

FAC 62-555

(13) Chlorination Facilities for Disinfection of Drinking Water.**(a) Gas Chlorination Facilities.**

1. New chlorinators shall be the vacuum-operated, solution-feed type.
2. Chlorinator capacity shall be such that any applicable minimum CT value and the minimum residual disinfectant level specified in paragraph 62-555.320(12)(d), F.A.C., and subsection 62-555.350(6), F.A.C., can be maintained when maximum chlorine demand coincides with maximum flow rate at the point of chlorine application.
3. At each drinking water treatment plant that is using gas chlorination facilities to achieve *Giardia lamblia* or virus inactivation in accordance with paragraph 62-555.320(12)(a) or (b), F.A.C.; at each treatment plant that is using gas chlorination facilities for disinfection and that is connected to a community water system (CWS) having an actual or design average daily chlorine consumption equaling or exceeding ten pounds per day; and at each treatment plant that has gas chlorine disinfection facilities constructed or altered under a construction permit for which the Department receives a complete application on or after August 28, 2003, and that is connected to a CWS serving, or designed to serve, 350 or more persons or 150 or more service connections, the supplier of water shall provide installed or uninstalled standby gas chlorination equipment (i.e., a standby chlorinator, including a standby vacuum regulator and a standby eductor, which is also referred to as an injector or ejector; a standby booster pump where booster pumps are used; and a standby evaporator where evaporators are used) of sufficient capacity to replace the largest equipment. However, for water systems that have multiple interconnected plants subject to this requirement, the supplier of water may provide one uninstalled standby for each type and size of gas chlorination equipment installed in the water system instead of providing standby gas chlorination equipment on site at each plant; and for water systems that have only one plant subject to this requirement and that are designed to serve 10,000 or fewer persons, as many as three water systems located in the same county, or within 50 miles of one another, may enter into a mutual aid agreement to share appropriately sized, uninstalled standby gas chlorination equipment instead of providing standby gas chlorination equipment on site at each water system's plant.
4. At each drinking water treatment plant that is using gas chlorination facilities to achieve *Giardia lamblia* or virus inactivation in accordance with paragraph 62-555.320(12)(a) or (b), F.A.C.; at each treatment plant that is using gas chlorination facilities for disinfection and that is connected to a community water system (CWS) having an actual or design average daily chlorine consumption equaling or exceeding ten pounds per day; and at each treatment plant that has gas chlorine disinfection facilities constructed or altered under a construction permit for which the Department receives a complete application on or after August 28, 2003, and that is connected to a CWS serving, or designed to serve, 350 or more persons or 150 or more service connections, the supplier of water shall provide devices for automatic switch-over of chlorine cylinders or containers.
5. Chlorine shall be fed into drinking water proportional to flow. Where the flow rate is reasonably constant, this may be accomplished by electrically interconnecting gas chlorination equipment with well or service pumps or by otherwise designing gas chlorination equipment to operate only when well or service pumps operate. Automatic flow proportioning control of chlorinators shall be provided where the flow rate fluctuates significantly. Furthermore, automatic residual control of chlorinators shall be provided where the chlorine demand fluctuates significantly, and automatic compound-loop control of chlorinators shall be provided where both the flow rate and the chlorine demand fluctuate significantly.
6. Scales shall be provided to accurately weigh chlorine cylinders or containers in use.
7. Chlorine shall be rapidly and thoroughly mixed with all drinking water being treated.
8. Chlorine storage and feed facilities shall be located in a room or area separate from other operating areas. If chlorine storage or feed facilities are enclosed in a room, the room shall be located at ground level and shall be provided with floor-level ventilation. New or altered chlorine rooms shall be designed and constructed in accordance with Section 5.4.1 in *Recommended Standards for Water Works* as incorporated into Rule 62-555.330, F.A.C. If chlorine storage or feed facilities are not enclosed in a

room, they shall be shielded from direct sunlight and rain and shall be located at ground level in an area that either has adequate natural ventilation or is equipped with a mechanical ventilation system. For the purpose of this subparagraph, an area is considered to have adequate natural ventilation if walls are not completely obstructing more than one side of the perimeter of the area. New or altered mechanical ventilation systems for chlorine storage or feed areas shall meet applicable requirements in Section 5.4.1.c of *Recommended Standards for Water Works* as incorporated into Rule 62-555.330, F.A.C.

9. At each drinking water treatment plant that is using gas chlorination facilities to achieve *Giardia lamblia* or virus inactivation in accordance with paragraph 62-555.320(12)(a) or (b), F.A.C., and at each treatment plant that is using gas chlorination facilities for disinfection and that is connected to a community water system serving, or designed to serve, 350 or more persons or 150 or more service connections, the supplier of water shall provide an audio-visual alarm system that is activated by high- and low-vacuum switches, a continuous chlorine residual analyzer, or a continuous oxidation-reduction potential meter to indicate loss of chlorination capability or chlorine residual. If the plant is not staffed during all hours the plant is in operation, the alarm also shall be telemetered to a place staffed during all hours the plant is in operation, or shall trigger an automatic telephone dialing or paging device, to enable notification of an appropriately licensed water treatment plant operator.

10. Suppliers of water shall provide the following safety or protective equipment at drinking water treatment plants with gas chlorination facilities.

a. At each treatment plant with gas chlorination facilities, the supplier of water shall provide in a convenient location, but not inside any room where chlorine is stored or handled, a self-contained breathing apparatus (SCBA) meeting the requirements of the National Institute for Occupational Safety and Health. However, for water systems that have multiple interconnected plants withdrawing chlorine from only 150-pound or smaller cylinders, the supplier of water may provide an SCBA in each vehicle used by plant operators instead of providing an SCBA at each plant withdrawing chlorine from only 150-pound or smaller cylinders.

b. At each treatment plant with gas chlorination facilities, the supplier of water shall provide appropriate protective equipment in accordance with Table 15.5 in *Water Treatment Plant Design* as incorporated into Rule 62-555.330, F.A.C., except that the supplier of water shall provide a self-contained breathing apparatus in accordance with sub-subparagraph a above instead of providing a gas mask in accordance with this sub-subparagraph and Table 15.5.

c. At each treatment plant withdrawing chlorine from ton containers or tank cars or trucks, the supplier of water shall provide continuous chlorine leak detection equipment that is connected to an alarm system. The alarm system shall include an audio-visual alarm at the plant, and if the plant is not staffed 24 hours per day and seven days per week, the alarm also shall be telemetered to a place staffed 24 hours per day and seven days per week, or shall trigger an automatic telephone dialing or paging device, to enable notification of an authorized representative of the supplier of water.

d. At each treatment plant withdrawing chlorine from ton containers or tank cars or trucks, the supplier of water shall provide an emergency chlorine leak repair kit meeting the requirements of the Chlorine Institute.

(b) Hypochlorination Facilities.

1. New hypochlorinators shall be positive displacement metering pumps or accurate vacuum-operated dosers.

2. Hypochlorinator capacity shall be such that any applicable minimum CT value and the minimum residual disinfectant level specified in paragraph 62-555.320(12)(d), F.A.C., and subsection 62-555.350(6), F.A.C., can be maintained when maximum chlorine demand coincides with maximum flow rate at the point of hypochlorite application.

3. At each drinking water treatment plant that is using hypochlorination facilities to achieve *Giardia lamblia* or virus inactivation in accordance with paragraph 62-555.320(12)(a) or (b), F.A.C.; at each treatment plant that is using hypochlorination facilities for disinfection and that is connected to a community water system (CWS) having an actual or design average daily chlorine consumption equaling or exceeding ten pounds per day; and at each treatment plant that has hypochlorite disinfection

facilities constructed or altered under a construction permit for which the Department receives a complete application on or after August 28, 2003, and that is connected to a CWS serving, or designed to serve, 350 or more persons or 150 or more service connections, the supplier of water shall provide installed or uninstalled standby hypochlorination equipment (i.e., a standby electrolytic generator and brine pump where sodium hypochlorite is generated on site; a standby metering pump where metering pumps are used; a standby doser, including a standby vacuum regulator and a standby eductor, which is also referred to as an injector or ejector, where vacuum-operated dosers are used; and a standby booster pump where booster pumps are used) of sufficient capacity to replace the largest equipment. However, for water systems that have multiple interconnected plants subject to this requirement, the supplier of water may provide one uninstalled standby for each type and size of hypochlorination equipment installed in the water system instead of providing standby hypochlorination equipment on site at each plant; and for water systems that have only one plant subject to this requirement and that are designed to serve 10,000 or fewer persons, as many as three water systems located in the same county, or within 50 miles of one another, may enter into a mutual aid agreement to share appropriately sized, uninstalled standby hypochlorination equipment instead of providing standby hypochlorination equipment on site at each water system's plant.

4. Hypochlorite shall be fed into drinking water proportional to flow. Where the flow rate is reasonably constant, this may be accomplished by electrically interconnecting hypochlorination equipment with well or service pumps or by otherwise designing hypochlorination equipment to operate only when well or service pumps operate. Automatic flow proportioning control of hypochlorinators shall be provided where the flow rate fluctuates significantly. Furthermore, automatic residual control of hypochlorinators shall be provided where the chlorine demand fluctuates significantly, and automatic compound-loop control of hypochlorinators shall be provided where both the flow and the chlorine demand fluctuate significantly.

5. Hypochlorite metering pumps shall have antisiphon protection. For new or altered hypochlorination facilities, the antisiphon protection for metering pumps shall be in accordance with Section 5.1.5 in *Recommended Standards for Water Works* as incorporated into Rule 62-555.330, F.A.C.

6. For sodium hypochlorite facilities that are constructed or altered under a construction permit for which the Department receives a complete application on or after August 28, 2003, and that include a metering pump:

- a. the pump shall be located as close as possible to, and lower than, the hypochlorite source with the pump suction line sloping upward from the pump to the hypochlorite source; or
- b. the hypochlorite facilities shall be otherwise designed to prevent gas binding of the pump.

7. For hypochlorination facilities constructed or altered under a construction permit for which the Department receives a complete application on or after August 28, 2003:

- a. hypochlorinator suction lines shall be located with the intake above the bottom of the hypochlorite container or shall be equipped with a strainer; or
- b. the hypochlorination facilities shall be otherwise designed to avoid feeding sediment into the drinking water.

8. Sodium hypochlorite shall not be stored or handled together with any acid or any ammonia or organic compound, and calcium hypochlorite shall not be stored or handled together with any acid or any combustible, organic, or oxidizable material. The storage of sodium hypochlorite shall be carefully managed to limit degradation of the hypochlorite and to limit formation of chlorate; alternative approaches for managing sodium hypochlorite storage are discussed on page 243 in *Water Treatment Plant Design* as incorporated into Rule 62-555.330, F.A.C. [Tanks for bulk storage of sodium hypochlorite shall have a liquid-level indicator](#), a vent, and an overflow discharging to a basin capable of containing accidental spills or overflows without uncontrolled discharge. [Where bulk storage of sodium hypochlorite is provided, a day tank also shall be provided unless there is an alternative means for accurately measuring the](#)

daily amount of hypochlorite fed and there are alternative safeguards (e.g., continuous chlorine residual monitoring; audio-visual alarms activated by high chlorine residual levels; and staffing at the water treatment plant, or at a monitoring and control center for the plant, during all hours the plant is in operation) that maintain a similar level of protection against overfeeding of hypochlorite. Sodium hypochlorite bulk storage tanks that are installed on or after August 28, 2003, and that cannot be completely drained to a day tank shall be equipped with a valved drain to allow for complete drainage and periodic cleaning of the bulk storage tank; however, this requirement does not apply to bulk storage tanks installed under a construction permit for which the Department received a complete application before August 28, 2003.

9. Hypochlorite solution or day tanks shall have a lid or cover, shall have a valved drain, and shall be scale-mounted or have a means for measuring the liquid level in the tank. For new or altered hypochlorination facilities, solution or day tanks shall be designed and constructed in accordance with Sections 5.1.10 and 5.1.11 in *Recommended Standards for Water Works* as incorporated into Rule 62-555.330, F.A.C.

10. Hypochlorite shall be rapidly and thoroughly mixed with all drinking water being treated.

11. Housing for new or altered hypochlorite storage or feed facilities shall be designed and constructed in accordance with Section 5.1.14 in *Recommended Standards for Water Works* as incorporated into Rule 62-555.330, F.A.C. Waste hydrogen from on-site sodium hypochlorite generation systems constructed or altered under a construction permit for which the Department receives a complete application on or after August 28, 2003, shall be vented directly to the outside atmosphere using a dilution air blower as necessary to ensure the concentration of hydrogen always will be below the explosion level.

12. At each drinking water treatment plant that is using hypochlorination facilities to achieve *Giardia lamblia* or virus inactivation in accordance with paragraph 62-555.320(12)(a) or (b), F.A.C., and at each treatment plant that has hypochlorite disinfection facilities constructed or altered under a construction permit for which the Department receives a complete application on or after August 28, 2003, and that is connected to a CWS serving, or designed to serve, 350 or more persons or 150 or more service connections, the supplier of water shall provide an audio-visual alarm system that is activated by high- and low-pressure switches, a low-flow switch or flow meter, high- and low-vacuum switches, a continuous chlorine residual analyzer, or a continuous oxidation-reduction potential meter to indicate loss of hypochlorination capability or chlorine residual. If the plant is not staffed during all hours the plant is in operation, the alarm also shall be telemetered to a place staffed during all hours the plant is in operation, or shall trigger an automatic telephone dialing or paging device, to enable notification of an appropriately licensed water treatment plant operator.

13. At each drinking water treatment plant with hypochlorination facilities, the supplier of water shall provide appropriate safety or protective equipment in accordance with Table 15.5 in *Water Treatment Plant Design* as incorporated into Rule 62-555.330, F.A.C.