

**641—15.51(135I) Spa operations.** A spa shall be operated in a safe, sanitary manner and meet the following operational standards.

**15.51(1) Filtration and recirculation.**

a. A spa shall have a filtration system in good working condition that provides water clarity in compliance with the water quality standards of 15.51(2) and meets the following criteria:

(1) Each filter cartridge is replaced with a new, unused, or cleaned and disinfected filter cartridge in accordance with the manufacturer's recommendations for pressure rise at the inlet of the filter, but at least once a month. If a functioning pressure gauge is not present at the filter inlet, the filter cartridge is replaced whenever the spa is drained and at least every two weeks. Filter cartridge replacements are recorded in the spa records.

(2) Each sand filter serving a spa is opened at least annually and the sand media examined for grease buildup, channeling and other deficiencies. The sand is cleaned and disinfected before the filter is put back into service. The annual inspection is recorded in the spa records.

(3) Each diatomaceous earth filter serving a spa is dismantled, and the filter socks and the interior of the filter are cleaned and disinfected at least annually. The annual cleaning is recorded in the spa records.

(4) The recirculation system has an operating pressure gauge located in front of the filter if it is a pressure filter system. A vacuum filter system has a vacuum gauge located between the filter and the pump.

b. The recirculation system for a spa shall treat one spa volume of water in 30 minutes or less.

c. Pumps, filters, disinfectant feeders, flow indicators, gauges, and all related components of the spa water recirculation system shall be operated continuously whenever the spa contains water, except for cleaning or servicing.

d. The recirculation system shall have inlets adequate in design, number, location, and spacing to ensure effective distribution of treated water and maintenance of uniform disinfectant residual throughout the spa.

e. A spa shall have at least one skimmer and meet the following criteria:

(1) Each skimmer has a self-adjusting weir in place and operational.

(2) Each skimmer has an easily removable basket or screen upstream from any valve.

f. Wastewater and backwash water from a spa shall be discharged through an air break or an air gap.

g. The water supplied to a spa shall be from a water supply meeting the requirements of the department of natural resources for drinking water and meet the following criteria:

(1) Water supplied to a spa is discharged to the spa system through an air gap or a reduced-pressure principle backflow device meeting AWWA C-511-97, "Reduced-Pressure Principle Backflow-Prevention Assembly."

(2) Each hose bib at a facility is equipped with an atmospheric vacuum breaker or a hose connection backflow preventer.

h. Spa water heaters shall meet the following criteria:

(1) Electric water heaters bear the seal of UL.

(2) Gas-fired water heaters are equipped with a pressure relief valve.

(3) Fuel-burning water heaters are vented to the outside, in accordance with the state plumbing code.

(4) Each indoor swimming pool equipment room with fuel-burning water heating equipment has one or more openings to the outside of the room for the provision of combustion air.

**15.51(2) Water quality and testing.**

a. *Disinfection.*

(1) Spa water shall have a free chlorine residual of at least 2.0 ppm and no greater than 8.0 ppm or a total bromine residual of at least 4.0 ppm and no greater than 18 ppm when the spa is open for use.

(2) A spa shall be closed if the free chlorine is measured to be less than 1.0 ppm or the total bromine is measured to be less than 2.0 ppm.

(3) The spa shall be closed if a free chlorine measurement exceeds 8.0 ppm or if the total bromine measurement exceeds 18 ppm.

(4) The spa water shall have an ORP of at least 700 mV, but no greater than 880 mV, and be closed if the ORP is less than 650 mV or greater than 880 mV.

(5) The spa shall be closed if the cyanuric acid concentration in the spa water exceeds 80 ppm. The spa may be reopened when the cyanuric acid concentration is 40 ppm or less.

(6) No cyanuric acid in any form shall be added to an indoor spa.

*b. pH level.* The pH of spa water shall be 7.2 to 7.8.

*c. Water clarity.* A spa shall be closed if the grate openings on drain fittings at or near the bottom of the spa are not clearly visible when the agitation system is off.

*d. Bacteria detection.*

(1) If coliform or *Pseudomonas aeruginosa* bacteria are detected in a sample taken in accordance with 15.51(2)“e”(8), the spa shall be drained, cleaned, and disinfected. The spa may reopen and a check sample shall be taken when the spa water meets the requirements of 15.51(2)“a,” “b” and “c.” If coliform or *Pseudomonas aeruginosa* bacteria are detected in the check sample, the spa shall be closed, drained, physically cleaned, and disinfected and the filter(s) cleaned and disinfected.

1. For cartridge filters, the cartridge shall be replaced with a new, unused cartridge or a cleaned, disinfected cartridge and the filter housing physically cleaned, then disinfected.

2. For sand and diatomaceous earth filters, the filter shall be opened and the media and components cleaned and disinfected.

The spa may reopen when no coliform or *Pseudomonas aeruginosa* bacteria are detected in a spa water sample taken when the spa water meets the requirements of 15.51(2)“a,” “b” and “c.”

(2) The facility management shall notify the local inspection agency of the positive bacteriological result within one business day after the facility management has become aware of the result.

*e. Test frequency.* The results of the tests required below shall be recorded in the spa records.

(1) The disinfectant residual in the spa water shall be tested or the ORP of the spa water checked each day before the spa is opened for use and at intervals not to exceed two hours thereafter until the spa closing time. For a spa at a condominium complex, an apartment building, a housing cooperative, or a homeowners association with 25 or fewer living units, the disinfectant level in the spa water shall be tested or the ORP of the spa water checked at least twice each day the spa is available for use.

The operator may make visual readings of ORP in lieu of manual testing, but the spa water shall be tested manually for disinfectant residual at least twice per day. Both ORP and disinfectant residual shall be recorded when manual testing is done. The operator shall specify in the spa records which results are from the manual tests.

(2) The pH of the spa water shall be tested each day before the spa is opened for use and at intervals not to exceed two hours thereafter until the spa closing time. For a spa at a condominium complex, an apartment building, a housing cooperative, or a homeowners association with 25 or fewer living units, the pH of the spa water shall be tested at least twice each day the spa is available for use.

If the spa is equipped with an automatic controller with a readout or local printout of pH complying with the requirements of 15.51(2)“f”(5), the operator may make visual readings of pH in lieu of manual testing, but the spa water shall be tested manually for pH at least twice per day. The operator shall specify in the spa records which results are from the manual tests.

(3) The spa water temperature shall be measured whenever a manual test of the spa water is performed.

(4) If a chlorine compound is used for disinfection, the spa water shall be tested for combined chlorine at least once a day.

(5) If cyanuric acid or a stabilized chlorine is used in a spa, the spa water shall be tested for cyanuric acid at least once a day.

(6) At least once in each month that a spa is open for use, a sample of the spa water shall be submitted to a laboratory certified by the department of natural resources for the determination of coliform bacteria in drinking water and the sample analyzed for total coliform and *Pseudomonas aeruginosa*.

*f. Test equipment.* Each facility shall have functional water testing equipment for free chlorine and combined chlorine or total bromine, pH, total alkalinity, calcium hardness, and cyanuric acid (if cyanuric acid or a stabilized chlorine is used at the facility) that meets the following criteria:

(1) The test equipment provides for the direct measurement of free chlorine and combined chlorine from 0 to 10 ppm in increments of 0.2 ppm or less over the full range, or total bromine from 0 to 20 ppm in increments of 0.5 ppm or less over the full range.

(2) The test equipment provides for the measurement of spa water pH from 7.0 to 8.0 with at least five increments in that range.

(3) A controller readout used in lieu of manual disinfectant residual testing shall be a numerical analog or digital display with an ORP scale with a range of at least 600 to 900 mV with increments of 20 mV or less.

(4) A controller readout used in lieu of manual pH testing shall be a numerical analog or digital display with a range at least as required in 15.51(2) "f"(2) with increments of 0.2 or less over the full range.

*g. Operator availability.* A person knowledgeable in testing water and in operating the water treatment equipment shall be available whenever a spa is open for use.

**15.51(3) Disinfection systems and cleaning.**

*a. Disinfectant system.*

(1) Equipment for continuous feed of a chlorine or bromine compound to the spa water shall be provided and be operational. The equipment shall be adjustable in at least five increments over its feed capacity. Where applicable, the chemical feeder shall be listed by NSF or another listing agency for compliance with Standard 50.

(2) The disinfectant equipment shall be capable of providing at least 10 ppm of chlorine or bromine to the spa water based on the recirculation flow rate.

(3) Equipment and piping used to apply any chemicals to the water shall be of such size, design, and material that they may be cleaned. All material used for such equipment and piping shall be resistant to the action of chemicals to be used.

(4) The use of chlorine gas is prohibited.

*b. Cleaning and superchlorination.*

(1) A spa shall be clean.

(2) A spa containing 500 gal of water or less shall be drained, cleaned and refilled a minimum of once a week. A spa containing over 500 gal to 2,000 gal of water shall be drained, cleaned and refilled a minimum of one time every two weeks. A spa with a water volume greater than 2,000 gal shall be drained, cleaned and refilled a minimum of one time every three weeks.

(3) The inspection agency may require that a spa be drained, cleaned, and superchlorinated prior to further usage.

**15.51(4) Safety.**

*a. Chemical safety.* Spa chemical safety shall meet the following criteria:

(1) If chemicals are added to the spa over the top, the spa is not occupied for a period of at least 30 minutes. The operator tests the spa water as appropriate before allowing use of the spa. The chemical addition and the test results are recorded in the spa records.

(2) Spa chemicals are stored and handled in accordance with the manufacturer's recommendations.

(3) SDS for the chemicals used in the spa are at the facility in a location known and readily accessible to the facility staff.

(4) Chemical containers are clearly labeled.

(5) A chemical hazard warning sign is placed at the entrance of a room where chemicals are used or stored or where bulk containers are located.

*b. Stairs, ladders, recessed steps, and ramps.* Spa stairs, ladders, recessed steps, and ramps shall meet the following criteria:

(1) When the top rim of a spa is more than 24 inches above the surrounding floor area, stairs or a ramp are provided to the top of the spa.

(2) Stairs, ladders, ladder rungs, and ramps are slip-resistant.

(3) Where stairs and ramps are provided, they are equipped with a handrail.

(4) Ladders and handrails are constructed of corrosion-resistant materials or provided with corrosion-resistant coatings. They have no exposed sharp edges.

(5) Ladders, handrails and grabrails are securely anchored.

c. *Water temperature.* The spa shall be closed if the water temperature exceeds 104°F.

(1) A thermometer shall be available to measure temperatures in the range of 80° to 120°F.

(2) Water temperature controls shall be accessible only to the spa operator.

d. *Emergency telephone.* Each facility where lifeguards are not provided shall have a designated emergency telephone or equivalent communication system that can be operated without coins. The communication system shall be available to users of the spa whenever the spa is open. If the emergency communication system is not located within the spa enclosure, management shall post a sign(s) indicating the location of the emergency telephone. Instructions for emergency use of the telephone shall be posted near the telephone.

e. *Water level.* Water level shall be maintained at the skimming level.

f. *Fully submerged outlets.* Spas and fully submerged outlets shall meet the following criteria:

(1) Each fully submerged outlet is designed to prevent user entrapment. A spa is closed if the cover/grate of a fully submerged outlet is missing or broken.

(2) For a spa constructed prior to May 13, 1998, each pump that draws water directly from a fully submerged outlet is connected to two or more outlets or a single outlet with an area of at least 144 in<sup>2</sup>.

(3) Each fully submerged outlet has a cover/grate that has been tested for compliance with the requirements of the ASME/ANSI standard by a testing agency or that is certified for compliance by an engineer licensed in Iowa.

1. The cover/grate for an outlet system with a single fully submerged outlet has a flow rating of at least 100 percent of the maximum system flow rate. The combined flow rating for the cover/grates for an outlet system with more than one fully submerged outlet is at least 200 percent of the maximum system flow rate.

The maximum system flow rate is the design flow rate for the pump(s) directly connected to the outlet(s) in an outlet system. In the absence of better information, the maximum system flow rate is the capacity of the pump(s) at 50 feet TDH, based on the manufacturer's published pump curves.

2. Fully submerged outlet cover/grates are not removable without the use of tools.

3. Purchase records and product information that demonstrate compliance are maintained by the facility for the life of the cover/grate. If a field fabricated cover/grate is certified for compliance to the ASME/ANSI standard by an engineer licensed in Iowa, a copy of the certification letter is kept at the facility for the life of the cover/grate.

(4) A spa with a single fully submerged outlet that is not unblockable and that is directly connected to a pump is closed if the outlet does not have a cover/grate that complies with the ASME/ANSI standard.

If a spa has two or more fully submerged outlets on a single surface that are all less than 3 ft apart on center, are not unblockable, and are directly connected to a pump, the spa is considered to have a single fully submerged outlet.

(5) A spa with a single fully submerged outlet that is not unblockable and that is directly connected to a pump is closed if the outlet system is not equipped with a safety vacuum release system that is listed for compliance with ASME/ANSI A112.19.17-2002 or ASTM F2387-04 (2012) by a listing agency.

1. Purchase records and product information that demonstrate compliance are maintained by the facility for at least five years from the time the SVRS is purchased or another approved system is installed.

2. An SVRS is installed in accordance with the manufacturer's instructions.

3. An SVRS is tested for proper function at the frequency recommended by the manufacturer, but at least once in each month the spa is operated. The date and result of each test are recorded.

(6) In lieu of compliance with 15.51(4) "f"(3), (4) and (5) above, a fully submerged outlet in a spa may be disabled with the approval of the department, except that an equalizer in a skimmer may be plugged without department approval if the management of the spa submits to the department information including but not necessarily limited to:

1. The area and volume of the spa;

2. Detailed information about the inlet system, including the location of the inlets and the type of inlet fitting;

3. The number of skimmers and pipe sizes;

4. Pump information and flow rates for the outlet system; and

5. Filter type, number of filters, the size of the filter(s), and whether multiple filters are backwashed together or separately.

If the department approves the application to disable the outlet, the outlet valve is closed and the valve secured by removing the handle, by locking the handle closed, or by another method approved by the department. The outlet may be physically disconnected from the pump system.

*g. Spa walls and floor.* Spa walls and floor shall be smooth and easily cleanable.

*h. Decks.* Spa decks shall meet the following criteria:

- (1) The deck has a slip-resistant surface.
- (2) The deck is clean and free of debris.
- (3) A hose bib is provided for flushing or cleaning of the deck.
- (4) Glass objects, other than eyeglasses and safety glass doors and partitions, are not permitted on the deck.

*i. Projections or obstructions.* There shall be no underwater or overhead projections or obstructions that would endanger user safety or interfere with proper spa operation.

*j. Electrical.* Spa electrical systems and components shall meet the following criteria:

(1) Each electrical outlet in the deck, shower room, and pool water treatment equipment areas is equipped with a properly installed GFCI at the outlet or at the breaker serving the outlet. Electrical outlets energized through an ORP/pH controller are not required to have a separate GFCI if the controller is equipped with a GFCI or is energized through a GFCI breaker. Ground fault circuit interrupter receptacles and breakers are tested at least once in each month the spa is operating. Test dates and results are recorded in the spa records.

(2) There are no outlets located on, or within 5 ft of, the inside wall of a spa.

(3) An air switch within reach of persons in the spa and its connecting tube are constructed of materials that do not conduct electricity.

(4) Lighting.

1. Artificial lighting is provided at all spas that are to be used at night or that do not have adequate natural lighting so all portions of the spa, including the bottom and main drain, may be readily seen.

2. Underwater lights and fixtures are designed for their intended use. When the underwater lights operate at more than 15 volts, the underwater light circuit is equipped with a GFCI. When underwater lights need to be repaired, the electricity is shut off until repairs are completed.

3. No electrical wiring extends over an outdoor spa.

*k. Enclosure.* Spa enclosure shall meet the following criteria:

(1) A spa is enclosed by a fence, wall, building, or combination thereof not less than 4 ft high. The spa enclosure is constructed of durable materials. A spa may be in the same room or enclosure as another spa or a swimming pool.

(2) A fence, wall, or other means of enclosure has no openings that would allow the passage of a 4-inch sphere and is not easily climbable by toddlers. The distance between the ground and the top of the lowest horizontal support accessible from outside the facility, or between the two lowest horizontal supports accessible from outside the facility, is at least 45 inches. A horizontal support is considered accessible if it is on the exterior of the fence relative to the spa or if the gap between the vertical members of the fence is greater than 1¾ inches.

(3) At least one gate or door with an opening of at least 36 inches in width is provided for emergency purposes. When closed, gates and doors comply with the requirements of 15.51(4) "k"(2) above. Gates and doors are lockable. Except where lifeguard supervision is provided whenever the spa is open, gates and doors are self-closing and self-latching.

(4) If there are sleeping rooms, apartments, condominiums, or permanent recreation areas that are used by children and that open directly into the spa area, the spa is enclosed by a barrier at least 3 ft high. No opening in the barrier permits the passage of a 4-inch sphere. The barrier is not easily climbable by toddlers. There is at least one 36-inch-wide gate or door through the barrier. Gates and doors are lockable. Except where lifeguard supervision is provided whenever the spa is open, gates and doors provided are self-closing and self-latching.

*l. Agitation system control.* The agitation system control shall be installed out of the reach of persons in the spa. The “on” cycle for the agitation system shall be no more than ten minutes.

**15.51(5) Management, notification, and records.**

*a. Certified operator required.* Each spa facility shall employ a certified operator. One certified operator may be responsible for a maximum of three facilities.

*b. Spa rules sign.* A “Spa Rules” sign shall be posted near the spa. The sign shall include the following stipulations:

(1) Persons with a medical condition, including pregnancy, should not use the spa without first consulting with a physician.

(2) Anyone having a contagious disease shall not use the spa.

(3) Persons shall not use the spa immediately following exercise or while under the influence of alcohol, narcotics, or other drugs.

(4) Persons shall not use the spa alone or without supervision.

(5) Children shall be accompanied by an adult.

(6) Persons shall not use the spa longer than ten minutes.

(7) No one shall dive or jump into the spa.

(8) The maximum patron load of the spa. (The maximum patron load of a spa is one individual per 2 lineal ft of inner edge of seat or bench.)

*c. Spa depth.* The maximum depth of a spa shall be posted at a conspicuous location near the spa in numerals or letters at least 3 inches high.

*d. Glass prohibited.* Glass objects other than eyeglasses, safety glass doors, and partitions shall not be permitted in a spa enclosure.

*e. Operational records.* The operator of a spa shall have the spa operational records for the previous 12 months at the facility and shall make these records available when requested by a swimming pool/spa inspector. These records shall contain a day-by-day account of spa operation, including:

(1) ORP and pH readings; results of pH, free chlorine or total bromine residual, cyanuric acid (if used), combined chlorine, total alkalinity, and calcium hardness tests; and any other chemical test results.

(2) Results of microbiological analyses.

(3) Water temperature measurements.

(4) Reports of complaints, accidents, injuries, or illnesses.

(5) Dates and quantities of chemical additions, including resupply of chemical feed systems.

(6) Dates when filters were backwashed or cleaned or a filter cartridge(s) was changed.

(7) Draining and cleaning of spa.

(8) Dates when ground fault circuit interrupter receptacles or circuit breakers were tested.

(9) Dates of review of material safety data sheets.

(10) If applicable, dates and results of tests of each SVRS installed at a facility.

*f. Submission of records.* An inspection agency may require facility management to submit copies of readings of ORP and pH, chemical test results and microbiological analyses to the inspection agency on a monthly basis. The inspection agency shall notify the facility management of this requirement in writing at least 15 days before the reports are to be submitted for the first time. The facility management shall submit the required reports to the inspection agency within ten days after the end of each month of operation.

*g. Operations manual.* A permanent manual for operation of a spa shall be at the facility and include instructions for routine operations at the spa, including but not necessarily limited to:

(1) Maintaining the chemical supply for the chemical feed systems.

(2) Filter backwash or cleaning.

(3) Water testing procedures, including the required frequency of testing.

(4) Procedures for draining, cleaning and refilling the spa, including chemical adjustments and controller adjustments.

(5) Controller sensor maintenance, where applicable.

(6) Superchlorination.

*h. Schematic drawing.* A schematic drawing of the spa recirculation system shall be posted in the swimming pool filter room or in the operations manual. Clear labeling of the spa piping with flow direction and water status (unfiltered, treated, backwash) may be substituted for the schematic drawing.

*i. Safety data sheets.* Copies of material SDS for the chemicals used at the spa shall be kept at the facility in a location known and readily accessible to facility staff with chemical-handling responsibilities. Each member of the facility staff with chemical-handling responsibilities shall review the SDS at least annually. The facility management shall retain records of the SDS reviews at the facility and shall make the records available upon request by a swimming pool inspector.

*j. Emergency plans.* A written emergency plan shall be provided. The plan shall include but not be limited to actions to be taken in cases of drowning, hyperthermia, serious illness or injury, chemical-handling accidents, weather emergencies, and other serious incidents. The emergency plan shall be reviewed with the facility staff at least once a year, and the dates of review or training shall be recorded. The written emergency plan shall be kept at the facility and shall be available to a swimming pool inspector upon request.

**15.51(6) Reports.** Spa operators shall report to the local inspection agency, within one working day of occurrence, all deaths; near drowning incidents; head, neck, and spinal cord injuries; and any injury that renders a person unconscious or requires immediate medical attention.

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