

# Blue-green algae in Lake Connewarre and the Barwon Estuary

3 February 2012

## Fact sheet for health professionals

Elevated concentrations of the blue-green algal (cyanobacterial) species *Nodularia spumigena* have recently been found in areas of Lake Connewarre and the Barwon River Estuary. Direct contact with water affected by the blue-green algae bloom can cause irritant effects. Ingestion of toxins through affected water or seafood by humans can adversely affect liver function and is possibly carcinogenic. Health professionals should be alert for symptoms including skin irritation, respiratory effects and hay-fever like symptoms from direct contact. Ingestion may lead to non-specific symptoms related to liver function such as fatigue, abdominal pain or jaundice. Diagnosis is by exclusion, so careful history taking is essential.

## Background

Concentrations of *Nodularia spumigena* in affected areas of Lake Connewarre and the Barwon River Estuary currently exceed the recreational health trigger of  $\geq 4 \text{ mm}^3/\text{L}$  specified in the *Guidelines for managing risks in recreational water*.<sup>1</sup>

*Nodularia spumigena*, like all gram-negative bacteria contains lipopolysaccharides in its cell wall. While research has shown that cyanobacterial lipopolysaccharide is significantly less potent than typical gram-negative bacterial polysaccharide (e.g. *E. coli*), direct contact with water containing the levels of cyanobacteria currently present in areas of Lake Connewarre and the Barwon River Estuary may result in a variety of symptoms including skin irritation, respiratory effects and hay-fever like symptoms.

The *Nodularia spumigena* species present in Lake Connewarre and the Barwon River Estuary has the ability to produce the toxin, nodularin, which acts as a hepatotoxin.

Toxicity is presumed to be similar to the blue-green algae toxins microcystins that are possibly carcinogenic to humans.

Nodularin toxin can bioaccumulate in aquatic organisms such as mussels, prawns, crabs and

fish. Many aquatic organisms accumulate toxins and transfer them along the food chain.

The current advice is for filter feeders such as prawns, mussels and crabs caught from Lake Connewarre and the Barwon River Estuary not to be consumed.

In fish, toxins will accumulate to the greatest degree in the internal organs, but will also accumulate in the head and in the flesh, particularly if blooms continue over long periods. The current advice is for fishers to remove internal organs of fish (gutting and gilling) prior to cooking and eating.

## Diagnosis

No routine pathology testing for toxin is available in humans. Diagnosis is by exclusion. Careful history taking is recommended.

Associated symptoms from ingestion are likely to be non-specific and related to liver function such as fatigue, abdominal pain or jaundice. Liver function tests are recommended.

## Treatment

If direct skin contact with water affected by the algal bloom has just occurred, people are advised to remove any affected clothing and wash themselves thoroughly with clean water after coming ashore. Clothing and wetsuits should be thoroughly rinsed

<sup>1</sup> Trigger value of  $\geq 4 \text{ mm}^3/\text{L}$ , specified in the *Guidelines for Managing Risks in Recreational Water* (National Health and Medical Research Council (NHMRC) 2008).

before being worn again to remove any traces of algae.

Stopping exposure from ingestion of affected seafood is the initial intervention.

Hepatotoxins from ingestion of affected seafood can cause abnormal liver function tests that may require clinical management.

As with other blue-green algae toxins like microcystins, it would be expected that long term toxicity would be related to chronic exposure to the toxin.

## Prevention

Visitors and residents are being advised that contact with the water from affected areas of Lake Connemara and the Barwon River Estuary should be avoided.

Recreational anglers are being advised to remove and discard guts and gills from fish prior to cooking. Fish should not be cooked whole as this will re-distribute toxins from the internal organs to the fish flesh, making it unsafe for consumption. Mussels, prawns and crabs obtained from affected areas should not be consumed.

Water from affected areas of Lake Connemara and the Barwon River Estuary should not be used for cooking, drinking, washing, showering, stock watering or for pets. Boiling the affected water will not make it safe to use.

Signs have been erected at key recreational access sites around Lake Connemara and the Barwon River Estuary to advise the public not to come into contact with affected water or consume affected seafood. Media releases have also been issued.

Water users who experience any health effects following recreational exposure or ingestion of affected seafood from Lake Connemara and the Barwon River Estuary are being directed to seek medical advice.

## Further information

For further information on health issues relating to blue-green algae, contact the Victorian Department of Health on 1300 761 874.

Information updates about the cyanobacterial bloom in Lake Connemara and the Barwon River Estuary is available on the Department of Sustainability and Environment (DSE) website: [www.water.vic.gov.au](http://www.water.vic.gov.au) and from DSE's Customer Service Centre on telephone 136 186.

## Useful resources

NHMRC, 2008, *Guidelines for Managing Risks in Recreational Water*. National Health and Medical Research Council.

Water Quality Research Australia, 2010, *Management Strategies for Cyanobacteria (blue-green algae): A Guide for Water Utilities*.

Victorian Government health information on blue-green algae:

<http://www.health.vic.gov.au/environment/water/bluegreenalgae.htm>