

## Blue green algae

Blue green algae (cyanobacteria) can build up in fresh or marine water if water temperatures, light conditions and nutrient levels increase and water flows are low, sometimes causing brightly coloured surface scums or 'blooms' to form.

Some blue green algae produce toxins which can be harmful to both humans and animals.

### What are blue green algae?

Blue green algae (cyanobacteria) are photosynthetic bacteria that share some properties with algae and are present in most aquatic ecosystems, including both fresh and marine water.

Blue green algae can be present in low numbers without causing harm but when favourable growth conditions occur, numbers multiply and a bloom occurs.

Blooms are often visible in the form of coloured surface films or scums. Some blue green algae produce toxins which can be harmful to both humans and animals through contact or ingestion.

In freshwater the blooms are normally blue-green in colour, but in marine waters the colours can range from blue-green through to yellow, orange and red-brown.

Many public water resources such as the River Murray and River Torrens are routinely monitored for blue green algae. If blooms occur it is standard practice for the Department of Health or Local Government to issue information and advice to the public.

### What causes blue green algal blooms?

#### Nutrient input

Nutrient enrichment or eutrophication encourages the growth of blue green algae. Phosphorus and nitrogen are the main nutrients that contribute to eutrophication, entering the waterway

from sources such as effluent, animal waste and agricultural pollution.

#### Temperature

Blue green algal blooms generally occur in the warmer months of the year due to increased water temperature and light conditions.

#### Stable conditions

Blue green algae prefer stable water to allow movement throughout the water column. Slow flow and low turbulence allow the blue green algae to move from the water surface where energy is gained from the sun to lower depths where nutrient levels are higher. This movement gives blue green algae an advantage over other microorganisms that compete for the same food.

#### Turbidity

Turbidity is caused by the presence of suspended solids and organic matter in the water column. Low turbidity can occur when slow moving water allows the solids to settle out of the water column. Blue green algae prefer low turbidity as it allows more light to penetrate through the water.

Drought conditions can intensify factors such as decreased flows and low turbidity, and may therefore contribute to the occurrence of blue green algal blooms.

#### Aesthetics

Blue green algal blooms often discolour the water and form unsightly scums on the surface and along



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shorelines. Blooms can also result in the production of unpleasant earthy or musty odours and tastes.

Caution should be exercised when a blue green algal bloom is suspected from the appearance, smell or taste of water.

## Health effects

Blue green algae produce a wide range of toxins, each of which has specific properties. The toxins are commonly grouped according to their mode of action:

- hepatotoxins – cause damage to the liver
- neurotoxins – cause adverse effects to the nervous system
- irritants/inflammatory agents – cause skin rashes, eye irritation and gastroenteritis.

The toxic effects of blue green algae can occur following ingestion or contact with affected water.

Symptoms vary according to the type and number of blue green algae present but commonly include skin rashes, eye irritation, stomach upsets and flu-like symptoms.

## Shellfish poisoning

Algal toxins can accumulate in shellfish, resulting in a potential health risk to human consumers.

Paralytic Shellfish Poisoning (PSP) occurs after the consumption of shellfish contaminated with toxic algae, including blue green or microalgae.

PSP can lead to tingling or prickling of the mouth and throat, dizziness, weakness, vomiting and muscle paralysis.

Consumption of shellfish contaminated by PSP has resulted in human deaths but to date appropriate monitoring and control measures have prevented

outbreaks in Australia. Other less serious health effects from consuming contaminated shellfish include gastrointestinal type illness.

Mussels, cockles, oysters and other shellfish caught in algae infested waters should not be consumed.

There is a permanent ban on the collection of shellfish from West Lakes and the section of the Port River between the Causeway and North Arm. These areas are subject to the occasional growth of toxic microalgae.

## Preventing illness

- Avoid contact with coloured surface films or scums in fresh or marine water bodies
- If you suspect contamination of a water supply with blue green algae, do not use the water for any purpose including drinking, cooking, washing or showering
  - Boiling the water will **NOT** make it safe to drink
- Do not consume shellfish from a water source where blue green algae is present or suspected
- Restrict pet and livestock access to any water supply containing or suspected of containing blue green algae
  - Do not let animals bathe in or drink contaminated water
  - Particular care should be taken with dogs as they can ingest very high concentrations of organisms from grooming their coat after contact
- If irrigation with water contaminated with blue green algae is unavoidable, do not use directly on plants being grown for human consumption.

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## Further Information

- Refer to 'Guidelines for Managing Risks in Recreational Water' at [www.nhmrc.gov.au/publications/synopses/eh38.htm](http://www.nhmrc.gov.au/publications/synopses/eh38.htm)
- Contact your local Council Environmental Health Officer
- Contact SA Health's Scientific Services (details below).

## Contact

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