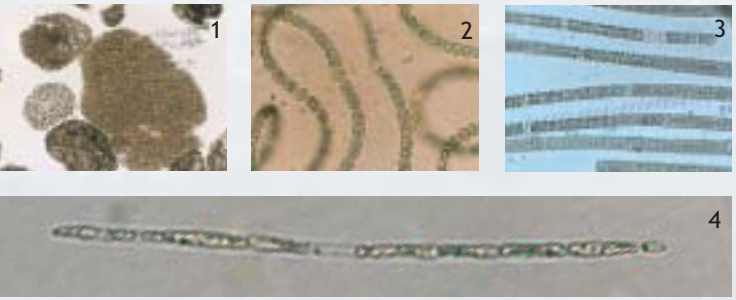
Blue-green algae usually flourish in any waters with high nutrient levels and can result in bright green or khaki paint-like scum along the waters edge or even discolour the water brown.



Four toxic blue-green species as viewed under the microscope: Microcystis aeruginosa[1] *(4-7µm),* Anabaena circinalis[2] *(6-9µm),* Nodularia spumigena[3] *(7-12µm) and* Cylindrospermopsis raciborskii[4] *(3-4µm). One Micron (µm)=one thousandth of a mm.*

When blue-green algal blooms are identified in any recreational waters, Health Warning signs are posted and media alerts are issued to inform the public. Both people and animals are potentially at risk if exposed to affected waters. As a precaution, water contact should be avoided and edible mussels from bloom-affected areas should not be consumed as they can become toxic.

Department of Health WA standard Warning sign.

Fish 'kills'

Some fish kills are caused by natural events. Others may be caused by toxic algal blooms, low oxygen levels in the water or by pollution spill events. People should avoid contact with any waters where there are dead, dying or erratically swimming fish. Those fish should not be handled or consumed and should be immediately reported to the authorities. If possible, the numbers and types of fish should be noted.

Dead fish from the Swan River estuary.

Reporting

Western Australia is a vast state with many inland lakes, riverine, estuarine and marine environments that are used for drinking and recreational purposes. It is not possible to test all of these water bodies all of the time.

If you are in doubt about the safety of a water body it is better that you are cautious and seek advice.

To report any discoloured water or blooms, please contact the Department of Environment on 9278 0300. The local water manager and Local Council Environmental Officer and/or Environmental Health Officer should also be notified of potentially affected water bodies through your local government.

The Western Australian Government has trained emergency teams that are equipped to investigate the causes of fish kills. It is important that fish kills in all inland waters be reported immediately to the nearest Department of Environment fish emergency response team on 0417 987 537.

Should adverse reactions develop after contact with any macroalgae, microalgae, fish or the consumption shellfish you should see your doctor. Further information can also be obtained from the Department of Health, Environmental Health Directorate that can be contacted on 9388 4999.

ALGAE:
Blooms, scum and recreation

Department of Environment
Department of Health WA

Algal blooms occur in lakes, rivers, estuaries and oceans of Western Australia. They usually occur as a result of elevated nutrient levels. Algal blooms are the proliferation of either macroalgae (seaweed) or surface scum accumulation or brightly coloured water due to microalgae (phytoplankton). Blooms can occur almost anywhere and many may go unnoticed.

Macroalgae

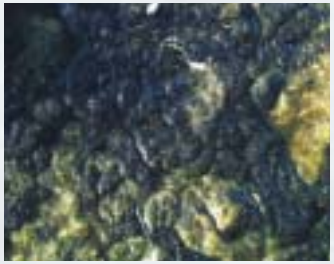
Macroalgal blooms may appear as accumulations of green or brown stringy growths in shallow waters and can end up as smelly, rotting wracks on foreshores.

Macroalgal wracks of green Chaetomorpha *(right) and red* Gracilaria *(left) accumulating along the edge of the Swan River estuary.*

Though stranded macroalgal blooms are generally harmless and are usually temporary, they can be a nuisance to recreational users and to nearby residents when they decompose by creating unpleasant smells.

Wracks of macroalgae on beaches or in the shallows can conceal the poison-barbed cobbler fish, rocks or broken glass and care should be taken to avoid wading amongst them.

The toxic freshwater blue green alga *Scytonema* can resemble harmless green macroalgae therefore it should not be handled but should be reported for investigation.



The blue-green algae Scytonema *can look like greenish-black macroalgae when in bloom.*

Microalgal blooms

Microalgal blooms usually occur from spring through to autumn when temperatures are warmer, there is bright sunlight and the water is slow-moving or stagnant. Under these ideal conditions they flourish, forming blooms (hundreds of thousands to millions of tiny cells per teaspoonful of water). These blooms can result in a heavy khaki, green, brown, white, yellow or red discolouration or scum and may have an odour. They are most visible under calm conditions when the cells accumulate near the water surface usually from late morning to the mid-afternoon.

Algal blooms – hazard categories

There are many types of microalgae, but in this fact sheet they have been divided into harmless, nuisance microalgal blooms, toxic blue-greens and fish killing events.

Harmless blooms

These results in a water discolouration but without any accompanying scum or odour. Simply rinsing off with clean water after contact is usually sufficient.

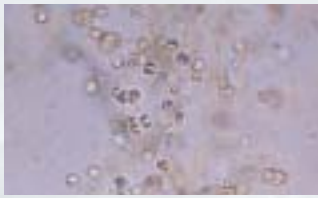
A harmless green bloom species Chlamydomonas.

Nuisance microalgal blooms

These occur when harmless microalgae form nuisance surface scums that may cling to the skin.

Under unusual some microalgal may produce mucus that can adhere to the skin or clothing of people entering the water. The microalgal should be rinsed off with clean water.

Cells of a red tide dinoflagellate shown adhering to swimmers in the Swan River estuary (Courtesy of Community Newspaper Group).



A bloom of tiny (3-4 micron diameter) colonial mucus forming marine diatoms Thalassiosira *that resulted in swimmer complaints when mucus adhered to the skin of recreational users at a Rockingham Beach (microscopic view).*

Nuisance surface foam/scum/mucus in the Murray River estuary at Mandurah resulting from microalgal blooms.

Other algae form blooms that can result in surface scum with a high mucus content. Such surface scums have been associated with elevated bacterial counts. Contact with these nuisance surface scums should be avoided.

Toxic blue-green algae

Blue-green microalgae are potentially harmful if ingested by humans and animals or if they come into contact with people's mucosa. Under favourable conditions, nerve or liver toxins can be produced while all blue-green algae can potentially cause skin irritation following direct exposure.

The toxic scum of the Microcystis *bloom in the Swan River estuary in February 2000 that resulted in the closure of recreational areas.*