



## Private Spa Pools: A maintenance guide for owners

The most important factor in spa pool care is to keep the water clean and disinfected at all times by the correct use of pool chemicals and good management of the disinfection, filtration and recirculation system.

A well maintained spa pool can provide many hours of enjoyment, but if not properly looked after, it can become a breeding ground for harmful bacteria and other organisms which may cause serious illness.

### What is a 'private' spa pool?

A private spa pool is one that is available only for the use of the owner/occupier and invited guests in a private home.

Private spa pools do not include communal spa pools in flats, units, retirement villages, and the like, under the care and control of a corporate body.

Spa baths are not discussed in this guide as they are emptied after each use like a conventional bath.

The most important responsibility for owners and operators of private spa pools is to keep the water clean and disinfected at all times.

### Why is safe spa pool water so important?

Warm water provides ideal conditions for the growth of micro-organisms such as bacteria.

If a spa pool is not kept clean and properly disinfected, the water may become contaminated with bacteria or other micro-organisms. Contact with contaminated spa pool water or aerosols (droplets) can lead to:

- skin, ear and eye infections;
- gastro-intestinal infections (stomach upset); and

- serious or fatal respiratory infections such as [Legionnaires' disease](#).

Newborns, the elderly and immunocompromised individuals are particularly vulnerable to infection from micro-organisms found in contaminated spa pool water.

### Keeping spa pool water safe

Proper disinfection and filtration of the spa pool water kills harmful micro-organisms, removes body fats and oils, and ensures the water is clean, safe and sparkling.

Water temperature and other factors affect disinfection and should be adjusted to recommended values.

Spa pool water should be tested prior to use and at least three times per week using a reliable pool water test kit, as advised by your pool supplier. At a minimum, each test should include a measure of disinfection levels, pH and alkalinity.

Temperature should be tested regularly to ensure the best operating conditions for the particular type of disinfectant used in the spa pool.

It is very important that the pump lint-pot and filter are cleaned regularly to ensure they do not become a source of contamination.

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If a sand filter is used, the water used to backwash (rinse) the filter must be disposed of into the sewer or into separate underground soakage if in an unsewered area.

Outdoor spas should be fitted with covers to prevent leaves, dirt, pollen or insects entering the water.

## Disinfection agents

Use only commercially available disinfectants suitable for private spa pools. Chlorine and bromine are the most common. Other methods include ozonation, UV irradiation and ionising systems.

**Note:** Ozone, UV and ionising systems require the addition of a small amount of oxidising agent to maintain a residual disinfection activity in the water.

The ideal disinfection system is one that uses automatic dosing and filtration, although manual dosing is commonly used for private spa pools. When using manual dosing, it is important to check the pump and filter system daily to ensure they are clean and working correctly.

A disinfection device such as a floating immersion dispenser should be used to disinfect the spa pool water at all times when the pool is not in use. Consult with the spa pool supplier for manual operation requirements.

Where the spa pool is constantly used it may become heavily contaminated and need to be "shock dosed" to bring it back to the correct operating conditions (see below).

## Recommended disinfection levels

### Chlorine disinfection:

- not less than 2 mg/L and up to 4 mg/L residual free chlorine while the pool is in use. The ideal level is 3 mg/L.

(Residual free chlorine is chlorine left over after combining with organic matter in the spa pool. This residual chlorine is free to kill bacteria from pool users or other sources.)

### Bromine disinfection:

- not less than 4 mg/L and up to 8 mg/L free bromine while spa pool in use. The ideal level is 6 mg/L.

### Other agents

Consult with the supplier of the disinfection agent for details.

**Note:** (1) mg/L (milligrams per litre) is the same as ppm (parts per million).

(2) skin or eye irritation associated with a strong chlorine-like smell can be caused by insufficient residual chlorine levels.

## Should I be shock dosing?

Spa pools should be shock dosed at least weekly, and more often if the pool is in constant use. To do this using chlorine:

- use a metric measuring jug or scales to add a sufficient quantity of chlorine (or other suitable oxidising agent) to the water to achieve 10mg/l residual free chlorine; for example, add 200 mL of liquid sodium hypochlorite (12.5% available chlorine) or 30 g of granular calcium hypochlorite per 1000 litres of water.
- ensure 10mg/L residual free chlorine is maintained 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.

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**Caution:** Do not use spa pool until residual free chlorine falls to 4mg/L.

## pH range

Spa pool water must be within the following pH range for the disinfectant to work efficiently:

- for chlorine: pH 7.2 to 7.6
- for bromine: pH 7.2 to 8.0

## Total alkalinity range

Total alkalinity prevents cloudy water, scale formation, corrosion of metals and makes the water comfortable. To adjust, add sodium bicarbonate as advised by the supplier. Total alkalinity of the water should be checked weekly to ensure the following levels:

- for chlorine disinfection: 60 mg/L to 200 mg/L.
- for bromine disinfection: 150 mg/L to 200 mg/L.

## Handling chemicals safely

When adding chemicals to pool water, first add the chemicals to water in a bucket; then add the mixture to the pool water with the pump and filter operating. Add small quantities at a time. Wait 10 to 15 minutes before testing.

Pool chemicals are potentially toxic and should be handled with care. There are serious risks to health from chemical vapours and the incorrect labelling and storage of chemical containers.

## What should the water temperature be?

Check the temperature regularly and maintain it at a suitable comfort level, usually 35°C to 37°C.

Water temperature should not exceed 40°C as it will cause discomfort for users and may even cause increased body temperature (hyperthermia).

If the pool is continuously heated it will require continuous disinfection.

## When do I change the water?

Replace 10% to 15% of the water each week.

It may be necessary to replace all the pool water occasionally if:

- the spa pool is used often or by a large number of people and the disinfectant cannot be adjusted to the recommended levels;
- algae starts to grow on the pool surfaces;
- the water becomes cloudy and cannot be easily cleared.

In accordance with SA Water restrictions the level of water in a spa pool that has been previously filled may be topped up or maintained only with water from a hand held hose or bucket. Water should always be added with the filtration system running.

There may be times when the water quality is severely affected and the spa pool may need to be completely emptied and refilled. A permit to refill the pool for health reasons should be sought from SA Water. For further information on the SA Water restrictions please see [www.sawater.com.au](http://www.sawater.com.au) or freecall 1800 130 952.

If algae are present, ensure the disinfectant and pH levels are in accordance with the recommended range. If algae are present in high numbers, a super-chlorination and manual removal may be needed. If this is not successful the spa may need to be emptied and the inside surfaces scrubbed with a chlorine solution using gloves, protective glasses and a mask followed by rinsing and refilling. Ensure the area is well ventilated. If algae persist the addition of an algacide may be required. A pool chemical supplier should be consulted.

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## When NOT to use the spa pool

Spa pools should not be used:

- if the disinfectant level and/or pH is not within the recommended range or pool water is dirty or cloudy;
- if the filtration unit and recirculation pump are not operating properly;
- by persons who are under the influence of alcohol or taking drugs that cause drowsiness;
- by persons with open wounds or who feel unwell or are pregnant;
- by persons who are immunocompromised. When in doubt check with your doctor before using a spa pool;
- when it is not properly maintained.

## Pool safety

For health and safety:

- always keep your head above water;
- spend no longer than 20 minutes in the spa pool at any one time;
- always supervise children using the spa pool;
- actively discourage nose blowing, spitting and urinating in the pool.

## Further information

Water quality:

- Local Council Environmental Health Officer
- the Department of Health on 8226-7100 or go to our website: [www.health.sa.gov.au/pehs/environ-health-index.htm](http://www.health.sa.gov.au/pehs/environ-health-index.htm).

- Spa pool shops and manufacturers

Water restrictions:

- SA Water: 1800-130-952 [www.sawater.com.au](http://www.sawater.com.au).

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Last revised October 2008

