

**The Metropolitan Water Reclamation District of Greater Chicago**

100 East Erie Street  
Chicago Illinois 60611

# **SAFETY RULES**

Amended February 17, 2017

# MWRD SAFETY RULES

## Introduction

It is the earnest desire of the Metropolitan Water Reclamation District of Greater Chicago (District) to conduct its operations with the utmost regard for the safety of its employees and the public. For this reason, the District provides equipment specifications and working conditions designed to promote efficient operations, eliminate accidents, and to minimize hazards that may cause injuries. Safety is a team-effort. All employees, including Supervisors, Managers, and Executive Staff, must work together to create a work environment where hazards can be anticipated, identified, evaluated and mitigated before an injury occurs.

Due to the nature of its operations, throughout the District there are locations which present potential unsafe conditions. Potential hazards that may be identified include, but are not limited to, areas in which an employee may enter, occupy, or otherwise come into contact with. The District strives to locate and address these hazards through investigations and engineering controls.

The District has also made a concerted effort to identify these hazards and potential hazards by posting signs on the building or in the area of the specific hazard. The warning signs are specific to the location and are updated through inspections and surveys; additional signs are posted as necessary. Some examples of warning signs include:

- Caution - High Noise Area - Hearing Protection Required
- Do Not Enter Without Portable Gas Meter
- Danger - No Smoking, Matches or Open Lights
- Danger - Do Not Smoke, Eat or Drink in This Area
- Danger - Confined Space - Authorized Personnel Only
- Danger - Equipment in This Area Starts and Stops Automatically
- Danger - High Voltage - Authorized Personnel Only

History tells us that a great number of accidents result from: lack of awareness of the potential hazards, lack of planning, improper procedures or implementation thereof, and the failure of equipment and/or material. With this in mind, the District's Safety Rules were developed to assist and protect employees during work. These Rules are updated periodically to address technological developments, changing conditions and improvements in equipment and procedures. Each employee is provided with a copy of the Safety Rules when hired and updates are made available on the District Portal.

Not all hazards can be mitigated with engineering controls and thus require strict adherence to the District's Safety Programs (DSP) such as Lock Out/Tag Out, Permit-Required Confined Space Entry, and Personal Protective Equipment.

These Safety Rules and DSPs are accessible to all District employees through the District's website portal. Both the employee and the supervisor are responsible for knowing and adhering to the Safety Rules as well as the DSPs specific to their work.

It is the responsibility of managers and supervisors to promote safety to their employees on a consistent basis. Supervisors are responsible to provide testing equipment, personal protective equipment, and other necessary equipment as specified for the particular location or process. Management or Supervisory

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personnel, upon observing or being notified of unsafe conditions and acts, shall immediately take appropriate action.

The District expects each employee to comply with all Safety Rules. Each job classification has required safety training and Managers and Supervisory personnel have the responsibility of ensuring employees receive the necessary training required to perform their job safely. It is the employee's responsibility to recognize the various signs posted and follow the instructions and protocols as stated in the specific Safety Rules and DSPs. Failure to recognize the danger and take protective measures could result in an injury or property damage. After all, it is the employee who suffers the most when they are injured, so they should do their utmost to avoid such a circumstance.

Employees may be disciplined if these Safety Rules or DSPs are violated. Claiming "ignorance" of any Safety Rule or DSP shall not be considered as an acceptable excuse for their violation. Any employee who violates these rules can be subject to disciplinary action.

The objectives of Risk Management and Safety are to prevent injuries, protect equipment from damage and maintain a productive work environment. Working together with others across the organization to ensure the safety of our operations is an invaluable investment in the well-being of both our employees and the public.

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## Part 1 - Section 1 Application and Responsibility

### 1.1.1 Application of Safety Rules

- a. *Possession* - Employees shall be given a copy of the Safety Rules when they are hired and are advised of updates as they occur.
- b. *Knowledge* - Each employee shall be familiar with the District's Safety Rules and District Safety Programs (DSPs), with particular emphasis on those Safety Rules and DSPs applying to his/her duties. Safety Rules shall be obeyed and lack of knowledge of them will not be accepted as an excuse for their violation. Employees may be examined periodically on their knowledge of the rules.
- c. *Interpretation* - If an employee is called upon to perform work that he/she considers hazardous and is not properly protected, he/she shall bring the matter to the attention of his/her supervisor before commencing work. If questions arise, the supervisor shall obtain the opinion of the personnel (Safety Coordinator or Safety Specialist) at the local Safety Office before making the final decision.

**Note:** *For the purpose of these rules, the term "supervisor" shall mean any person directly in charge of the work.*

### 1.1.2 Responsibility for Safety

- a. *Ability* - Before starting a job, the supervisor and the employee shall be satisfied that the employee can perform the work without injury.
- b. *Understanding* - Before starting a job, each employee shall thoroughly understand the work to be performed, his/her part in it, and the safety rules that apply. "Toolbox" or pre-job safety discussions conducted before the work activity should be conducted to promote safe operations.

### 1.1.3 Reporting Employee Injuries

- a. Injuries, no matter how slight, shall be reported immediately to an employee's immediate supervisor. Any employee who does not report an accident or injury can be subject to disciplinary action.
- b. The immediate supervisor of an injured employee shall prepare the accident notification form "Mailer" within 24 hours. This form is available from the local Safety Office and on the District portal.
- c. When the services of a physician are necessary, a clinic designated by the District shall be used whenever possible. A copy of the accident notification mailer (if available) should be brought with the injured employee to the clinic.
- d. In case of serious accidents to employees or others, the injured shall be attended to promptly. The accident shall be reported immediately to the plant or section head on duty and the System Dispatcher.

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## 1.1.4 Practical jokes

Practical jokes, rowdiness, and “horseplay” are strictly forbidden.

## 1.1.5 Intoxicants

- a. Any employee reporting for work under the influence of alcohol, drugs or other intoxicants, or who is found bringing such intoxicants onto the premises of any District facility, will be subject to disciplinary action.
- b. Many prescription and over the counter drugs act as central nervous system depressants or stimulants causing drowsiness, dizziness, agitation or other effects. Employees are responsible to ensure that any of these drugs taken will not affect the ability to perform work duties safely.

## 1.1.6 Conflict of Rules

In the event of a conflict between the Illinois Department of Labor or other regulatory agencies and these Safety Rules, the more stringent regulations shall apply.

## 1.1.7 Firearms

Fireworks, firearms, weapons, or any other items of an explosive or hazardous nature not connected with an employee’s duties shall not be brought onto District property or to any other place of District business.

## 1.1.8 Vigilance

Employees are expected to remain alert and vigilant at all times while on duty. Failure to do so may jeopardize the safety of fellow workers and equipment.

## Part 1 - Section 2 General Precautions

### 1.2.1 Protecting the Public

- a. All employees working on roadways shall wear traffic safety vests.
- b. The public shall be kept away from the locations where work activity presents hazards.
- c. Before work is performed on or very near roadways, the agency(s) having jurisdiction shall be notified.
- d. Ground openings, such as trenches, shafts, and obstructions, shall be protected by suitable barricades or covers. When covers or barricades are exposed to traffic, they shall be marked with danger signs during the day and lighted at night with flashers so as to be visible to traffic and the public.
- e. When it is necessary to warn or divert traffic, flagmen (wearing traffic safety vests) or warning devices shall be stationed far enough on each side of the hazard to give vehicles enough time to stop and/or adjust to the new traffic pattern.
- f. Vehicles used to block manholes in roadways shall be equipped with flashing lights.
- g. When necessary to leave equipment or other obstructions on a roadway overnight, the following precautions shall be taken:



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1. They shall not be left adjacent to fire plugs or directly in front of entrances to parks, playgrounds, churches, houses, schools, etc.
  2. They shall be locked, blocked, or otherwise secured so that children or the public cannot move them.
  3. They shall be adequately protected by approved warning devices.
  4. They shall be secured to prevent children and others from climbing or otherwise playing on them.
- h. When chiseling, chipping, welding, or flame cutting is performed on locations where others are exposed to eye hazards, barricades or shields shall be placed around the work area.

## 1.2.2 Taking Chances

- a. Before commencing any work that may be hazardous, care shall be taken to establish safe work procedures. Where more than one employee is engaged on the same job, all employees concerned shall understand the Procedures to be followed. Under no circumstances shall safety be sacrificed for speed.
- b. Employees shall always be careful to place themselves in a safe and secure position. The care exercised by others shall not be relied upon for protection.

## 1.2.3 Reporting Hazardous Conditions

- a. When an employee observes a hazardous condition that may cause injury, property damage, or interfere with services, regardless of the department in which such condition exists, he/she shall report it promptly to their supervisor using the "Unsafe Condition Report Form - SU-303". This form is available from the local Safety Office and the District portal. If the supervisor cannot resolve the hazard, the supervisor provides comments on the form and forwards it to the local Safety Office. The local Safety Office will investigate the hazardous condition and have it corrected. In case of an emergency: guard, secure, or isolate the subject site.
- b. An employee who receives a report of any hazardous emergency condition shall obtain the informant's name and the exact location and nature of the trouble. Appropriate steps shall be taken immediately to inspect, or if necessary, correct the condition.
- c. Any fire, smoke, excessive heat, unusual odors or water around electrical equipment witnessed must be reported immediately to their supervisor. Reported fires must be documented on the Fire Report form, available on the District portal, and sent to the local Safety Office.

## 1.2.4 Entering Hazardous Areas

Only authorized and trained personnel shall enter restricted areas such as power or treatment plants, pumping stations, confined spaces, manholes, vaults electrical and arc rated areas, etc.

## 1.2.5 Guards

- a. No guard shall be removed from a machine while it is in operation. Guards may need to be removed in some instances for testing and repair, but must be replaced upon completion of work. If a protective guard is removed for any reason, then the District's Lockout Tagout Hazardous Energy Control Procedures apply.
- b. Permanent guards shall not be modified.

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- c. Machines and power tools shall not be operated with guards removed except where temporary protection is provided. If it is necessary to place temporary guards on any apparatus, they shall be of substantial construction, suitable for the purpose intended, and shall be replaced by permanent guards as soon as possible.
- d. Any equipment which is not fitted with a guard, which an employee believes is necessary, shall be reported to his/her supervisor.

## **1.2.6 Control of Hazardous Forms of Energy**

- a. Before starting work on any electrical circuit, machine, belting shafting, pressurized or hazardous piping or other apparatus, employees shall ensure that the equipment has been de-energized, isolated and locked and tagged out. Each employee working on the equipment must apply his/her personal Lockout Tagout device to the energy source or group lockout mechanism. Refer to the District's Lockout Tagout Hazardous Energy Control Procedures for further details.
- b. No switch, governor, valve, throttle, or other device used to put the circuit or equipment into service shall be operated while it is locked and tagged out.
- c. A personal Lockout Tagout device that has been placed for the protection of workers, shall be removed only by authorization of the employee who applied it. (Follow District Operating Instructions pertaining to the equipment involved.)
- d. For additional details, refer to the District's Lockout Tagout Hazardous Energy Control Procedures and the District's Electrical Safety Program.

## **1.2.7 Permit-Required Confined Space Entry**

- a. All in-ground tanks, sewer manholes, vaults, pits/trenches greater than four feet deep are considered Permit-Required Confined Spaces. In addition any structure that meets the following conditions is a Permit-Required Confined Space: is large enough and so configured that an employee can bodily enter and perform assigned work; has limited or restricted means for entry or exit; is not designed for continuous employee occupancy.
- b. All entries into Permit-Required Confined Spaces must be in accordance with the requirements of the District's Permit-Required Confined Space Entry Program. Only trained and authorized personnel are allowed to enter a permit required confined space. See Part 4, Section 4 for additional information.

## **1.2.8 Office and Clerical Work**

- a. Shoes shall be worn in all office environments.
- b. Chairs, wastebaskets, cords, and other articles shall not be left in aisles where they constitute a tripping hazard.
- c. Desk drawers, cabinet doors, slides, and files shall not be left standing open while unattended.
- d. Use handrails, pick up anything you see on stairs; DO NOT USE STAIRS FOR STORAGE; and do not try to carry materials when using stairs, if you can avoid it. Do not carry stacks of materials so high that your vision is obstructed.
- e. Approved stepladders or other safe supports shall be used to reach material on high shelves or at other similar locations.

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- f. Employees shall not move furniture, equipment, or other large items unless they are employed for that purpose (e.g. laborers).
- g. Paper cutters shall be secured in the closed position after use.
- h. Employees shall close the cover over material being duplicated on a photocopy machine and avoid looking at the light. After photocopying is completed, keep the cover closed.

## 1.2.9 General

- a. Warning signs shall be heeded.
- b. Persons seen in a dangerous situation shall be warned without being startled.
- c. Employees not required to be near dangerous places shall keep away from such areas.
- d. Any employee engaged in transporting, storing or using chemicals or compressed gasses shall have the proper safety training on the handling of chemicals or compressed gases prior to attempting to work with said items. Contact your supervisor or the local Safety Office for information on training.

## Part 1 - Section 3 Protective Devices

### 1.3.1 Eye Protection

Prescription/non-prescription eyeglasses (even with hardened lenses) are not a substitute for goggles. Full cover safety glasses, goggles, and/or face shields shall be worn when an employee is engaged in or is in close proximity to the following work:

- a. Safety glasses shall be worn in all shop areas;
- b. Drilling or chipping stone, brick, concrete, paint pipe coatings or metal and the breaking of frozen ground;
- c. Landscaping activities (mowing, edging, tree trimming...);
- d. Power grinding, buffing or wire brushing, whether there is a built-in eye shield or not;
- e. When dust or flying particles are present;
- f. Flame welding, cutting or burning. (Approved colored lenses shall be used);
- g. Drilling with hand or electric drill overhead;
- h. Handling acids, caustics, chlorine, ammonia or other similar liquids, solvents, or gases;
- i. Brush chippers;
- j. Cleaning or scaling pipe;
- k. Flying particles caused by other workers. Consequently, if other employees are within the range of such particles, a suitable screen around the work area may be used;
- l. Fertilizer, sewage or sludge handling equipment where there is a reasonable expectation of exposure because of wind or splash;
- m. Any other equipment/procedures which a foreman or supervisor believes to be dangerous to the eyes.

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## 1.3.2 Head Shields and Hoods

Approved head shields or hoods shall be worn when:

- a. Electric arc welding;
- b. Hydrogen and heliarc welding;
- c. Sand blasting.

## 1.3.3 Supplied Air Equipment

Approved filtered supplied air equipment shall be used when:

- a. Entering or working in any manhole, sewer, enclosure, confined space, or any other area where an adequate supply of fresh air cannot be assured, or where oxygen is less than 19.5%;
- b. Sand blasting in enclosed areas;
- c. During some painting operations as indicated in Subpart 1.3.8.a.

## 1.3.4 Respirators

Approved respirators shall be worn when:

- a. Applying paint or other toxic liquids with pressure spray equipment inside buildings, except in shops where special approved rooms are provided for this purpose;
- b. Material being buffed creates an abnormal amount of dust;
- c. Handling lime or other toxic or caustic powdered chemicals;
- d. Exposed to abnormal amounts of dried sludge;
- e. Sand blasting;
- f. Work generates airborne dust or noxious vapors.

***Contact the local Safety Office for additional information concerning the evaluation, fit testing and training with respirators.***

## 1.3.5 Use of Life Jackets, Life Lines, and Similar Equipment When Around Water or Confined Spaces

- a. While working in areas of potential falls into deep water, an employee shall wear an approved life jacket or a full-body harness with a retractable life line attached to a suitable anchorage point that will prevent falling into the water.
- b. While working in areas with limited exits such as confined spaces, and the potential for fire or escaping gas (as inside manholes or tunnels) exist, an employee shall wear an approved full-body harness with life line attached, and at least one employee shall be stationed at the surface.
- c. Employees must wear a full-body harness when working along an unprotected edge at a height greater than 4 feet. The full-body harness shall be equipped with a personal fall arrest retractable life line.
- d. Refer to the District's Fall Protection Program for additional information.

## 1.3.6 Head Protection

- a. Approved safety headgear shall be worn by all employees at all times, except while in offices, lunch rooms, locker rooms, laboratories or other areas, as designated by the local Safety Office.

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This rule applies to all supervisors or others observing the work as well as to employees who are actually performing the work.

- b. Safety head gear or headband assembly shall contain only District approved markings and shall not be defaced or altered in any manner.

## 1.3.7 Wearing Apparel

- a. Each employee shall wear shoes, gloves, and other clothing suitable for the work performed.
- b. Shorts, sleeveless shirts, sweatpants, and opened toed shoes are not permitted in plant areas.

***Note: Other protective devices are provided by the District to be used in various types of work. The use of these devices is covered by rules applicable to specific departments and materials used.***

## 1.3.8 Use of Paints and Paint Products

- a. Where paint materials are to be used, employees shall wear protective gloves, clothing and goggles. In unventilated or poorly ventilated areas, employees shall use respirators approved for the material being used. In some cases, supplied air equipment may be utilized. Employees shall use approved hand cleaner after use of toxic paint materials.
- b. A protective cream shall be used on exposed areas of the skin when applying coal tar coatings.

## 1.3.9 Lighting

Explosion-proof lights shall be used in all areas where excessive dust or explosive gases may be present.

## 1.3.10 Hearing Protection

Approved earplugs or muffs, available to all employees from the storeroom, shall be worn while in areas having a decibel reading of 85 or higher.

## Part 1 - Section 4 Hand and Power Tools

### 1.4.1 Use of Tools

- a. All conducting tools, hammers with metal handles, screwdrivers or knives with the metal continuing through to end or sides of handles, shall not be used on or near energized electrical equipment.
- b. Metal measuring tapes, brass bound rules, metal scales and gauges, wire or metal bound hose, or wire core rope shall not be used when working on or near energized electrical circuits or equipment.
- c. Chisels, drills, punches, ground rods, and pipes shall be held with suitable holders or tongs (not with hands) while being struck with a sledge by another employee.
- d. Wrenches with sprung or damaged jaws shall be discarded.
- e. Pipe shall not be used to extend a wrench handle for added leverage unless the wrench was designed for such "cheater bar" use.
- f. Tools shall be used only for the purpose for which they are designed.

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- g. When using a saw or other tool, an employee shall not brace the work with their knee or other part of their body.
- h. Before making adjustments or changing air tools, unless equipped with quick-change connectors, the air shall be shut off at the air supply valve ahead of the hose. The hose shall be bled at the tool to relieve pressure before breaking the connection.
- i. Practical jokes with compressed air are strictly forbidden. Compressed air entering or blown against the body may result in serious injury or death.
- j. Compressed air shall not be used to clean clothing while being worn nor used to blow dust or dirt out of the hair.
- k. When using a screwdriver or other tool, an employee shall place himself/herself in such a position that he/she will avoid injury if the tool should slip.
- l. Only trained and authorized employees shall be permitted to operate power equipment.
- m. High-pressure air shall not be used to clean lathes, threading machines, mills, or other machinery or equipment.

## **1.4.2 Care of Tools**

- a. All tools, regardless of ownership, shall be of an approved type, maintained in first class condition, and be subject to inspection at any time. A supervisor has the responsibility to condemn tools.
- b. Tools with sharp edges shall be so stored and handled so that they will not cause injury or damage. They shall not be carried in clothing pockets.
- c. When shock tools such as chisels, punches, drills, etc. become mushroomed or cracked, they shall be dressed and repaired before further use, or replaced.
- d. When faces of hammers, sledges, etc., become chipped or rounded, they shall be repaired or replaced.
- e. Wood handles that are loose, cracked or splintered shall be replaced. Taping or lashing them with wire will not be permitted.
- f. All cutting tools such as saws, wood chisels, draw - knives, axes, etc., shall be kept in suitable guards unless special compartments are provided for their storage.
- g. All spark proof tools shall be kept separate from the regular tools.
- h. Only approved spark proof hand tools and power tools approved for use in hazardous locations shall be used where excessive dust or explosive gases are present.

## **1.4.3 General**

- a. All files, rasps, and other hand tools which have a sharp tang shall not be used without approved handles.
- b. Tools, except those normally carried on belts, that must be raised or lowered from one elevation to another shall be placed in approved tool buckets or firmly attached to hand lines.
- c. Tools shall not be thrown from place to place or from person to person under any circumstances.
- d. Tools shall not be left lying around where they may cause tripping hazards.

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- e. Tools shall never be placed unsecured on elevated places.
- f. When working on or above open grating, a canvas or other suitable covering shall be used in order to prevent tools or parts from dropping to a lower level. Additional securing of the danger area by barricades or guarded by a worker may be required.
- g. Electric tools (except those with self-contained power or double insulated) such as electrical drills, saws, etc., shall have their frames effectively grounded at all times while connected to a source of power. Additionally, the employee or person in charge shall assure their connection to a Ground Faulted Circuit Interrupter (GFCI), if appropriate.
- h. The insulation on hand tools shall not be depended upon to protect users from shock.
- i. Employees operating or working near rotating machine tool equipment shall not wear gloves, loose, or hanging clothing. Additionally employees with long hair will be required to have their hair tied back.

## **Part 1 - Section 5 Ladders and Scaffolds**

### **1.5.1 Training**

- a. Each employee that performs work on a portable ladder greater than six feet or a scaffold shall receive training in the inspection, use, and care of such equipment.
- b. Employees engaged in the erecting, disassembling, moving, operating, maintaining, and inspecting of scaffolds shall receive training in proper construction techniques.

### **1.5.2 General**

- a. A competent person (with previous training) shall inspect the scaffold before it is released for use.
- b. A competent person shall inspect ladders routinely, in addition to the everyday use inspections.
- c. Ladders should be secured or tied off regardless of the surface they rest on.
- d. The ladder must have an 'MWRD' stamp indicating the ladder meets District design criteria. This label is not a substitute for routine inspections.
- e. Side rails, rungs, and hardware must be clean and in good condition.
- f. Only one person shall be on a ladder at a time.
- g. Defective (missing or broken shoes, broken rungs or side rails, etc.) ladders shall be tagged and taken out of service immediately.
- h. Employees shall have at least one hand free to grasp the ladder and face the ladder when moving up or down the ladder.
- i. If a ladder is to be placed where the opening of a door may displace it, the door shall be locked or otherwise guarded. Obey any and all directions and safety precautions on the ladder.
- j. Portable metal straight ladders, marked with 'MWRD', are to be used ONLY for entering in-ground tanks.

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- k. Ladders shall not be painted. They shall be treated only with a transparent non-conducting material.

## 1.5.3 Straight/ Extension Ladders

- a. Straight/ Extension ladders shall only be used if:
  - 1. The feet are equipped with approved safety shoes.
  - 2. The ladder is placed one foot away for every four feet of rise.
  - 3. The extension ladder segments overlap does not exceed the following:

Size of Ladder	Minimum Overlap
≤ 36 feet	3 feet
>36 feet - 40 feet	4 feet

- b. Employees shall not stand above the third rung from the top of the ladder
- c. Short ladders shall not be spliced together.
- d. Ladders to access roofs should extend at least three feet above the roof line or top support.
- e. The fly section of an extension ladder shall not be used as a straight ladder.

## 1.5.4 Stepladders

- a. Employees shall not work from the top two steps of a stepladder
- b. The top step of the ladder is not be used as a step.
- c. While an employee is working on the ladder at a point 10 feet or more above the ground or floor, the ladder should be held by at least one other person.
- d. Ladder legs shall be fully spread while the ladder is in use.
- e. Step ladders shall NOT be used as straight ladders.

## 1.5.5 Scaffolds

- a. All scaffolds shall be of sufficient strength and rigidity to safely support the weight of employees and material.
- b. Scaffold height shall not exceed four times the shortest base dimension unless it is additionally secured with guy wires, tiebacks and bracing.
- c. All scaffolds six feet tall or more shall be equipped with railings. If railings cannot be installed, then other fall protection is required.
- d. All scaffolds ten feet tall or more shall be equipped with toe-boards
- e. Scaffolds shall not be moved without first removing all loose tools, materials and equipment resting on the scaffold deck.
- f. Scaffold decks shall be fully planked, secured and kept clear of debris.
- g. Ladders shall be used to access the scaffold deck.



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- h. When working on all vehicle-mounted aerial lifts, employees shall be tied off with a retractable lifeline.

## Part 1 - Section 6 Handling Materials

### 1.6.1 Training

- a. Any employee involved in manual labor must be trained in the appropriate techniques of moving and lifting materials and equipment used in their job.
- b. Employees required to drive powered industrial trucks shall be trained and certified in their proper inspection, use, and care.
- c. Employees who operate hoists, cranes and derricks, or assist with their material handling, must be trained in the operation of the equipment and use of standard hand signals to communicate with the operators of the equipment.

### 1.6.2 Manually Handling Materials

- a. Employees shall use proper techniques when handling materials or equipment.
- b. Employees should not lift objects greater than 60 lbs. by themselves.
- c. When two or more persons carry a heavy object, there shall be a prearranged signal to lift and lower the object.
- d. Whenever possible, two or more persons carrying one object should face in the direction of travel.
- e. Whenever manual lifting is performed, employees shall use proper lifting techniques, so as to avoid back or other types of injuries.

### 1.6.3 Cranes/ Derricks

- a. A competent person shall inspect the hoisting equipment annually. Fall protection must be used where necessary.
- b. A designated competent person shall ensure the equipment is safe before and during use.
- c. A designated employee shall give standard hand signals to the operator of the crane, derrick, etc. However, the operator shall obey the stop signal given by anyone.
- d. A designated person shall observe clearances for electrical wires and cables and shall provide sufficient warnings when necessary:

Function	Voltage	Clearance
Hoisting	≤ 50 kV	10 feet
Hoisting	> 50 kV	10 feet + 4 inches for each additional 1 kV
In transit, no load, boom lowered	< 50 kV	4 feet
In transit, no load, boom lowered	50 > ≤ 345 kV	10 feet

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Function	Voltage	Clearance
In transit, no load, boom lowered	345 > ≤750 kV	16 feet

- e. When mobile hoist, cranes, booms, or similar lifting devices are used near energized lines or equipment, all persons shall remain in the clear until the lifting device is in a safe position.
- f. No employee shall stand under a suspended load, inside the angle of a winch line, nor shall lie, stand or work near a cable, chain or rope under tension unless the nature of his work requires it.
- g. The rear of the crane shall be barricaded to prevent an employee from being struck or crushed.
- h. Winch lines, ropes, wires, etc... shall not be guided by hand when standing within reach of the drum or sheave.
- i. Wire rope loops, where allowed, shall be made with proper splicing or mechanical clamping of the tail section. A U-bolt shall be placed on the short side of the tail.
- j. No employee shall ride on a cable, chain, hoisting device (sling, hook, etc...) or on material being moved.
- k. Operators shall never leave the vicinity of cranes, hoists, derricks or other lifting devices while a load is suspended.
- l. Trucks on which derricks or booms are erected shall not be moved except under the immediate direction of a designated competent person.
- m. When wooden boxes or crates are opened, or lagging is removed from reels, any exposed nails shall be immediately removed or bent over and the timbers or lagging should be placed so they will not interfere with the work or the flow of traffic.
- n. Before raising any load, the crane operator shall first raise it a few inches to inspect the balance of the load, test the stress of the load and if the brakes hold.
- o. When it is necessary to transport a suspended load by crane, the load shall be transported high enough to clear all obstructions but low enough to maintain safe control.
- p. All crane hooks shall be equipped with safety locks.
- q. Tag lines shall be used to position the load when possible.
- r. Loads shall be moved at a slow and safe speed. Excessive speed shall be strictly avoided.

## Part 1 - Section 7 Fire Prevention

### 1.7.1 Housekeeping

- a. Good housekeeping shall be maintained at all work locations and in all vehicles.
- b. Combustible materials, such as oil soaked rags, waste, and shavings shall be kept in approved metal containers with self-closing lids. Containers shall be emptied as soon as practicable.
- c. Clean rags shall be kept in metal or metal lined bins with self-closing covers.

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- d. No clothing shall be allowed to hang on walls, behind doors or in the backspace of switchboards. No matches shall be left in clothes placed in lockers. Rubbish and unused clothing shall not be allowed to accumulate in lockers.
- e. Paper and other combustible materials shall not be allowed to accumulate and weeds or other rank vegetation shall not be permitted to grow in close proximity to District structures.
- f. Flammable liquids flashpoint less than 100 degrees F shall not be used for cleaning purposes, unless appropriate and approved methods are used. Refer to the product's Safety Data Sheet for additional information.
- g. Solvents with a flashpoint of 100 degrees F or higher shall be kept in approved, properly labeled containers in amounts that do not exceed one gallon. Refer to the product's Safety Data Sheet for additional information.
- h. Flammable liquids that have a flashpoint of less than 100 degrees F, stored in any building not designed for their storage shall not be stored in a quantity totaling more than five gallons. Approved individual storage containers of any liquid shall not exceed one gallon. This does not apply to areas that are designated flammable liquid storage areas/ rooms and have been designed with the proper controls.
- i. All solvents shall be kept in approved properly labeled containers and shall be handled and dispensed only in approved properly labeled safety cans. Containers larger than 5 gallons shall not be used for transporting these solvents within a plant area.
- j. When pouring or pumping gasoline from one container to another, the containers shall be bonded and grounded.
- k. Employees shall not smoke in proximity to flammable liquids, gases or explosives, either on property occupied by the District or elsewhere.
- l. Rubbish shall not be burned.
- m. Smoking is not allowed inside any District facility or vehicle.






## 1.7.2 Fire Protection

- a. Properly maintained firefighting equipment is an essential part of good housekeeping. Extinguishers shall be located in the most accessible places and each employee shall be familiar with and know how to operate each type of extinguisher so that fires may be promptly extinguished in their beginning. All extinguishers shall be regularly inspected by the local Safety Office, refilled, weighed, etc. in accordance with the manufacturers' recommendations and the date of such inspections, refills, etc. recorded on a tag attached to the extinguishers.
- b. For large scale fires (e.g. too big for a fire extinguisher to handle):

***CALL 911 to alert the local fire department and to initiate the District's Emergency Response and Evacuation Procedures.***

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- c. Fires are divided into five general classes. These classes and the type or types of extinguishers designed for use on each are:

<b>A</b>		Common Combustibles	Wood, paper, cloth etc.
<b>B</b>		Flammable liquids and gases	Gasoline, propane and solvents
<b>C</b>		Live electrical equipment	Computers, fax machines
<b>D</b>		Combustible metals	Magnesium, lithium, titanium
<b>K</b>		Cooking media	Cooking oils and fats

- Class A Fires: Fires in ordinary combustible materials, such as wood, cloth, paper, rubber, and many plastics. Use an ABC dry chemical or water type extinguisher.
- Class B Fires: Fires in flammable liquids, combustible liquids, petroleum greases, tars, oils, oil-based paints, solvents, lacquers, alcohols, and flammable gases. Use FOAM or a BC or ABC dry chemical type extinguisher.
- Class C Fires: Fires that involve energized electrical equipment where the electrical non-conductivity of the extinguishing media is of importance. Use a BC or ABC dry chemical type extinguisher. Agent must be a nonconductor of electricity. DO NOT USE FOAM, PRESSURIZED WATER, ANTI-FREEZE OR WATER PUMP TYPE EXTINGUISHERS ON CLASS "C" FIRES. (When electrical equipment is de-energized, fire extinguishers for Class A or Class B fires can be used safely.)
- Class D Fires: Fires in combustible metals, such as magnesium, titanium, zirconium, sodium, lithium, and potassium. Use Class "D" dry powder.
- Class K Fires: Fires in cooking appliances that involve combustible cooking media (vegetable or animal oils and fats). Use a Class "K" Wet Chemical type extinguisher

- d. When using a fire extinguisher: remember the acronym, **P.A.S.S.**

<b>P</b>	<b>PULL the Pin</b>
<b>A</b>	<b>AIM the extinguisher nozzle at the base of the flames</b>
<b>S</b>	<b>SQUEEZE the handle or trigger while holding the extinguisher upright</b>
<b>S</b>	<b>SWEEP the extinguisher from side to side, covering the base of the fire with the extinguisher agent</b>

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- e. Employees shall not enter confined spaces after using CO2 extinguishers until the area has been thoroughly ventilated and tested to be safe for occupation.
- f. *When extinguishers have been used, they shall not be put back where they were located before use. Instead, used extinguishers must be taken to the local Safety Office for refilling or exchange.*
- g. Call for help and assistance as soon as possible when a fire event occurs.

## Part 1 - Section 8 Personal Hygiene

### 1.8.1 General

Whenever working around sewage, the following rules shall be observed:

- a. Hands and fingers shall be kept away from nose, mouth, and eyes;
- b. Rubber gloves should be worn when cleaning pumps, and handling wastewater, screenings, sludge, grit or for other work where a person comes in direct contact with untreated sewage or sludge;
- c. Gloves shall always be worn when hands are chapped, or burned, or when the skin is broken from any cause;
- d. Before eating or smoking and after work, the hands shall be washed thoroughly with soap and hot water. When this is not possible, an approved waterless cleaner shall be used;
- e. Splash goggles and face shields should also be worn when working around liquid sewage.

## PART 2 Motor Vehicle and Other Mobile Equipment

### Part 2 - Section 1 Motor Vehicle

#### 2.1.1 General

- a. Only those employees specifically authorized, who possess valid licenses or permits and are insured, shall operate District motor vehicles or personally owned vehicles on District business.
- b. Drivers shall know and obey all state and local motor vehicle laws that apply to them.
- c. A driver shall not permit unauthorized persons to drive, operate or ride in or on a District vehicle.
- d. Where seat belts are provided, they shall be used.
- e. Employees shall not permit anyone to ride on the running boards, fenders or any part of any motorized equipment except on the seats or inside the body walls. Passengers shall not stand in moving vehicles except where necessary and hand holds are provided.
- f. Employees shall not ride on loose material or on equipment carried on trucks.
- g. Employees shall not ride on trailers.

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- h. Employees shall not jump on or off vehicles in motion.
- i. All employees shall stay clear of pressurized oil or air which is escaping from a ruptured line or fitting. No attempt shall be made by an employee to stop or slow such a leak by using his hands, feet or other parts of his body. The pump, compressor or engine shall be stopped as soon as the leak is detected.
- j. Drivers of cars, trucks, fork lift equipment, electric carts, etc. shall exercise maximum care to keep from running over electric extension cords, air hoses, pipe lines, etc.
- k. No one shall ride as a passenger on tractors etc. at any time.
- l. Operators of District vehicles shall check for presence of safety equipment before starting out.
- m. Reckless or dangerous operation of any motor vehicle on District property or in the course of District business will subject an employee to disciplinary action.
- n. Refer to the MWRDGC Administrative Procedures Manual, available through the District portal, for additional details regarding driver's license requirements and vehicle operations.

## **2.1.2 Inspection**

- a. Brakes shall be tested by the driver at the start of each day. The driver shall report to their supervisor any defects which may have developed during the day. If brakes are not working safely, they shall be adjusted or repaired before the vehicle is put in operation.
- b. Lights and other signaling devices shall be inspected daily. If found defective, lights and signaling devices shall be repaired before the vehicle is placed back in operation. No motor vehicle shall be operated at night unless equipped with properly working headlights, taillights, and other necessary safety devices, as required-by law. Head lights are to be turned on during all storm conditions.
- c. The driver shall inspect any load to be transported to ensure it has been properly secured and is suitable for travel. Tall loads shall be measured to ensure they do not exceed height restrictions of the travel route.

## **2.1.3 Operation**

- a. The use of cell phones is not permitted while the vehicle is in motion. The driver must stop the vehicle in a safe location in order to conduct any communications by cell phone.
- b. The operator of a motor vehicle shall clearly signal his intention of turning, passing or stopping.
- c. Upon a signal from a vehicle approaching from the rear, the driver of a District vehicle shall yield the right of way.
- d. Drivers shall be prepared to stop and the right of way shall be yielded in all instances where necessary to avoid an accident.
- e. Drivers following other vehicles shall stay a safe distance behind so that they can stop in the clear distance ahead.
- f. Drivers shall keep a sharp lookout for children, especially in school zones or where they are playing, and be prepared for an immediate stop.
- g. Trucks or trailers stopped on any public roadway shall be protected by red flags, proper warning lights or reflectors in accordance with legal requirements.

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- h. Vehicles shall not be parked on bridges or culverts except when necessary for work.
- i. Trucks shall not be operated with tailgates hanging or dangling.
- j. Before backing-up a vehicle the driver shall definitely determine that the space needed is clear, and back-up slowly, keeping a constant lookout during the entire time he/she is backing-up. If another employee is available, that employee shall be so stationed that he/she can warn the driver of approaching danger and assist the driver in maneuvering the vehicle.
- k. When entering or leaving any building or enclosure, or to or from an alley or street where vision is obstructed, a complete stop shall be made and the driver shall proceed with caution.
- l. Trucks on which derricks or booms are erected above traveling height shall not be moved except under the immediate direction of a designated employee, who shall give his/her undivided attention to the movement.
- m. Before radio equipped cars or trucks are driven adjacent to or beneath energized equipment such as outdoor substations, a check shall be made to insure that proper clearance will be maintained between the antenna and energized equipment.
- n. Transmitters in trucks and cars shall not be used while the gasoline tank of the vehicle is being filled.
- o. All ignition systems shall be turned off and no smoking permitted while refueling.
- p. Load limits of booms, derricks and other hoisting equipment shall not be exceeded. Over-loading causes serious accidents. Overturning, boom collapse, and cable failures annually result in serious injuries and death to construction workers. Each manufacturer posts the safe loads for various boom angles in the cabs of the machines. The safe load chart shall be posted in a prominent place in the cab near the operator who should familiarize him/herself with the safe working and tipping capacity of his/her crane.
- q. When proceeding down grade (incline), the clutch shall not be disengaged. Trucks, particularly if heavily loaded, shall be in low or second gear on steep grades.
- r. When stopped on an incline, drivers shall be sure that the brakes are properly applied, the vehicle is in gear where possible, and the wheels are at an angle against the curb. This applies whether vehicle is facing up or down grade.

## **2.1.4 Loading and Hauling**

- a. Materials and equipment shall be loaded so they will not cause a hazard by shifting. Heavy equipment and materials shall be securely fastened.
- b. Pipe, ladders, etc., shall be loaded parallel with the truck length and carried as high as practical.
- c. Red flags during the day and red lights at night shall be attached to equipment or material that extends more than 4 feet beyond the back of the vehicle. Red flags or approved clearance lights shall be attached to loads extending more than 2 feet beyond the front of the vehicle.
- d. Tools, materials or equipment shall not be permitted to extend beyond the permanent fixtures provided on the sides of the truck.
- e. Only trucks and properly equipped vehicles shall be permitted to tow trailers. Equipment may include electric brakes, heavy-duty shock absorbers and overload springs, depending upon the gross weight of the trailer.

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## 2.1.5 Accidents

- a. Drivers of District vehicles shall always stop and give their names and addresses, and the District's name and address when involved in an accident. Drivers shall also secure the names, addresses, insurance, policy numbers, and license numbers of others involved in the accident, and the names and addresses of all available witnesses or others who may have knowledge of the accident.
- b. Drivers or other employees shall not determine or admit liability of the District when an accident occurs.
- c. All automobile accidents shall be reported immediately in accordance with District regulations.

## Part 2 - Section 2 Other Mobile Equipment

### 2.2.1 Tractors and Bulldozers

- a. Operators shall use good judgment at all times while using this equipment and shall fully understand its capabilities and limitations.
- b. This equipment shall not be operated at locations or in situations when it can slide, tip over or otherwise become hazardous to operators or others.
- c. Operators shall have good safe footing and hand-holds when getting on and off equipment.
- d. The engine should be stopped, the brakes locked on, and the blade dropped before a dozer cable is adjusted. This adjustment and all track or winch adjustments should be made on level ground.
- e. Upon completion of the work shift, the bucket or blade shall be rested on the ground and brakes or clutches set as recommended by the manufacturer.
- f. Tractors shall be equipped with roll bars and seat belts.
- g. When working on land with a brush cover, the area shall be walked over before working and obstacles shall be marked and noted.

### 2.2.2 Fork-Lift Equipment

- a. Only trained and certified personnel may be authorized to operate a forklift.
- b. When operating fork-lift equipment, employees shall:
  1. Face in the direction of travel and keep a sharp lookout for all obstacles. For better vision when carrying bulky loads, truck shall be backed in the direction of travel;
  2. Stop at all blind intersections and corners. Sudden stops that may injure an operator, spill the load or damage the truck shall be avoided;
  3. Descend ramps slowly, and when carrying a load, the truck shall be backed down, to prevent a shift in the center of gravity and spilling;
  4. Place forks on floor when truck is parked. Operator shall always drive truck with empty forks in the lowest travel position. He/she shall not attempt to move any obstacle or object by ramming it with the forks;



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5. Inspect all bridge timbers or plates used for access into trucks or freight cars, to make certain that they are adequate to support the weight of the truck and its load, and that they are secured before driving on them;
6. Keep arms and legs within running lines of the truck.

## 2.2.3 Power Mower Equipment

- a. Only trained and authorized personnel may operate power mower equipment.
- b. When operating power mower equipment (including hedgers, trimmers, edgers, etc), employees shall:
  1. Wear reflective traffic safety vests to enhance better visibility for others in the area;
  2. Wear appropriate personal protective equipment (e.g. hearing protection, goggles, face shields, gloves, etc.);
  3. Remove wire, stones, branches, and other foreign objects from area to be mowed. Rocks and tree roots shall be avoided;
  4. Keep hands and feet from under the machine and out of discharge chute while engine is running;
  5. Stop engine (or motor) and disconnect spark plug wire or wires before adjusting, repairing or replacing cutting blade or blades. If the equipment being used is of the rotary type, special attention shall be given to the condition of the blade mounting bolt or nut;
  6. Mowers must be right side up and completely on the ground when started;
  7. When mowing a terrace, slope or incline, mow lengthwise (across the face of the slope, etc.) instead of up and down;
  8. Never pull a hand mower towards feet. Turn around and pull mower from behind;
  9. Employees operating rotary motors will insure that other personnel are kept at a safe distance;
  10. Mowers must be stopped and allowed to cool before refueling.

## 2.2.4 Electric Utility Carts

- a. Only trained and authorized personnel may operate electric utility carts.
- b. When operating electrical utility carts, employees shall:
  1. Only operate the carts on District property. The operation of carts on public roads is prohibited;
  2. Before use, inspect the cart for a working headlight, taillight, horn, brakes and an audible backup signal. Electric utility carts that do not have all operating parts in functioning order shall not be used until repairs are made;
  3. Before proceeding through intersecting sidewalks/walkways, honk horn to alert employees in the area;
  4. Cart operators must always yield to pedestrians;

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5. Obey all traffic signs;
6. Carts may only carry the number of passengers it has seats for. The bed of the cart is not meant for passengers;
7. Operators and passengers shall keep arms, legs and feet inside the cart when it is moving;  
and
8. Always remain seated when the cart is in motion.

For additional information, refer to the District's Electric Utility Cart Program in the MWRDGC Administrative Procedures Manual, available through the District portal.

## **PART 3 Plant Operations**

### **Part 3 - Section 1 Sewage Treatment Plant Operations**

#### **3.1.1 Housekeeping**

- a. Trash and loose objects shall be picked up from floors, stairways and work platforms.
- b. Projecting nails shall be removed or clinched over.
- c. Walkways shall be kept free of grease, sludge and oil.
- d. Walkways shall be kept free of ice. If this is not possible, they shall be salted or sanded.
- e. Splash guards and drip pans shall be used whenever possible to keep oil and grease from machinery and pumps off the floor.
- f. Trash containers, except for desk type wastebaskets, shall have fire-snuffing lids.
- g. Clean up work area upon the completion of work.

#### **3.1.2 Sludge Digestion Tanks**

- a. When digestion tanks are started up, they shall be filled immediately with raw sludge or effluent to prevent the build-up and possible escape of explosive gases.
- b. Whenever work is done in areas where a gas leak is possible, procedures for entering hazardous areas or tanks shall be followed. Refer to the District's Permit-Required Confined Space Entry Procedures (DSP) for additional details.

#### **3.1.3 Freight Elevators and Man Lifts**

- a. On elevators equipped with interlocks, such interlocks should never be made inoperative.
- b. Doors or gates of elevators, which are not equipped with interlocks, shall be closed before the car is started. The doors or gates shall not be opened when the elevator is in motion or between floors.
- c. Elevators shall never be loaded beyond their rated capacity. If there is doubt about the weight of the object to be moved, it should be weighed.

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- d. Heavy objects shall be placed as close as possible to the center of the car so the car and load will be in balance.
- e. Objects which could tip over while the elevator is in motion shall be properly secured.
- f. Any defects in the elevator shall be reported to an employee's immediate supervisor.
- g. Only trained and authorized personnel shall be permitted to use man lifts.
- h. All employees on man lifts shall wear full-body harnesses and be secured by lifelines.
- i. No one shall get on or off a man lift while it is in motion.
- j. Employees shall grip man lift handholds with both hands and, therefore, shall not carry objects in their hands when using man lifts.
- k. Riders shall not lean back away from the man-lift when using it.
- l. Any defects or irregularities in the operation of the man lifts or its safety devices shall be reported immediately to their supervisor.

## **3.1.4 Conveyors**

- a. Employees shall stay clear of conveyors because they may start at any time.
- b. Employees shall not ride conveyor belts or buckets.
- c. Employees shall not attempt to clear an energized, blocked conveyor or loosen any material therein. Work shall only be performed after the equipment has been properly locked out and tagged out according to the District's Lockout Tagout Hazardous Energy Control Procedures (DSP).
- d. Employees shall not clean in the vicinity (within 10 feet) of conveyor rollers while belt is in operation.
- e. Spilled products shall not be cleaned up in a manner that will create a hazardous, dusty atmosphere. Use of compressed air is prohibited.
- f. Work near rollers and other moving parts shall only be performed after the equipment has been properly locked out and tagged out according to the District's Lockout Tagout Hazardous Energy Control Procedures (DSP).

## **Part 3 - Section 2**

### **Fall Protection**

#### **3.2.1 Full-body Harnesses and Retractable Lifelines**

- a. Full-body harnesses with a retractable lifeline attached shall be worn when removing trash from trash racks or containers if a suitable railing is not provided. The free end of the line shall be attached to anchorage rings or a cable on the platform or other support. The length of the line shall be such that it will prevent the employee from falling into the container.
- b. Full-body harnesses with a retractable lifeline attached shall be worn when employees are exposed to unprotected sides or edges of surfaces that present a falling hazard of four feet or more to a lower level. Refer to the District's Fall Protection Program (DSP) for additional details.
- c. Full-body harnesses with lifelines attached shall be worn when employees are entering confined spaces. Refer to the District's Confined Space Entry Procedures (DSP) for additional details.

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## Part 3 - Section 3 Barges, Boats and Docks

### 3.3.1 Barges, Boats and Docks

- a. All work in, on or around barges, boats and docks shall comply with the most current US Coast Guard Regulations.
- b. Life jackets are required for all employees and other personnel on barges and boats.

## Part 3 - Section 4 Railway Operations

### 3.4.1 Railway Operations

- a. All work in, on or around railway operations shall comply with the most current Interstate Commerce Commission (ICC) Regulations regarding railroad safety. The Commercial Transportation Law establishes general safety requirements for track, facilities and equipment belonging to rail carriers within Illinois, and gives the ICC jurisdiction to administer and enforce those requirements.
- b. All work in, on or around railway operations shall comply with the most current Federal Railroad Administration Regulations regarding railroad safety. The federal regulatory authority has been delegated to the Federal Railroad Administration (FRA).

## PART 4 Maintenance and Construction

### Part 4 - Section 1 Electrical

Electrical equipment and lines shall always be considered as energized unless they are positively proven to be de-energized and properly grounded. IF IT ISN'T GROUNDED - IT ISN'T DEAD!

Refer to the District's Electrical Safety Program and the District's Lockout Tagout Hazardous Energy Control Procedures (DSP) for additional details.

Only Qualified Electrical Personnel are authorized and allowed to work on electrical circuits and components.

### Part 4 - Section 2 Dispatching and Clearances

#### 4.2.1 General

Refer to the District's Lockout Tagout Hazardous Energy Control Procedures (DSP) for additional details.

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## Part 4 - Section 3 Compressed Gases and Welding

### 4.3.1 Handling Cylinders

- a. Tags shall be used to indicate whether a pressure cylinder is full or empty.
- b. Care shall be exercised in handling all pressure cylinders. They shall not be dropped or jarred. Bumping mats, hydraulic tailgates or other approved methods shall be used in lowering cylinders from trucks.
- c. Cylinders shall be transported in an upright, secured position with caps in place. (Only metal caps are acceptable). They shall be transported without regulators attached.
- d. Cylinders shall not be rolled and shall not be carried by valves or caps.
- e. A suitable truck, chain or other holding device shall be used to keep cylinders from being upset while in use.
- f. Electric magnets or loop slings shall not be used for handling cylinders.

### 4.3.2 Storage of Cylinders

- a. Portable gas cylinders whether full or empty shall be stored in an upright position with caps in place, away from heat and fastened so they cannot fall or be upset.
- b. Cylinders shall not be placed or stored where sparks from welding or cutting operations can reach them.
- c. When necessary to store indoors, oxygen and acetylene cylinders shall be placed in separate areas or separated by a fire resistant wall.
- d. When stored outside, the oxygen and acetylene cylinders shall be separated.
- e. Outside storage areas shall be away from roads and other traffic paths or protected with barricades or other structures. These areas shall be kept free of weeds and other combustible materials.
- f. Cylinders containing chlorine, propane or hydrogen shall not be stored in a general storeroom. They shall be stored in separate, well ventilated, fire-proof areas.
- g. Cylinder storage should be so planned that cylinders will be used in the order which they are received. Empty and full cylinders should be stored separately, with empty cylinders marked. Empty cylinders which have had the same contents shall be grouped together.
- h. Storage cylinders shall be properly labeled at all times.

### 4.3.3 Handling and Storage, General

- a. Cylinders shall not be allowed to come into contact with energized conductors or ground wires from electrical equipment.
- b. A full cylinder shall be connected to a header or manifold with other cylinders only when their temperatures are approximately the same.
- c. Only those fuel gas cylinders that are in actual use, secured in place and connected to a manifold, welding set, etc. shall be permitted in any building except that structure designated to store it. All empty and spare cylinders shall be stored elsewhere.

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- d. The valves of compressed gas cylinders shall be opened slowly.
- e. Employees shall never tamper with the safety relief devices in valves of cylinders.
- f. Employees shall never force connections that do not fit.
- g. Oil or grease shall not be used for lubricating valves, gauge connections or other parts of an oxygen system. Oxygen cylinders and fittings shall not be handled with oily or greasy hands or gloves.
- h. Before a regulator is removed from a cylinder, the cylinder valve shall be closed and all pressure released from the regulator.
- i. A leaking cylinder shall not be used.
- j. An open flame shall not be used to detect flammable gas leaks.
- k. The recessed top of cylinders shall not be used as a place for tools.
- l. No attempt shall be made to mix gases in a cylinder or to transfer gas from one cylinder to another, except carbon dioxide fire extinguishers and medical oxygen, when the transfer is made under the direction of safety personnel.
- m. "No Smoking" signs shall be posted at entrances to areas where hydrogen, oxygen or acetylene are used or stored.
- n. When the valve of a cylinder becomes clogged with ice, it shall be thawed with warm water (not boiling water).

## **4.3.4 Welding and Cutting - General**

- a. Compressed gases shall be used only by experienced and properly instructed persons.
- b. A Hot Work Permit, available through the District portal, issued by the supervisor must be filled-out and kept on-site, prior to commencement of work. Refer to the District's Hot Work Permit Program (DSP), available through the District portal, for additional details.
- c. When welding or cutting in elevated positions, precautions shall be taken to prevent sparks or hot metal from falling onto people or flammable material below.
- d. Suitable fire extinguishing equipment shall be immediately available at all locations where welding and cutting equipment is used.
- e. Matches or cigarette lighters shall not be carried by welders or their helpers when engaged in welding or cutting operations.
- f. In dusty or gaseous spaces where there is danger of causing an explosion, welding or cutting equipment shall not be used until the space is adequately ventilated and tested to be safe for occupation and performance of the work. Certain conditions will also require the wetting down of the area.
- g. Welding or cutting of any pipeline, tank or empty container shall not be performed until positive proof is obtained that it is free from an explosive mixture of gases. Before welding or cutting closed containers, they shall be vented to the atmosphere to prevent an explosion by expansion of trapped gases.

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- h. Adequate ventilation or approved respiratory equipment shall be used while welding in confined spaces or while brazing, cutting or welding zinc, brass, bronze, galvanized or lead coated material.
- i. When welding, burning or brazing metal tanks or drums the tanks and drums shall be emptied of their contents and filled with water.
- j. Any heated material or stock which must be left in the work area or on a work bench shall be properly marked "Hot" so that other people are warned.

## **4.3.5 Electric Welding**

- a. Electric welding shall be done behind a permanent screen or in curtained-off areas, where possible. In all other areas, a portable welding shield shall be used. All precautions shall be taken to prevent exposing nearby persons to the arc.
- b. A welder, unless working behind a screen, shall not strike an arc with an electrode until nearby persons who may be exposed to the arc have been given ample warning.
- c. No electrical welding machine, either AC or DC, shall be operated until the machine is properly grounded, with the exception of portable self-generating units, which shall not be grounded.
- d. To protect his/her eyes, face, and body during electrical welding and cutting, the operator shall wear an approved helmet, proper protective gloves, eyewear, and clothing. Other employees shall not observe electric welding operations unless they use approved eye protection.
- e. Proper eye protection shall be worn to guard against flying particles of scale when the helmet is raised.

## **4.3.6 Gas Welding**

- a. Suitable eye protection, gloves, and clothing shall be worn during welding or cutting operations or while cleaning scale from welds.
- b. Matches or cigarette lighters shall not be used to light a torch; a torch shall not be reignited on hot work. A friction lighter or stationary pilot light shall be used.
- c. Hose shall not be repaired with tape.
- d. When welding equipment is not in use, the cylinder valves shall be closed and regulators, lines, and torches bled completely.
- e. If there are defective gauges on compressed gas cylinders, or leaky welding hoses, cylinders or torches, the welding unit shall not be used and the condition shall be reported to the immediate supervisor.

## **Part 4 - Section 4 Underground Work**

### **4.4.1 Safeguarding Manholes, Vaults, and Control Chambers**

- a. Warning devices, barriers, barricades, guard rails and other protective equipment and structures shall be placed to adequately protect the public and employees before manhole covers or gratings are removed or other work operations are begun. The protective equipment and structures shall not be removed until the manhole covers or gratings are replaced.

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- b. While work is in progress in a manhole or other underground structure, one employee shall be stationed on the surface at the opening at all times.
- c. Trucks, tool carts, and other equipment shall be so placed as to present the least impediment or hazard to traffic, consistent with a safe working area for the employees. If possible, trucks or equipment shall be placed between the working area and oncoming traffic. However, any vehicle so used shall have rotating warning lights and arrows in operation.

## 4.4.2 Working in Manholes and Vaults

- a. Approved Confined Space Entry Procedures shall be followed at all times. Refer to the District's Permit-Required Confined Space Entry Procedures (DSP) for additional details.
- b. A check for explosive gas, toxic gases and oxygen deficiency shall be made before removing a manhole cover. Continuous monitoring shall be made after entering a manhole or a vault.
- c. Where there is evidence of flammable or toxic gases, the manhole or vault shall be purged before it is entered by forcing a current of fresh air into the enclosure. A manhole upstream and downstream shall be opened. While work is in progress, periodic checks shall be made to determine if gas is accumulating. In any event, purging shall be continuous.
- d. Fresh air blowers shall be placed so as not to pick up exhaust fumes from nearby internal combustion engines. Personnel on the surface shall check wind direction and keep fresh air blowers upwind from any source of flammable or toxic gas or exhaust fumes.
- e. Manhole covers shall always be removed and replaced by means of approved hooks or hoists. After being raised to a height of 6 inches the cover shall be blocked before the hook is removed.
- f. A blow torch or other open flame shall never be used to melt ice around a manhole or vault cover.
- g. Smoking shall not be permitted in any underground enclosure or structure.
- h. An open flame shall not be used to test for gas or leaks.
- i. If there is any question regarding the flammability of a liquid found in a manhole or vault, it shall be tested by an approved method. If the liquid is found to be flammable, it shall be removed before other work is performed.
- j. Upon first entering a manhole or vault, the employee shall make a careful inspection for unsafe conditions such as cracks or other defects in the roof, walls, floor, ducts, and sumps. The presence of warning signs and tags should also be observed. Any unsafe conditions found shall be promptly reported to the immediate supervisor.
- k. If high temperatures and humidity are anticipated or encountered, the immediate supervisor shall be notified before proceeding with work.
- l. Only one employee at a time shall be permitted on manhole rungs. Others shall not stand directly under the rungs.
- m. The condition of the manhole rungs shall be checked every time a person ascends or descends, and weak or faulty rungs shall be reported to the immediate supervisor.
- n. Manhole covers upstream and downstream may be removed to allow ventilation wherever the manholes exist.



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## 4.4.3 Working in Control Chambers

- a. Approved Confined Space Entry Procedures shall be followed at all times. Refer to the District's Permit-Required Confined Space Entry Procedures (DSP) for additional details.
- b. Whenever entering control chambers, all associated manhole covers shall be opened for proper ventilation and ventilated by mechanically induced ventilation if necessary.
- c. A check for explosive gas, toxic gases and oxygen deficiency shall be made before entry. While work is in progress, continuous monitoring shall be performed to determine if gas is accumulating.
- d. Trash, paper, and oily rags shall not be allowed to accumulate in Control chambers.
- e. Whenever work must be done in an area where the potential for an explosive atmosphere exists, nonferrous tools or tools approved for use in explosive atmospheres shall be used.

## 4.4.4 Working in Sewers

Whenever it is necessary for employees to walk along a sewer from one manhole to another, the following rules shall be observed:

- a. Approved Confined Space Entry Procedures shall be followed at all times. Refer to the District's Permit-Required Confined Space Entry Procedures (DSP) for additional details;
- b. Before entering any sewer line, a check for explosive gases, toxic gases and oxygen deficiency shall be made, with continuous monitoring performed to determine if gas is accumulating after entering the sewer line;
- c. The employee shall wear rubber boots, gloves, hardhat with lamp, and a full-body harness with a lifeline attached;
- d. As one person walks into the sewer, another person shall remain under the manhole to maintain communication with a third person at the surface; and
- e. Hand lines shall be strung along the route to be walked.

## Part 4 - Section 5 Excavations

### 4.5.1 Excavating by Machine

- a. Trenches greater than four feet deep are considered Permit-Required Confined Spaces. Refer to the District's Permit-Required Confined Space Procedures (DSP) for additional details.
- b. All material removed from excavations shall be piled at least 24" from the edge of the excavation, preferably on the side next to traffic.
- c. Shoring shall be used for unstable soil or depths five feet or greater unless the excavation is properly sloped. Excavations requiring shoring shall be designed by a competent person, unless the excavation is 20 feet or greater in depth, then a Registered Professional Engineer shall design the necessary shoring. At least one copy of the design shall be maintained at the job site during excavation.
- d. The machine shall never be oiled, greased or fueled while the motor is running. The gasoline tank shall be filled from approved safety type cans or pumps.

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- e. Operators shall keep other employees and bystanders a safe distance from the machine while it is in operation.
- f. An employee shall not attempt to clear the bucket or discharge chute while the machine is in operation.
- g. When an end loader is being loaded by hand the machine operator shall keep his hands and feet free of all controls except the brakes.
- h. Machines shall not be used on slopes or inclines without first preparing the right-of-way to prevent overturning.
- i. Employees other than the operator shall not stand with hands or feet resting on a machine while it is running.
- j. Other companies with underground utilities in the area shall be notified before excavating is begun.
- k. All underground cables, ducts, pipelines and other utilities and structures shall be spotted and staked, or marked, when possible. When digging near such facilities, hand excavation shall be used to avoid damaging them.
- l. Machines which are parked or operating on streets or highways shall be protected by proper warning devices.
- m. When it is necessary to leave excavating equipment unattended, the blade, bucket, or scoop shall be lowered to the ground, and the ignition system locked.
- n. Ground openings, such as trenches, shafts and obstructions, shall be protected by suitable barricades or covers.
- o. Equipment shall be shut down and de-energized before inspection or maintenance work is begun.
- p. Where laser beams are used for guidance in excavating, employees shall wear proper eye protection and avoid looking at the beam or its reflection.

## **4.5.2 Excavating by Hand**

- a. Trenches greater than four feet deep are considered Permit-Required Confined Spaces. Refer to the District's Permit-Required Confined Space Procedures (DSP) for additional details.
- b. All material removed from excavations shall be piled at least 24" from the edge of the excavation, preferably on the side next to traffic.
- c. Shoring shall be used for unstable soil or depths greater than five feet unless the excavation is properly sloped. Excavations 20 feet or greater in depth, that require shoring, shall have the system designed by a Registered Professional Engineer. At least one copy of the design shall be maintained at the job site during excavation.
- d. Employees shall not work under pipe which is supported on skids over a trench.
- e. Pressure on air tools shall be released before the equipment is left unattended.
- f. All connections to air tools shall be made secure before turning on air pressure.
- g. Compressed air at the tool shall not be turned on until the tool is under the control of the operator.

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- h. The frame of a paving-breaker, air drill or other pneumatic tools, shall be effectively grounded when being used close to underground electrical installations.
- i. The use of explosives by District personnel is prohibited.

## **Part 4 - Section 6 Explosives**

- 4.6.1 District personnel are strictly forbidden to handle explosives or blasting caps.**

## **Part 4 - Section 7 Tree Trimming**

### **4.7.1 General**

- a. When tree trimming, tree felling, brush loading or brush disposal operations are underway on street, highway or any other area accessible to the public, "People Working" signs, cones, red flags, barricades, and other warning devices (or combinations thereof) shall be used to protect vehicular and pedestrian traffic. Where a flagger is necessary, they must be a Certified Flagger. All employees working on public roadways shall wear reflective traffic safety vests.
- b. Climbers shall not be used in tree trimming work.
- c. Dead or rotted limbs, regardless of size, shall not be used by employees for support.
- d. No work shall be done in a tree unless the employee is securely tied off to an aerial bucket.
- e. The safety line shall be crotched in such a manner as to prevent its "working out" on a lateral limb.
- f. When working in a multiple-trunk tree the safety line shall be crotched preferably around a main trunk other than the one on which the employee is working.
- g. Employee shall crotch his/her safety line in two places if a single crotch does not adequately protect him/her from falling into energized lines or falling back into trunk of tree.
- h. The safety line shall not be used as a pull rope or as a hand line to lower limbs or branches.
- i. The ground end of a safety rope shall not be allowed to dangle over roadways and shall be kept free from obstructions, passing vehicles, etc.
- j. The taut-line hitch shall not be released until the climber is on the ground.
- k. Branches or other material shall not be dropped unless the immediate area has been cleared so that there is no possibility of injury to persons or damage to property. If the possibility of injury or damage is apparent, a rope shall be used to lower branches or other materials.
- l. When lowering heavy tree members, employees shall not tie fall lines around hands or bodies.
- m. Employees shall not attempt to clear limbs or brush from under that side of tree where the climber is working.
- n. Employees shall obtain assistance or use power equipment if available, when lifting logs or other heavy loads.
- o. When loading brush on a truck, employees shall not stand on or straddle the loaded brush.

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- p. Brush shall be hauled away promptly or otherwise disposed of to avoid presenting “an attractive nuisance” to children and to prevent injury to persons or damage to passing vehicles.
- q. When hauling brush, care shall be taken that it doesn’t extend over the sides of the truck.

## 4.7.2 Care and Use of Tools

- a. Ropes shall be inspected before each use. If rope is damaged, it should be replaced.
- b. Ropes shall be kept away from fire, acids, oil, chemicals, and all sources of excessive heat.
- c. Dragging ropes over rough surfaces and sharp objects, such as rocks, shall be avoided. Ropes shall be stored separately from sharp edged cutting tools.
- d. The cutting edge of tools shall be suitably sheathed or guarded except while in actual use.
- e. When not in actual use, the trimmer's saw shall be returned to the scabbard.
- f. Axes shall not be used in trees or carried on the shoulder.
- g. Tools shall not be thrown into or dropped from a tree; they shall be raised or lowered by a suitable rope line.
- h. A pruner shall not be laid on a limb, in a crotch or hooked on a wire or rope. It shall be hooked over a limb strong enough to hold its weight.
- i. Ladders shall be removed from the base of the tree when not in use.

## 4.7.3 Chain Saws and Power Trimming Equipment

- a. Chain saw operators shall use proper protective clothing, hearing and eye protection.
- b. When starting a chain saw it shall be placed on or against a solid support.
- c. The operator shall grip the chain saw with both hands during the entire cutting operation.
- d. Saw bumper shall be against tree or limb before starting a cut.
- e. Chain saw operators shall, when necessary, clear the immediate area around their work to make certain that brush will not interfere with either the chain saw or operator.
- f. The operator of chain saws and power trimming equipment shall be thoroughly trained and familiar with their operation prior to use.
- g. The chain saw engine or motor shall be stopped:
  - 1. When working on any part of the chain or cutting bar;
  - 2. While the saw is being moved from one location to another; and
  - 3. While the saw is unattended.
- h. Gasoline driven chain saw engines shall be stopped when being refueled. If gas is spilled on a chain saw during refueling, it shall be wiped off before engine is started.
- i. A gasoline driven chain saw shall not be used above shoulder level.
- j. Employees shall not approach chain saw operator within the reach of the saw while the saw is in operation.
- k. Employees shall never hand a pneumatic pruner or saw to another employee unless it is disconnected from an air hose.

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- l. Pneumatic and electrical tools shall not be left unattended if connected to a power source.
- m. Pneumatic and electrical tools shall not be adjusted or repaired while connected to a power source.
- n. All chain saws shall be equipped with emergency shutoff bars.

## 4.7.4 Chippers

- a. Chipper operators shall use hearing protection, eye protection (full cover goggles or face shield), and protective clothing while chipping.
- b. Chippers shall never be parked directly under tree being trimmed.
- c. Employees shall not permit spectators to stand near machine while feeding brush into a chipper.
- d. Full cover goggles or face shield shall be worn by employee when feeding brush into a chipper.
- e. Employees shall never place hands or other parts of the body into the brush hopper while a chipper is in operation.
- f. Tools or other metallic objects shall not be used to push brush into a chipper. Sweepings, which may contain foreign objects such as stones and nails, shall be loaded on a truck and not fed into the chipper.
- g. Ignition key shall be removed when chipper is left unattended.

## 4.7.5 Tree Trimming near Energized Conductors

- a. Wires in proximity to tree trimming shall be considered as energized, unless proven to be dead and are grounded.
- b. The power company shall be contacted before any work is attempted.

## Part 4 - Section 8 Brush and Weed Control

### 4.8.1 Brush Cutting

- a. When two or more people are cutting brush they shall be separated by at least 10 feet.
- b. All tree and brush burning is prohibited.
- c. When it is necessary to work in the vicinity of poison ivy, poison oak or poison sumac, employees shall keep sleeves rolled down and wear gloves.

*Note: A thorough scrubbing with soap and water is good preventive measure in the event of contact with poison ivy, oak or sumac or skin irritating chemicals.*

- d. Under no circumstances, shall anyone except the operator, ride on a bulldozer or any other heavy equipment used in land clearing.
- e. Bulldozers used in clearing and brush piling shall be equipped with overhead brush guards to protect operators.
- f. Employees shall not anchor equipment to railroad tracks, fences or structures belonging to others.

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g. When emerging from right-of-way prior to road travel, employees shall check brakes.

## 4.8.2 Weed Control

Herbicides and chemicals used to control weeds are to be handled only by District employees that have been trained and authorized in their use.

## PART 5 Chemicals and Gases

Employees who handle Chemicals and Gases shall consult the Safety Data Sheets (SDS) for each product and be guided by the information contained therein.

### Part 5 - Section 1 Acids and Caustics

If possible acids and caustics should be carefully handled inside a laboratory hood with sufficient ventilation. Proper personal protective equipment should also be used when handling these materials. Always follow Safety Data Sheet (SDS) requirements for handling of materials and use of personal protective equipment (PPE).

#### 5.1.1 Storage

- a. Acids and bases, in any quantity, shall be kept in an approved container, prominently labeled. These containers shall not be used for any other purpose.
- b. Acids and bases shall not be stored near heaters, steam pipes or other sources of heat.
- c. Acid and base containers shall be securely stoppered or covered.
- d. Acids and bases, kept on shelves, shall normally not be stored higher than waist level.
- e. Acids and bases shall be stored in separate locations.
- f. Empty acid and base containers shall be thoroughly rinsed with cold water before disposing of the containers in appropriate receptacles. Refer to Section 5.1.3 c.

#### 5.1.2 Handling

- a. Only properly trained and authorized employees shall be given the responsibility of operating valves or other equipment which control the movement of acids and caustics.
- b. Approved protective equipment and clothing shall be worn when handling acids or caustics. Minimum protection shall be: lab coat, chemical goggles, acid-proof gloves, and face shield.
- c. Should any acid, caustic or other chemical come in contact with the eyes, they shall be thoroughly washed with large amounts of running water and a physician consulted as soon as possible. Do not rub the eyes.
- d. Oxygen is a good first aid treatment for chemical or caustic inhalation.
- e. Persons handling quantities of concentrated chemicals shall have quick access to a shower or a supply of water for diluting and washing off any acid spilled on them or on their clothing.
- f. Spills shall be cleaned up using appropriate spill kit materials and neutralizing agents.

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- g. Fires of flammable acids and caustics shall be put out by the use of dry chemical or carbon dioxide extinguishers.
- h. After handling large quantities of acids or caustics, employees shall take a shower to avoid skin irritation.
- i. Before lifting or moving a carboy of acid, caustic, or other liquid chemical, it shall be examined carefully to see that it is not in a leaky or defective condition. The wire which holds the carboy stopper in place shall be checked to see that it has not corroded and that the stopper is secure. **All leaks or other unusual and/or unsafe conditions must be reported to the supervisor immediately.** All movements shall be made slowly to avoid excessive agitation of the acid, caustic, or other liquid chemical.
- j. Before starting to unload a tank car or tank truck of acid, caustic or other liquid chemical, the acid, caustic or other liquid chemical storage tank shall be gauged to determine if there is adequate space inside the tank to contain the acid, caustic, or other liquid chemical without overflowing the tank. Air vents shall be piped close to the ground to avoid splash.
- k. When tank cars or trucks are unloaded, warning signs shall be prominently posted and barriers placed so as to warn all employees of the impending danger.
- l. Only approved methods, tools, and equipment shall be used to extract acid from a container. Sucking by mouth on a siphon is prohibited.
- m. Chemicals in railroad tank cars or tank trucks shall be unloaded in accordance with the regulations of the ICC and the recommended practices of the Manufacturing Chemists Association.

## 5.1.3 Use

- a. When mixing acid or caustic with water, the acid or caustic shall be cautiously poured into the water while continuously stirring or mixing. **NEVER** pour the water into the acid or caustic.
- b. If it is necessary to enter a tank or vat to clean it, the District's Permit-Required Confined Space Entry Procedure (DSP) must be strictly adhered to. See Part 4, Section 4.
- c. All small containers such as bottles, jars, etc., when empty of chemical, shall be washed out thoroughly with cold water. Carboys, steel drums, tank trucks or tank cars shall not be washed but shall be completely drained of all chemical before returning to the chemical supplier.
- d. Open flames and smoking are prohibited when working with or near acid in metal containers, such as tanks, condensers, boilers, etc. Spark-proof tools shall always be used where there is a danger of accumulated flammable gases.

## Part 5 - Section 2 Gases

### 5.2.1 General

Many types of gases may be found or used in operations. By understanding some of their key properties, they can be handled safely and injury caused by them can be avoided. Consult the Safety Data Sheets for each product and be guided by the information contained therein. Information about frequently encountered gases follows:

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## 5.2.2 Properties

- a. Sludge Gas - Sludge gas is principally composed of methane and carbon dioxide with small amounts of hydrogen, nitrogen, hydrogen sulfide, and oxygen. Occasionally, traces of carbon monoxide may be found in sludge gas. Sludge gas is lighter than air so it will be found near the top of a structure. The gas will not support life and it is flammable. Check the gas for combustibility, oxygen deficiency, hydrogen sulfide and carbon monoxide using a four-way gas meter. Refer to the District's Portable 4-Way Gas Meter Program (DSP), which is available on the District portal) for additional details.
- b. Sewer Gas - This is a gas found in sewers which contains very high percentages of carbon dioxide, varying amounts of methane, hydrogen, and hydrogen sulfide, and a low percentage of oxygen. This gas is lighter than air so it will rise to the top of a closed structure. This gas will not support life and is flammable. Check the gas for combustibility, oxygen deficiency, hydrogen sulfide and carbon monoxide using a four-way gas meter.
- c. Ammonia - Ammonia is 60% as heavy as air and is found near the top of a structure. It is injurious to both the air passages and the lungs of a person who comes in contact with it. It has a pungent odor and it is very irritating to the eyes. The Permissible Exposure Limit (PEL) for ammonia is 25 parts per million (PPM). Check for ammonia using the appropriate ammonia testing tubes or chips.
- d. Carbon Dioxide (CO<sub>2</sub>)- Carbon dioxide is 53% heavier than air and so is found near the bottom of a structure. However, it may rise if heated. It is both colorless and odorless, and when inhaled it may cause an acid taste in the mouth. Carbon dioxide is not normally found in dangerous amounts unless an oxygen deficiency exists, and at this time it will act as an asphyxiant. The PEL for Carbon Dioxide is 5000 PPM. This gas is not explosive or flammable. A four-way gas meter shall be used to test for the presence of this gas.
- e. Carbon Monoxide (CO) - Carbon monoxide is an extremely flammable toxic gas. It is slightly lighter than air and so is found near the top of structures. It is colorless, odorless, tasteless, flammable, and poisonous. This gas acts as an asphyxiant. The PEL for carbon monoxide is 25 PPM. A four-way gas meter shall be used to test for this gas.
- f. Chlorine (Cl<sub>2</sub>) - Chlorine gas is 2 1/2 times as heavy as air and will be found at the bottom of a structure. It has a yellow-green color and a very strong odor that causes choking at low concentrations. It is very toxic and injurious to both the air passages and the lungs of a person who might come in contact with it and will induce inflammation to surfaces of the respiratory tract. Chlorine can be fatal at a very low concentration. The PEL is 0.5 PPM. This gas is non-flammable and not explosive. A chlorine leak detection kit is used to test for chlorine.
- g. Gasoline - Gasoline vapor is 3 to 4 times heavier than air and is found at the bottom of a structure. It is colorless and has an odor that is noticeable at 0.03 per cent. Gasoline vapor has an anesthetic effect when inhaled and could be fatal at very low concentration. The PEL is 300 PPM. Gasoline vapor has little to no specific effect on the lungs but acts after being absorbed into the blood and transported to the tissues of the body. Gasoline vapor is flammable and explosive in concentrations of 1.3 to 6.0 per cent in air.
- h. Hydrogen (H) - Hydrogen is 7% as heavy as air and is found at the top of a structure. It is both colorless and odorless, and acts as an asphyxiant. This gas acts mechanically to deprive the body tissues of oxygen and will not support life. A four-way gas meter shall be used to test for hydrogen. Hydrogen has also been described as flammable or explosive in other sections.



# MWRD SAFETY RULES

Concentrations of 4.1% to 75% hydrogen in air can be explosive. Sparks or hot surfaces may ignite the mixture.

- i. Hydrogen Sulfide (H<sub>2</sub>S) - Hydrogen Sulfide gas is extremely flammable and very toxic. It is 19% heavier than air and so will be found near the bottom of a structure unless the gas is heated and the air is highly humid. This gas is colorless and has the odor of rotten eggs even in small concentrations. The PEL is 10 PPM. It can impair a person's sense of smell at concentration above 50 PPM. This gas can be fatal at a concentration of above 250 PPM. A four-way gas meter shall be used to test for this gas.
- j. Methane - Methane is an extremely flammable gas. It is 55% as heavy as air and could be found near the top of a structure. It is both colorless and odorless, and acts as an asphyxiant. It also acts to mechanically deprive the body tissues of oxygen and does not support life. The PEL for methane is 10% lower explosion limit. A four-way gas meter shall be used to test for this gas.
- k. Nitrogen - Nitrogen is almost as heavy as air and may be found near the top and bottom of a structure. This gas is both colorless and tasteless, and is physiologically inert. It is the principal constituent of air (about 79 per cent).
- l. Oxygen - Oxygen is 11% heavier than air and will be found at different levels of a structure. It is both colorless and tasteless. Normal air contains about 21 percent of oxygen. The PEL for oxygen is 19.5% – 23.5%. Oxygen is required to support combustion. Oxygen in concentrations above 23.5%, presents a severe fire hazard, as the oxygen supports combustion. A four-way gas meter shall be used to test for this gas
- m. Sulfur Dioxide - Sulfur Dioxide is a Corrosive and Toxic chemical. It is 2¼ times heavier than air and could be found at the bottom of a structure. It is colorless and has a strong penetrating (irritating sulfur type) odor even in low concentrations. The PEL for Sulfur Dioxide is 2 PPM with a STEL of 5 PPM. This gas will cause injury to and act as an irritant to the air passages of the body, the lungs, and respiratory tract membranes. It will not burn or support combustion. The characteristic odor indicates the presence of this gas. Use the appropriate Sulfur Dioxide detection tube or chip.

# MWRD SAFETY RULES

## Part 5 - Section 3 Laboratory

**5.3.1 General – Refer to District’s Chemical Hygiene Plan, available through the District portal, for additional details.**

### **5.3.2 Radioactive Materials**

- a. All personnel working in the radiological laboratory must wear film badges.
- b. All radioactive materials must be handled in accordance with the rules of the Atomic Energy Commission.
- c. A Radiation Safety Officer shall be in charge at all times.

## **PART 6 First Aid and Medical Treatment**

### Part 6 - Section 1 General

#### **6.1.1 Injuries and Illnesses**

- a. It is desirable that employees be proficient in first aid, rescue breathing, C. P. R., the control of bleeding, and the treatment of traumatic shock. Therefore, it is the Policy of the District to have employees trained to administer immediate care to Injured/Ill employees.
- b. For treatment beyond normal first aid, the services of Emergency Medical Services (EMS), by calling 911, shall be obtained.
- c. Employees shall contact their supervisors for information regarding:
  1. The reporting of all injuries no matter how slight;
  2. Where first aid or medical treatment (injured employee sent to a clinic for treatment) may be obtained;
  3. Who the first responders are in their respective departments and areas;
  4. How to enroll in one of the numerous First Aid/CPR classes offered by the District;
  5. How to activate EMS.
- d. The District has made available Automated External Defibrillators (AED's), throughout various locations. The list of locations is available on the District’s portal. Training is available by contacting the local area Safety Office.

# MWRD SAFETY RULES

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