

Domestic swimming pools: water care

Poorly maintained swimming pools can create serious health risks for users. Humans, animals, and the environment can contaminate pools with infectious organisms. In most cases these organisms cause mild illness, but some infections can be serious or potentially fatal.

Why keep your pool clean?

Poorly maintained pools can create potential health risks for users. Harmful bacteria and viruses must be killed quickly to prevent user infection. Contaminants such as sunscreen, skin, and hair should also be treated or removed. Algae must also be controlled.

Contact with water contaminated with microorganisms may lead to infections of the skin, ears, eyes, central nervous system, or digestive system. Hazardous organisms can be introduced by humans, animals, and the environment. Most cause mild disease but some infections can be serious or fatal.

Pool safety is also important. Children must always be supervised and pools should have appropriate safety barriers. Domestic pool owners should be trained to perform cardiopulmonary resuscitation (CPR).



Water supply

Only treated mains water from a domestic water supply should be used to fill a pool. This water may have unsuitable pH or mineral levels that may interfere with disinfection or damage your pool and equipment with stains, scale, and corrosion. Therefore, pool water will require regular testing and chemical treatment.

Seek advice from an environmental health officer at the local council if another water source is to be used.

Water treatment

Water remains in a pool for long periods of time, so it must be treated to keep it clean and safe. Proper disinfection and filtration of pool water kills harmful microorganisms and removes body fats, oils, soil, and other contaminants.

Water filtration

Pool water must be regularly circulated and filtered. If the pool filter doesn't operate properly, the chemicals added to keep the pool disinfected and clean will not be effective.

Common filter types include sand filters, diatomaceous earth, and cartridge filters. The filter system should be able to completely filter a volume of water equivalent to the volume of all the water in the pool within six to eight hours. The filtration system should operate continuously when a pool is being used and for at least one hour afterwards. Filters should be cleaned regularly to ensure they are operating at maximum efficiency.

In sewered areas, the water used to backwash (rinse) the filter must always be disposed to sewer. In unsewered areas refer to the SA Environment Protection Authority's information sheet, '[Disposal of Swimming Pool Backwash Water](#)'.

Testing

It is important to test the water before use and at least once every day for pH and chlorine (or other disinfectant) concentration. More frequent testing should be done in hot sunny weather or when the pool is being used by many people, so that changes in water quality are detected before problems develop.

Other parameters (see below) should be measured at least weekly and adjusted as necessary. Reliable pool water test kits should be used - kits can be purchased



from swimming pool shops, some supermarkets, hardware, and major department stores.

Recommended disinfection levels

Commercially available disinfectants for domestic swimming pools should be used. Chlorine is the most common, but bromine, ozone, ultraviolet (UV) irradiation and ionising systems may be used.

If chlorine or bromine are not the main disinfecting agents, a small amount of chlorine or another oxidising agent should be added to maintain residual disinfection activity in the water. Consult a pool supplier for more information.

The chlorine in the water that can effectively kill pathogens is called 'free residual chlorine'. If chlorine is used, the free residual chlorine concentration in your pool should be maintained at 1.0 to 3.0 mg/L. The ideal level is 2 mg/L.

When a pool is not in use, a method such as a floating immersion dispenser should be used to maintain a disinfection residual in the pool water at all times.

After a pool is heavily used, after a rainstorm, or if a pool has been poorly maintained it may require 'shock dosing' to bring it back to a safe standard for use.

Shock dosing instructions

Add sufficient chlorine to the pool water to achieve 10 mg/L residual free chlorine. For example, add 200mL of liquid sodium hypochlorite (12.5% available chlorine) or 30g of granular calcium hypochlorite per 1000 litres of water.

Maintain 10 mg/L free residual chlorine for at least one hour.

Operate the pump and filter at all times during shock dosing.

Other products may be available for this purpose. Consult with your pool supplier. Do not use the swimming pool until free residual chlorine falls to 4 mg/L. This may require leaving the pool overnight.

Saltwater pool chlorinators

One method of chlorinating a pool is to use a saltwater pool chlorinator. A measured quantity of salt is dissolved in pool water.

As the saltwater passes through a chlorine generating cell, it produces chlorine. Refer

to your saltwater chlorinator's operation instructions for specific details.

pH

To ensure chlorine works efficiently, the pH range must be maintained within 7.2 – 7.6. This is also the ideal pH of water for the comfort of pool users.

Stabiliser (cyanuric acid)

To prevent chlorine from rapidly breaking down in pools exposed to direct sunlight, cyanuric acid can be added to reduce the amount of chlorine consumed. It should be maintained at a concentration of at least 30 mg/L and no more than 50 mg/L.

Further advice on stabilisers can be obtained from a swimming pool supplier.

Total alkalinity

Total alkalinity should be checked at least once a week to prevent cloudy water, scale formation, metal corrosion, and keep the water comfortable for users.

Total alkalinity should be maintained in the range of 60 to 200 mg/L and adjusted as necessary by using sodium bicarbonate as advised by a swimming pool supplier.

Add small quantities of chemical mixed with water at a time to the pool with the pump and filter operating. Wait 10 - 15 minutes before testing.

Calcium hardness

To prevent scale formation, calcium hardness should be checked once a week. The ideal range of calcium hardness is 150 to 400 mg/L.

Preventing algae

Algae are small organisms that multiply rapidly and can form slimy, green floating material or coat surfaces. They are very common organisms that can enter a pool with rain, wind, soil, swimwear, and cleaning equipment.

Good pool maintenance can prevent algae growth. In pools disinfected with chlorine, the presence of algae is an indicator that free chlorine is not being properly maintained. If algae are present, ensure that disinfectant and pH levels are within the recommended ranges.

Algae can also be controlled using an algaecide, but if algae persist consult your pool supplier.

Topping up the pool

Top up pool water regularly with treated mains water from a domestic water supply using a hand-held hose or bucket. Check disinfectant and pH levels after topping up. All top up water should be added via the skimmer box with the filtration system running.

Water temperature

Water temperature is one of the factors that affect disinfection, so treatment should be adjusted to maintain recommended values. If the pool is continuously heated it will require continuous disinfection. For heated pools, check the temperature regularly and maintain it at a comfortable 26 - 30°C.

Maintenance

All domestic swimming pools need regular cleaning, as follows:

- > Remove litter and vacuum the bottom of the pool regularly to remove dirt and debris.
- > Scrub the pool walls and surrounding areas regularly to remove debris.
- > Clean the pump lint-pot and filter system regularly (daily when using manual dosing).
- > Repair any damaged pool surfaces keep pipes, filters, pumps, and motors in good working order.
- > Service all pool equipment according to manufacturer's directions.
- > Ensure all electrical equipment is maintained in good condition.

- > Use a pool cover when the pool is not in use to keep dirt, leaves, and debris out, to minimise mosquito breeding, and to reduce water loss by evaporation.
- > Store, handle, and use pool chemicals according to the manufacturer's instructions.

Domestic pools should not be used if:

- > the water has been contaminated.
- > the disinfectant level and/or pH are not within the recommended ranges, or the pool water is dirty or cloudy.
- > the recirculation pumps and filters are not operating properly.

Further information

SA Health website:

<https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/public+health/water+quality/swimming+pools+and+recreational+waters/pools+at+home+and+maintaining+them>

South Australian Environment Protection Authority website:

https://www.epa.sa.gov.au/environmental_info/water_quality/programs/stormwater/advice_and_assistance

Pool and spa safety

<https://www.sa.gov.au/topics/planning-and-property/owning-a-property/pool-and-spa-safety>

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