



Swimming Pool Operation Guide



The object of properly maintaining a swimming pool is to provide water quality for swimmers that is safe and clear, has disinfecting properties for the control of bacteria, viruses, and algae, and is nonirritating to swimmers. In order for the pool

owner or manager to insure water of this quality, it is important that they be aware of the basic concepts of pool maintenance.

During semi-annual inspections conducted by the Environmental Health Division (EHD), we receive a number of questions regarding the maintenance and operation of public swimming pools and spas. The following should help clarify the requirements enforced by EHD.



Water Quality

Frequent and accurate water testing is critical to assuring that proper water balance is maintained. Daily operation records must be kept for each pool, noting the chemical readings and corrective action taken if needed. It is essential that a proper test kit be used when making daily tests. A DPD Reagent test kit must be provided for testing disinfectant residuals.

A free chlorine residual of at least 1.0 PPM is required at all times the pool or spa is available for patron use. Chlorine is required to oxidize and eliminate organic compounds such as algae, dirt, and cosmetics. The chlorine also inactivates infectious microorganisms such as E. Coli, Shigella, and Giardia. When chlorine is added to the pool water, a portion of the chlorine will be consumed by these reactions and the remaining chlorine is referred to as free available chlorine.

Different forms of chlorine may be used. These forms include Sodium Hypochlorite, Calcium Hypochlorite, Trichlor, and Dichlor. Trichlor and Dichlor contain cyanuric acid which is also referred to as stabilizer or conditioner. If cyanuric acid is used, a minimum free chlorine residual of 1.5 PPM is required. The cyanuric acid levels in the pool shall be maintained less than 100 PPM.

The pH of the pool water shall be maintained between 7.2 and 8.0. This level ensures the effectiveness of the chlorine as well as prevents the water from being corrosive or scaling. Pool water problems may result from improper pH. A low pH may result in irritation to the swimmer's eyes or mucous membranes, dissolving of metal pool components, or plaster staining. A high pH may result in cloudy water or scale and the control of algae or bacteria may be affected.

Other water chemistry parameters that will affect the water balance include alkalinity, calcium hardness, total dissolved solids, and water temperature.

Water Chemistry Guidelines*				
Parameter	Min.	Ideal	Max.	Type
Free Chlorine	1.0 PPM	2.0-4.0 PPM	4.0 PPM	Pools
	2.0 PPM	3.0-5.0 PPM	4.0 PPM	Spas
Combined Chlorine	0 PPM	0 PPM	0.2 PPM	Pools
	0 PPM	0 PPM	0.5 PPM	Spas
pH	7.2	7.4-7.6	8	Both
Cyanuric Acid	0 PPM	30-50 PPM	100 PPM	Both

*Based upon ANSI/APSP Guidelines



Safety

The pool shall be enclosed by a fence, portion of a building wall, or other durable enclosure not less than 5 feet in height. Openings, holes, or gaps in the fence shall not exceed 4 inches. The gate to the fence is required to be equipped with a self-closing and self-latching device designed to keep the gate or door securely closed at all times when not in use. The latching device of the gate shall be at least 3 1/2 feet above the deck.

The following is a list of safety equipment which is required to be available at the pool facility:

1. Body hook on 12 foot pole, readily accessible.
2. Body hook on 6 foot pole in separate spa enclosures.
3. A minimum 17 inch diameter life ring with attached throw rope of 3/16 inch diameter, long enough to span the maximum width of the pool.
4. The bottom drain and recirculation outlets are required to be covered with grates or other protective devices which shall be removable only with tools. All suction fittings shall meet the ASME/ANSI A112.19.8-2007 performance standards.



County of Ventura
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Signage

The following signs are required to be posted, clearly visible from the pool or spa:

1. **“Warning - No Lifeguard On Duty.** (4-Inch Lettering Is Required.) **Children Under the Age of 14 Should Not Use Pool Without an Adult in Attendance.”**
2. Demonstration of artificial respiration, with a diagrammatic illustration.
3. Emergency telephone number: **911**
4. Maximum occupant load; based on the water surface area. (4-inch lettering is required.)
Swim Pools = one bather per 20 sq. ft.
Spa Pools = one bather per 10 sq. ft.
5. **“NO DIVING ALLOWED”** for pools having a maximum depth of less than 6 feet. (4-inch lettering is required.)
6. **“EMERGENCY EXIT”** for pools with only one emergency exit.

In addition to the above signs, spas will be required to provide the following caution sign:

CAUTION

1. **Elderly persons, pregnant women, infants, and those with health conditions requiring medical care should consult with a physician before entering a spa.**
2. **Unsupervised use by children under the age of 14 is prohibited.**
3. **Hot water immersion while under the influence of alcohol, narcotics, drugs, or medicines may lead to serious consequences and is not recommended.**
4. **Do not use alone.**
5. **Long exposure may result in nausea, dizziness, or fainting.**



Equipment

Water is continuously recirculated and disinfected by removing it from the pool, filtering it, adding disinfectant, and returning it to the pool. Each of the following devices is an integral part of a recirculation system:

1. Influent and effluent gauges shall be provided for the filter system and shall be at the same height. Filters are to be backwashed when the pressure difference between the two gauges is over 5 psi.
2. An approved automatic disinfecting unit shall be provided and maintained to continuously feed disinfectant to the pool or spa.
3. A flowmeter shall be installed on the recirculation system to measure the required flow of water in gallons per minute as water is returned to the pool.
4. DPD test kits shall be available for daily readings of chlorine and pH. DPD is a reliable test that differentiates between free and combined chlorine.



Inspection

Health inspectors from EHD may at all reasonable times enter all parts of the premises of a public swimming pool to determine compliance with health and safety requirements. For locked pool areas, keys shall be readily available. Pools may be closed for failure to provide access for inspection.



Pool or Spa Closure

A swimming pool or spa may be closed for one or more of the following reasons related to public health and safety:

1. Failure to meet water clarity. The main drain is not visible from the deck.
2. The main drain cover or other suction fitting is missing, broken, cracked, or not too secured.
3. There is no detectable chlorine or disinfectant residual.

4. The chlorine residual is greater than 10 PPM.
5. The pH of the water is greater than 8.0.
6. The cyanuric acid level is greater than 100 PPM.
7. The safety/lifesaving equipment is missing or broken.
8. The required safety signs are missing.
9. The fence/gate is damaged and not secure.
10. A fecal accident has occurred in the pool.

If you have any other questions about these or any other requirements related to your pool or spa, please call your district Environmental Health Specialist or visit our website. See the information box below.



Fecal Accidents In Pools

1. Close the swimming pool/spa and instruct all bathers to exit the area.
2. Manually remove the fecal material from the water with a net, scoop or bucket and dispose of the material in a sanitary manner. Any equipment contaminated while cleaning must be disinfected.
3. For fecal accidents involving formed stools, ensure that a free chlorine residual of at least 2.0 PPM and a pH less than 7.5 is maintained for at least **30 minutes** prior to reopening the pool. If cyanuric acid is present in the pool water, increase this time to **2 hours***.
4. For fecal accidents involving a loose stool or diarrhea, the free chlorine residual shall be raised to 20 PPM and the pH maintained at 7.5 or less for at least **13 hours** prior to reopening the pool. If cyanuric acid is present in the pool water, increase this time to **60 hours***.

***This applies to pools with a maximum cyanuric acid level of 50 PPM. Before superchlorination of any pool, consult an aquatics professional to determine the most optimal and practical methods.**

5. The free chlorine concentration and pH must be monitored hourly to ensure the proper concentration is maintained.
6. Operate the recirculation system continuously during this time period.
7. Backwash the pool filter after the required timeframe.
8. The pool may be reopened after the time and chlorine concentration has been achieved. The free chlorine residual must be reduced below 10.0 PPM and the pH between 7.2 and 8.0.
9. Establish a fecal accident log. Document each fecal accident including the date, time, and procedures followed for treatment.

Fecal accident pool closure procedures are based on recommendations by the Centers for Disease Control and Prevention. Additional information may be obtained at www.cdc.gov/healthyswimming

NOTE: Adjustment of water chemistry can result in damage to the pool or equipment if performed incorrectly. Although not required, an experienced pool professional is recommended.

For Information:

Contact the Environmental Health Division for assistance with your pool operation problems.

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