

VERMONT HEALTH REGULATIONS, CHAPTER 5  
Subchapter 17

5-1570 Public Spas and Hot Tubs

Pursuant to Title 18, V.S.A., Chapter 3, Section 102, the following regulations governing public spas and hot tubs are hereby established as the minimum requirements by the Agency of Human Services.

SECTION 1.0 DEFINITIONS

**AIR INDUCTION SYSTEM** - A system whereby air is induced into fixed ducting. The Air Induction System is activated by a separate air power unit.

**ALKALINITY** - The amount of bicarbonate, carbonate, or hydroxide compound present in water solution, expressed as  $\text{CaCO}_3$ .

**ANTIVORTEX DRAIN** - A drain with a raised cover designed to prevent the vacuuming effect on a body which may come in contact with the drain.

**BACKWASH** - The process of cleansing the filter media and/or elements by reverse flow.

**BACKWASH CYCLE** - The time required to thoroughly backwash the filter media and/or elements.

**BACKWASH RATE** - The rate of application of water through a filter during the cleaning cycle. It is normally expressed in U.S. gallons per minute per square foot of effective filter area.

**BAND** - See Hoop.

**BREAKPOINT CHLORINATION** - When chlorine is added to water containing ammonia it reacts with the ammonia to form chloramines. If more chlorine is added to the water, the total residual chlorine continues to rise until the concentration reaches a point that forces the reaction with ammonia to go rapidly to completion. Compounds of nitrogen and chlorine are released from the water, and the apparent residual chlorine decreases. The point at which the residual suddenly drops is called the breakpoint. When enough chlorine is added to pass the breakpoint, all combined chlorine compounds disappear, eye irritation potential and "chlorine odors" disappear, and the chlorine that remains in the water is all in the free state. The breakpoint occurs at different concentrations in different waters. Superchlorination usually results in exceeding the breakpoint.

**DECK, ABOVE-GROUND** - Any structure that is on top of or adjacent to the outer edges of the spa/hot tub/pool that can support person(s).

13140027

001

DECKS - Those areas surrounding a spa or hot tub which are specifically constructed or installed for use by bathers.

EFFECTIVE FILTER AREA -

PERMANENT MEDIA TYPE: The effective filter area is the cross section area of the filter surface that is perpendicular to the flow direction.

CARTRIDGE FILTER: The total effective filter area is that cartridge area which is exposed to the direct flow of water. This excludes cartridge ends, seals, supports and other areas where flow is impaired.

FACE PIPING - The piping, with all valves and fittings, which is used to connect the filter system together as a unit.

FACTOR OF SAFETY - The ultimate load divided by the safe load or the ultimate strength divided by the allowable stress.

FILTER - A device that separates solid particles from water by recirculating it through a porous substance (a filter media or element).

PERMANENT MEDIA FILTER: A filter that utilizes a media that can be regenerated and will not have to be replaced.

DIATOMACEOUS EARTH FILTER: A filter that utilizes a thin layer of filter aid as its filter media. The aid must be replaced periodically.

CARTRIDGE FILTER: A filter that utilizes a porous cartridge as its filter media.

FILTER AGITATION - The mechanical or manual movement to dislodge the filter air and dirt from the filter element.

FILTER CYCLE - The operating time a filter is in use and not in cleaning and/or backwash cycles.

FILTER ELEMENT - A device within a filter tank designed to entrap solids and conduct water to a manifold collection header, pipe or similar conduit. Filter elements usually consist of a septum and septum support.

PERMANENT FILTER MEDIA: A finely graded material (such as sand, anthracite, etc.) which removes filterable particles from the water.

FILTER AID: A type of finely divided medium used to coat a septum type filter, usually diatomaceous earth, processed perlite or similar material.

FILTRATION FLOW - The rate of flow, in volume per time (GPM, GPH), through the filter system installed per manufacturer's instructions with new clean media.

FILTRATION RATE - The rate of filtration of water through a filter during the filter cycle expressed in U.S. gallons per minute per square foot of effective filter area.

HEAD - A basic measurement of pressure or resistance in a hydraulic system which is equivalent to the height of the column of water which would cause the same resistance. The total head is the sum of all the resistance in an operating system (energy per unit weight of flowing fluid).

HOOP - A circumferential constraint that prohibits the reaction to the pressure tending to separate the staves in hot tubs.

HYDROJET - A fitting which blends air and water creating a high velocity, turbulent stream of air-enriched water.

LINER - That membrane that acts as a container for the water.

EXPANDABLE LINER: A liner that is constructed of a material that has the capability of stretching into a depth or shape other than the original construction dimensions.

HOPPER LINER: The liner that is used to obtain greater depth by geometrical pattern construction of the liner bottom to fit a predetermined size or shape.

MULTIPOINT VALVE - A separate switching valve with a separate position for each of the various filter operations. This valve combines in one unit the functions of several direct-flow valves.

NEPHELOMETRIC TURBIDITY UNITS (NTU's) - A measure of water clarity.

OVERFLOW SYSTEM - A system which collects overflowing water, including perimeter type overflows, surface skimmers, surface water collection systems or weirs of various design.

PINCHING HAZARD - Any configuration of components that would pinch or entrap the fingers or toes of a child or adult.

POOLS -

ABOVE-GROUND SPA/HOT TUB: A pool of any shape that is deeper than 24" (61 cm) or holds more than 2,500 gallons of water or has a water surface area in excess of 150 square feet. The above-ground pool is located entirely above-ground (i.e., with no excavated portions) and has a constant depth.

IN-GROUND SPA/HOT TUB: Any spa/hot tub/pool whose sides reside partially or fully below the natural ground level.

13140027

003

NON-PERMANENTLY INSTALLED SPA/HOT TUB: Any pool that is so constructed that it may be readily disassembled for storage and reassembled to its original integrity.

ON-GROUND SPA/HOT TUB: Any pool whose sides rest fully above the surrounding earth and which has a deep area below ground level.

PERMANENTLY INSTALLED SPA/HOT TUB: One that is constructed in the ground, or in a building, in such manner that the pool cannot be readily disassembled for storage.

PUBLIC SPAS AND HOT TUBS - Artificial structures containing water and designed to direct water or air enriched water under pressure onto a person's body for recreational and therapeutic purposes. Public spas and hot tubs may include hydrojet circulation, hot water, cold water mineral baths, air induction bubbles, or some combination thereof and are not drained, cleaned or refilled for each user. Public spas and hot tubs include units operated by an owner, lessee, operator, licensee, or concessionaire, regardless of whether a fee is charged for use. Public spas and hot tubs may be individual units or may be integrated into a larger swimming pool or bathing pool. Spas and hot tubs are differentiated by the following definitions.

SPAS - Units of irregular or geometric shell design usually formed of plastic, concrete, metals or other materials. Industry terminology for a spa includes, but is not limited to, the terms "therapeutic pool," "hydrotherapy pool", "whirlpool," "hot spa" and "hot tub."

HOT TUBS - Units constructed of wood with sides and bottoms formed separately, and the whole shaped to join together by pressure from the surrounding hoops, bands or rods.

RECESSED STEPS - A riser/tread or series of risers/treads extending down from the deck with the bottom riser/tread terminating at the spa/hot tub tub/pool wall, thus creating a "stairwell."

RECESSED TREADS - A series of vertically spaced cavities in the spa/hot tub/pool wall creating tread areas for stepholes.

REMOVABLE - Capable of being taken away from the main unit with the use of only simple tools, such as a screwdriver, pliers or wrench.

ROD - See Hoop.

SEPTUM - That part of the filter element consisting of cloth, wire screen or other porous material on which the filter medium or aid is deposited.

SPA OR HOT TUB ESTABLISHMENT - A public facility whose primary business is the rental of time in public hot tubs or spas within the confines of the space owned, leased or rented by the business ownership.

13140027

004

SPRAY RINSE, MECHANICAL - A spray system which directs a stream of water against the filter surface, causing the filter aid and accumulated dirt to dislodge into the empty tank.

SHOCK TREATMENT - This refers to raising the residual disinfectant level to 10 ppm or more for several hours.

TAMPERPROOF - A condition in which tools are required to alter or remove portions of the equipment.

TREAD CONTACT SURFACE - Foot contact surfaces of ladder, step, stair or ramp.

TURNOVER - The period of time (usually in hours) required to circulate a volume of water equal to the pool capacity. The TURNOVER RATE is the number of times a quantity of water equal to the pool capacity passes through the filters in a stated time (usually in turnovers per day).

WATER LINE - The water line shall be defined in one of the following ways:

- a. Skimmer System - The water line is the midpoint of the operating range of the skimmers.
- b. Overflow System - The water line is the height of the overflow rim.

#### SECTION 2.0 APPLICABILITY

All requirements of this subchapter shall apply to all public spas and hot tubs constructed after April 9, 1988. Any modification of a public spa or hot tub which occurs after April 9, 1988, shall conform with the design and construction requirements of this subchapter (Section 3). The Vermont Department of Health may waive construction requirements if the facility being modified or expanded cannot meet the applicable requirements due to the structure of the existing building in which the facilities are located, and the proposed waiver will not create a public health risk. All public spas and hot tubs shall comply with all water supply, waste water disposal, operational, maintenance and monitoring requirements of the subchapter (Sections 4 through 8) as of April 9, 1988.

#### SECTION 3.0 DESIGN AND CONSTRUCTION CRITERIA

The design and construction of public spas and hot tubs shall conform to Section 2.0, 3.3, 3.4 and 3.5, Suggested Health and Safety Guidelines for Public Spas and Hot Tubs, Centers for Disease Control, Center for Environmental Health, Atlanta, Georgia 30333, revised January 1985.

For further information regarding other State Agencies' requirements regarding electrical standards, sanitary facilities and ventilation, contact the Vermont Department of Health.

13140027

005

#### SECTION 4.0 WATER SUPPLY

The water supply serving a public spa or hot tub shall meet the water quality requirements of the Vermont Department of Health Public Water System Regulations. The water supply shall produce enough water to meet the requirements for refilling, backwashing, and cleaning.

#### SECTION 5.0 WASTE WATER DISPOSAL

SECTION 5.1 Overflow water shall be discharged to a waste system or returned to an approved filter system. Where perimeter overflow water discharges into a sewer, an air gap of at least two times the discharge diameter shall be provided and located above possible flood or waste-water back-up level.

SECTION 5.2 Backwash water shall be discharged into a sanitary sewer through an approved air gap or to a properly operating, approved sub-surface disposal system.

#### SECTION 6.0 OPERATIONAL PROCEDURES

##### SECTION 6.1 Operating Instructions

A detailed written manual for all phases of operation and normal maintenance of each component of the system shall be available at each facility. The guide shall be kept in a secure area and made available to each employee. This guide shall include as a minimum the following information:

- a. Customer safety rules which shall be posted at the entrance to the public spa or hot tub and which may also be made available to users in pamphlet form.
- b. Required training or certification levels of operator employees.
- c. The number and type of operating personnel.
- d. Specific work statements for each employee.
- e. Spa or hot tub operation, maintenance and cleanup procedures.
- f. Proper water maintenance procedures.
- g. Chlorinator cylinder change procedure (if applicable).
- h. Pump operating instructions.
- i. Backwash procedure.
- j. Operating instructions for vacuum filters (if applicable).

13140027

006

- k. Water test instruction - frequency of testing, method of test, test kit to be used, and interpretation of results.
- l. Filter check procedure.
- m. Recordkeeping for health department (operation report form).
- n. First-aid report forms.
- o. Emergency phone numbers.

#### SECTION 6.2. Operating Personnel

Personnel responsible for public spa and hot tub operation shall be qualified in the operation of equipment, the procedure for performing the necessary water quality tests and safety checks, and the appropriate emergency procedures. During an inspection by Health Department staff, the responsible personnel may be asked to demonstrate their ability to operate equipment and check water quality.

#### SECTION 6.3 Signs

A caution sign shall be mounted adjacent to the entrance to the public spa or hot tub. It shall contain at least the following warnings:

##### CAUTION

- Pregnant women; elderly persons; and persons suffering from heart disease, diabetes, or high or low blood pressure should not enter the spa/hot tub without prior medical consultation and permission from their doctor.
- Do not use the spa/hot tub while under the influence of alcohol, tranquilizers, or other drugs that cause drowsiness or that raise or lower blood pressure.
- Do not use at water temperatures greater than 104°F.
- Do not use alone.
- Unsupervised use by children is prohibited.
- Enter and exit slowly.
- Observe reasonable time limits (that is, 10-15 minutes), then leave the water and cool down before returning for another brief stay.
- Long exposure may result in nausea, dizziness or fainting.

- Keep all breakable objects out of the area.

A sign shall be posted in the immediate vicinity of the public spa or hot tub stating the location of the nearest telephone and indicating that emergency telephone numbers are posted at that location. Those emergency telephone numbers should include the name and phone number of the nearest available police, fire and/or rescue unit, physician, ambulance service and hospital. Operators of public spas and hot tubs are also encouraged to provide the above information to their customers in pamphlet form.

#### SECTION 6.4 Oils, Body Lotions, and Minerals

The use of oils, body lotions and minerals shall be prohibited.

#### SECTION 6.5 Personal Hygiene

Persons shall be required to shower before entering the spa or hot tub. A sign shall also be posted requiring a shower for each user prior to entering the spa or hot tub and prohibiting oils, body lotion, and minerals in the water.

#### SECTION 6.6 Bather Load

1. The bather load of a spa shall not exceed the number which allows 7 square feet of water surface area for each person using the spa.

2. Groups of persons greater than the capacity of a spa may be allowed in the spa area, however, a sign must be posted within the spa area which states the maximum number of people allowed in the spa at one time.

#### SECTION 7.0 MAINTENANCE OF PUBLIC SPA AND HOT TUB WATER

##### SECTION 7.1 Physical Operation

Public spa and hot tub systems shall be operated to provide a minimum turnover rate of 30 minutes or less and filter cleanings as necessary to maintain the required turbidity and flow through readings.

##### SECTION 7.2 Chemical Balance

The values for chemical parameters shall conform with the following:

	Minimum	Ideal	Maximum
pH	7.2	7.4 - 7.6	7.8



Total Alkalinity (buffering), ppm as CaCO <sub>3</sub>	60	80 - 100 For calcium hypochlorite, lithium hypo- chlorite, and sodium dichlor	180
		100 - 120 For sodium hypochlorite, trichlor, chlorine gas, and bromine	
Calcium Hardness (ppm)	150	200-400	500

SECTION 7.3 Biological Control

1. Newly installed public spas and hot tubs shall be soaked for a period of twenty-four hours with water containing 100 ppm of chlorine prior to use.
2. At least once a month, public spas and hot tubs shall be drained and scrubbed with a chlorine compound.
3. At least once a week, the internal portion of the spa or hot tub shall be thoroughly brushed with a stiff-bristled brush.
4. At least once every 24 hours, the spa or tub water shall be shock-treated with 10 ppm of chlorine or bromine for a minimum of four hours.
5. Disinfectant levels of water during periods of use shall conform with the following.

	Minimum	Ideal	Maximum
Free Chlorine (ppm)	2	3 - 5	5
Bromine (ppm)	2	3 - 5	5

6. Alternative methods of disinfection - other than Bromine or Chlorine- must receive written approval from the Vermont Department of Health before being used in a public spa or hot tub.

SECTION 8.0 MONITORING REQUIREMENTS FOR PUBLIC SPA AND HOT TUBS

SECTION 8.1 Each facility shall have accurate testing equipment to measure the parameters required by this section.

1. The following shall be measured in each spa or tub at least hourly during the hours of operation:

Disinfectant levels  
pH  
Temperature

2. These values shall be accurately recorded on operation report forms in a daily log. At a spa or hot tub establishment, in lieu of hourly recording of these values - the responsible person at the end of each shift shall sign the log sheet certifying that these values were measured hourly and fell within the designated range or adjusted accordingly.

3. At least once a week the following shall be measured in each spa or tub and recorded in the log:

Total Alkalinity  
Calcium Hardness

SECTION 8.2 At least twice during the hours of operation, all filters and circulation equipment shall be checked for proper operation as required by this subchapter.

SECTION 8.3 BIOLOGICAL MONITORING. Samples for bacteriological analysis may be taken during an inspection or at any other time by Health Department personnel.

If a test result shows unacceptable levels of bacteria, the Health Department may require that the spa or hot tub not be used until corrective measures are completed.

88-17

Effective: 4/9/88

13140027

010