

Work **Safe!** Bulletin

DANGER: COMPRESSED CHLORINE

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THE EMPLOYER SHALL TRAIN ALL WORKERS
HANDLING CHLORINE CYLINDERS IN:

- * Properties and hazards of chlorine
- * Safety requirements, working and emergency procedures
- * Personal protective and monitoring equipment.

THE EMPLOYER SHALL PROVIDE WORKERS WITH ALL NECESSARY EQUIPMENT.

Required Safety Procedures

Information/Communication

- Written procedures shall be developed and followed for:
 - the regular changing of chlorine cylinders and
 - emergency/rescue.
- Each worker shall receive a copy of the emergency plan.
- These procedures shall be clearly posted on the outside of the chlorine room.
- Where a single worker is required to change a tank, a "Working Alone Plan", as defined by M.R.105/88R, shall be established.
- An alarm system, ventilation and working alone plan shall be in place, before a worker can enter the chlorine room for reasons other than repairs and cylinder changes.
- Local fire department/rescue agencies should be familiar with chlorine room area and procedures, including first aid and CPR.
- A means of communication, between the workplace and the emergency response agencies shall be readily available.

Training:

- Each worker shall receive appropriate and ongoing training of both regular work and emergency procedures.
- Workers shall be trained on the proper use, maintenance/cleaning and storage of respiratory and all other necessary personal protective equipment.
- Training on respiratory equipment shall conform to Canadian Standards Association (CSA) requirement Z94.4-M 1982.
- The employer shall follow up on the training to ensure that workers clearly understand the procedures.

Chlorine Room Requirements

Location:

- The chlorine room shall be isolated from the general work area.

Warning System:

- A chlorine detector shall be installed in the chlorine room with a warning system, both inside and outside the room, including bell, alarm, lights, or other devices.
- Where no warning system is available, each entry shall require the wearing of pressure-demand, supplied-air breathing apparatus.

Ventilation:

- Emergency room exhaust system must be of sufficient capacity to produce:
 - 30 air changes per hour for swimming pool operations; or
 - 20 air changes per hour for water treatment plants.
- Exhaust pickup must be at floor level.
- Fan control for the exhaust must be in manual mode and in close proximity to observer's station.
- Exhaust outlet must be on the outside of the building well away from any air intakes.

Emergency Exit/Viewing Window:

- Doors open outward, shall have panic hardware, and locks that are not self-locking.
- Rooms larger than 200 square feet or 18.6 square meters shall have more than one emergency exit door.
- There shall be a properly sealed viewing window in the door, or close to the door, to allow the observer an unobstructed view of the complete work area.
- All openings to the room, other than those for prescribed ventilation and exit/entrance, shall be properly sealed.

Emergency Equipment/Precautions:

- An eyewash station meeting requirements of ANSI Z358.1 -1990; and
- A drench shower shall be readily available for immediate use.
- The valve stem wrench shall be kept, at all times, on the valve stem of chlorine cylinder in use.
- Cylinders shall be securely anchored and when cylinders are not connected to the chlorinator, cylinder valve protective caps shall be in place.
- A leak test kit that consists of ammonium hydroxide must be used when testing connection points.
- An emergency repair/capping kit shall be readily available for cylinders of one ton or greater.
- Chlorinator shall automatically cease operation in conjunction with the shutdown of recirculating pumps.

Communication:

- An effective means of communication (i.e. telephone, intercom, etc.) with other workers and emergency rescue agencies shall be available at all times.
- Chlorine room area shall be placarded so that any rescue or assistance agency is warned of the hazard, and location of chlorinator.

Personal Protective Equipment Requirements*Clothing:*

- Workers involved in changing pressurized chlorine shall wear an apron or suit, and gloves made of rubber i.e. (Neoprene, PVC, viton or chlorinated polyethylene).

Respiratory:

- The following is required for changing one 150 pound cylinder or less:
 - With one worker - supplied-air breathing apparatus, positive pressure, continuous flow, or in pressure-demand mode.
 - With two workers - observer to wear pressure-demand supplied-air respirator in ready position while a worker changes cylinders.
- And for changing cylinders over 150 pound capacity (cascading cylinders, one ton or greater): Both operator and observer shall wear pressure-demand supplied air respirator with full face piece.
- The requirements of CSA Z94.4 "Selection, Care and Use of Respirators" shall form the basis of a respiratory protection program.