

Chlorine Safety

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Chlorine is a disinfectant that is commonly found in most municipal entities across Alabama. The use of chlorine helps save lives by preventing the spread of waterborne diseases. That being said, however, chlorine is a severe irritant so it's critical to understand the dangers when working with chlorine at your facility. Exposure to chlorine has effects ranging from irritation to death, depending on the concentration and time of exposure. Because of the danger of respiratory damage, chemical burns and death, it is imperative that workers use, store and handle chlorine properly.



Storage

Most plant operations store 150-pound cylinders or 1-ton containers. Chlorine containers of any size should always be secured to protect them from falling, rolling or being dropped. Chlorine may be stored indoors or outdoors, though shading from sunlight is recommended for outdoor storage. Storage areas should be away from HVAC intakes, as chlorine gas could be distributed throughout a building in case of a leak.

Indoor storage areas should have a ventilation fan located near the floor with a fresh air intake near the ceiling. The ventilation fan must be operated by a switch that is weather proof and located outside the chlorine room entrance door. The fan should be turned on and allowed to run prior to entering the chlorine room. The chlorine storage area should have a well-maintained chlorine gas detector installed, complete with alarm and call-out capability if a leak occurs when the plant is unmanned.

Unloading Chlorine Cylinders and Ton Containers

All employees receiving chlorine cylinders and containers must be properly trained and have the proper equipment to unload and receive chlorine containers.

- Make sure the protective valve housing is on securely.
- **Never** lift a chlorine cylinder by its protective valve housing!
- Use a properly rated hoist or forklift to relocate ton containers. When using a hoist, remember that the total weight of the ton container is nearly 2 tons. A one-ton hoist is not sufficient for lifting a ton container.
- The hoist and cables must be in good operating condition. Have a professional inspect the hoist each year and repair or replace it when necessary.



- Once the containers or cylinders are unloaded, secure them properly at the site. Always store cylinders in an upright position. Store ton containers with the two valves lined up vertically.

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.



Chlorine Leak Response

NEVER respond to a chlorine leak unless you have been properly trained and have the necessary safety equipment—including a self-contained breathing apparatus and protective suit. To speed response and recovery, each treatment plant should have the appropriate Chlorine Institute Emergency Kit onsite:

- Kit A: for 100 or 150-pound cylinders
- Kit B: for ton containers
- Kit C: for tank cars and tank trucks
- Cylinder containment vessels: for 100 or 150-pound cylinders

Whether a chlorine leak is handled in-house or not, your Emergency Response Plan should detail the exact procedure. Most importantly, practice, practice and practice the procedure. Finding the Emergency Response Plan and reading it in the middle of a chlorine gas leak is not a good option.

Security

The events of 9/11 made treatment plant security all the more important.

- Control access to chlorine cylinders and containers with gates, locked buildings and other barriers.
- Provide bullet-proof shields for containers that are not indoors.
- If funding allows, use electronic gates and doors with access badges that record the comings and goings at the plant. If not, ensure all visitors sign in and show photo identification.



Sources: *CDC.gov* and *worksafebc.com*