Chapter 320

PUBLIC BATHING PLACE OPERATIONAL REGULATIONS

This Reprint Courtesy of

Consumer Protection Services
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SUBCHAPTER 1. GENERAL PROVISIONS

310:320-1-1. PURPOSE

The Public Bathing Place Operational Regulations are minimum design criteria and will be used as such by the State Department of Health. Nothing in these operational regulations should be construed as preventing the consulting engineer from recommending, or the reviewing authority from approving, more effective treatment where local conditions dictate such action.

310:320-1-2. DEFINITIONS

"**Abrasion hazard**" — means a sharp or rough surface that would scrape the skin upon chance or by normal use modes.

"**Adjustable inlet**" — means a fitting mounted in the pool wall and connected to the return piping from the recirculation system that is directionally adjustable or a fitting mounted in the pool floor and connected to the return piping from the recirculation system that has a means of flow adjustment.

"**Air pump assist backwash**" — means the compressing of a volume of air in the filter effluent chamber (by means of an air compressor or by the water pressure from the recirculating pump) which, when released, rapidly decompresses and forces water in the filter chamber through the elements in reverse, dislodging the filter aid and accumulated dirt, carrying it to waste.

"**Air induction system**" — means a system whereby a volume of air (only) is induced into hollow ducting built into a spa floor, bench, or other location. The air induction system is activated by a separate air power unit (blower).

"**Attendant**" — means any person capable of providing rescue who is responsible to the management.

"**Backwash**" — means the process of thoroughly cleansing the filter media and/or elements by reverse flow.

"**Backwash cycle**" — means the time required to thoroughly backwash the filter media and/or elements and the contents of the filter vessel.

"**Backwash rate**" — means the rate of application of water through a filter during the cleaning cycle normally expressed in U.S. gallons per minute per square foot of effective filter area.

"**Bathing load**" — means the maximum number of persons allowed in the pool enclosure at one time.

"**Booster pump system**" — means a system whereby one or more hydrojets are activated by the use of a pump which is completely independent of the filtration and heating system of a spa.

"**Cartridge filter**" — means a filter that utilizes a porous cartridge as its filter medium.

"**Collector tank**" — means a tank receiving the gravity flow from the perimeter overflow gutter and main drain(s) from which the recirculation pump takes suction. It may be referred to as a balance tank.

"**Department**" — means the Oklahoma State Department of Health and authorized representatives.

"**Diatomaceous earth filter**" — means a filter that utilizes a thin layer of filter aid as its filter medium that periodically must be replaced.

"**Engineering nomenclature**" — means the technical terms used through these standards are understood to represent the currently accepted professional engineering definitions.

"**Filter**" — means a device that separates solid particles from water by recirculating it through a porous substance (a filter medium or element).

"**Filter agitation**" — means the mechanical or manual movement to dislodge the filter aid and dirt from the filter element.

"**Filter aid**" — means a type of finely divided medium used to coat a septum type filter, usually diatomaceous earth, processed perlite, or similar material.

"**Filter cycle**" — means the operating time between cleaning and/or backwash cycles.

"**Filter element**" — means 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.

"**Filter freeboard**" — means the clear vertical distance between the top of the filter medium and the lowest outlet of the upper distribution system in a permanent media filter.

"**Filter media, permanent**" — means a finely graded material (such as sand, anthracite, etc.) which removes filterable particles from the water.

"**Filter septum**" — means that part of the filter element consisting of cloth, wire screen, or other porous material on which the filter medium or aid is deposited.

"**Filtration flow**" — means 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**" — means 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.

"**Hydrojets**" — means a fitting which blends air and water creating a high velocity, turbulent stream of air enriched water.

"**Hydrotherapy, whirlpool, or spa pool**" — means a public pool used exclusively in conjunction with high velocity air and/or high velocity water recirculation systems, utilizing hot, cold, or ambient temperature water. These pools will be referred to as spas.

"**Individual therapy units**" — means tanks which are designed for the therapeutic treatment of one individual at one time and are drained and cleaned after each individual use. Individual therapy units are not considered public bathing places.

"**Ladders**" — means a series of vertically separated treads or rungs either connected by vertical rail members or independently fastened to an adjacent vertical spa/pool wall.

"**Lower distribution system" (underdrain):** — means those devices used in the bottom of a permanent media filter to collect the water uniformly during the filtering and to distribute the backwash uniformly during the backwashing.

"**Open to the general public**" — means not restricted to tenants or guests.

"**Overflow system**" — means the term overflow system encompasses perimeter type overflows, surface skimmers, and surface water collection systems of various design and manufacture. The water line shall be established by the height of the overflow rim.

"**Perimeter overflow gutter**" — means a trough or gutter around the inside perimeter of the pool walls with the overflow lip effecting a skimming action to clean the pool water surface.

"**Permanent media filter**" — means a filter that utilizes a medium that can be regenerated and will not have to be replaced.

"**Plunge pool**" — means the receiving body of water located at the terminus of a recreation water slide.

"**Pool deck**" — means the unobstructed area around the outside of the pool curb, diving boards, diving towers, and/or pool slides.

"**Pool floor**" — means the interior bottom pool/spa surface and consists of that surface from a horizontal plan up to a maximum of a 45°F slope.

"**Pool turnover**" — means the circulation of a quantity of water equal to the pool volume through the filter and treatment facilities.

"**Portable pool**" — means a shallow pool, with depth not exceeding 4.5 feet, intended only for swimming instruction, which can be quickly erected, used for an instruction period then dismantled and moved to another location. Conditions governing authorization and operation are shown in the public Bathing Place Regulations and Public Bathing Place Facility Standards.

"**Precoat pot**" — A hopper with a valved connection to the suction side of the recirculation pump of pressure diatomaceous earth type filter systems that is used for coating the filter with filter medium prior to filtering water through the system.

"**Private pool**" — A pool maintained by an individual for the use of his family and friends, with no other formal admission requirement.

"**Public swimming pool or public pool**" — means a structure of concrete, masonry, or other approved materials, located wither indoors or outdoors, used for bathing or swimming, or for instructional purposes in swimming, diving, or other aquatic activities by humans, and filled with a filtered and disinfected water supply, together with buildings, appurtenances, and equipment used in connection therewith. A public swimming pool or public pool shall mean a conventional pool, spa type pool, wading pool, special purpose pool, or water recreation attraction to which admission may be gained with or without payment of a fee and includes but is not limited to pools operated by or serving camps, churches, cities, clubs, counties, health spas, institutions, parks, state agencies, schools, subdivisions, or other cooperative living type projects such as apartments, boarding houses, condominiums, hotels, mobile home parks, motels, recreational vehicle parks, and mobile home parks.

"**Recessed steps**" — means a riser/tread or series of riser/treads extending down from the deck with the bottom riser/tread terminating at the spa/pool wall, thus creating a "stairwell."

"**Recessed treads**" — means a series of vertically spaced cavities in the spa/pool wall creating tread areas for stepholes.

"**Recirculation system**" — means the system traversed by the recirculated water from the pool until it is returned to the pool (from the through collector tank, recirculation pump, filter, chemical treatment heater, if provided, and returned to the pool) .

"**Skimmer system**" — means the water line shall fall in the midpoint of the operating range of the skimmers.

"**Special purpose pool**" — means a public pool used exclusively for a particular purpose, including but not limited to springboard or platform diving

training, scuba diving instruction, and aquatic programs for handicapped individuals and kindergarten children.

"**Spray pool**" — means a recreative area intended for use by children, in which water is supplied by a system of sprays but is not allowed to accumulate.

"**Steps**" — means a riser/tread or series of riser/treads extending down from the deck into the spa/pool area.

"**Toxic**" — means the adverse physiological effect on man.

"**Tread contact surface**" — means the foot contact surfaces of ladder, step, stair, or ramp.

"**Turnover rate**" — means the period of time (usually in hours) required to circulate a volume of water equal to the pool capacity.

"**Upper distribution system**" — means those devices designed to distribute the water entering a permanent media filter in a manner such as to prevent movement or migration of the filter medium. This system shall also properly collect water during filter backwashing unless other means are provided.

"**Vacuum (or suction) filter**" — means a filter which operates under a reduced pressure from the suction of a pump.

"**Wading pool**" — means a pool intended for recreative use by children and having a maximum depth not exceeding 18 inches.

"**Water line**" — means the water line shall be defined in one of the following ways: (See Skimmer System and Overflow System).

"**Water recreation attraction**" — means a public bathing or swimming facility with design and operational features that provide patrons recreational activity which is different from that associated with a conventional swimming pool and purposefully involves total or partial immersion in the water. Water recreation attractions include but are not limited to water slides, water amusement lagoons, and wave pools.

SUBCHAPTER 3. OPERATIONAL PROVISIONS

310:320-3-1. Life saving equipment

(a) **Adequate life saving equipment**. Adequate life saving equipment shall be provided at all public bathing places where the water is sufficiently deep for swimming and diving, to minimize the danger of drowning and of injuries to bathers from falls or collisions.

(b) **Lifeguard chairs**. Each public bathing place open to the general public shall have at least one (1) elevated lifeguard chair. This shall be presumed to be adequate for two thousand (2,000) square feet of pool surface area with an additional lifeguard chair being provided for each additional area of two thousand (2,000) square feet or fraction thereof. Lifeguard chairs shall be located so that a lifeguard is not required to protect a segment in excess of one-hundred-eighty (180) degrees. Where a pool is provided with more than one (1) lifeguard chair and the pool width is forty (40) feet or more, chairs shall be located on each side of the pool. See Standards Section 310:315-7-3 and Regulations Section 310:320-3-2.

(c) **Small pools**. Every swimming pool having a horizontal dimension of thirty (30) feet or less or a surface area of sixteen hundred (1600) square feet or less shall provide:

(1) One (1) or more poles each at least sixteen (16) feet in length. These shall end in a shepherd's crook with an opening of at least eighteen (18) inches and shall be constructed of light sturdy material such as aluminum or bamboo.

(2) Two (2) or more ring-buoys fifteen (15) to eighteen (18) inches in diameter, constructed of light material, such as kapok, with at least one-quarter (1/4) inch rope attached to reach the length of the pool, not to exceed forty (40) feet.

(d) **Large pools.** For pools having a minimum horizontal dimension of more than thirty (30) feet or more than sixteen hundred (1600) square feet of surface area, the unit requirements listed under Standards Section 310:315-7-2 shall be doubled, and a backboard provided. The maximum length of pole required will be sixteen (16) feet. For large pools requiring more than two (2) lifeguard chairs, the requirements of Regulations Section 310:320-3-1 shall be provided for each chair.

(e) **Life line.** A life line shall be provided at or near the break in grade between the shallow and deep portions of a public bathing place, with its position marked with colored floats spread on five (5) foot centers. Life lines shall be three-quarters (3/4) of an inch minimum diameter.

Terminals shall be securely anchored to a receptacle of corrosion-resistant material and of a type which will be recessed in to the pool wall. See Standards Section 310:315-7-4.

(f) **Location of life saving equipment**. Life saving equipment shall be mounted in conspicuous places, distributed around the pool edge at lifeguard chairs, or elsewhere, ready of access, with its function plainly marked.

(g) **First aid kit.** A completely stocked first aid kit shall be conveniently available at each bathing place. Contents shall be suitable for the type facility as recommended by the American Red Cross.

(h) **Telephone.** A telephone to reach emergency assistance without the use of coinage shall be accessible to the pool during all hours of operation.

310:320-3-2. Personnel.

(a) **Transfer of ownership.** Each holder of a permit to construct a public bathing facility shall notify the Department in writing upon sale, lease, or other transfer of responsibility for the premises and shall supply the Department with the name and address of the new operator and/or owner.

(b) **Operation and management**. The bathing place shall be maintained under the supervision and direction of a properly trained operator who shall be responsible for promoting good sanitation and safety, the proper maintenance of the bathing place, and all physical and mechanical equipment and records. Proper training can generally be obtained through attendance at short courses for swimming pool operators sponsored by the state, county, and municipal health departments; state colleges and universities; and organizations such as the YMCA, YWCA, and Red Cross. It is recommended that pool operators attend these training courses.

(c) **Lifeguard.**

(1) One (1) or more lifeguards shall be on duty at the pool side of all bathing places open to the general public, and all pools with diving boards or platforms higher than one (1) meter at all times when the pool is open and in use. These individuals shall be in full charge and shall have authority to enforce all rules and regulations pertaining to sanitation and safety.

(2) Lifeguards of public bathing places in Oklahoma shall have satisfactorily completed an advanced course of instruction in life saving and water safety equivalent to that offered by the American

Red Cross or YMCA. Lifeguards shall be carefully selected and shall be not less than sixteen (16) years of age at the time they are employed as a lifeguard for duty at any public bathing place in Oklahoma. Lifeguards shall have a current life saving certificate, be capable swimmers, shall be competent in life saving methods, and be able to perform artificial respiration, shall be in good physical condition, and shall be able to command respect. At least one (1) person holding a current certificate in cardiopulmonary resuscitation (CPR) and trained in multi-media or equivalent first aid shall be on duty at all times the pool is in use. A current advanced life saving certificate for each lifeguard employed shall be prominently displayed or posted at the checking stand or other convenient point so as to be easily read by the patrons. The CPR certificate(s) shall be similarly posted. Bathing places open to the general public with water depths of four (4) feet or less may substitute persons passing an American Red Cross Basic Water Safety Course or its equivalent, rather than the Advanced Life Saving Course. It is recommended that, in addition, such persons also receive instruction in the shallow water "carries and assists" portion of the Red Cross Advanced Life Saving Course or its equivalent.

(3) Lifeguards assigned to the pool side shall not be subject to duties that would distract their attention from proper observation and supervision of persons in the pool area, or that would prevent immediate assistance for persons in distress in the water.

(4) The number of lifeguards on duty shall be such as to provide reasonable general supervision of the activities of all persons in the pool area, with detailed supervision and close observation of those persons in the pool water. The number shall also be sufficient to enable periodic relief or rest periods so that they will be alert while on duty. As a general approximation, it is recommended that the pool management provide at least one (1) lifeguard at the pool side for each seventy-five (75) persons in the swimming pool, with the determining factors being the type of pool, size of pool, ratio of surface area of deep water to the area of pool, temperature of the water, and quality of the water. Lifeguards shall wear distinguishing suits or emblems so that they may be easily identified by persons using the swimming facilities.

(5) In the case of pools not open to the general public, that limit the use of the pool to their tenants or guests, it is recommended that a lifeguard or attendant who is responsible to the pool management be in attendance when the bathing place is in use. No person shall

be employed for this duty who has a known communicable disease. Pools not open to the general public which do not have attendants present during all hours of operation must post a sign at the entrance to the pool area stating "NO LIFEGUARD OR ATTENDANT ON DUTY."

(d) **Duties and responsibilities of pool personnel.** The Oklahoma Public Bathing Place Act provides that all owners, managers, operators, and other attendants in charge of any public bathing place shall be responsible for the safety and sanitation of public bathing places. In addition to compliance with the other parts of these standards, the pool personnel must be responsible for the following:

(1) Duties and responsibilities pertaining to bathers and general pool operation.

(A) See that all rules and regulations affecting the users of the bathing place are properly enforced.

(B) Report all drownings and accidents requiring hospitalization immediately to the local health authorities by telephone and in writing within seven (7) days. If there is no local health department, contact Environmental Services at the State Health Department, Oklahoma City, Oklahoma.

(C) Report to the operator or management any condition of the bathing place or equipment which may be detrimental to its safe operation.

(D) See that showers are used and are operating properly.

(E) See that all persons known to be infected with a communicable disease are excluded from the pool.

(F) See that all persons who are under the influence of an intoxicating liquor or drugs are excluded from the shower rooms and the pool area.

(G) See that all doors and gates to the bathing place are locked when the bathing place is not in use or when the facility is closed for health or safety reasons. Signs stating "POOL CLOSED" shall be placed at all entrances to the pool when not open for use.

(H) Two (2) unannounced emergency drills each year are recommended, including at least one (1) with a water rescue, at all pools open to the general public.

(I) Submit required records of the pool operations to the county health department. In counties without a county health

department, mail the operation record to the State Health Department.

(J) See that animals are not allowed inside the pool enclosure.

(K) See that safety equipment is not tampered with or played with by bathers or used for anything other than its intended use.

(2) Duties and responsibilities pertaining to the bathhouse and appurte-nances.

(A) See that walk areas, overflow gutters, counters, lockers, equipment, furniture, interior partitions, and walls are in good repair and are clean. Where porous deck coverings are used, they shall be disinfected with a one hundred (100) ppm solution of chlorine at least once each day the facility is in use.

(B) See that floors of dressing rooms, shower stalls, and other interior rooms are scrubbed, using hot water with a suitable detergent, rinsed thoroughly, and disinfected daily. More frequent attention to floors is recommended during periods of heavy use. It is important that the floors be thoroughly clean prior to disinfection with chlorine compounds. The floors should be scrubbed with soap or a suitable detergent, using hot water, then disinfected with a 0.3 percent to 0.6 percent solution of available chlorine, or a suitable commercial cleaner and disinfecting agent may be used.

(C) See that toilet rooms and fixtures are kept clean, sanitary, and in good repair.

(D) See that liquid soap dispensers, paper towel dispensers, and toilet paper holders are kept adequately supplied.

(E) See that no food, drinks, debris, or foreign substances are thrown or carried into the pool. No glass containers of any type may be used in or near the pool. Beverages should be dispensed in paper cups to avoid the hazard of broken glass. Waste containers for disposal of used cups and food wrappers shall be located at convenient points within the walk areas.

(F) Exclude unauthorized persons from the bathing place area.

(G) Exclude spectators and non-bathers from the toilet rooms provided for the persons using public pool facilities.

(3) Duties and responsibilities pertaining to mechanical equipment.

(A) See that the pool is free from sediment and accumulations of lint and hair. See that the walls and bottom of the pool are free from dirt and discoloration and that the overflow gutters and skimmers are clean and flushing properly. See that the bottom and sides of the bathing place are brushed or suction cleaned as often as is necessary to keep the pool free of solids that may settle, algae, and slime.

(B) See that the level of the water is maintained at such a height as to ensure a constant slight overflow into the overflow gutter when no bathers are in the pool.

(C) Operate the pool equipment so as to maintain a clear and safe water and be responsible for maintaining the disinfection residuals and other chemical parameters as given under Regulations Sections 310:320-3-7 and 310:320-3-8.

(D) Keep on hand at all times at least a two (2) weeks supply of chemicals for disinfection and pH control of bathing water.

(E) Keep on hand diatomite filter aid sufficient for two (2) weeks operation for filtration with diatomite filters, including diatomite skimming filters.

(F) When adjusting flow from inlets, give consideration to the fact that children, who are more susceptible to infectious diseases than older persons, will be more or less restricted to the shallow sections; the greatest pool loads with subsequent contamination are likely to come in this section of the pool. Inlets should be adjusted to provide approximately ten (10) PSI pressure on the effluent gauge when the filter is clean. Approximately seventy (70) percent of the water should return to the pool through the inlets in shallow portion of the pool.

(G) Provide for filtration plant operation.

(i) All bathing place operators shall know how to properly operate the filtration system and its appurtenances. These include hair catchers, filters, pumps, chemicals, and vacuum cleaners.

(ii) Where surface skimmers are provided as a means of control of flotage, bathing place personnel shall regularly insure that the flow of makeup water is adequate to assure proper skimming operation. Baskets or screens provided to trap large solids shall be cleaned regularly.

(iii) An adequate supply of septa and diatomite filter aid shall be available at all times where skimmer filters are provided. When two (2) or more skimmer filters are in operation, they shall be inspected periodically to ensure balanced operation.

(iv) Pool volume and turnover rate shall be posted in the equipment area of all existing and all new pools.

(4) Duties and responsibilities pertaining to water chemistry.

(A) Be responsible for taking all tests as per Regulations Section 310:320-3-8.

(B) No pool shall be allowed to remain open for use if the free active chlorine, pH, or turbidity are not within the limits required by these regulations as per Regulations Section 310:320-3-7. It is the responsibility of the pool personnel to close the pool if any one (1) of these three (3) are not within the required parameter limits.

(C) Store all chemicals in a safe manner and in an area not accessible to unauthorized persons. No chemical shall be stored in a container that does not have a complete label on it for that product.

(D) See that the proper chemicals are on hand for the type disinfection feeder in use. Hand feeding of chlorine is permitted only for super-chlorination or cleaning the pool. Only chemicals recommended by the manufacturer of solution or flow-through feeders should be used.

(E) Chlorine and pH readings from an electrode type automatic controller may be substituted, with approval of the Department, for three (3) of the four (4) required daily readings in Regulations Section 310:320-3-8.

310:320-3-3. Rules and precautions for patrons

(a) **Rules for pools.** Rules governing the use of pools, spas, and other public bathing places shall be displayed on signs large enough for easy reading which are posted at the entrance to the pool, dressing rooms, or other appropriate places. Sign shall provide, in similar language, that:

(1) A cleansing shower bath, using warm water and soap, must be taken before entering the pool.

(2) Persons with open wounds, bandages, or any symptom of communicable disease shall be prevented from entering the pool.

(3) Swimming alone is prohibited.

(4) At pools which do not have attendants or lifeguards on duty, children under twelve (12) years of age must be accompanied by an adult responsible for that individual child at the pool side.

(5) Running and rough play are prohibited in and around the pool.

(6) "Cut-offs" should be hemmed.

(7) Excess body lotions should be removed prior to entering the water.

(8) Bathing load limits shall be posted and enforced. See Standards Section 310:315-7-3.

(9) "NO LIFEGUARD OR ATTENDANT ON DUTY" where appropriate. See Regulations Section 310:320-3-2.

(b) **Precautions for spas**. Precautions for spa patrons shall be posted on a sign which provides, in similar language, that "Persons who are pregnant, taking medication, or have any history of cardiovascular disease should consult a physician before entering hot water. Drugs and alcohol are prohibited."

310:320-3-4. Safety provisions

(a) **First aid kit.** A completely stocked first aid kit meeting the requirements of the American Red Cross shall be on hand at each bathing place.

(b) **Emergency telephone numbers.** Every bathing place shall provide, immediately adjacent to its telephone, a selected list of current telephone numbers for available doctors, ambulance services, hospitals, and police or fire department rescue squads.

(c) **Life saving equipment**. All public bathing places shall provide and maintain in good condition adequate life saving equipment. See Regulations Section 310:320-3-1 for required equipment.

(d) **Bathing load**. The bathing load must be observed and the limit enforced by the owner and management at all pools. Bathing load shall not exceed design standards as per Standards Section 310:315-7-3.

310:320-3-5. Swimming suits and towels furnished by management

(a) **Suits and towels.** All swimming suits and towels used by and maintained for public use shall be thoroughly washed and sterilized after each use.

(b) **Laundering of suits and towels.** Swimming suits furnished by the management of the bathing place must be washed with hot water and

soap or detergent, rinsed, and thoroughly dried and sterilized by heat each time they are used, or an equivalent approved process shall be used.

(c) **Clean suits and towels.** Clean swimming suits and towels shall not be permitted to come in contact with unwashed suits and towels or be stored on shelves or in baskets which have been used for storing dirty swimming suits and towels. The issuing of clean suits and towels at the same counters where dirty towels and suits are turned in shall be prevented.

310:315-3-6. Wading and spray pool operation

(a) **Operation.** All artificially constructed bathing places, including wading pools and spray pools using recirculation systems, shall be free of turbidity, algae, and slime or floating matter, and the water quality shall comply with the same standards as all other artificially constructed bathing places.

(b) **Supervision**. A supervisor shall be present at all times when a wading pool is in use. The supervisor's main duties consist of maintaining proper conduct and guarding against accidents. Children over twelve (12) years of age should be permitted to enter the enclosure but not the pool. Children with open sores or cuts, bruises, etc., or any contagious disease should not be admitted to the pool. The pool should be operated on definite hours on prescribed days to secure proper discipline and parents' cooperation. This supervisor replaces lifeguards and other safety requirements.

(c) **Drains.** Wading pool and spray pool drains shall have grates or covers complying with Standards Section 310:315-7-14. This stipulation shall apply to all existing wading pools and spray pools with recirculation systems, as well as those to be constructed.

310:320-3-7. Quality of bathing water

The pool water of all artificially constructed public bathing places shall undergo treatment necessary to comply with the following standards:

310:320-3-8		Minimum	Ideal	Maximum	Comments
A. Disinfectant Levels	Free chlorine, mg/1 (ppm)	1.0	1.0 - 1.5	5.0	NOTE: Chlorine should be maintained at this level continually. Super-chlorinate regularly. See pH below.
	Combined Chlorine, Mg/1 (ppm)	None	None	0.2	If combined chlorine* is TOO HIGH you may have: ◆ Sharp chlorinous odors ◆ Eye burn ◆ Bacteria growth *Combined chlorine is eliminated by super-chlorination
	Bromine, mg/1 (ppm)	2.0	3.0	4.0	NOTE: Health department officials should be consulted before use.
B. Chemical Values	PH	7.2	7.5	7.8	If pH is: TOO HIGH: ◆ Low chlorine eficiency ◆ Scale formation ◆ Cloudy water ◆ Increased scaling potention ◆ pH maintained too high TOO LOW: ◆ Rapid dissipation of chlorine ◆ Plaster/concrete etching ◆ Eye discomfort ◆ Corrosion of metals
	Total alkalinity as $CaC0_3$, mg/1 (ppm)	80	100	200	If total alkalinity is: TOO HIGH: ◆ Cloudy Water ◆ Increased scaling potential ◆ pH maintained too high TOO LOW: ◆ pH bounce ◆ Corrosion tendency
	Undissolved solids, mg/1 (ppm) (Turbidity	None	None	None	If undissolved solids are:
	Dissolved solids, mg/1 (ppm)	300	. . .	1500	If dissolved solids are: TOO HIGH: ◆ Chlorine may be less effective ◆ Scaling may occur ◆ Fresh water should be added to reduce solids ◆ Salty taste, and ◆ Dull water TOO LOW: ◆ Total alkalinity may be too low ◆ Aggressive water

310:320-3-8		Minimum	Ideal	Maximum	Comments
B. Chemical Values	Hardness, as $CaC0_3$, mg/1	50	125	500	If hardness is: TOO HIGH: ◆ Scaling may occur ◆ Water has bad "feel" ◆ Short filter tuns TOO LOW: ◆ Plaster or concrete etching may occur ◆ Corrosion
	Copper, mg/1 (ppm)	None	None	0.3	If copper content is TOO HIGH: ◆ Staining may occur, ◆ Chlorine dissipates rapidly, ◆ May indicate pH to low, corrosion, etc. ◆ Water may discolor, ◆ Filter may plug,
	Iron, mg/1 (ppm)	None	None	0.2 <u>0.3</u>	If iron content is TOO HIGH: ◆ Staining may occur, ◆ Chlorine dissipates rapidly, ◆ Water may discolor, ◆ Filter may plug
	Manganese, mg/1 (ppm)	None	None	0.05	If manganese content is TOO HIGH: ◆ Staning may occur
C. Biological Values	Algae	None	None	None	If algae are observed: ◆ Super-chlorine or shock treat pool ◆ Supplement with brushing and vacuuming ◆ Maintain adequate free chlorine residual ◆ Use approved algacide according to label direction
	Bacteria	None	None	None	If bacteria count exceeds health department requirements: ◆ Super-chlorinate pool & follow proper maintenance procedures ◆ Maintain proper free chlorine residual

310:320-3-8		Minimum	Ideal	Maximum	Comments
D. Stabilizer	Cyanuric acid, mg/1 (ppm)	30	. . .	100	If stabilizer is: TOO LOW: Chlorine residual rapidly destroyed by sunlight TOO HIGH: May exceed health department requirements Note: Stabilizer is not needed in indoor pools, and should not be used in hot water facilities. Cyanuric acid may titrate as alkalinity. See Appendix.
E. Algacides	Quaternary algacides	. . .	. . .	. . .	NOT PERMITTED IN PUBLIC POOLS.
	Copper-based algacides (nonchelated), mg/1 (ppm)	0.1	0.2	0.3	NOTE: Ineffective against some algae. Health department officials should be consulted before using. May contribute to staining.
	Copper-based algacides (chelated), mg/1 (ppm)	0.1	1.0	3.0	NOTE: See above.
	Silver based, mg/1 (ppm)	0.5	1.5	3.0	NOTE: Precipitates with cyanuric acid. Ineffective against some algae. Health Department officials should be consulted before use.
F. Remedial Practices	Superchlorination Frequency	Monthly	When combined chlorine is 0.2 mg/1 (ppm) or more	Weekly	NOTE: See design sections.
	Required superchlorination Chlorine, mg/1 (ppm)	5	10	. . .	
	Required shock treatment chlorine, mg/1 (ppm)	10	. . .	. . .	
	Flocculating frequency	Not recommended			NOTE: Health department officians should be consulted before using.
	Water replacement Hot Water Facilities	. . .	. . .	. . .	Change water and clean monthly as a minimum, more frequently when heavy use and chemical treatment difficulties are experienced

310:320-3-8		Minimum	Ideal	Maximum	Comments	
G. Temperature	Water Temperature ºF, Hot Water Facilities	90ºF	. . .	105ºF	If temperature is:	
					TOO HIGH: ◆ Threat to health of certain persons with high blood preasure ◆ Excessive fuel requirement ◆ Increased evaporation ◆ Bather discomfort ◆ Increased scaling potential ◆ Increased use of chlorine	TOO LOW: ◆ Bather discomfort
	Swimming Pools (Artificially heated water)	75ºF	. . .	90ºF		
	Indoor Pools (air) Excluding hot water facilities	Water temperature plus 8º Max. Water temperature minus 2º Min.				
H. Water Clarity	Water Turbidity	Must be able to see main drain or 6-inch black disk on bottom of deepest part of pool from pool sidewalk.			If water turbidity is	
					TOO HIGH: ◆ Chlorine level may be too low ◆ Filtration system may be inoperative ◆ Too turbid water may lead to drowning because of reduced visibility	

310:320-3-9. Sampling and testing procedures

(a) **Bathing place operators**. As required by Regulations Section 310:320-3-2, all bathing place operators shall know how to perform the following:

(1) Collect a sample for bacterial analysis.

(2) Collect at proper places a representative sample for determination of applicable chemical and operational parameters required by Section 310:320-3-9.

(3) Be able to perform all applicable chemical analyses and operational determinations required by Regulations Section 310:330-3-9. The D.P.D. method should be used for free and combined chlorine determination. Orthotolidine (OTO) is not an acceptable method for determination of free chlorine.

(4) Observe the proper procedure of turbidity determination. Close pool any time the main drain cannot be seen from sidewalk. Determine cause and reduce turbidity to acceptable level before reopening pool.

(5) Observe the water temperature in hot water pools and spas.

(6) Balance the pool water in relation to pH, total alkalinity and calcium hardness as per Regulations Section 310:320-3-7 (see Regulations Section 310:320-5-2 for Tables) .

(b) **Sampling and testing required**

(1) Tests shall be made of pool water as follows:

Free chlorine	Four (4) times per day
Bromine (if applicable)	Four (4) times per day
PH	Four (4) times per day
Turbidity	Four (4) times per day
Combined chlorine	Daily
Turnover	Daily
Total alkalinity	Weekly
Calcium hardness	Weekly
Cyanuric acid	Weekly

(2) Hot water facilities (above 90°F). In addition to the above tests, the following shall be determined:

Temperature	Four (4) times per day
Copper	Weekly
Iron	Weekly
Total dissolved solids	Weekly

(3) Bacteriological samples. Hot water facilities and pools open to the general public may be required to submit a sample weekly to the local or the state health department.

310:320-3-10. Satisfactory compliance of records

(a) The Operation Record Form provided for these reports is designed to serve all types of bathing places, but not all of the lines of items will be applicable to each bathing place. Therefore, the management of a facility will be responsible for maintaining records only on those line items of the report that apply to their bathing place. All bathing places must maintain information on turbidity, pH value and chlorine residual; and for pools using stabilized chlorine compounds, cyanuric acid testing is also required.

(b) The law with reference to records shall be satisfied when records appropriate to the type of bathing place being operated are submitted to the county health department, or for those counties without a county health department, to the appropriate sanitarian.

(c) **Record forms.** Public bathing place operation record forms may be obtained from either the county or the state health department. The information requested or indicated thereon must be filled in completely for each day the public bathing place is open to the public. Forms tailored to suit the needs of the management may be substituted for Department forms provided that all information required by these standards is included and the forms are submitted to the Department for approval prior to use.

(d) **Posting of inspection sheet.** The inspection sheet filled out by an authorized representative of the Department, which indicates the sanitary condition of the public bathing place, must be posted and maintained in a conspicuous place easily visible to all who use the facilities.

(e) **Laboratory reports.** The laboratory reports covering any chemical or bacteriological examination of the water in a public bathing place must be

kept on the premises and made accessible to authorized representatives of the Department.

(f) **Report to the county health department**. A copy of the cumulative daily operation record must be forwarded to the appropriate health department.

(g) **Operation report form**. The public bathing place operation record forms are designed to cover one (1) full week of operation. As a general rule, an original and one (1) copy will be required. The original is for the permanent files of the operator. The copy shall be forwarded to the appropriate health department as indicated above.

(h) **Frequency of reporting to the county health department.** The management of public bathing places operated on a year-round basis must, unless instructed otherwise, forward copies of the accumulated weekly reports to the appropriate health department once each month. The accumulated copies must be mailed immediately following the closing of the pool on the first Saturday of each month.

(i) **Seasonally operated bathing places.** The management of public bathing places operated on a seasonal basis, for example, outdoor bathing places operated only during the warmer months, must, unless specifically instructed otherwise, forward copies of the operating records to the appropriate health department at the close of each week's activity. Weekly reports will enable the personnel of the county health departments to give more prompt assistance to those operators who obviously are having continuous operation difficulties than would be possible with monthly reports.

310:320-3-11. Winterizing and securing outdoor pools

When the pool is closed, all gates shall be locked. All outdoor pools shall be secured in one of the following approved methods:

(a) **Draining.** Drained and kept drained until put back into service; or

(b) **Pools not drained or covered.** Turbidity shall be controlled so that the main drain is visible from the pool deck. Maintaining disinfectant concentrations will suppress algae growth, and maintaining water balance will protect concrete and metal surfaces.

(c) **Covering.** Provide a pool cover of a type that is securely anchored to the deck area with bolts or similar hardware and capable of supporting a minimum of one thousand (1000) pounds. Water must not be allowed to

accumulate on the top. Swimming in the pool with a partial cover is prohibited. If water is left in the pool, it should be drained below the tile and skimmers (eighteen (18) to twenty-four (24) inches) and kept chlorinated. The air should be blown out of the skimmer and fill lines. Lights should be stored on the deck or in the bottom of the pool and with switches taped in the off position.

310:320-3-12. Special conditions

Should special conditions exist or circumstances be such that in the opinion of the manager or operator, certain items listed as requirements would not be applicable, then alternate items shall be submitted in writing to the Department for appraisal as an acceptable substitute for the requirement, and upon approval may be used.

SUBCHAPTER 5. FORMS AND TABLES

310:320-5-1. Portable pools

(a) **Conditions governing operation**. The following conditions govern operation of portable pools:

(1) To be used for instructional purposes.

(2) For installation only at public buildings where adequate toilet and other sanitary facilities are conveniently available and at other agencies historically engaged in swimming instruction; i.e., Red Cross, YMCA, etc.

(3) The pool(s) to have continuous supervision by instructors or supervisors meeting requirements of these standards for life-guards.

(4) Instruction classes to be sized on the basis of one (1) pupil for each four hundred (400) gallons of pool volume.

(5) Use of the pool(s) to be limited to daylight hours unless the lighting requirements of these standards are met.

(6) The pool(s) to be covered and locked whenever unattended or out of use.

(7) The pool(s) installation at each location to be authorized by a permit issued by the Department for a scheduled period, preferably about two (2) weeks, extendable at the option of the county health

department, upon receipt of a written request giving justification for the time extension.

(8) The operations of the pool(s) to be coordinated with the county health department for the purposes of inspections and supervision.

(9) Pool(s) to be located on paved surface with paved area and walkway from shower and toilet facilities to the pool.

(b) **Application data required.** Application data required for portable pools is as follows:

(1) Location(s) to be used.

(2) List of sanitary facilities available and the distance from the pool at each location. The number of showers, toilets, and lavatories for boys and girls.

(3) Square feet of paved ground available for each installation.

(4) The name of the owner of the installation; i.e., City of Oklahoma City.

(5) The name and mailing address of the responsible individual and phone number; i.e., John Doe, Director of Recreation, City Park Department.

(6) The duration of the term of instruction for which classes are to be scheduled for each location.

(7) Each installation will require an application for permit with the above information.

310:320-5-2. Water balance and water balance tables

(a) Water balance is accomplished by adjusting the pH, total alkalinity, and calcium hardness in relation to each other. Tests are run on the pool water to determine the values for pH, total alkalinity, and calcium hardness. The accompanying table is used to determine scaling or corrosive potential of the water and to indicate corrective measures needed. Pools and spas that do not have balanced water are not only subject to considerable damage to the facility from scaling or corrosion but do not make effective use of free chlorine and indeed often have difficulty maintaining the required chlorine and pH levels. For more information, please contact your local health officials.

Recommended values are:

(1) pH, 7.2 to 7.8

(2) Total alkalinity 80-120 ppm (pools), 100-150 ppm (spas)

(3) Calcium hardness 100-150 ppm (pools), 150-300 ppm (spas)

(b) Directions to determine water balance point are as follows:

(1) Test the pool or spa water to determine the level of pH, total alkalinity, and calcium hardness.

(2) On the "Variable Temperature Water Balance Chart," locate the test values for total alkalinity and calcium hardness.

(3) Connect a line between values for Total Alkalinity and Calcium Hardness. Mark the intersection with a pivot line. This becomes the pivot point. Draw a horizontal line through the pivot point and the pH scales. Read the pH from the appropriate pH-Temperature Scale at the intersection with the horizontal line. This is the pH at which the water is balanced and is neither corrosive nor scaling.

(4) If the pool water pH value shown on the chart is no more than 0.5 pH above or below the actual observed pH in #1, above, then the water is in balance.

(A) If the actual pool water pH is 0.5 units higher than the pH value indicated in the chart, then the water is considered scaling and will deposit calcium in lines, filters, and in the pool.

(B) If the actual pool water pH is 0.5 units lower than the pH value indicated in the chart, then the water is corrosive and will corrode the metal pipes, pump impellers, ladders, and other fixtures and will etch the pool plaster, making it "sandy."

(5) Calcium hardness is the hardest of the three to balance. Therefore, using the actual calcium hardness value as a pivot point, move the line between 7.2 and 7.8 to see at what level the total alkalinity can be adjusted to balance the water. The pH should be adjusted first to between 7.2 and 7.8 (ideal is 7.6) and then the total alkalinity adjusted last. It is perfectly permissible to operate a pool at a slightly higher or lower pH than ideal (but within the 7.2 to 7.8 range) in order to balance the water.

(6) Cyanuric Acid vs. Total Alkalinity. Cyanuric Acid will titrate as total alkalinity using the current field tests. The following is a conversion

chart that may be used to determine the corrected value to Total Alkalinity:

pH	Cyanuric Acid Factor
6.0	.04
6.5	.10
7.0	.21
7.5	.30
8.0	.36
8.5	.38
9.0	.38

1. Test total alkalinity, pH, and Cyanuric Acid.
2. Multiply ppm Cyanuric Acid by Cyanuric Acid factor.
3. Subtract the product from the measured total alkalinity.
4. The result equals actual total alkalinity.

For example: With a pH of 7.5, Cyanuric Acid of 50 ppm, and Total Alkalinity of 150 ppm:

150 - (50 x .30) = Actual Total Alkalinity
150 - 15 = 135 ppm Actual Total Alkalinity

310:320-5-3. Signs for storage of pool chemicals

(See Appendix B)

310:320-5-4. Operation record form and instructions (See Appendix C)

REFER TO THE PUBLIC BATHING PLACE FACILITY STANDARDS AND THE PUBLIC BATHING PLACE REGULATIONS

Procedures

_____ 1. Application completed in accordance with "Guidelines for applicants for Public Bathing Place Permits."

_____ 2. Five (5) sets of plans submitted, each signed by applicant and sealed by a professional engineer licensed in Oklahoma.

_____ 3. Fee submitted.

Design

_____ 1. Engineering report (may be a summary on drawings) presenting significant design features, and added narrative solutions to unusual problems when needed for clarity.

_____ 2. Water supply: source; backflow prevention (including all hose bibs); drinking fountains; fill spout (2 diameters or 6 inch air gap) .

_____ 3. Wastewater: approved sewer (permit exists) of sufficient capacity; NPDES permit if applicable; diatomaceous earth separation; sanitary and backwash wastes plan; backflow prevention (air gap) ; local ordinances provisions on backwash discharge.

_____ 4. Pool material and finish: impervious; white or pastel color (no variegated finish) .

_____ 5. Enclosure: excludes unattended small children; permits visual observation; maximum gap four (4) inches; four (4) feet height (six (6) feet if open to general public) ; construction does not form ladder; all entry through self-closing, self-latching gates only; no safety hazards at grade separations.

_____ 6. Equipment and chemical storage areas; sufficient access for operation and maintenance (eighteen (18) inch clearances) ; access by public limited; venting; hose bib with backflow preventer; chemical storage signs. See Standards Sections 310:315-7-2 and 310:315-7-13.

_____ 7. Bathing load computed per Standards Section 310:315-7-3.

_____ 8. Pool features: handicapped provisions if open to general public; three (3) feet minimum depth (three and one-half (3-1/2) feet recommended)

, competition pools; bottom slopes; lifeline at break; side walls; depths; ledges inside line eleven (11) degrees from plumb; diving board height, projection over pool, headroom; depth markings (deck and pool wall) ; outlets (144 in^2 or antivortex covers); adjustable inlets, required minimum plus added inlets at stairs, recessions, flow-through channels; gutters comply with Standards Section 310:315-7-14; skimmers thirty (30) gpm each, valved separately, NSF-listed.

_____ 9. Ladders, stairs, seats, fountains: two (2) ladders or one (1) ladder and one (1) set of stairs; stairs recessed or "go clear across"; colored stripes; uniform height; barriers around recessed seats, and added inlets; fountain supply filtered and chlorinated if discharging to pool; no structures in fountain to invite diving.

_____10. Decks: four (4) foot minimum width; impervious; non-slip; slope and drainage; no wood decks indoors, and sealed, drained, and unshaded if outdoors; access by fifty (50) foot (maximum) hose from hose bib with backflow preventer; no carpeting; no epoxyed gravel unless interstices are grouted.

_____11. Bathhouse: see Standards for (extensive) details; must be sanitizable; required only at 1) pools open to the general public; 2) where access to pool is problematic as at a housing development; and 3) other special installations; no fire traps; fire extinguisher (not CCL_4) .

_____12. Ventilation: all indoor spaces effectively ventilated.

_____13. Wading pools: four (4) hour turnover; flow measurement and control; eighteen (18) inches maximum depth; one (1) skimmer per four hundred (400) ft^2 pool area; emergency drainage with quick-opening valve; barrier if contiguous with swimming pool.

_____14. Spas: impervious (no wood); no depth markers required; four (4) foot minimum deck width about fifty (50) percent of perimeter if less than 120 ft^2 spa area; decks drained; handrail complying with Standards Section 310:315-7-11; thirty (30) gpm per skimmer (NSF-listed) plus adequate main drain flow to prevent settling in lines; no connection, other than at spa plenum, between filter and therapy circulation systems; antivortex or equivalent suction openings; disinfection device NSF-listed (bromine recommended); two (2) filter return inlets, minimum; temperature control at 105°F maximum; inlet and return temperature gauges. (See also #16 below.)

_____15. Water recreation attractions; preconsultation with OSDH required; see Standards Section 310:315-7-12.

_____16. Recirculation system: system TDH calculated for dirty filter; pump sized at maximum TDH; hair and lint strainer with extra basket and compound pressure gauge where required: vacuum cleaning provisions; inlet and return temperatures measured if heater provided; piping sized per Standards Section 310:315-7-14; piping color coded and valves tagged; flow meter with minimum and maximum flows marked; piping schematic provided. See Standards Section 310:315-7-14 for further details.

_____17. Filters: influent and effluent pressure gauges; sign glass; filter tanks and piping drainable; filter medium composition and particle size specified; filter NSF-listed; head loss when dirty at maximum allowable flux (gpm/ft^2) computed correctly; operating instructions provided, including maximum and minimum flow rates. See Standards Section 310:315-7-15 for further details.

_____18. Disinfection and pH control: chlorinator/brominator NSF-listed and meets delivery requirements of Standards Section 310:315-7-16; chlorine gas installation per Standards Section 310:315-7-16; gas mark; pH control feeder if pool open to general public or larger than fifty thousand (50,000) gallons.

_____19. Testing equipment: see Standards Section 310:315-7-17.

_____20. Lighting and electrical requirements: artificial lighting required, ten (10) foot-candles, deck area; underwater lights (if used) recommended @ eight (8) foot-candles and with low water cutoff protection; ten (10) foot-candles, interior rooms; all wiring meets NEC Code; ground fault interrupter circuit breakers for outlets; all piping and metal fencing grounded per NEC Code.

_____21. Life saving provisions and equipment: lifeguard or attendant needs weighed carefully where slides or swings are used; safety/pool rules signs specified, including "No Lifeguard or Attendant on Duty" where required; see Regulations Section 310:320-3-1 for details.

_____22. First aid: kit specified; telephone (non-coin operated) accessible; emergency phone numbers posted.

310:320-5-7. Figures

APPENDICES

APPENDIX A

CHECK LIST FOR POOL OPERATORS

DAILY

1. Check motor and pump operation. Note any unusual sounds and pressure readings.
2. Check chemical feed operation, including chlorinators.
    - A. Check weight of gas chlorine cylinder, if used.
    - B. Test for chlorine and pH residuals four times daily.
    - C. Check for turbidity four times daily.
3. Check filter operation.
    - A. Air releases valves.
    - B. Influent and Effluent pressure gauges.
    - C. Flow indicator and turnover rate.
    - D. Water clarity.
    - E. Pool bottom condition. (Sediment?)
    - F. Water surface condition.
4. Check cleanliness of pool area; bath-house floors, showers.
5. Check operation of water heater and adequacy of hot water supply; soap in shower rooms.
6. Check condition of plumbing fixtures.
7. Availability of personnel for all necessary duties.
8. Check water and air temperature.
9. Flush pool decks; sunbathing areas.
10. Clean and disinfect bathhouse floors and fixtures.

IF NEEDED

1. Recharge chemical feed equipment.
2. Backwash filter.
3. Clean pool bottom.
4. Add make-up water to fill pool for overflow skimming.
5. Skim manually.
6. Make repairs, or initiate repairs.
7. Check operation and cleanliness of foot rinse units.

EVERY TWO WEEKS

1. Check and replace first aid kit supplies.
2. Check proper posting and condition of bather regulation placards.
3. Check character of supervision exercised over shower room activities.
4. Check structural and safety of condition of decks and deck equipment.
5. Check frequency of collection and submission of pool water samples for bacteriological analysis.
6. Check recirculation pump efficiency by reference to pump performance curve, using pump suction and discharge gauge readings.
7. Inventory chemicals, filter aid, test reagents, spare parts for feeders, and other supplies.

MAKE APPROPRIATE ENTRIES ON WEEKLY POOL OPERATION REPORT FORM AND ON MAINTENANCE LOG.

APPENDIX B

POOL DATA SHEET

Pool Name: _____

Width: _____ Length: _____ Depth: _____ To: _____

Pool Capacity: _____ gallons

Pump Capacity: _____gpm.

Area of filter surface: _____square feet

Turnover Rate:

Based on filter surface area _____ hours. Based on pump Capacity

_____ hours.

Filters operate _____ hrs./day

Turnovers per day _____

Type Filter _____

Maximum Filter Flow Rate _____ GPM

Pool Load Capacity

_____ persons per day

_____ persons at one time

APPENDIX C

HOW TO MEASURE YOUR POOL'S VOLUME

- Rectangular Pool

  Length x Width x Average Depth x 7.5 = TOTAL GALLONS

- Circular Pool

  Diameter x Diameter x Average Depth x 5.9 = TOTAL GALLONS

- Oval Pool

  Long Diameter x Short Diameter x Average Depth x 5.9 = TOTAL GALLONS

HOW TO CALCULATE MINIMUM REQUIRED FLOW*

- For a Swimming Pool

  $$\frac{\text{Pool Volume (gallons)}}{480 \text{ (minutes)}} = \text{MINIMUM REQUIRED FLOW}$$

- For a Wading Pool

  $$\frac{\text{Pool Volume (gallons)}}{240 \text{ (minutes)}} = \text{MINIMUM REQUIRED FLOW}$$

- For a Spa

  $$\frac{\text{Pool Volume (gallons)}}{30 \text{ (minutes)}} = \text{MINIMUM REQUIRED FLOW}$$

HOW TO CALCULATE MINIMUM REQUIRED FILTER AREA (HI-RATE SAND FILTER)

- $\frac{\text{Minimum Required Flow (gallons/minute)}}{15 \text{ (gallons/minute/square foot)}}$ = Minimum square feet of filter area required

*New Pools and Spas should meet the skimmer flow requirement of 43 (gallons per minute per skimmer)

APPENDIX D

HOW TO CALCULATE MAXIMUM BATHING LOAD*

Breakpoint Breakpoint
↓ ↓

X = SURFACE AREA OF SWIMMING AREA

Length of swimming area on shallow end | Width

L X W = Surface area shallow/swim

10 x 10 = 100

Breakpoint Breakpoint
↓ ↓

X = SURFACE AREA OF DIVING AREA

Length of swimming area on deep end | Width

L X W = Surface area diving deep

5 x 10 = 50

$$\frac{\text{SURFACE AREA OF SWIMMING AREA}}{15} \times \frac{\text{SURFACE AREA OF DIVING AREA}}{24} = \text{MAXIMUM BATHING LOAD}$$

$$\frac{100}{15} \times \frac{50}{24} = 14$$

*See Section 7.3, Page 13 of the Code. There are some variations for indoor pools, pools with minimum deck area and for pools with installed diving boards.

APPENDIX E

INFORMATION SHEET ON HOT TUB TEMPERATURES

Safety officials frequently warn the public about the dangers of drinking and driving. Now the U. S. Consumer Product Safety Commission is cautioning that drinking and hot-tubbing do not mix well either.

According to CPSC staffers, the use of hot tubs at water temperatures above the normal body temperatures can cause drowsiness which may lead to unconsciousness and subsequently result in drowning.

The risk of drowning is significantly heightened if individuals consume alcoholic beverages while, or prior to, soaking in hot water, CPAC staff warns. Of 10 deaths recorded in 1979, three involved alcohol-related drownings in hot tubs heated to approximately 110 degrees Fahrenheit.

Even if no alcohol is consumed, extremely hot water during hot tub use can threaten life, CPSC reports. Soaking in a hot tub of water heated to 106 degrees Fahrenheit; for example, can raise human body temperature to the point of heat stroke (or impairments of the body's ability to regulate its internal temperature. These conditions can be fatal even to fully healthy adults.

As hot tubs have gained in popularity throughout the nation, so have concerns at CPSC that consumers learn how to use these products safely. Accordingly, CPSC staff strongly urges consumers to observe the safety rules for hot tub use.

CPSC staff is currently working with staff from the Spa and Tub Association (a division of the National Swimming Pool Institute) and the International Spa and Tub Institute (both of Santa Ana, California) as they develop voluntary safety standards for the manufacture, installation, and use of hot tubs. These standards are expected to reflect many of the safety warnings listed below:

1.Hot tub water temperatures should never exceed 104ºF. A temperature of 100ºF is considered safe for a healthy adult. Special caution is suggested for children.

2.Excessive drinking during hot tub use can cause drowsiness which could lead to unconsciousness and subsequently result in drowning.

3.Pregnant women beware! Soaking in water above 102ºF can cause fetal damage during the first three months of pregnancy (resulting in the birth of a brain damaged or deformed child) . Pregnant women should stick to the 100ºF maximum rule.

4.Before entering the hot tub, users should check the water temperature with an accurate thermometer; hot tub thermostats may err in regulating water temperatures by as much as four degrees.

5.Persons with medical history of heart disease, circulatory problems, diabetes or blood pressure problems should obtain their physician's advice before using hot tubs. Also persons taking medications which induce drowsiness, such as tranquilizers, antihistamines or anticoagulants should not use the hot tubs.

APPENDIX F

CHEMICAL STORAGE

Provision must be made for dry storage of at least a two-weeks supply of all chemicals used (Sec. 19.1) . Chemicals must be stored in a cool, dry locked room away from paint, fertilizer, and other chemicals. All chemicals must be stored in a safe manner and in an area not accessible to unauthorized persons (Sec. 27.4). No chemicals shall be stored in a container that does not have a complete label on it for that product (Sec. 17.4.4) . Keep all containers closed.

Proper chemicals must be on hand for the type of disinfection feeder in use. Hand feeding of chlorine is permitted ONLY for superchlorination or cleaning the pool - not on a regular basis to provide a chlorine residual. The code requires a two week supply of all chemicals used in the pool or spa to be stored at the site - this includes pellets, tablets or sticks for the chlorinator or brominator, pH adjustment chemicals and water balance chemicals.

Rooms where chemicals are stored must be plainly marked on the outside door with a sign saying "POOL CHEMICALS" or other signs approved by the Fire Department. This tells the fire department that if they put water on these chemicals, explosions, fire or noxious gases may result. Many pool chemicals are explosive, flammable or corrosive under the right conditions or if used improperly. ALWAYS read and follow directions on the label.

When storing chemicals keep calcium hypochlorite (HTH, etc.) away from all organic substances such as trichlors (stabilizer or organic chlorine) , paint, acid, etc. Remember - ammonium nitrate is used for blasting powder as well as fertilizer, so don't store it in the same room as the pool chemicals. The hot water tanks should not be in the chemical storage room. Damp calcium hypochlorite is highly explosive. When dipping powdered chlorine out of its containers, use a clean dipper - free of oil, grease, insecticides and hydrocarbons or dampness. These substances will cause a fire with the powdered chlorine. Most powdered chlorine produced today contains a fire retardant for added safety.

If large amounts - i.e., 50 pound bags - of other chemicals are kept - store the chlorine between such inert products as sodium bicarbonate and calcium chloride. DE filter powder is also inert.

All areas used for storage of pool chemicals shall be plainly marked on the outside door (sec. 19.2) .The sign may say "POOL CHEMICAL."

If spills occur clean up immediately. Remove as much of the spilled material as possible and dispose of it in an approved manner. Rinse the area thoroughly to dilute any remaining chemical. In the case of calcium hypochlorite use lots of water. Do not wash chemicals into lawns or other planted areas as they may kill the vegetation. These chemicals should not be washed into a storm drainage system.

APPENDIX G

DEALING WITH BLOODBORNE PATHOGENS

Every facility and event should be aware of how to deal with a situation involving an incidence in which exposure to blood or body fluids are possible. Risk of operator and patron/tenant exposure to bloodborne pathogens (disease) has increased significantly.

Most exposures are to Hepatitis B. The risk of having liver cancer is 350 times greater in persons who have had Hepatitis B. Transmission occurs through exposure to body fluids, especially blood and saliva. If exposed, **WASH YOUR HANDS!** A Hepatitis B vaccine is available and must be offered to OSHA, Class II employees.

There have been confirmed cases of HIV/AIDS exposure from blood and other body fluids. There is not treatment or vaccine for HIV/AIDS. Again avoid exposure if possible. The best prevention is to wash thoroughly with soap and hot water.

HOW TO DEAL WITH AN EXPOSURE

The best rule is do not get exposed. If an accident occurs, the following steps should be taken:

- **The Victim:** (Remember not to get exposed - put on disposable gloves.)
  1. Have the victim put pressure on the wound with absorbent material, such as paper towels, and you call for emergency assistance, if necessary.
  2. If the victim is unable to assist, put on disposable gloves before you assist them.
  3. If an exposure occurs, **WASH THOROUGHLY WITH SOAP AND WARM RUNNING WATER AS SOON AS POSSIBLE AFTER EXPOSURE.**
  4. If CPR is necessary, use a one-way valve mask.

- **Clean-up:** (Designate a person -- have equipment on hand.)
  1. PUT ON DISPOSABLE GLOVES.
  2. Soak up as much fluid as possible with paper towels or gel from a bloodborne pathogens kit.
  3. Soak area with 10% bleach solution (1-10 solution changed daily) .
  4. Blot up with paper towels.
  5. Place all paper towels in biohazard bag.
  6. Peal off gloves and put in biohazard bag, close bag, and dispose of biohazard bag.
  7. Wash thoroughly with soap and warm running water.
  8. Clean contaminated shoes with bleach solution.
  9. If clothing is contaminated, place in separate biohazard bag and launder separately with detergent and bleach.

- **Recommended Equipment:** (Available from safety supply houses)
  1.Gloves - disposable, latex
  2.Biohazard bags
  3.Paper towels
  4.Bleach
  5.Spray bottle for bleach solution

OSHA requires all employers to notify and train employees that may be exposed to blood or body fluids in the course of their jobs. More information is available from the Department of Labor or from OSHA, (405) 528-1500.

APPENDIX H

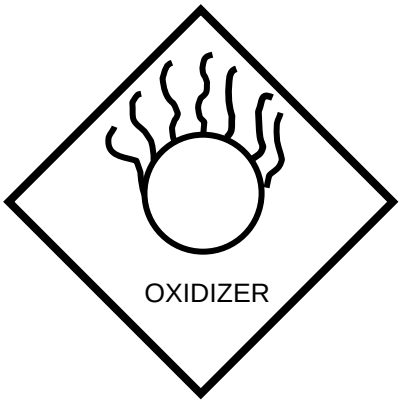
POOL WINTERIZING CHECKLIST

_____ 1.Adjust chemical balance of pool water to recommended levels.
_____ 2.Superchlorinate.
_____ 3.Add an algaecide to prevent algae growth.
_____ 4.Add sequestering or chelating agents to prevent mineral staining and scale build-up.
_____ 5.Clean and vacuum the pool, because any debris left in the water will consume chlorine during the off season.
_____ 6.Empty and store skimmer baskets and hair-and-lint traps for the winter.
_____ 7.Backwash the filter thoroughly.
_____ 8.Clean the filter media or elements.
_____ 9.Drain sand filters. Remove cartridges or DE filter elements, inspect for tears or excessive wear and store for the winter.
_____ 10.Lower the water level to below the skimmers and return lines. If needed, remove the remaining water from the recirculation lines using an air compressor or industrial type tank vacuum cleaner.
_____ 11.Open all pump room valves and loosen the lid from the hair-and-lint skimmer. However, if the filter is below pool water level, close the valves leading from the pool to the filter.
_____ 12.Grease all plugs and threads.
_____ 13.Add a non-toxic antifreeze such as propylene glycol (1 part antifreeze diluted in 2 parts water) to the pipes to prevent freeze damage and possible bursting. Do not use automotive antifreeze.
_____ 14.Plug skimmer or gutter lines. Winterize with antifreeze and expansion blocks. Secure skimmer lids to the deck to prevent their loss.
_____ 15.Plug vacuum and return lines and the main drain.
_____ 16.Make sure the hydrostatic relief valve is operational.
_____ 17.Drain and protect recirculation pumps. If a pump and motor will be exposed to severe weather, disconnect, lubricate, perform seasonal maintenance, replace seals and store. Add antifreeze to help protect pumps and seals form any residual water left after draining.
_____ 18.Clean surge pits or balancing tanks.
_____ 19.If underwater wet-niche lights are exposed to the elements, remove them from their niches and lower them to the bottom of the pool.
_____ 20.Disconnect all fuses and open circuit breakers.
_____ 21.Drain pool water heater. Grease drain plugs and store for the winter.
_____ 22.Turn off the heater gas supply, gas valves and pilot lights.
_____ 23.Install the winter safety cover.
_____ 24.Return any unopened chemical and empty storage containers to the distributor.
_____ 25.Properly store opened chemicals in tightly sealed containers in a well-ventilated room. Dispose of test reagents, sanitizers and other chemicals that will lose their potency over the winter.
_____ 26.Disconnect, clean and store the chlorinator, controllers and other chemical feed pumps. Store controller electrodes in liquid.
_____ 27.Clean and protect gauges, flowmeters, thermometers and hygrometers.
_____ 28.Store all deck furniture (chairs, lounges, tables, umbrellas) . Identify and separate all furniture in need of repair.
_____ 29.Remove deck equipment, hardware and non-permanent objects such as ladders, rails, slides, guard chairs, starting blocks, drinking fountains, disabled lifts, portable ramps, clocks, wires and rescue equipment to prevent vandalism. Store the items in a clearly marked, identifiable, weather-protected location. Cap all exposed deck anchors or sockets.
_____ 30.Remove the diving boards. Store the boards indoors, upside down and flat so they will not warp.
_____ 31.Open hose bibs and fill spouts.
_____ 32.Turn off the water supply to restroom showers, sinks and toilets. Drain the pipes; add antifreeze. Remove any shower heads and drinking fountain handles.
_____ 33.Have the phone company disconnect the pool telephone and discontinue service for the winter.
_____ 34.Install a pool or deck alarm system.
_____ 35.Inventory supplies and equipment. Make suggestions for preventive maintenance and repair, upgrading and needed equipment purchases.

APPENDIX B

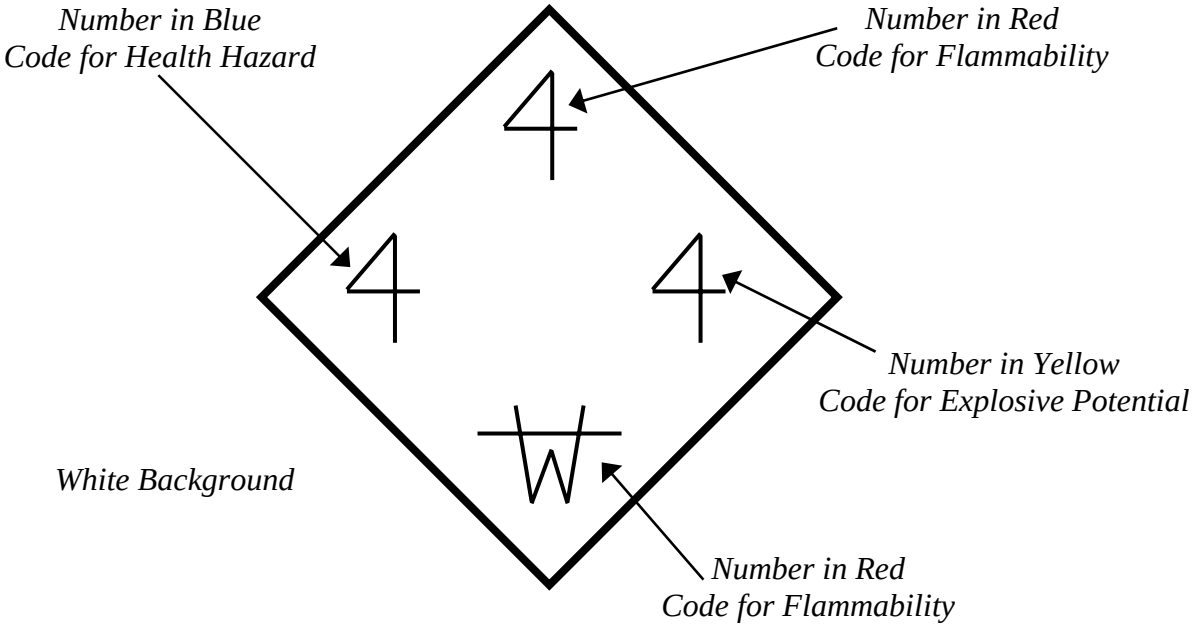
Suggested signs to be used to indicate presence of pool chemicals

1. U.S. Department of Transportation sign — 4" square



yellow background

2. National Firefighters Prevention Assn (NFPA) #704-1975, Standard System for the Identification of the Fire Hazards of Materials, adopted as follows for Pool Water Treatment Chemicals, — 12" square



4 is the highest number on this scale (0 - 4 scale)