17. Practice good housekeeping techniques at all times in welding and cutting areas.
18. Properly ventilate any welding area. Check ventilation equipment annually to make sure air flow is adequate.
19. Use Acetylene only at pressures below 15 pounds per square inch. At higher pressures the gas is unstable and may explode.
20. Do not use copper tubing to repair acetylene hose. Acetylene will attack pure, unalloyed copper, forming a very explosive powder, copper acetylene.
21. Never strike an arc or tap an electrode against a cylinder.
22. Always use a spark lighter to light a torch. Never use matches.
23. Never use oxygen to dust off clothing and the work area. Use fuel gases only for intended purpose.
24. All arc welding ground connections shall be mechanically strong and adequate for the required current.
25. When not in use, electrode holders shall be placed so that they cannot make electrical contact with people, objects, fuel or compressed gas tanks.
26. Cables with splices within 10 feet of electrodes are prohibited from being used.
27. Cables with damaged insulation or exposed bare conductors shall be replaced.
28. The welder shall not coil or loop the electrode cable around parts of his body.
29. Do not leave welding rod stubs on the ground or floor where they may cause an accident.
30. See applicable OSHA Welding Cutting and Brazing Standards.

## CONFINED SPACE WORK

## INTRODUCTION

The term "confined space" is often misunderstood. The following introductory section is designed to be educational: it explains confined spaces and outlines their characteristics and hazards, with an explanation of the City confined space program. Actual City safety rules regarding confined spaces begin on page 22.

### What is a confined space?

Unlike a trench or excavation, 'confined space' is not something easily visualized by the mind. Part of the reason for this is that a confined space can be almost anything. However, it does have some common components that we can define.

1. It is not designed for continuous human occupancy.
2. It has restricted or limited entry and exit...hence, **confined**.

### What are some typical confined spaces?

In a municipality, sewer lines and manholes are among the most commonly encountered confined spaces. However, other common confined spaces found in municipal operations might include:

- storage tanks and trash containers
- utility pits
- tank trucks and trash trucks
- storm sewers
- lift stations
- trenches
- water vaults

Again, however, a confined space may be any space meeting the above three criteria, and failing to recognize or identify a confined space can be a hazard in itself.

### Why are confined spaces hazardous?

The word that best describes the hazardous nature of a confined space is: "uncertainty." Often the conditions within a confined space appear benign. Workers enter such spaces routinely to make repairs, perform maintenance work, check readings of gauges or meters, clean, etc. At such times, the conditions within the confined space may have been harmless. In many instances the worker has performed the task within the confined space repeatedly without incident. Thus, the worker is lulled into a false sense of security that the space will always be harmless, or that any necessary escape from the space will be quick and easy.

However, because the space is **confined**, toxic or flammable atmospheres may become contained and concentrated. Mechanical or electrical hazards may be in direct proximity to the worker where they can be mangled or electrocuted. The worker can become entrapped or engulfed by material within the space. Because, by definition, a confined space

has restricted entry and exit, escape becomes difficult or impossible. The worker thus may be seriously or fatally injured.

Another reason confined spaces can be hazardous is that workers fail to recognize a confined space as being such. It is important for the municipality to first identify every confined space that it has as the first step in a confined space safety program.

## What are some of the common hazards?

### *Atmospheric Hazards*

Atmospheric hazards can vary depending on the type of confined space. However, one potential atmospheric hazard common to most confined spaces is oxygen deficiency. There are numerous conditions that can cause oxygen deficiency. Furthermore, insufficient oxygen is a condition that cannot be sensed by the worker. The end result may be that the worker enters the space, gradually becomes faint, passes out, and perhaps dies from this lack of adequate oxygen.

A common toxic hazard in sewers and manholes is sewer gas or hydrogen sulfide. Because it is heavier than air, this gas settles near the bottom of the confined space. In small concentrations, its typical 'rotten egg' smell is easily recognized for a short time, until it dulls the senses. In higher concentrations it may not be smelled and can immediately cause unconsciousness and/or death in a matter of a few seconds.

Flammable atmospheres are another risk. Methane can reach levels of explosive concentration. Petroleum products fumes can often be encountered in many confined spaces, as well as fumes of other flammable chemicals. A match, a spark from a hammer, static electricity, lighting a welding torch... all can easily cause an immediate explosion. Gases such as hydrogen sulfide and carbon monoxide are also very toxic and can cause death in relatively low concentrations.

### *Mechanical Hazards*

Some confined spaces may contain mechanical equipment with sharp blades or other moving parts that can become accidentally energized and mangle a worker. Stored energy from springs or counterweights, for example, can be accidentally triggered causing the mechanical equipment to move suddenly and injure the worker.

### *Electrical Hazards*

Like mechanical hazards, a confined space may also contain electrical equipment that can accidentally become energized and electrocute the worker.

### *Entrapment*

Workers can become trapped within a confined space and die from exposure. The space can unknowingly close, trapping a worker inside. Workers can drown inside a water line when an upstream valve is unknowingly opened. Some substances, such as asphalt, can cause entrapment due to their viscosity or "stickiness."

### *Engulfment*

An example of this type of hazard would be a salt or sand bin where a worker walking on the surface of the substance in the bin can literally be swallowed by the motion of the material and suffocate.

In addition to these possible hazards, confined spaces may contain excessive heat causing heat exhaustion or can contain excessive noise requiring hearing protection. Dim or inadequate lighting may increase the likelihood of accident and injury.

## Identify All Confined Spaces

You should begin by identifying every confined space that workers may be required to enter within the scope of their work. Applicable employees then need to be informed of the existence, locations and dangers of these spaces by posting danger signs or other equally effective means.

### *Permit Entry System*

Many injuries and deaths occur in confined spaces because a worker enters a confined space without telling anyone or because management fails to alert the worker to a known hazard that the worker may be unaware of. To prevent these tragic occurrences, a permit entry system needs to be developed. Such a system requires that a permit be completed for any worker to enter into a confined space. The permit forces both the worker(s) and management to recognize the confined space as being a hazard, identify the hazards that may be encountered upon entry, require any testing of the atmosphere, safety equipment, attendants, rescue equipment, etc. OSHA regulations and the City Safety Regulations (provided at the end of this section) require the use of a permit entry system when entering confined spaces.

### *Testing*

Testing for atmospheric hazards is also an OSHA requirement. Many hazardous atmospheres cannot be detected by our sense of smell. These include carbon monoxide, oxygen deficiency, methane, and large concentrations of hydrogen sulfide. Without testing, the worker's first clue to the presence of the hazard might be sudden collapse and subsequent death. Testing of a confined space thus becomes critical. Furthermore, since such hazardous substances tend to be heavier than air and displace air, testing of the confined space must be done **at the bottom** of the confined space especially, although the rest of the space also needs to be tested.

## *Safety Equipment*

The permit entry system needs to address individual items of safety equipment needed for each confined space. This might include respirators, hard hats, safety harnesses, etc. This would also include emergency equipment necessary for any rescue such as a rescue tripod, winch, first aid kit, etc.

## *Monitoring*

For prolonged periods of work in a confined space, provision for continued monitoring of the space may be necessary. Portable monitoring devices may be needed to detect and warn workers of changing atmospheric hazards.

## *Ventilation*

One of easiest methods of reducing or eliminating hazardous atmospheres, particularly in manholes and sewer lines, is through ventilation. Mechanical blowers can eliminate many hazardous atmospheres if properly set up and used.

## *Observation*

No worker should enter a confined space without a trained attendant standing by to summon help or operate a man-lift in the event of an emergency. The attendant is part of the permit entry system.

## *Training*

As with any hazardous activity, training is essential to prevent accidents and fatalities. Equally important is the periodic use of emergency drills. Such drills help ensure that employees respond properly in emergency situations. Training should be documented and records maintained. Contact Risk Management or the insurance loss control representative for confined space training.

Below are listed the safety regulations that apply to all City operations when a confined space must be entered. However, some City locations may have their own specific confined space entry program. If you are working in one of these areas, consult this program for more detailed instruction.

## CONFINED SPACE SAFETY REGULATIONS

1. Review the specific **Confined Space Program** of the department or facility before beginning work.
2. Any vessel entered shall be properly blinded and/or isolated before work begins.
3. The vessel will be clean, gas free and contain adequate oxygen concentration before entry is permitted.
4. An **Entry Permit** shall be issued before anyone enters a permit-required confined space.
5. A **Confined Space Attendant** shall be assigned to the work area. The attendant will be adequately trained in the duties of a **Confined Space Attendant** as defined in OSHA regulations.
6. A **Confined Space Attendant** shall not leave the area when personnel are working inside a confined space.
7. The potential hazards of a confined space will be determined prior to entering the confined space.
8. All personnel entering the **confined space** will be adequately trained.
9. Personnel entering the confined space will be briefed by their supervisor as to the risks of the operation.
10. The confined space atmosphere shall be monitored on a regular basis. The area should be retested after breaks or lunch periods.
11. Do not enter a confined space unless you are properly attired to do so.
12. Contact a supervisor if assistance is required. **Never enter a confined space when unsure of the hazards.**
13. Rescue involving a confined space **shall not be attempted** unless the rescuers are qualified and properly trained and equipped for confined space rescue.
14. Do not attempt rescue without appropriate personal protective equipment.
15. Immediately report any confined space incident and/or accident to your **supervisor**.
16. Consult OSHA Standard 29 CFR 1910.146 for guidance on Confined Space entry procedures.

## MAINTENANCE SHOP SAFETY

Maintenance shop personnel, in addition to the areas outlined below, should pay particular attention to Safety Manual sections on Welding Cutting & Brazing, Cranes, Power Tools, Hand Tools, and Lockout/Tagout procedures.

### Radiator Service

Be careful when checking the radiator since automotive cooling systems work under pressure. The coolant may be in the boiling range and therefore too hot to check safely. Always observe the following precautions when checking the radiator.

1. Place wiping cloth over cap and turn it 1/4 turn counter-clockwise. This will permit the escape of pressure.
2. Caution: If a rumbling noise is heard coming from the radiator, or if coolant spews out from under the cap, close the cap immediately because the coolant is too hot and will boil over violently if pressure is released. The coolant will have to cool down before it can be checked safely.
3. Remove the cap by turning it counter-clockwise until stop is reached, and then lift it off.
4. Operate the engine at idle speed when adding water or anti-freeze while the engine is hot. This will allow it to circulate quickly without damage to the engine block. If water is very low or engine is extremely hot, wait for it to cool before adding coolant.

### Tire Service

1. Check pressure and inspect tires before inflating them.
2. Protect yourself against blowout when inflating tires. Never squat facing the tire. Stand at one side, so that the fender is between you and the tire, if possible. Use chuck gauge with clip and extension hose.
3. Never leave jack handles or other tools where they can be a tripping hazard.
4. A protective cage or equivalent protection shall be provided for the inflating of truck tires.

### Battery Service

1. Do not smoke or permit open flames or sparks near batteries that are being recharged, as they emit hydrogen gas, which is explosive. Recharge batteries only in a well ventilated area.
2. When disconnecting a battery always remove the ground cable first in order to prevent sparks if the wrench is accidentally grounded.
3. When installing a battery always attach the ground cable last.
4. Wash acid and corroded particles from hands immediately after performing battery service. Be sure that clothing is free of acid and corroded particles.

5. Face shields or other eye protection shall be worn when handling batteries. If acid gets into the eye, promptly rinse the eye thoroughly with water until chemical is completely removed. After a thorough rinsing, cover the eye with a sterile gauze compress and take the injured person to a doctor.
6. Use great care in the storing and handling of electrolyte for dry charge batteries.
7. Follow safe lifting practices when handling batteries. Use only an approved carrier. When lifting batteries in and out of under hood mountings, you can sometimes gain additional leverage by resting your elbows on the fenders.

## Lubrication and Maintenance Service

1. To prevent slipping, promptly clean up oil and grease from floors. Never discharge a high pressure grease gun at any part of the body, as grease may penetrate the skin, causing injury.
2. Do not rock cars while they are on a twin post or free wheel lift, as movement may cause enough shifting of the car on the supports to fall off the lift.
3. Do not stand in front of a vehicle when guiding onto a lift or pit. If you do, you may be injured if it does not stop in time.
4. When using floor lift jacks, be sure they are resting on a firm base and make good contact with the car. When chain hoists or jacks are used, vehicles shall be securely blocked before employees go under them.
5. Do not allow anyone to remain in a vehicle being raised on a lift.
6. Do not overload the lift.
7. Keep your hand on the control valve when the lift is being raised or lowered. Do not prop it open.
8. Do not allow anyone to walk under the lift when it is being raised or lowered.
9. Report immediately to your supervisor any faulty operation of the lift. Do not use the lift until the defect has been corrected. A jumpy lift usually means low oil -- have it filled or repaired. Tag lift until repaired to warn others.
10. When using the lift, observe the following precautions:
    A. Center the vehicle over the lift.
    B. Adjust the adapters to make proper contact with the vehicle.
    C. Raise the lift slightly off the floor almost making contact with the vehicle.
    D. Look under the vehicle, making sure that the gas line, muffler, tail pipe, or other parts of the car will not be damaged by contact with the lift.
    E. Raise the lift until contact is made and vehicle begins to rise slightly.
    F. Look under the vehicle, checking that proper contact is being made, and if satisfactory, continue raising the lift to the proper height.
    G. When fully raised, inspect contact points to make certain that the vehicle is firmly positioned.
    H. Do not open the doors of vehicle that is raised on a frame contact lift.
    I. After lowering, check to ensure that there is adequate clearance under the vehicle before moving it off the lift.
    J. When not in use, the lift shall be lowered completely to avoid accidents.
    K. Lift areas shall be cleared of objects from prior jobs. Oil absorbent material shall be used to remove excess oil and grease before a new job is started.
11. Vehicles shall be properly positioned and automatic chocks shall be operative on all lifts.
12. Safety legs or pins shall be operative to prevent dropping of lifts in event of pressure failure.

13. Do not work under vehicles or other equipment supported by jacks or chain hoists without protective blocking or stands that will prevent injury if jacks or hoists should fail.
14. Hoods, dump sections of dump trucks and similar movable parts shall be blocked to keep them stationary during repairs. (See Lockout/Tagout section of Safety Manual.)

## Air Compressors

1. Turn off the main switch before oiling, wiping, or working on the air compressor.
2. Test safety valve weekly to be sure that it operates properly.
3. Never tamper with the safety valve or controls. All adjustments and repairs should be made by qualified mechanics.
4. Do not pile objects near the compressor, nor hang them above it in such a way that they could fall into the mechanism.
5. See OSHA compressed air standard 29 CFR 1917.154.

## Special Fire Prevention - Protection

1. No petroleum products or solutions containing petroleum shall be poured into any drain or sewer.
2. Never use gasoline for cleaning purposes under any circumstances.
3. Put all oily waste in covered metal containers. Approved and properly marked storage containers shall be provided for waste, oily rags, etc. Empty them frequently to prevent spontaneous combustion.
4. Welding and brazing shall be done away from flammable or explosive substances. Appropriate fire extinguisher shall be located nearby.
5. Smoking shall not be permitted in any maintenance shop area in the vicinity of flammables.
6. The correct type, proper size and adequate number of clearly marked and easily accessible extinguisher shall be provided.
7. Fire exits shall be properly marked and kept clear at all times. During working hours all exit doors must be kept unlocked.
8. Employees shall be instructed in the safe handling of flammables. (See Hazard Communication Section)
9. Only approved and properly marked cans shall be used for flammable liquids.
10. Fire authorities should be given information about the premises to enable them to respond to an emergency.
11. Employees shall be instructed in evacuation procedures.

## What to Do In Case of Fire

1. Know the location of firefighting equipment and how to use it.
2. Call 911 to contact the Fire Department.
3. When a fire starts, lose no time in using firefighting equipment at hand to try to control the fire before it spreads. Call, or have someone call the Fire Department immediately.

4. When a gasoline spill catches fire, attack the flame at its base. When using a dry chemical or carbon dioxide extinguisher, use a rapid side-to-side motion. Be sure that all of the fire is put out or it will reflash.
5. Notify your supervisor and the Risk Manager as soon as possible after a fire has occurred.
6. Consult Fire Fighting Equipment Section of Safety Manual pg 6.

## Closing of Vehicular Service Building

1. Turn off air compressor at main control switch and air valves at the tanks.
2. Check control setting of heating equipment, and be sure it is working properly
3. Lock all windows and doors.
4. Disconnect all coffee makers and appliances except refrigerators.

# FUEL DISPENSING SAFETY

## General

1. Good housekeeping shall be maintained in the entire service area.
2. Gasoline, diesel and other fuel dispensing pumps shall be properly labeled.
3. Shut off the pump immediately if a fire occurs while the nozzle is still in the tank. Do not remove the nozzle until the fire has been put out.
4. Report unsafe gasoline nozzle i.e. faulty automatic shut-off.
5. Smoking is not permitted in any fuel dispensing area.
6. Stand in a safe position at the pump. Do not cross in front of moving vehicles.
7. Before delivering fuel into the fuel tank, make certain the engine is off.
8. Good metallic contact shall be made between the nozzle and tank before filling the tank. Use particular care when topping off, so as to avoid spillage of gasoline.
9. Always replace fuel tank cap immediately after delivery.
10. Be sure hose nozzle is hung securely on the pump after delivery.
11. Keep pump hose exactly placed within island limits so it will not catch on bumpers or fenders.
12. Keep hose, nozzles, and connections in good condition.
13. Report immediately any leakage near a fuel pump. Do not use the pump until the leak is fixed. This work shall be done only by a qualified mechanic.
14. Fuel spillage on driveways should be reported immediately. If the spill is large enough to create a risk of the fuel reaching drains, immediate measures should be taken to stop the flow of the fuel. Dumping sand on and in the way of the flow is recommended.
16. Remove clothing wet with gasoline immediately and be sure that it is cleaned before it is worn again. Do not go near a heater or open flame wearing gasoline soaked clothing. When the skin has been wet with gasoline, wash the affected part thoroughly with soap and water to prevent skin inflammation.
17. Deliver gasoline into fuel tanks of properly labeled metal containers only. Never deliver gasoline into glass bottles, open containers, or food, drug, or cosmetic containers. The Federal Hazardous

Substances Labeling Act requires that any container that is filled with gasoline, kerosene or other hazardous substances must be labeled in an approved manner. (In private service stations, if the container does not have such a label, the dealer must apply one before filling it.)

18. Employees shall not siphon gas with a hose or tube, particularly where the mouth is used to create suction.
19. The location of shut-off switch should be clearly marked, and all employees should know where it is and how to use it.

## Automatic Nozzles

1. Use only automatic nozzles which have been approved by Underwriters Laboratories, Inc. and the City Fire Department.
2. In situations where the nozzle cannot be secured to prevent it from falling out, remain by the nozzle and fill the tank on manual control.
3. Observe the nozzle frequently while gasoline is being delivered so any mechanical failure will be noticed immediately.
4. Check the automatic nozzle regularly and keep it in good repair.

## Receiving and Storing Gasoline

1. Fill pipes of underground tanks shall be plainly marked by color code, tags, or other methods on the installation to show the contents of the tank. Always take precautions to prevent the mixing of products as a result of delivery into the wrong tank.
2. Keep fill caps tight between deliveries to keep water or dirt from entering. The use of grease on threads will aid in keeping fill caps watertight.
3. Gauge tanks with calibrated sticks in gallons or inches, before ordering, and again before receiving deliveries to be sure the quantity being delivered will not overflow. Be sure also that the correct tank chart is used.
4. Clear fill pipe areas of parked cars prior to the time of delivery of gasoline. Do not allow parking in those areas where it will interfere with absentee deliveries. A car parked near or over a fill pipe may be a serious fire hazard.
5. Make sure that gasoline vapor discharged from vent pipes does not enter buildings. Do not strike matches or permit other sources of ignition near vent openings. (It is especially important when tanks are being filled because an equal volume of flammable vapor is being discharged into the air through the vents.)
6. Report to the immediate supervisor on duty at once if liquid gasoline should discharge from vents at any time.
7. Consult OSHA standard 29 CFR 1917.156 Fuel Handling and Storage.

## REFUSE COLLECTION

### Introduction

1. Drive your vehicle on the right hand side of street unless operating on one-way streets or specifically directed otherwise by supervisor.
2. Never activate packing mechanism on rear loaders unless turn-buckles are properly fastened, except when unloading packer.
3. Collection crews shall haul only the type of refuse they have been assigned.
4. Crew members shall handle refuse in such a manner as not to increase the hazard to themselves from broken or flying glass.
5. Never manipulate anything in or near the hopper while packer is in operation.
6. Do not manually push refuse into hopper while packer is in motion.
7. Never put any part of your body in the hopper area while the packer blade is in motion.
8. Never activate packing controls while any portion of the body is in the hopper area.
9. Make sure there are no objects on the edge of the hopper, such as lumber or pieces of glass, which would fly out and injure someone when packer is in motion.
10. No one will ride in the hopper. Ride only in prescribed locations. At no time shall any part of the body extend into the hopper.
11. Never put refuse in hopper when truck is full.
12. Use caution when moving heavy wheeled containers.
13. Each rear load truck should carry a broom and shovel to clean up rubbish spills.
14. Containers used in carry out service, when left unattended, should be out of driveways and walkways, off sidewalks, and near curb.

### Unloading Operations

1. All refuse collected shall be delivered to the designated disposal point where the complete load must be discharged.
2. Directions from disposal site attendants shall be followed.
3. Be alert at the disposal site and watch out for sharp objects and wire that may puncture tires or tangle drive line.
4. Wait until vehicle is completely stopped at the disposal area before unfastening turnbuckles or latches.
5. Use caution when manually operating rear doors on trucks.
6. Employees not operating the dumping controls shall stand clear of the vehicle until the load is completely discharged.
7. Never raise the tailgate or operate the push plate in a jerking manner.
8. When tailgate is in raised position, never have any part of body between vehicle body and raised tailgate unless proper blockage is installed.
9. Stop all engines and remove the key before getting into the packer body to clean it.
10. While at the disposal site blades shall be cleaned of loose refuse in accordance with the guidelines of the truck.
11. Drivers of refuse collection vehicles shall inspect their vehicles for cracks, broken welds, etc., while at the disposal site.

## Hazardous Materials

If refuse personnel come in contact with or identify suspected hazardous material, radio supervisor, City shops or 911. Advise them of your location and situation. If possible, do not touch, handle or remove the material from the original location where it was found.

## Vehicle Breakdowns

1. Call your supervisor or City Shops to report breakdown. Give truck number, location and description of trouble.
2. If a vehicle stalls on roadway, warning triangles (reflectors) are to be placed in a manner conforming to D.O.T. vehicle code.
3. Stalled vehicles are not to be left unattended.

## Injuries

1. Report all injuries, regardless of how minor, on the same day they occur.
2. Any serious injury shall be reported to supervisor immediately.
3. Any employee witnessing an accident shall immediately assist the injured and arrange for medical treatment if required.
4. In the event an employee is caught in hopper or packer: Stop operation of vehicle packer immediately. Check extent of injury. If help cannot be administered, summon help.
5. Use appropriate forms on the Intranet website to report injuries.

## Vehicle Fires

1. For fires in the packer body of the truck, radio your supervisor, City shops or 911. Advise them of the fire and location of truck. Attempt to locate an isolated but accessible area to dump the load. Move truck away from burning refuse pile, and maintain radio contact if possible.
2. For fires in the engine or cab compartments, contact supervisor, City Shops, or 911. Advise them of the fire and location of the truck. If possible to do so without endangering yourself, move truck away from any structures and attempt to put out the fire with the fire extinguisher. Maintain radio contact if possible.

## OFFICE SAFETY

1. Practice good housekeeping at all times in office areas.
2. Keep cords and other wiring covered so they do not become tripping hazards. Do not overload outlets by connecting too many items.
3. Keep equipment in good repair.
4. Do not block stairs, steps or doorways.
5. Clean up all spills immediately.
6. Use the proper ladder or stool for reaching high places do not stand on chairs or furniture.
7. Portable electric heaters should not be used in office spaces.
8. Follow proper lifting techniques when carrying large or awkward materials.
9. Practice sound electrical safety techniques when working with computers, typewriter, photocopiers, etc.
10. Report unsafe situations to your supervisor immediately.
11. Report accidents and injuries immediately to your supervisor.
12. Do not store food in desks, cabinets or other similar areas.
13. Know the **Emergency Evacuation Plan** for your particular office area.
14. Know the location of the nearest fire extinguisher, fire alarm, and first aid kit.

## TREE TRIMMING OPPERATIONS

### Tools and Equipment

1. All tools and equipment shall be properly maintained.
2. Employees shall make daily inspections of all equipment, tools, etc. before using them.
3. Hand saws shall be kept sharp and properly set so they will not jump out of the cut and cause injury.
4. Ramp boards (used to load equipment into trucks) shall be kept smooth sanded and varnished to prevent splintering of boards. (Hinged ramps are recommended.)
5. Proper care of safety lines shall be taken at all times.
    A. Safety line shall be protected against wetting or dampness. Completely dry and clean before storing.
    B. Safety lines and hand lines shall be kept in a clean box by themselves. Do not store lines and tools together.
    C. All ropes and lines shall be kept coiled when not in use and hung in a clean, dry, dark, well ventilated area.

Chipper blades shall be kept sharp. (Dull blades cause extra strain on the engine and may cause chippings to clog in the chute.)

### Fuels

1. Fuels shall be dispensed and stored safely.
2. Stop gasoline powered equipment before fueling and wipe away spills before starting it.
3. Fuels shall be stored in approved flammable liquid containers only.
4. Fuel containers shall never be stored or carried in crew compartments.

## Personal Protective Equipment

1. Appropriate personal protective equipment shall be used and maintained properly.
2. Safety goggles or face shield and hearing protection shall be worn when feeding a chipper.
3. Work gloves shall be worn when roping or handling equipment and tools.
4. Work boots should have ankle support and non-slip soles.
5. Safety equipment such as goggles, hard hats and gloves should be stored where they are readily available. Goggles and face shields should be kept clean, and should be replaced when cloudy or scratched.
6. First aid kits shall be carried on all trucks and kept well supplied.

## Work Area Protection

1. Traffic cones, barricades, high level warning devices, etc., shall be properly placed in the street after the truck stops at the work location. Flashing warning signals should be observed for a few minutes to assure they are working correctly. (See Safety Manual section on Barricades and Work Area Protection for further guidance.)

## Tree Trimming Operation - General Rules

1. Safe procedures shall be observed when climbing and working trees. Never use a bull rope for climbing.
2. A climber should position themselves above the limb they are cutting off to prevent being struck by the limb as it falls.
3. All limbs shall be tested before the full weight of the body is allowed to rest on them. Keep one arm around the trunk or keep the hands on separate limbs. Branches are more apt to snap off on a cold day than on a warm day.
4. Only one person shall work in a tree at a time unless an additional person can work in the same tree safely.
5. Trees shall not be climbed or worked in when wet unless in an emergency. Use extreme caution when doing so.
6. Climbers shall keep hands and feet free from tight or binding positions where they can become entrapped where limbs meet the trunk of a tree.
7. Safety lines shall be used when climbing as well as in performance of work. Use safety line with a saddle and have the climber assisted up the tree by ground person when necessary.

8. The climber shall tie himself in with his safety tag-line while changing his safety line or re-crotching.
9. Knots tied to lines for prolonged periods or knots tied repeatedly at the same point in a line will cause kinking and excessive wear of the line. Avoid this practice.
10. The safety line should be crotched around the main trunk and only at a height that the trunk would support the climbers' weight.
11. Safety lines shall be examined for cuts and wear and tested before each day's use. Questionable lines shall be taken out of service at once.
12. Safety lines shall be at least 1/2" 3-strand Esterion, safety blue, polyester or nylon and from 120-150 feet in length when used in larger trees.
13. The working load of a line shall not exceed 1/5 the breaking strength of the line.
14. The climber should stay in his safety saddle until he is again safely on the ground.
15. When using a ladder, lashing or other tie lines should pass over side rails and the end of the rungs (not over the center of the rungs).
16. Ladders must be placed on sound footing (and not in the bed of a truck).
17. When using straight ladders at trees, to establish proper angle, the foot of the ladder should be moved out of the perpendicular by 1/4 the length of the ladder. If the ladder is 12 feet long, the foot should be 3 feet out from the base of the tree. Estimate the length of the ladder by counting rungs which are usually 1 foot apart.
18. Tools shall be raised or lowered by means of a hand line or the free end of the safety line.
19. Hand saws should be carried in a scabbard and securely fastened to the climber's belt.
20. Tree spurs shall be put on at the base of the tree and removed when reaching the ground.
21. A large tree limb that cannot be controlled by hand should have a line or lines attached for controlled lowering before the limb is cut off.
22. The trimmer shall place themselves in the tree so that the saw cannot fall against them if it is suddenly released.
23. When using the chain saw from the bucket, always have it attached by a safety line to the bucket.
24. Safety goggles or face shield and ear plugs or muffs shall be worn when operating chain saw.
25. Always give proper warning when about to drop something out of a tree, such as: "Timber"; "Heads up"; and "Look out below".
26. Not more than two people at a time should be allowed to work near the base of a tree which is being felled.
27. When trees must be cut flush to the ground, it is safest to make the first cut at stump height above the swell of the roots and cut the stump flush with the ground after the tree is down.
28. When felling trees on hillsides, try to drop the tree up the slope (and not down slope nor across the slope).
29. Make sure the area around you is clear before turning to the side with a chain running in your hands.
30. Never leave a saw or any other machine running unattended.
31. When bucking fallen logs on hillsides, wedge logs firmly first and then buck only from the high side.
32. Pruner poles must be made of non-conductive material and have a non-conductive pull line between the lever arm and the handle. This is a safeguard against electrical shock.
33. Only one person shall feed a chipper at a time. If other employees are available - they should prepare the bush for the person feeding the chipper. Stand to the side when feeding the chipper.
34. Safety goggles or a face shield and hearing protection shall be worn when feeding the chipper. No loose clothing or gloves with holes shall be worn when chipping or stump grinding.

35. The bush shall be cut small enough so that, if it is drawn into the chipper, it will not cause injury to the operator.
36. Under no circumstances shall tools such as scoops or forks be used to push brush and debris into the chipper. Such practice is extremely dangerous to the operator and the machine.
37. Pneumatic tools must be handled with care so that they will not be activated unexpectedly. Disconnect a pneumatic tool from the air hose before handing it to another person and before leaving it unattended.
38. When edging, a safety shield shall be worn by the operator to prevent rocks from striking themselves in the face. A face shield and shin guards shall always be worn when operating a lawn renovator.
39. To prevent head injuries, low hanging limbs shall be trimmed and hard hats shall be worn.
40. Safety goggles or a face shield shall be worn when operating the stump cutter.

## TRENCHING AND SHORING OPERATIONS

All City trenching and shoring operations are to be conducted according to OSHA standard 29 CFR 1926 Subpart P, including 1926.650, 1926.651, and 1926.652 and Appendices B through F. These standards are contained in a separate more manageable size field manual titled "Construction Standards for Excavations". This handbook should be available and in use by all work groups whose employees are required to enter excavations, even for short periods of time.

## CELLULAR PHONE USE IN VEHICLES

Distracted drivers are more likely to make a driving error or react too slowly. As more City drivers are using cellular phones, it is important that they be used safely and courteously. Currently, there is no law or City policy against using a cellular phone while driving, but you could be charged with dangerous or careless driving if you cause an accident while using one, and cellular phone use is frequently cited by other drivers as an annoyance or hazard because distracted cell phone users often behave more erratically. It is important both for safety and for the image of City drivers that common sense and courtesy be followed in using Cellular phones while in City of Grand Junction vehicles.

### Guidelines for Cellular Phone Use in Vehicles

1. Whenever possible, use your cellular phone when parked, or have a passenger use the phone.
2. If your position requires frequent cell phone use in a vehicle, you should have voice mail service and hands-free equipment for your phone, and use both to avoid distractions.
3. If your phone rings when you are driving – especially during hazardous conditions -- let your cellular voice mail service take the call and listen to the message later when you are parked, or pull over before answering, if traffic conditions permit.

4. Make sure the phone is easy to see and reach: Place your cellular phone in your vehicle where you can grab it without removing your eyes from the road.
5. Suspend conversations during hazardous driving conditions or situations.
6. Let the person you are speaking to know you are driving and that the call may need to be suspended at any time.
7. Do not take notes or look up phone numbers while driving. As a driver, your first responsibility is to pay attention to the road. Common sense dictates you do not read, look up an address or attempt to write or take notes while driving.
8. Attempt to dial and place all calls when you are not moving.
9. When possible, plan your calls before you begin your trip, or call when your vehicle is parked at a stop sign or red light. If you absolutely need to dial while driving, assess the traffic and dial only a few numbers at a time.
10. Learn and use the pre-programmed number dial features of your phone. Practice using this feature for commonly dialed numbers *before* driving so you are familiar with the procedures.
11. Do not engage in stressful or emotional conversations while driving. A stressful or emotional phone conversation while driving is distracting and potentially dangerous. If necessary, suspend the phone conversation.
12. Use your cellular phone to call for help or to help others in emergencies. Your cellular phone lets you be a "good Samaritan" in the community. If you see an auto accident, crime in progress or other serious emergency where lives are in danger, call 911 and give the exact location and information to fire, police or ambulance personnel.

## LPG - LIQUID PETROLEUM GAS (Propane)

Mixtures of Propane, Methane, and Butane comprise Liquid Petroleum Gas (LPG), often referred to as simply Propane. It is used in a wide variety of operations, including fueling vehicles, as heat source for heating or melting materials, weed burning operations, cutting, soldering, and heating buildings or equipment.

Applicable OSHA standards for handling and storage of LPG are contained at 29 CFR 1910.110.

### Basic Precautions

1. The material is extremely flammable. DO NOT smoke while using LPG.
2. Operate in only well ventilated areas.
3. Never puncture the container.
4. Keep the container away from sources of flame or heat.
5. Never incinerate the container.
6. Keep the container away from exposure to heat sources.
7. When changing propane cylinders, make sure that tank valves are closed before breaking connections. Check for leaks after change is complete using a soapy water solution.
8. Have a fire extinguisher or other firefighting equipment nearby when using propane.

9. Have a first aid kit nearby when using propane.
10. Use chemical goggles and leather gloves and cover extremities when working with propane, especially when lighting a pilot or burner on a propane system or changing system connections. Use of a Face shield is recommended while lighting pilot lights, especially when re-lighting after a pilot light has gone out.
11. Store excess cylinders securely and in a manner that protects the valve assembly from accidental blows. (Storage of liquefied petroleum gases shall be stored and handled in compliance with NFPA No. 58.[12] Taken from the "Handbook of COMPRESSED GASES second edition, Compressed Gas Association, Inc.)
12. NFPA hazard labels should be placed on all cylinders. (Part of 29 CFR 1910.1200)
13. Never store excess cylinders near walkways, exits, and general path of travel.
14. Never store excess cylinders under stairs, decks, ramps, etc.
15. Never store cylinders together with oxygen sources or strong oxidants.
16. Always secure the valve opening with a cap or similar device when storing excess cylinders.
17. Prior to each use, inspect cylinders for signs of damage and/or wear.
18. Damaged cylinders must be taken out of service and replaced or repaired.
19. Periodically check cylinders to assure that they are inspected and approved for use. This inspection should also be performed each time a cylinder is brought on-site from an outside source.
20. Never attempt to repair a propane cylinder. Refer all repairs to qualified propane service personnel.
21. Never refill a cylinder that has exceeded the certification date. (5 years)
22. Never improperly dispose of cylinders. Return them to an authorized propane dealership for proper disposal.
23. Immediately report unsafe conditions to your Supervisor or the Risk Manager.

## General Safe Work Practices

**These work practices shall be observed when using propane fired equipment:**

1. All employees using propane equipment must be adequately trained, and must carefully read and understand the Operator's Manual before using the equipment:
   A. Read the igniting procedure before initiating the firing operation.
   B. Learn the warning steps if the equipment does not ignite properly.
   C. Be familiar with the specific purge cycles for each pilot light system.
2. Inspect the equipment before use.
3. Be sure that the equipment is adequately maintained.
4. Become familiar with the MSDS that applies to propane.
5. Stay alert for the smell of propane.
6. Never work on propane powered equipment near energized electrical equipment.
7. Never refuel or re-charge propane cylinders near flames or excessive heat.
8. If you have problems with a pilot light, immediately shut off the equipment and refer to the operator's manual or contact your Supervisor.
9. Never force any gas controls.

10. If you cannot operate knobs, switches, valves, etc. on a propane system, contact your fleet maintenance or your Supervisor for assistance.
11. Do not tamper with and/or alter any controls, valves, switches, etc.
12. Never use tools to turn valves, knobs, switches, etc. on a propane system.
13. Faulty propane equipment must be serviced immediately by qualified service personnel.
14. Be sure that NFPA hazard labels are attached to all cylinders.

## Health Considerations

1. Propane can be both a heat and cold hazard to employees. Note that escaping propane gas can cause sudden freezing of exposed skin.
2. Know the basic first aid procedures for coming in contact with propane.
3. Be sure that an MSDS on propane is available in the area of operation.
4. Wear chemical goggles when working with propane.
5. Wear leather gloves and other protective clothing to cover extremities when working with propane.
6. Report injuries immediately.
7. Use propane in adequately ventilated work areas.

## Personal Protective Equipment (PPE)

1. Wear chemical goggles when working with propane gas.
2. Wear leather gloves when working with propane gas.
3. Cover extremities with long sleeves when working with propane gas.
4. Wear a face shield if re-lighting a unit which has recently gone out.

## Emergency Gas Procedures

If you smell gas or see escaping propane gas:

1. Shut off the main fuel supply.
2. Call 911, secure the area from approach by the public or other workers, and contact your supervisor.
3. Never touch electrical switches, light matches or use electrical or electronic equipment.
4. Be cautious about creating sparks from static or ferrous metals.

## HAZARD COMMUNICATION PROGRAM

### Introduction

The following introduction describes the purpose and scope of Hazard Communication programs as defined by OSHA standard 1910.1200. It is intended to assist in educating safety representatives and employees concerning hazardous substances, and provide guidance in implementing facility-specific Hazard Communication Programs. Each facility which deals with hazardous substances must have a Hazard Communication Program conforming to these general guidelines. Following the Introduction is the section which includes the hazard communication safety regulations for use throughout the City, and in facilities without a facility-specific program.

The basic goal of a Hazard Communication Program is to provide information to City employees about the chemical hazards they work with and how to protect themselves. This knowledge, in turn, should help to reduce the incidence of chemical source illnesses and injuries.

About 32 million workers are potentially exposed to one or more chemical hazards. There are an estimated 575,000 existing chemical products, and hundreds of new ones are being produced annually. Chemical exposure may cause or contribute to many serious health effects. Also, chemicals may present safety hazards and have the potential to cause fires, explosions and other serious accidents. Due to these hazards the Occupational Safety and Health Administration (OSHA) issued a rule in 1983 called Hazard Communication. The scope of this rule was expanded in 1987 to include employers in the non-manufacturing sector. To underscore the pertinence of Hazard Communication for municipalities, a partial list of hazardous chemicals often associated with municipal operations includes:

| | | | | |
|---|---|---|---|---|
| Formaldehyde | Hydrochloric acid | Nitric acid | Sulfuric acid | Stoddard Solvent |
| Mercury | Sodium hydroxide | Acetone | Toluene | Isopropanol |
| Trichloroethane | Lead | Hydrazine | Ammonia | Ethylene glycol |
| Phenol | Ethyl acetate | Pesticides | Crystalline Chlorine | Sulphur |
| Carbon monoxide | Asbestos | Freon | Hydrogen sulfide | |
| Nitrous oxides | Asphalt | Mineral Spirits | Portland cement | |
| Sulphur Dioxide | Ferrous Sulfide | Silica | Ferric Chloride | |

Please note that the above is only a **partial** listing.

Given that cities such as Grand Junction have exposure to these or other hazardous chemicals, it is prudent for all facilities using chemicals to have a program based on the Hazard Communication rule CFR 1910.1200. The following outlines the requirements of such a program and explains the various elements.

There are five basic requirements under the OSHA Hazard Communication Standard:

1. A written plan must be established explaining how the Hazard Communication Program works for the facility and who is responsible for various items in the implementation of the program.
2. An inventory of on-site chemicals must be assembled on a list that identifies each one of them consistently with the label.
3. A procedure must be developed for inspecting, creating, and maintaining container labels.

4. Safety Data Sheets (SDS) must be collected for all products containing more than one percent of a hazardous chemical. These sheets must be accessible to employees, contractors and medical personnel. The designation "Safety Data Sheet" is replacing the older designation "Material Safety Data Sheet" and the terms may be used interchangeably.
5. Employees must be trained regarding the possible chemical hazards specific to their worksite. This training should also include procedures for safe handling of chemicals and protective devices that should be worn to limit exposure in the event of a spill or release.

## *Written Program*

The Hazard Communication Standard requires a **written program**, whether or not the City introduced the hazard in the workplace. The written program must address the following items:

### Labeling

1. The designation of the person(s) responsible for ensuring labeling of containers within the facility.
2. Designation of person(s) responsible for ensuring labeling on shipped containers. For the City, this responsibility generally relates to DOT regulations with regard to hazardous waste which is not a part of the Hazard Communication Standard. The City seldom ships hazardous products that are not in the form of waste.
3. Description of the labeling system used.
4. Description of written alternatives to labeling of facility containers, where applicable.
5. Procedures to review and update label information when necessary.

### Material Safety Data Sheets (MSDS) (or just SDS)

1. Designation of person responsible for obtaining/maintaining the MSDS.
3. How such sheets are to be maintained (e.g., in notebooks in the work area, via a computer terminal, in a pick-up truck at the jobsite, via telefax) and how employees obtain access to them.
4. Procedures to follow when the MSDS is not received at the time of the first shipment from the supplier.

### Training

1. Designation of the person(s) responsible for conducting training.
2. Format of the program to be used (audiovisuals, classroom instruction, etc.).
3. Elements of the training program - (discussed in the following).
4. Procedures to train new employees at the time of their initial assignment and when a new **hazard** is introduced into the workplace.
5. Procedures to train employees of new hazards they may be exposed to when working on or near another employer's worksite (i.e., hazards introduced by other employees).

## Other Items of Discussion

1. Does a list of the hazardous chemicals exist, and if so, is it compiled for each work area or for the entire worksite and kept in a central location?
2. Are methods the employer will use to inform employees of the hazards on **non-routine** tasks outlined?
3. Are employees informed of the hazards associated with chemicals contained in unlabeled pipes in their work areas?
4. Does the plan include the methods the employer will use at multi-employer worksites to inform other employers of any precautionary measures that need to be taken to protect their employees?
5. For multi-employer workplaces, are the methods the employer will use to inform the other employer(s) of the labeling system used described?
6. Is the written program made available to employees?

## The Chemical Inventory

An inventory of the **hazardous chemicals** present at the facility should be assembled. It is prudent to keep this list near the front of every book of MSDS with product names as they appear on the MSDS. This can be used as a cross reference which allows the user of a chemical to readily find needed information.

A hazardous chemical is any chemical that presents a physical and/or health hazard as shown by at least one study where the hazard was recognized at a level showing statistical significance. If OSHA has published a Permissible Exposure Limit (PEL), or the American Conference of Governmental Industrial Hygienists (ACGIH) has established a Threshold Limit Value (TLV) for the chemical, the chemical is automatically deemed hazardous. With the exception of highly toxic or cancer-causing chemicals, all chemicals present in quantities greater than one percent in a product must be listed in the inventory. Chemicals that are more toxic (e.g., benzene) must be listed if in a product at greater than 0.1 percent.

The chemical inventory should include the manufacturer's product name, location, and telephone number, and the work area where the product is used. Hazardous chemicals that may be generated in the work operation by the municipality must also be listed (e.g., welding fumes). After the inventory is assembled, a central coordinating department, such as Purchasing, should be consulted to determine whether all hazardous chemicals purchased are on the list. A procedure should be developed to keep the list current when new substances are purchased and used. It is very helpful to use the Purchasing Department to approve all purchases of hazardous chemicals and track the inventory in a data base. If any product containing a hazardous chemical is used in greater frequency or quantity than typical consumer use, the product or chemical should be included on the chemical inventory.

A helpful way to organize the chemical inventory is to separate the chemicals and/or products into various classifications (e.g., flammable, highly toxic, carcinogenic, etc.). The National Fire Protection Association (NFPA) has a system that classifies chemicals having acute effects into certain groups in accordance with similar characteristics. These classifications are helpful to train workers on the types of hazards in the workplace. However, the classifications are based on how the chemicals react in the event of a fire. This may or may not be indicative of how the chemicals behave at room temperature.

Until a standardized labeling and classification system is developed, a combination of communication measures may be appropriate.

## *Labeling*

The standard requires that any container, bag, barrel, box, bottle, etc. be labeled if it contains hazardous materials and is not used merely by one person during one work shift. Given these criteria, a pail or beaker of hazardous material must be labeled if used to transfer material from a larger receptacle such as a 55 gallon drum. The labels on both the larger receptacle and the container used for transfer must have the same information. The chemical or trade name and the labels should be the same as that on the Safety Data Sheet.

Labels must include the following:

1. The chemical or mixture's trade name.
2. The name and address of the manufacturer.
3. A warning with regard to the potential health effect or hazard - NFPA labels can be used for this in most cases.

Optional information – which may be helpful

4. The Personal Protective Equipment (PPE) appropriately worn during the product's use.

5. The organ(s) affected by exposure to the chemical or mixture (e.g., blood, liver, kidneys, etc.) This is referred to as the target organ.

## *Material Safety Data Sheets*

Note: Under the new Globally Harmonized System, these sheets will be called “Safety Data Sheets or “SDS”. In this manual, most references are to MSDS. Both designations convey the same chemical information. Regardless of designation as SDS or MSDS, the sheets may be kept together in the same location.

If a product is purchased containing more than one percent of a hazardous chemical, an MSDS should accompany the shipment of the product. If an MSDS is not attached, a system to ensure that the appropriate MSDS is received should be put in place. The purchasing department also has the option to implement a policy which will refuse all shipments of hazardous materials not accompanied by an MSDS. Hazardous products bought at the hardware store that are used with greater frequency or amounts than typical consumer use must also have an MSDS. However, these items will not typically be bought with an MSDS. Therefore, the hardware store should be contacted to determine the supplier who sold the product. This supplier should then send an MSDS upon request.

After obtaining the MSDS, the data sheet should be checked to determine whether all the necessary items are included. The following is a list of required items:

1. Product or chemical identity used on the label.
2. Manufacturer's name and address.
3. Chemical and common names of each hazardous ingredient (including CAS numbers).

4. Name, address, and phone number for hazard and emergency information.
5. Preparation or revision date of the MSDS.
6. The hazardous chemical's physical and chemical characteristics, such as vapor pressure and flashpoint.
7. Physical hazards, including the potential for fire, explosion, and reactivity.
8. Known health hazards, including signs and symptoms of exposure or any medical conditions aggravated.
9. OSHA Permissible Exposure Limit (PEL), ACGIH Threshold Limit Value (TLV), or other exposure limits.
10. Emergency and first aid procedures.
11. Whether OSHA, NTP or IARC lists the ingredient as a carcinogen.
12. Precautions for safe handling and use.
13. Control measures such as engineering controls, work practices, hygienic practices or personal protective equipment required.
14. Primary routes of entry.
15. Procedures for spills, leaks, and clean-up.

One quick way to check the MSDS is to see if all blocks/spaces are filled out as is required by the standard. The MSDS can be in any format as long as it has the above information. If the MSDS does not give adequate information, it may be best to contact the supplier for a more complete MSDS or to send the product back and refuse to use that vendor unless an adequate MSDS can be obtained.

The MSDS must be available to employees, their designated representatives, emergency personnel such as fire departments, and to appropriate government agencies.

The purpose of the MSDS is to communicate the chemical hazards, safe handling and emergency procedures, and contact information for further assistance if needed; for routine use as well as emergencies.

All the chemical ingredients of the product will be listed if in a percentage greater than one percent. Many times, manufacturers and suppliers will not disclose the ingredient for proprietary reasons. This is permissible for ingredients that are not considered hazardous.

The Chemical Abstract System (CAS) number, which is a unique number assigned to each chemical, should be included on the MSDS next to that chemical. The CAS number relates to a chemical registry which allows one to find a particular chemical and information regarding it in a computer data base. Chemicals can be known under a number of different synonyms so the number is assigned to ensure the chemical's accurate identity.

Some products during normal use or during heating may give off hazardous by-products even though they may not be hazardous in their original form. This information is important to protect against potential hazardous exposures. An MSDS must be made available for any material which may emit hazardous components when being formed, welded, sawed, etc. For example, bricks may require an MSDS if the bricks are sawed and present an exposure to silica dust (sand).

## Interpretation of the Standard Regarding MSDS

MSDS must be written in English, but can be translated into other languages for the purposes of training.

Hazardous chemicals need not be reported on the MSDS if it can be demonstrated that the hazardous components are bound in such a way that there is no potential for exposure to it. The standard defines exposure as potential as well as measurable exposure by any route of entry, either under normal conditions of use or in a foreseeable emergency. If there is no potential exposure given this definition, the chemical is not covered under the standard.

Computer generated MSDS do not have to include the fields that do not apply to the chemicals for which they are being used. In "standardized" forms where the information does not apply, this should be noted appropriately (e.g., N/A).

Where evidence indicates that a class or family of chemicals presents similar health hazards, it is appropriate to report those findings on the MSDS with respect to the entire class or family. NFPA classes of chemicals can be used in such a way.

The standard requires readable MSDS or electronically accessible MSDS to be maintained on site. This may be accomplished by the use of computers with printers, and/or fax machines. The key issue in compliance is that no barriers to access needed information exist during the work shift. For highly toxic chemicals, it may be helpful to have MSDS (available within 15 minutes) at each job site. For less hazardous chemicals, accessibility during the work shift is appropriate.

Communication of the hazard information via telephone does not satisfy the requirements of the standard. However, if employees are working at remote stations (trucks, construction trailers, etc.), vital information related to an emergency can be communicated via telephone, CB radio, etc. with subsequent sending of hard copy MSDS via mail, fax or delivery. In this scenario, a person must be stationed whenever appropriate at the central location to disseminate information to those at remote locations.

A system for retrieval of MSDS should not require that a supervisor be contacted. The locations where the MSDS books or computer terminals having the same information are kept should not be locked up preventing access. If computers or fax systems are used exclusively to communicate hazard information, all employees must be trained on their proper use. On multi-employer jobsites with contractors, municipalities must provide contract personnel foremen/supervisors with MSDS of products or chemicals that they may contact either routinely or in a foreseeable emergency in the scope of their work. If the contract employer(s) bring hazards to the municipality's worksite, they must submit MSDS to the appropriate City personnel and any other contractor's foreman if their employees were subject to exposure.

## Arrangement of MSDS Books

Although there is no prescribed system for arranging the MSDS books, some suggestions are appropriate:

1. A comprehensive book having all the MSDS will be kept in one department such as Purchasing. This book shall be updated by one person. Copies of the new/revised MSDS should then be sent to the departments that are using that product or chemical. This is one reason why Purchasing or a central coordinator must be advised of any new hazardous chemical which enters the system.
2. Books for MSDS of chemicals/products that are used at a particular worksite should be kept within that worksite. These smaller MSDS books will more readily allow an employee to find the MSDS of concern.
3. A chemical inventory for that particular department should be kept at the front of each MSDS book, with an exhaustive inventory kept in the book discussed in suggestion (1).

4. The books should be divided in a logical manner. One way to separate the books is by class of chemical (e.g., acids, bases, flammables, carcinogens). Another way to separate the book is by type of use (e.g., lubricants, cleaning products, compressed gases, welding products, adhesives, paints). After these divisions are made, it is most helpful to compile the products/chemicals alphabetically by trade name.
5. After organizing the book, it is helpful to use the chemical inventory as an index, noting the page number or section in which the MSDS for the chemical resides. There should be some method to update the index as new MSDS are placed in the book.
6. It is highly recommended that the Hazard Communications Written Program be placed near the front of each MSDS book.
7. The MSDS books at each location must be periodically updated by a designated person.

## CITY-WIDE HAZARD COMMUNICATION REGULATIONS

1. Review the site-specific **Hazard Communication Program** of your department or facility before working with any chemicals. Check material safety data sheets of chemicals prior to use.
2. Wear appropriate personal protective equipment as recommended by material safety data sheets when working with chemicals.
3. All personnel working with chemicals shall be adequately trained in potential hazards of the chemicals they are using.
4. Report all injuries or accidents immediately.
5. Clean up all minor spills.
6. If a major spill of hazardous materials occurs, evacuate and cordon off the area, call 911, and contact **your supervisor** DO NOT attempt to clean up a hazardous materials spill alone.
7. Properly store chemicals in such a way that chemical incidents do not result.
8. Properly label all containers containing flammable, poisonous, toxic, or otherwise dangerous materials.
9. Store insecticides, pesticides, herbicides, flammables, and strong acids in storage that is locked from public access.
10. Post signs informing personnel that hazardous chemicals are located in cabinets, lockers, closets, etc.
11. Employees required to wear respiratory equipment must be qualified to do so. This includes but is not limited to training, medical qualifications, and fit testing of respirators.
12. Only approved solvents will be used to clean parts and materials.
13. Gasoline, kerosene and other potentially dangerous materials will not be used as cleaning solvents.
14. Employees will wear gloves and safety goggles when working with cleaning solvents.
15. Maintain adequate ventilation when working with chemicals.
16. Employees should know the location of the nearest fire extinguisher, first aid kit, emergency eyewash, emergency shower and telephone when working with chemicals.
17. For guidance on Hazard Communication, consult OSHA Standard 29 CFR 1910.1200.

## HEARING CONSERVATION PROGRAM

1. Check to see if elevated noise levels are present, and as appropriate, review the **Hearing Conservation Program** of a department or facility before working in those areas.
2. Certain areas may be identified as "**High Noise Areas.**" Personnel working in these areas will wear approved hearing protection.
3. When requested by supervisors, employees shall wear approved hearing protectors even if the area is not marked. Employees who are concerned about noise levels should request hearing protection be provided.
4. Personnel will be adequately trained in the use of hearing protection and will be familiar with the hazards related to elevated noise levels.
5. Hearing protection will be made available to anyone working in areas where elevated noise levels exist.
6. Personnel routinely exposed to elevated noise levels above 85 decibels shall be included in a Hearing Conservation Program. Contact your supervisor if you have questions regarding such a program.
7. Remember- people do not get accustomed to loud noises - **THEY LOSE THEIR HEARING!**
8. For guidance on hearing safety, consult OSHA Noise and Hearing Conservation Standards.

## RESPIRATORY PROTECTION PROGRAM

### INTRODUCTION

This program will provide City of Grand Junction employees with the criteria for compliance with the OSHA Respiratory Protection Standard 29 CFR 1910.134.

### SCOPE

**David L Roper, Risk Manager,** has been designated as the person responsible for coordinating this program. Each supervisor will ensure that their employees will meet governmental requirements and all elements of the Respiratory Protection Program.

### PURPOSE

It is the responsibility of the City to provide a safe and healthful workplace for its employees. In an effort to meet these requirements, all departments will conduct various surveys to determine whether the need for a Respiratory Protection Program exists. The employees who work in selected areas will be covered by this program. This program will dictate what steps must be taken to reduce employees exposure to nuisance dust, respirable dust, toxic chemicals, etc.

### COVERED EMPLOYEES

The following employee job classifications will be covered by the **Grand Junction Respiratory Protection Program.** These employees were selected based upon workplace observations, total dust, respirable dust, and other known workplace chemical evaluations. Covered employees will be evaluated annually.

The following job classifications have been identified:

1. **Fire Department personnel**
2. **Parks and Recreation Pesticide/Herbicide Applicators**
3. **Persigo Wastewater Treatment personnel**
4. **Maintenance personnel who weld periodically**
5. **Maintenance personnel who paint periodically**
6. **Water treatment personnel working with chlorine in emergency situations.**
7. **Street Sweeper department personnel**

A list of covered employees will be maintained by the respective department.

## PERSONAL PROTECTIVE EQUIPMENT

The selection of respirators is based upon several factors. These factors include but are not limited to workplace air contaminants, employee fit test results, employee comfort and ease of use in the workplace. Employees are fit tested using the "Rainbow Passage". This passage is discussed in Section on Fit Testing Procedure and Results. It has been determined through site inspections and surveys that the primary type of respirator required is either Air-Purifying Respirators or Air Supplied Respirators.

Each department will list the types and models of respiratory equipment available at their respective facilities. That pertinent information will be found in this section of the **Grand Junction Respiratory Protection program**

## RESPIRATOR CARE AND MAINTENANCE

Respirators containing filters will be changed on a daily or shift basis. Employees will be furnished these types of respirators if they desire. These employees will be responsible for the care and maintenance of these respirators. Employees using respirators will use the following procedure to adequately clean their respirators.

1. Remove used or spent filter.
2. Examine all parts of the respirator (ie. straps, inhalation valve, exhalation valve, etc.)
3. Wash the entire respirator in warm soapy water. The use of a mild disinfectant is recommended.
4. Shake or gently wipe all excess water from the respirator. Allow the respirator to air dry.
5. Re-examine the respirator when installing the new cartridges.
6. Report any damage or defects to your immediate Supervisor.
7. Do not make repairs on respirators.

Additional respirators will be available upon request. These respirators will be inspected monthly. These respirators will be stored in clean, dry locations. These respirators will be stored in their original containers or clean containers. Disposable dust respirators will be discarded at the end of the day or sooner if necessary.

Supervisors will periodically inspect the condition of respirators.

Air supplied respirators will be inspected periodically by qualified individuals. The air used in these systems shall meet "Grade D" specifications. Compressors used to fill tanks will be tested every six (6) months. Guidelines developed by the Compressed Gas Association for "Grade D" specified air shall be met.

## EMPLOYEE TRAINING

City of Grand Junction employees will be adequately trained in the use of Air-Purifying Respirators or Air-Supplied Respirators. These employees will be trained in all aspects of these respirators. During this training session employees will also be fitted with an approved respirator. The results of fit testing are included in the Fit Testing Procedure and Results section. Records of employee training will be kept in this section of the **Grand Junction Respiratory Protection Program.**

A training outline used to discuss Respirators is given below, it may be used as a suggested guideline for air purifying and air supplied respirators. It is strongly recommended that a training outline be prepared that is specific for each respective department.

### *Suggested Outline*

I. INTRODUCTION
- A. Uses
- B. Advantages
- C. Disadvantages
- D. Limitations
- E. Fit Testing
- F. OSHA Eleven Point Program
- G. Employee Qualitative Fit Test

II. TYPES OF RESPIRATORS
- A. Dust
- B. Mist
- C. Fume
- D. Organic Vapor
- E. Supplied Air

III. APPLICATION
- A. Nuisance Dust
- B. Total Dust
- C. Respirable Dust
- D. Silica
- E. Welding Fumes
- F. Degreasing Vapors
- G. Acids/Bases
- H. Toxic Chemicals

IV. ADVANTAGES

V. DISADVANTAGES

VI. LIMITATIONS
- A. Air Purifying
- B. Air Supplied

VII. FIT TESTING
- A. Negative Test
- B. Positive Test
- C. Banana Oil Test
- D. Irritant Smoke Test

VIII. OSHA ELEVEN POINT PROGRAM
- A. Written Program
- B. Equipment Selection
- C. Care and Maintenance
- D. Medically Fit
- E. Knowledge of Hazards
- F. Recordkeeping

IX. EMPLOYEE FIT TEST EXERCISE
- A. Irritant Smoke Test
    1. Fit Mask
    2. Close Eyes
    3. Negative Test
    4. Positive Test
    5. Read "Rainbow Passage"

X. QUESTIONS AND ANSWERS
- A. Equipment
- B. Fit tests
- C. Applications
- D. Advantages/Disadvantages

## FIT TESTING PROCEDURE AND RESULTS

During the training phase of the **Grand Junction Respiratory Protection Program,** employees will receive fit testing of their respective respirators. Employees will be assured of a positive fit.

The following procedure will be used:

1. Properly don an air purifying respirator.
2. Conduct a Negative Pressure Test.
3. Conduct a Positive Pressure Test.
4. Close their eyes.
5. Irritant smoke will be passed over the respirator.
6. Employees will read the "Rainbow Passage."
7. If a leak is found, the test will be repeated.
8. After the test, a form will be completed describing the test and the type of respirator that was used for the test.

The "Rainbow Passage" is a phrase that is used to show that an adequate seal can be maintained when wearing a respirator. The passage requires the jaw to move various positions that could result in a leak. The employee will repeat the "Rainbow Passage" while wearing a respirator during the test. The "Rainbow Passage" reads as follows:

> When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long, round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond his reach, his friends say he is looking for the pot of gold at the end of the rainbow.

Copies of each employee's fit test results will be kept in this section of the **Grand Junction Respiratory Protection Program.** A sample form has been included at the end of this section.

## GRAND JUNCTION RESPIRATOR FIT TEST

1. DATE: _____
2. EMPLOYEE TESTED: _____
3. EMPLOYEE SSN: _____
4. SIGNATURE: _____
5. TYPE OF RESPIRATOR: _____
6. RESPIRATOR MODEL: _____
7. POSITIVE FIT TEST: _____
8. NEGATIVE FIT TEST: _____
9. QUALITATIVE FIT TEST: _____
   (IRRITANT SMOKE)
10. TEST CONDUCTED BY: _____
11. SIGNATURE: _____

## RECORDKEEPING REQUIREMENTS

There a several records that shall be maintained in accordance with 29 CFR 1910.134, OSHA Respiratory Protection Standard. Those records are listed below:

1. Documentation to demonstrate employee medical fitness to wear a respirator.
2. Care and maintenance schedule of all air purifying and air supplied respirators.
3. Proof of training.
4. Employee fit test results.
5. Documentation to show that annual reviews have been made on the Grand Junction Respiratory Protection Program.

The **Grand Junction Respiratory Protection Program** was written by W-H Interscience of Colorado. This program shall be reviewed on an annual basis. The following individuals endorse the **Grand Junction Respiratory Protection Program:**

Mr. Greg Lanning_____ Public Works Director

Mr. Bob Kelley _____ Safety Coordinator

Mr. Nathan Carruth_____ Risk Manager

## EMPLOYEE RESPIRATORY PROTECTION PROGRAM ACKNOWLEDGEMENT

It has been shown that on this day you have received the following information regarding the **Grand Junction Respiratory Protection Program:**

1. Respirator Training
2. Respirator Fit Test
3. Respirator Examination
4. Personal copy of the **Grand Junction Respiratory Protection Program**

It is understood that employees covered by this program will comply with all aspects of the **Grand Junction Respiratory Protection Program.** Covered employees shall maintain a personal copy of this program and use it when necessary. Failure to follow all sections of the **Grand Junction Respiratory Protection Program** may lead to disciplinary action up to and including termination. This form shall be maintained in your training records.

### EMPLOYEE RESPIRATORY PROTECTION PROGRAM ACKNOWLEDGEMENT

Employees Signature _____ Date_____

## STATEMENT OF EMPLOYEE RESPONSIBILITY

As an employee of the City of Grand Junction, it is your responsibility to be aware of all safety rules and regulations that apply to your job. You are encouraged to ask your supervisor if you are not sure how to complete a task safely. City of Grand Junction Management wants to provide you with a safe and healthy workplace. It is your responsibility to work safely, use equipment and training provided, and to comply with these safe work practices.

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## —T—



## —V—



## —W—