



FAQs – Swan River *Alexandrium minutum* bloom and Paralytic Shellfish Poisoning

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Monitoring Information (Swan River) web-link

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What is the current health warning?

The current health warning is to not eat fish, crabs or shellfish collected from the Swan River, between Pelican Point to Como Jetty and upstream to Maali Bridge Park, Herne Hill. This includes the commonly known areas of Matilda Bay, Como Jetty, Perth Waters, Elizabeth Quay, Barrack Street Jetty, Claisebrook Cove, Ascot Waters, Riverside Gardens, Garvey Park, Sandy Beach Reserve, Point Reserve, Fish Market Reserve, Woodbridge Riverside Park and Middle Swan Reserve.

Shellfish includes oysters, mussels, clams, pipis, scallops, cockles and razor clams.

What are the potential health risks caused by the toxins produced by *Alexandrium minutum*?

Alexandrium minutum produces toxins that can be concentrated by filter feeding shellfish. Consumption of shellfish containing high levels of these toxins can result in PSP. In the worst-case scenario, this can cause muscular paralysis and death due to respiratory failure.

Crabs may bioaccumulate these paralytic shellfish toxins (PSTs) in the viscera (internal organs). PSTs may also bioaccumulate in the muscle tissue of both crabs and some fish.

Cooking, pressure cooking and/or freezing processes do not destroy these PSTs.

Can I safely consume crabs, and fish taken outside of the affected area?

It is very unlikely that consuming crabs and fish caught outside of the affected area poses a significant risk of exposure to harmful levels of PSTs. However, should you feel unwell or experience symptoms of PSP; you should seek urgent medical attention.

What is Paralytic Shellfish Poisoning (PSP)?

Paralytic shellfish poisoning (PSP) is a disease caused by eating shellfish containing paralytic shellfish toxins (PSTs). PSTs are produced by some types of naturally occurring algae e.g. *Alexandrium minutum*, which are accumulated by filter-feeding shellfish. Crabs and certain fish also feed on shellfish, which may lead to bioaccumulation of PSTs in their organs and muscle tissue and could be dangerous if consumed.

What are the symptoms of PSP?

Symptoms of PSP are known to begin within minutes or up to 24 hours after eating shellfish.

Initial symptoms include tingling and numbness around the mouth which can spread to the face, neck, arms and legs.

Other symptoms include:

- nausea and vomiting
- headache
- weakness
- blurred vision or temporary blindness
- prickly sensation at the finger tips
- change in temperature sensation

- loss of balance
- difficulty speaking or swallowing
- in severe cases difficulty breathing, paralysis and death can occur.

What should I do if I feel sick, or experience PSP type symptoms?

Seek urgent medical attention, particularly if you have any difficulty breathing.

Is there an antidote for PSP?

No. There is no specific antidote for PSP. Seek immediate medical attention if you or someone you know experiences PSP symptoms.

In severe cases people are monitored in hospital and may need breathing support.

How long do PSP symptoms remain?

Evidence suggests that after 12-24 hours, regardless of severity, victims start to recover gradually and are without any residual symptoms within a few days.

Is it safe for me to swim in and recreate on the Swan River?

Yes. Swimming, water-skiing and boating is OK, but as a general rule swimming should be avoided in areas of discoloured water. It is also safe for dogs to swim in the water. There may be some areas associated with this bloom, where a red discoloration of the water may be observed.

Can the Alexandrium algae cause skin irritations?

Not that we know of, but it is recommended to avoid swimming in discoloured water in the affected area or where surface scums are evident.

Where are health warning signs displayed?

Health warning signs that state: 'Do not fish, or do not collect crabs or shellfish', have been erected, or put in place at popular fishing spots, jetties, boat ramps etc. within the impacted area. Even if a sign is not erected at the place you fish, within the impacted area, you are still advised not eat any fish, crabs or shellfish caught or collected in that location.

Where can I fish in the Swan River?

The current health warning is to not eat fish, crabs or shellfish collected from the Swan River, between Pelican Point to Como Jetty and upstream to Maali Bridge Park, Herne Hill. You can fish outside this exclusion zone at locations such as Claremont Jetty, Point Walter, Bicton, Blackwall Reach, Mosman Bay, North Fremantle and the Canning River.

Please check current health warnings on the Department of Health website before you go fishing in the Swan River.

How do shellfish become contaminated?

Shellfish feed by filtering small food particles; including microscopic algae, out of the water. When shellfish filter microalgae (e.g. *Alexandrium*) that produce PSTs, they accumulate these toxins in their tissues. Shellfish are resistant to the PSTs, but can transfer them on to other animals and humans that consume the shellfish.

What is the maximum level of PSP in bivalve molluscs (shellfish)?

The Australian and New Zealand Food Standards Code (2017) define the maximum level of paralytic shellfish poisons (Saxitoxin equivalent) in bivalve molluscs equal to 0.8 mg/kg. In a strict sense, this level is only applicable to shellfish that are harvested for sale, but may provide a comparative measure where other seafood is tested.

Does adherence to or comparison with ANZFSC maximum PSP levels from recent testing in shellfish, crabs and fish guarantee their safety?

Whilst adherence to, or comparison with ANZFSC maximum PSP levels from recent testing, may provide a general indication that crabs, fish and shellfish taken recreationally are most likely fit for human consumption; any results received should be treated with caution and are indicative only.

Unfortunately, due to the cost of testing, and the limited number of tests reasonably able to be performed (in combination with changing environmental conditions, including bloom movement and its persistence over-time) this testing cannot fully guarantee the safety of every individual catch for human consumption.

How long after a bloom do PSP toxins remain in shellfish, crabs and fish?

Even after a bloom ends, PSTs in crabs and some types of shellfish can remain for some time. PSTs in mussels may reduce quickly i.e. within days to a couple of weeks, whilst crabs and some fish and other shellfish species may take up to a month or even longer.

What factors contribute to Alexandrium blooms?

Waterways contain many different species of algae that will opportunistically take advantage of ambient conditions to proliferate and out-compete co-occurring species. Factors influencing blooms include *temperature, turbulence, salinity, available nutrients and water clarity*.

Should I consume shellfish that are collected recreationally?

Regardless of the presence/absence of *Alexandrium minutum*, and/or PST's, as a general rule people should avoid eating wild shellfish collected recreationally as their safety cannot be guaranteed. This is particularly the case in rivers, estuaries or other waterways, like the Swan River, where there is an increased likelihood of contaminant or nutrient inputs, which may result in elevated levels of algal toxins, bacteria, viruses, heavy metals and/or other contaminants within shellfish.

It is especially unsafe to eat wild shellfish from:

- marinas or other areas potentially subject to boat discharges
- areas near outfalls from sewage, septic tanks, stormwater or industrial sites
- areas affected by recent heavy rainfall
- areas affected by toxic algal blooms.

What shellfish are safe for human consumption?

The Department of Health recommends only eating shellfish that has been harvested commercially under strict monitoring programs, that ensure waters are free from pollutants and toxins. These safety programs include routine testing of the animal as well as the waters to make sure the shellfish are safe to eat. Farmed shellfish purchased in supermarkets and other commercial outlets in WA are subject to a strict quality-assurance program to ensure they are safe for human consumption.

What factors lead to a decline of an algal bloom?

Algal blooms generally cease when available nutrients in the water are depleted and/or the environmental conditions, such as light and temperature, no longer support algal growth. A heavy rainfall event may also assist to disrupt some algal blooms but can provide a catalyst for some algal blooms to release toxins.

How long will this bloom last?

It is not known how long the bloom will last, but the Department of Biodiversity, Conservation and Attractions (DBCA) will continue to monitor algae levels within the Swan River and provide advice to the Department of Health.

The Department of Health will continue to update its current health warning (as appropriate), and will advise when river conditions are satisfactory from a public health perspective.

Is this the first time an *Alexandrium* bloom has been recorded in the Swan River?

Alexandrium has been recorded in the Swan River since 2001, but we have never before seen a bloom of *Alexandrium minutum* at this density or extent in the river system. Favourable temperatures, salinities, and available nutrients, as well as, relatively calm weather conditions, over the past month, have contributed to the proliferation and continuation of this bloom.

Monitoring Information (Swan River) web-link

DBCA is the Western Australian state government agency which undertakes management, and weekly phytoplankton (microalgae) and physico-chemical water quality monitoring through-out the Swan River.

For current monitoring information please refer to:

<https://www.dpaw.wa.gov.au/management/swan-canning-riverpark/ecosystem-health-and-management/374-monitoring-evaluation-and-reporting?showall=&start=1>. For a quick Google search type: 'Microalgae activity report' and click on the first link below.

How can we stop the spread of the bloom?

At this time, there is very little we can do to stop the spread of this alga. The bloom is spreading through the movement of tides, which have pushed it a long way upstream. The bloom currently occurs between Pelican Point, Nedlands and Maali Bridge Park, Herne Hill. It is not known how long the *Alexandrium* bloom will persist, but it is likely to remain until ambient environmental conditions change significantly. The DBCA will continue to monitor algae levels within the Swan and Canning rivers and provide advice to the Department of Health.

What is the likely impact of the *Alexandrium* bloom on the river's ecosystem and wildlife?

Alexandrium minutum produces potent neurotoxins which are toxic to some zooplankton and small fish. These impacts can influence the ecosystem dynamics. *Alexandrium* also has the potential to impact wildlife as toxins can accumulate up the food chain. Filter feeders such as mussels filter water and can remove the algae from the water column. The algae contain toxins which can accumulate in the mussels and the mussels can then be consumed by other organisms including

crabs and fish. To date no negative effects on wildlife has been observed in association with this algal bloom.

What does the algal bloom look like?

The visual impact of the algae is a dirty red or rusty discoloration of the water. The Department of Health generally advises people not to swim in areas of discoloured water or after heavy rainfall events.

What actions are being taken to reduce the bloom and the human health risks?

The DBCA and the Department of Water and Environmental Regulation (DWER) monitor the Swan Canning Estuary water quality weekly, to inform river management actions regarding algal blooms.

DBCA with the assistance of the Department of Primary Industries and Regional Development (DPIRD) are collecting mussels, blue swimmer crabs and black bream in the Swan River. These species will then be tested for toxins to increase our understanding of the potential impacts of *Alexandrium minutum* upon these species.

This testing is indicative only and is not designed to confirm that crabs, fish and mussels are safe for human consumption, as there other factors in large urban catchments (e.g. local sources of pollution, stormwater runoff etc.) that can influence whether it is safe to consume seafood from the river. As results become available, the Department of Health will provide further advice regarding the continued safety to consume seafood caught in the Swan River.

In the past the DBCA has investigated different approaches to control algal blooms. Each type of algae is unique, and DBCA is currently undertaking laboratory trials to investigate approaches to control *Alexandrium*.

What other river management initiatives help prevent Alexandrium and other algae from spreading?

Algae are a natural part of the river system, and algal blooms are quite common in nutrient rich river systems. Controlling nutrients that enter the river system helps to reduce the likelihood of nuisance and toxic algal blooms.

DBCA and its' partners use constructed wetlands, foreshore plantings, and different landcare initiatives in the catchment, to help reduce nutrients such as nitrogen, and phosphorus entering our rivers. Fewer nutrients in the water, means, less nutrients for algae and fewer blooms.

Additionally, DBCA also run free behaviour change programs such as: 'RiverWise gardening' workshops, to assist residents and land managers to use fertiliser more responsibly.

DBCA in partnership with DWER also provide artificial oxygenation to around 14 kilometres of the upper Swan and Canning Rivers through four oxygenation plants. This oxygenation zone provides a refuge area for aquatic wildlife at times of the year when there is low oxygen in these parts of the river which also helps to reduce nutrient release from the sediment and with processing of nutrients that enter the river system.

DBCA and DPIRD work together to remove any dead fish from the river when fish kills occur, as they can produce and contribute harmful bacteria into our rivers.

What can Perth residents do to help slow down the algae's spread and prevent future outbreaks?

Reduce your fertiliser use and only fertilise at the right time of year. Having a waterwise garden, that doesn't use a lot of fertiliser, or water, helps to reduce nutrient losses to the environment and saves people money. DBCA supports the 'RiverWise gardening' workshops that are held by Josh Byrne.

These workshops provide a great forum for people to; better understand how they can make positive changes to their practices that can help their gardens and the Rivers. The next workshops are being held in the City of Swan on 30 May and City of Melville on 6 June. Refer to the River Guardians website for more information: <https://www.riverguardians.com/>.

People can also pick up after their dogs, rake up lawn clippings/ leaves and put them in the bin to reduce the nutrient load being washed into our drains which ultimately flow into our rivers.

Background

Since early March 2019, the Swan River has been experiencing a toxic algal bloom caused by the microscopic species '*Alexandrium minutum*'. This bloom commenced in the Swan River near East Perth, before moving up and downstream, impacting Claisebrook Cove, Ascot Waters, Perth Waters and Matilda Bay. The bloom then intensified primarily through the middle and upper reaches of the Swan River.

On 13 March 2019, the Department of Health, Western Australia issued the first of several media statements, to advise of the risk of paralytic shellfish poisoning (PSP) and the advice not to fish, collect crabs or shellfish from the impacted area.

This fact sheet provides information, in a Frequently Asked Question (FAQ) format, relevant to this current Swan River bloom, as well as other general health, fishing and other issues relating to *Alexandrium minutum* and Paralytic Shellfish Poisoning.

Current media statement web-link

For the latest Department of Health media statement refer to: <http://ww2.health.wa.gov.au/News>.