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CHLORINE GAS SAFETY PROGRAM

Chlorine Gas System Safety Program

There is a need to emphasize major precautions to be observed while working with chlorine, which is a very dangerous gas. The following outlines a program governing the moving, storage, and maintenance procedures to be used for handling chlorine gas. Consult the Safety Engineer for procedures to be followed in an emergency, and the type of first aid treatment to be rendered to persons exposed to chlorine fumes.

1. MOVING CYLINDERS

- a. Never move a chlorine gas cylinder unless the cylinder valve cap is in place.
- b. Do not drop a cylinder or allow an object to strike the container with extreme force.
- c. Never apply heat to chlorine cylinders or valves.
- d. Any handtruck used for moving cylinders shall have a clamp support at least two-thirds of the way up the cylinder.
- e. When lifting a cylinder using a crane or hoist, a special cradle or carrier should be used. Never use a rope sling, chain, or magnetic device.
- f. Never lift a cylinder by the valve cap or neck.

2. STORING CYLINDERS

- a. One extra, full or empty, container may be racked and stored in the chlorine room. All other containers should be stored outside of attended power or pumping plants. The storage area should be cool and dry, and protected from all heat sources including the sun.
- b. Never store containers near turpentine, ether, anhydrous ammonia, finely divided metals, hydrocarbons, oxygen cylinders, acetylene cylinders, or any flammable materials.
- c. The storage area should be clean, well vented to atmosphere, and remote from elevators, gangways, ventilating systems, or any other type

of area that would allow leaking gas to disperse rapidly throughout the building.

- d. Cylinder valve caps should always be screwed securely in place during storage.
- e. Cylinders should always be stored vertically and never stacked or laid horizontally. The storage room should never contain other stored material.

3. GENERAL PRECAUTIONS

- a. Never tamper with the fusible plug safety device on containers.
- b. Never alter or repair a container or valve. Tell the chlorine supplier if any damage is found.
- c. Never place a container in hot water, or apply direct heat to increase the flow rate, or for any other reason.
- d. A flexible copper tube connection should be used between the container and the piping system. Copper tubing shall be type K or L and sized for a minimum of 3500-kPa (500-lb/in²) working pressure. A type L9.5 mm (3/8-1n) o.d. flexible copper tube is recommended.
- e. Never perform maintenance work on a system unless the tank valves are closed.
- f. When a container is empty the valve should be closed, lines disconnected, and the valve tested for leakage. An outlet pipe cap should be promptly attached and the cylinder valve cap secured. If the valve does not seat immediately, open and close it lightly until it seats. Never impact the valve or cylinder with anything, with the mistaken idea it would help make a tight valve closure.
- g. To detect a chlorine gas leak, attach a cloth to the end of a stick, soak it with ammonia, and hold it close to the suspected area. A white cloud of ammonia chloride will result if there is a chlorine leak. Commercial 26 ° Be ammonia

must be used; household ammonia is not strong enough.

DO NOT GET ANY AMMONIA ON THE BRASS.

h. Do not enter a chlorine contaminated area without wearing a self-contained breathing apparatus, which is available at all Bureau plants. Canister-type chlorine masks do not protect against chlorine concentration over 1 percent when the oxygen concentration is below 16 percent.

i. If a leak develops in a chlorine system, shut off the cylinder valves and ventilate the area to the outdoors prior to repairing the leak. Should a major leak develop which can not be controlled,

clear the area of personnel, and exhaust the fumes to the outdoors.

j. If a cylinder valve leaks, tighten the packing nut with the special wrench. Should it continue to leak, replace the outlet pipe cap and remove the cylinder to the outdoors.

k. If a cylinder leaks, tilt the cylinder to permit gas instead of liquid to escape. Less equivalent leakage can flow through a crack as gas than as liquid.

l. Do not use water on a chlorine leak.

m. In case of fire all cylinders should be removed from the fire zone immediately.