

Blue-green algae blooms: risks to fishers

November 2015

Cyanobacteria, also known as blue-green algae, pose a risk to water users, including fishers, for a variety of reasons.

What are cyanobacteria?

Cyanobacteria, also known as blue-green algae, are a type of bacteria that act like plants and other algae in the way they trap light energy to make their own food from water and carbon dioxide (photosynthesis).

Cyanobacteria grow in a range of environments including;

- fresh and marine waters,
- on soils and in other earthy environments, and
- in associations with plants and animals.

Excessive growth of cyanobacteria, called blooms, can occur when levels of nutrients like phosphorus and nitrogen in the water are too high.

Blooms are more common in summer as many of the common bloom-forming species in NSW have optimal growth rates around 25°C, however, winter blooms can still occur.

How to identify a bloom

Blooms often appear as a distinct green colouration to the water, with small flecks floating within the water column, and with slicks and scums forming on the water surface during calm sunny weather conditions.

Severe blooms can form thick scums resembling oil based paint poured onto the surface of the water. Scums can be green, blue-green, blue-grey or even white or red depending on the age of the algae and the state of decomposition. Some blooms also produce a strong musty or earthy odour. However not all blooms form surface scums or produce odour.



Why are cyanobacterial blooms a risk to fishers?

Cyanobacteria pose a risk to water users, including fishers, for a variety of reasons.

Firstly, some species of freshwater cyanobacteria (but not all) can produce potent toxins. There are several types of toxins produced by cyanobacteria that;

- causes the breakdown of cells within the liver leading to internal bleeding, or;
- attacks a variety of internal organs including the liver, kidneys, stomach and intestines or;
- attacks the nervous system and can cause respiratory arrest.
- Some of these toxins have also been shown to be tumour promoters.

Secondly, all cyanobacteria have a component of their cell walls that can cause skin rashes, ear and eye irritations, and fever like symptoms, diarrhea and vomiting if swallowed. They may also be tumour promoters.

Studies have shown that about 15% of the population may be susceptible to allergic reactions from cyanobacteria. People who already suffer other allergies such as asthma and hay fever are more prone to the effects than those who don't.

Thirdly, it has been suggested that many cyanobacteria may produce a slow acting neurotoxin, BMAA, which has also been linked as a possible cause of neurodegenerative illness such as Alzheimer's disease and motor neuron disease. Although these links have yet to be proved, avoidance of cyanobacteria is advised as a precaution.

Potential exposure

Human health hazards from cyanobacteria arise from three methods of exposure:

1. **Swallowing water containing cyanobacteria.**

People are advised never to drink untreated water directly from a lake, river or reservoir, especially if there is a cyanobacterial bloom, but even if there is not because of the possible presence of other harmful microorganisms. When there is a bloom, even drinking boiled water is not advised as boiling will not destroy any toxins present. People swimming in contaminated water can also swallow small amounts accidentally which can lead to gastric upsets.

2. **Direct contact with the cyanobacteria.**

People wading or swimming in water contaminated with cyanobacteria are at risk from the contact irritants. Cyanobacteria may also foul fishing equipment, especially a marine filamentous species known as “Fireweed” or “Mermaids hair” that can cause severe skin blistering upon contact.

3. **The inhalation of water droplets and aerosols containing cyanobacteria.**

Water skiing, jet skis, boats and outboard motors can create sprays that may be inhaled, as can wind and wave action. Exposure through inhalation can lead to asthma, and it is also the most toxic form of exposure. Fortunately the amounts of contaminated water inhaled are usually very small and the risk thus reduced.

4. **Eating toxic mussels, yabbies or finfish.**

Freshwater mussels and yabbies accumulate toxin when exposed to a bloom. Finfish exposed to blue-green algae have been found with moderate levels of toxin in their viscera.

How can fishers keep safe from cyanobacterial blooms?

When bloom are detected in NSW lakes, rivers, reservoirs and wetlands, management authorities will issue a media release and post warning signs at major points of public access.

If a bloom has not been reported, fishers should avoid water bodies where there are thick surface scums and bad odours as previously described.

The best way that fishers can keep safe from cyanobacterial blooms is to avoid fishing at bloom locations and choose an alternative location to fish.

If you are fishing at a location where a cyanobacterial bloom may be present;

- avoid direct contact with the water as much as possible, or
- wear waders, gumboots or gloves when entering the water or retrieving fishing gear and fish from the water.
- avoid drinking the water, even if boiled, from the location.
- avoid sprays created by boats and outboard motors, and if possible on windy days with wave action, fish at upwind locations rather than downwind locations to avoid wind and wave created sprays.
- do not sell or eat mussels, yabbies, or other invertebrates taken from waters with an algal scum or until at least 2 weeks after a Red Alert has been lifted.
- clean any fish caught in clean uncontaminated tap water, and discard the viscera.

It is probably best not to eat fish caught at locations with severe blooms that last extended periods of time as BMAA can be bound to proteins and may accumulate through the food chain from cyanobacteria to zooplankton to fish to humans. While the presence and health impacts of BMAA have yet to be proved, avoidance is currently the best policy.

Regional Algal Coordinating Committees (RACCs) monitor algal conditions in NSW waterways.

RACCs inform the public about Algal Red Alerts using local media and signage at impacted areas or nearby boat ramps.

Fishers should follow local radio news and newspapers for information about algal blooms. Website: <http://www.water.nsw.gov.au/water-management/water-quality/algal-information>

Hotline: 1800 999 457

Acknowledgments

The following information has been prepared by DPI - Water, DPI - Food Authority, and Fisheries NSW.

© State of New South Wales through the Department of Trade and Investment, Regional Infrastructure and Services, 2015. You may copy, distribute and otherwise freely deal with this publication for any purpose, provided that you attribute the NSW Department of Primary Industries as the owner.

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (November 2015). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of the Department of Primary Industries or the user's independent adviser.

Published by the Department of Primary Industries. [NSWFA/FA248/1511](https://www.dpi.nsw.gov.au/NSWFA/FA248/1511)