**PURPOSE**

To provide a hazard free workplace and have an Gaseous Chlorine Gas Awareness Program to ensure the safety and health of all company employees performing job tasks in which gaseous chlorine may be on site.

Compliance with this program is mandatory and applicable to all company employees who work in an environment where gaseous chlorine is present in any amount. Failure to comply will result in disciplinary action and/or is grounds for termination. This includes multi-contractor work site(s). Wagner-Meinert, LLC does not specifically work with gaseous chlorine, etc.

**CHLORINE GAS**

Chlorine gas is still a commonly used disinfectant. It’s highly effective and comparatively low-cost.

Chlorine gas can be pressurized and cooled to change it into a liquid so that it can be shipped and stored. When liquid chlorine is released, it quickly turns into a gas that stays close to the ground and spreads rapidly. Chlorine is a greenish-yellow gas under normal conditions. It has a distinct pungent, irritating odor, which is like the odor of bleach. The strong smell may provide an adequate warning to people that they have been exposed.

**PHYSICAL PROPERTIES:**

**Color – greenish yellow**

**Odor – pungent, similar to laundry bleach. Detectable by smell at concentrations of 0.2 to 0.4 ppm.**

**Specific gravity – Approximately 2.5. This means gas chlorine is 2.5 times heavier than air, and will sink to the lowest level in a building or area.**

**Boiling point is -29.15 degrees F. Liquid chlorine that escapes from a cylinder or ton container will immediately convert to gas.**

**One volume of liquid chlorine converts to 460 volumes of gas.**

**Liquid chlorine that vaporizes on skin can reduce the temperature enough to cause frostbite.**

**Chlorine is not explosive or flammable, but can react violently with many substances.**

**Chlorine reacts with water to form hypochlorous and hydrochloric acids, with hypochlorous acid being the main disinfectant.**

**EXPOSURE TO CHLORINE:**

**Chlorine is a severe irritant. As noted above, when mixed with water (including moisture in mucous membranes, eyes and skin), it forms an acid. The primary route of exposure is through the eyes and respiratory system.**

**Exposure to chlorine has effects ranging from irritation to death, depending on the concentration and time of exposure.**

**Employee risk for exposure depends on how close they are to the place where the chlorine was released.**

**1. If chlorine gas is released into the air, the employee may be exposed through skin contact or eye contact. The employee may also be exposed by breathing air that contains chlorine.**

**2. If chlorine liquid is released into water, the employee may be exposed by touching or drinking water that contains chlorine.**

**3. If chlorine liquid comes into contact with food, the employee may be exposed by eating the contaminated food.**

**4. Chlorine gas is heavier than air, so it would settle in low-lying areas**

**The OSHA ceiling level (the maximum limit of any worker exposure) is 1.0 ppm.**

**A level of 10 ppm is considered Immediately Dangerous to Life and Health under the National Institute for Public Safety and Health (NIOSH).**

**At low levels for a short time, chlorine can cause eye irritation, coughing, sneezing and throat irritation. At higher levels, labored breathing and vomiting may occur. Death can result from suffocation.**

**DANGEROUS CHLORINE REACTIONS:**

**Chlorine has the potential for violent or explosive reactions with certain substances. It is very important to separate chlorine from the following:**

* **Ammonia and ammonia compounds**
* **Hydrocarbons – oils, greases, solvents, even in small amounts.**

**SITE SPECIFIC CONTINGENCY PLANS / EMEREGENCY PLANS:**

The Safety Director or other competent person will inform our employees of the known potential fire, explosion or toxic release hazards related to their job and the process and the applicable provisions of the emergency action plan. Employees must be informed where chlorine is used in the host facility and aware of additional plant safety rules Per paragraph (h)(2), 29 CFR 1910.119, the facility for which we are working will provide our employees the known potential fire, explosion, or toxic release hazards related to our work and the process and explain the applicable provisions of their contingency plans and provisions such as escape routes, procedures to account for employees, means of reporting emergencies, and alarm system.

**DOCUMENT MANAGEMENT:**

If after reading this program, you find that improvements can be made, please contact the Safety Director. We encourage all suggestions because we are committed to the success of our Gaseous Chlorine Gas Awareness Program. We strive for clear understanding, safe behavior, and involvement from every level of the company.

**CHANGE CONTROL:**

All management system changes are reviewed, approved or disapproved by the Safety Committee.

**PERSONNEL:**

The Owners of Wagner-Meinert, LLC have the ultimate responsibility for this Program. They have designated the Safety Director to manage the Gaseous Chlorine Awareness Program.

| **Revision / Review History** | | | |
| --- | --- | --- | --- |
| **Revision** | **Date** | **Authorized By** | **Changes** |
| 1 | 8/2/2016 | Safety Director | New Program |
| 1 | 6/30/2017 | Safety Director | Annual Review |
| 1 | 6/5/2018 | Safety Director | Annual Review |
| 1 | 6/7/2019 | Safety Director | Annual Review |
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