CHAPTER 14

SAFETY

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14:1 GENERAL RULES OF SAFETY

This health, safety, and accident prevention information is meant to provide instruction and guidance for the recognition and avoidance of hazards. This section outlines general rules of safety that should apply to all personnel. Safety is often times a matter of common sense and thinking about potential consequences of a particular action. It is important that all personnel think before acting and keep safety foremost in their minds.

14:1.1 General Rules

1. Keep your mind on your work at all times.
2. Always watch where you are walking.
3. Never move an injured person unless it is absolutely necessary. Keep the injured as comfortable as possible until an ambulance arrives, utilize the job site first aid equipment, including personal protective equipment, to protect yourself against a blood borne pathogen exposure incident until an ambulance arrives.
4. Be aware of emergency egress routes out of each building or project site.
5. Know where emergency fire fighting equipment is located and only use if properly trained.
6. Lift correctly, with legs, not the back. If the load is too heavy, get help.
7. Do not enter a barricaded area without proper authorization.
8. Use of intoxicating substances, including alcohol and medications, is strictly prohibited. Follow doctor's instructions if taking prescription drugs that advise against driving or using machinery.
9. Use only 3-prong extension cords.
10. Use ground-fault circuit interrupters at all times when using tools in wet atmospheres or with any temporary power supply. Check the electrical grounding system daily.
11. No one but the operator should ride on equipment unless proper seating is provided.
12. Do not operate any equipment without proper guards in place. Do not remove, displace, damage, or destroy any safety device or safeguard or interfere with its use.
13. When working around powered equipment, such as trucks, earth-working equipment, forklifts, etc., be sure that the operator can always see you.

14. If and/or when an employee must enter a hazardous or confined space, such as, but not limited to, a bin, silo, hopper, excavation, or tank, which contains bulk or loose material that could engulf the employee, the personnel should follow the procedures outlined in Section 14:4.
15. Trenches over five feet deep must be shored or sloped. Keep out of trenches or cuts that have not been properly shored or sloped. Excavated or other material must not be stored nearer than two feet from the edge of the excavation. Excavations less than five feet in depth may also require cave-in protection in some instances. Trenches deeper than four feet are considered a "confined space." Information regarding confined space entry is presented in Section 14:4.

14:2 FIRST AID AND MEDICAL SERVICES

This section describes general procedures relevant to first aid and medical services.

14:2.1 First Aid/Medical Treatment

1. First aid kits should be available to all employees for the treatment of a work-related injury or illness.
2. Medical cases, which require treatment beyond first aid, should be referred to an off-site physician or hospital as required by the severity of the injury or illness.

14:3 OSHA SITE INSPECTIONS

Procedures relevant to compliance with the Occupational Safety and Health Act (OSHA) and/or state regulatory inspections.

14:3.1 Regulatory Agency Inspections

1. The Drain Commissioner's representative should:
    a. Keep a detailed record of the scope of the inspection.
    b. Identify the personnel questioned by the Inspector.
    c. Note items of apparent interest to the Inspector.
    d. Record comments made by the Inspector.
    e. Record observations made during the inspection.
2. Upon completion of the inspection, the Drain Commissioner's representative should request that a closing meeting be held. More than one Drain Commissioner

representative should be present to ensure a complete understanding of all statements made by the Inspector.

3. Following the closing meeting, the Drain Commissioner's representative should prepare a detailed report of the inspection incorporating any record, notes, samples, photographs, etc., made or taken during the inspection.

14:3.2 Citations

In the event an OSHA inspection is conducted on the project and the Drain Commissioner believes conditions found do not comply with the provisions of the laws, the nature of the alleged violation(s) should be described in a written citation with reference made to the applicable regulations of the law. These conditions must be corrected on or before the date shown on each written alleged violation.

14:3.3 Posting of Citation

OSHA requires that a copy of all citations be prominently posted at or near each place a violation referred to in the citation(s) occurred. It must remain posted until all violations are corrected or for three working days, whichever period is longer. (Working days meaning Monday to Friday - not including weekends and Federal holidays.) The Act provides penalties for violations of the posting requirements.

14:3.4 Approval

After notification of proposed penalties, the Drain Commissioner has the right to contest any or all parts of the citation and the proposed penalties. If the Drain Commissioner fails to contest within the 15-day time period, the citation and the penalties proposed should be deemed to be a final order and not subject to review by any court or agency.

14:3.5 Abatement

The Drain Commissioner may file notice (letter) to contest the reasonableness of the time stated in the citation for the abatement of alleged violations. Alleged violations that are not contested must be corrected within the specified period noted in the citation. Failure to comply within the abatement period should result in further proposed penalties for each day the alleged violation has not been corrected. Timely correction of an alleged violation does not affect the initial proposed penalty. The OSHA provisions and regulations provide that whoever knowingly gives false information is subject to fines and/or imprisonment or both.

14:3.6 References

OSHA 29CFR 1903.1-21

14:4 CONFINED SPACE ENTRY

Any operation conducted by persons while inside a confined or process space is dangerous by nature. The purpose of a confined space entry policy is to minimize the health and safety risks associated with confined space entry and to attempt to assure that personnel do not sustain serious injury while working in a confined space.

A confined space is a space that (a) is large enough and so configured that an employee can bodily enter and perform work; (b) has limited or restricted means for entry or exit; and (c) is not designed for continuous employee occupancy.

Most confined spaces encountered by personnel are non-permit required spaces. If a hazard or potential hazard exists in the confined space, a permit should be required. A permit is written authorization specifying the location and type of work to be performed, certifying that all existing hazards have been evaluated, and that necessary protective measures have been taken to ensure the safety of each employee.

(1) Construction/Environmental Site Confined Spaces

Confined or enclosed space present on a construction or environmental work site has a limited means of egress, is more than 4 feet in depth and is subject to the accumulation of toxic or flammable contaminants, or has an oxygen deficient or enriched atmosphere, should be considered a confined space. This should include all excavations deeper than 4 feet, such as for footings, tunnels and pipelines.

14:4.1 Entry Procedures

1. ***Entrance Covers:*** Any conditions making it unsafe to remove an entrance cover should be eliminated before a cover is removed. When entrance covers are removed, the opening should be guarded, if necessary, to prevent employees from falling through the opening and to protect entrants from falling objects.
2. ***Testing and Air Quality:*** Pre-entry and periodic testing should be mandatory for any confined space entry. The purpose of the testing is to confirm that the space atmosphere is:
    - Respirable (i.e., safe to breathe without using a respirator).
    - Does not present a flammable or explosive hazard.

Entry should not be made or, if persons are already inside, they should immediately exit, in the event any of the following conditions are found:

- The oxygen content is less than 19.5% or more than 23.5%.
- The combustible gas content is greater than 10% of its LEL.
- Any air contaminant exceeds its OSHA/MDCIS exposure limit.

In addition to the requirement for an immediate exit, the following actions should be implemented if airborne combustible gas levels exceed 10% of its LEL:

- All electrical equipment should be disabled or removed from the space unless certified intrinsically safe or explosion-proof for that atmosphere. Only certified equipment should subsequently be used in the space.
- All tools and PPE used in the space should be of non-sparking design.

a. *Testing Equipment:* Only appropriate air monitoring equipment maintained and calibrated as described herein, should be used to test confined space atmospheres. This equipment should be equipped with an audible alarm system that should alert employees when a hazardous condition develops.

b. *Test Personnel:* Only designated personnel who have been adequately trained may use test equipment for the purposes of this program. A list of qualified personnel and their respective level of training is maintained by the Corporate Health and Safety Officer.

c. *Pre-Entry Testing:* A pre-entry test should be made from outside the space as well as the area surrounding the space not more than 30 minutes prior to the time of entry and shall be recorded on the permit entry form.

d. *Repeat Testing:* A repeat test should be made and recorded on the entry permit in any of the following circumstances:

- At mid-shift if the space is being continuously occupied.
- Each time the space is vacated for 30 minutes or more (e.g., lunch break) and then re-entered.
- Each time a chemical compound, such as a solvent or other source of air contamination, is introduced into the space or identified as a result of field activities.

- Upon the request of any person occupying or about to enter the space.
- Where there is insufficient historical data of the air quality within the space.

3. Ventilation: Ventilation is the primary method of protection against a hazardous atmosphere, and is mandatory for confined space entry. Natural ventilation may be sufficient in many cases but mechanical (i.e., powered) ventilation may also be required.

a. *Natural Ventilation:* Prior to entry, all confined spaces should be opened to the maximum feasible extent to allow for as much air exchange between the external and internal confined space environment as is possible.

b. *Mechanical Ventilation*

1) Powered Ventilation: Powered ventilation should be used if any of the following situations occur:

- Testing indicates any deviation from normal conditions, such as any oxygen concentration less than or equal to 19.5% or greater than or equal to 23.5%; any positive indication of combustible gas greater than or equal to 10% of its lower exposure limit (LEL).
- Any unusual atmospheric conditions, such as unusual odors, unusual temperature, etc.
- Any cleaning compounds, solvents or other chemicals used inside the space (see Hazard Communication Program for specific information on the safe use of chemicals or products that contain chemicals).
- Symptoms associated with being in the space are experienced by Entrants (e.g., dizziness, nausea, headache, weakness, etc.).
- Natural ventilation is not possible or feasible.
- Hot work is performed within the space.
- Where toxic atmospheres are produced as part of a work procedure such as welding or painting.

2) *Powered Ventilation Methods:* The preferred method of powered ventilation is to provide fresh air into a space using a flexible duct hose attached to an electrically powered blower. The duct end should be

directed toward the areas where personnel should be working. Another acceptable method includes using portable fans directed into the space, or a compressed air line used to introduce air into the space. Whenever air is forced into a space, the quality of the supply air source must be checked.

3) *Continuous Ventilation:* Ventilation (natural, powered or both) should be continuous while an entry is in progress.

4. Personal Protective Equipment (PPE): PPE may be necessary if ventilating equipment and/or work practices are not adequate or feasible for a particular space. PPE includes:

- Half face, negative pressure air-purifying respirators (at the exposure limit or less).
- Safety Harness (chest and full body).
- Life-lines.
- Tripod, winch, fall arrest systems.

To facilitate rescue, retrieval systems should be installed and should be utilized whenever an employee enters a permit required confined space unless the retrieval equipment would increase the risk of injury and would not contribute to rescue efforts. Retrieval systems should consist of a chest or full body harness with a retrieval line attached at the center of the Entrant's back near shoulder level, or above the Entrant's head. The other end of the retrieval line should be attached to a mechanical device or fixed point outside the permit space. A mechanical device should be available to retrieve personnel from vertical permit spaces more than 5 feet deep indoors or more than 10 feet deep outdoors (as during construction activities such as trenching).

5. Lighting: If the available lighting is inadequate for the work to be accomplished in a confined space, intrinsically safe auxiliary lighting equipment should be used. When auxiliary lighting is used, supplemental lighting (approved intrinsically safe flashlights or lanterns) should be carried, if necessary, to safely evacuate the space in the event of auxiliary lighting failure.

6. Attendants: An Attendant(s) should be stationed outside a permit space at all times while Entrants are within a space.

7. ***Training:*** Each person with an active role in a permit space entry should be trained and know his/her responsibilities prior to participating in confined space work.
8. ***Rescue and Emergency Response:*** Employees with active roles in permit required confined space entry should know the procedures for summoning and conducting non-entry rescue and emergency services.

14:4.2 Training

Entering permit required confined spaces is a team effort. All of the individuals involved with the entry must be properly trained and know their roles.

14:4.3 Emergency and Rescue

Entry of a confined space for rescue or other emergency purposes should be made only by trained off-site emergency rescue personnel.

14:4.4 References

29 CFR 1926.21

The Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910.146(c)(4) for Permit Required Confined Space Entry as adopted by the Michigan Department of Consumer and Industry Services (MDCIS), formerly MIOSHA Rule R. 325.63001-49.

MDCIS 325.50201-31 (Occupational Health Standards For Construction, Part 2. Tunnels, Shifts, Caissons, and Cofferdams).

MDCIS Rule 6402 (Occupational Health Standards For Construction, Control Measures for Hazardous Atmospheres in Confined Spaces).

MDCIS Department of Labor Safety Standards Rules 408.40901-53 (Part 9. Excavation, Trenching, and Shoring).

MDCIS, Part 1, General Rules, Rule 114(g).

14:5 FIRE PROTECTION

This section describes fire protection and prevention at construction projects. While focused on construction projects, the requirements and procedures are applicable to other types of projects and situations.

14:5.1 Fire Protection Plan

The Fire Protection Plan should include the following elements:

1. Site layout map with alternative access/egress routes.
2. Emergency telephone numbers for nearest fire department.
3. Access to, and location of, visible fire fighting equipment.
4. Inspection and maintenance of fire fighting equipment.
5. A Fire Prevention Plan.
6. Employee training relating to the above elements.

14:5.2 References

29CFR 1926.150-155

29CFR 1910.110

NFPA

14:6 TRENCHING AND EXCAVATIONS

Minimizing and eliminating the potential hazards of trenches and excavations.

14:6.1 General Requirements

1. Prior to excavating: Call the participating One-Call center for the area (e.g., Miss Dig).
2. Excavations that are left open will be barricaded in a manner that is appropriate considering the location. When next to vehicular traffic, local, or state highway department requirements for warnings and barricades SHOULD be followed.
3. Employees in an excavation should be protected from cave-in by an adequate protective system(s).
4. Spoils should be stored a minimum of 2 feet from the sides of the excavations and should not block the means of exit from the excavation.
5. A stairway, ladder, ramp, or other safe means of exit should be located in excavations that are 4 feet or greater in depth. Access to the means of egress should be within 25 feet of the employees.
6. Employees working in excavations should be protected against the hazards posed by water accumulation.

14:6.2 Sloping

Sloping means that the sides of an excavation are laid back to a "maximum allowable slope" from which they will not collapse.

14:6.3 Shoring

1. Shoring uses a framework of vertical members called uprights, horizontal members called wales, and cross braces to support the sides of the excavation to prevent cave-in.
2. When the soil conditions are particularly hazardous, or if the excavation is more than 10 feet deep, "close sheeting" is added behind the wales for even greater support.

14:6.4 Trench Box

1. Although the trench box does not prevent a cave-in, it is designed to withstand the soil forces caused by a cave-in, protecting the workers within the structure.
2. No one should be allowed within the trench box when it is being installed or removed. The height of the trench box should be greater than the depth of the excavation. The trench box should extend a minimum of 18 inches above the point where the excavation wall is properly sloped.

14:6.5 References

29CFRl 926.650

29CFR1926.65 I

29CFRI 926.652