

MARINE BIOTOXIN IN SHELLFISH FACT SHEET

MARINE BIO-TOXIN IN SHELLFISH

FREQUENTLY ASKED QUESTIONS.

What causes toxicity in the shellfish?

The toxicity in shellfish on the west coast of the North Island is caused by a bloom of an algae called *Gymnodinium catenatum*. Shellfish feed on the toxic algae and become toxic themselves. This algae produces a toxin in shellfish, and if eaten, can cause illness in humans.

What is Gymnodinium catenatum?

Gymnodinium catenatum is a one-cell algae (dinoflagellate) that forms chains. The cells are able to move around in the water being closer to the surface at night, and deeper during the day. They multiply rapidly and often do not separate, hence forming the chains.

The cells can also form cysts. The cysts lie in the mud or seaweed on the sea floor, until conditions are suitable for them to hatch and multiply.

Gymnodinium catenatum is able to survive and grow in waters that are far lower in temperature than other algae that have historically produced toxic algae blooms in New Zealand.

The bloom currently in New Zealand waters, is surviving in water 12-14°C. It is very likely that the organism that we have will be able to survive in water temperatures from 12 - 20°C, if it is similar to other temperate strains. If this is so then this bloom could be present for some months to come, and it could spread.

Scientists are not sure what the best environmental conditions are in New Zealand for *Gymnodinium catenatum* as this organism has not been found here previously.

What are Paralytic Shellfish Poisoning toxins?

Paralytic Shellfish Poisoning is caused by a group of 24 chemicals called the saxitoxins and gonyautoxins. These chemicals are produced by the algae and released into the shellfish when the algae are eaten. The chemicals all differ in their toxicity to humans, and can be changed depending on the species of shellfish. Stomach acids in animals and humans can also alter the toxicity.

The toxins can also be released into the sea from the algae, as the toxin is soluble in water, but there are no known problems with recreational contact with water eg swimming or diving.

At what levels of toxicity are people at risk of illness and death?

The risk of illness depends on a number of factors such as your current state of health, weight, which toxins are present and how much toxin is in the shellfish. **The toxins are heat stable so cooking the shellfish will not remove them.**

The Ministry of Health issues warnings to the public when the toxicity is measured at 80ug/100g (saxitoxin equivalent). At this level of toxicity we expect that the toxins will not affect most people. In the current event, levels of toxin have been found at up to 50 times this warning level.

People have become ill from eating shellfish which were only 10 times above the warning level. Now that some areas have reported levels at 50 times higher than the warning level, we would expect adults could eat enough shellfish in one meal to cause illness, and in some cases death.

In overseas PSP events caused by *Gymnodinium catenatum*, people have been put on life support in hospital for up to 10 days and up to 15% of the people who ate shellfish died.

What are the symptoms of Paralytic Shellfish Poisoning?

- Numbness and tingling (prickly feeling) around the mouth, face or extremities first.
- Headache and dizziness.
- Moderate to severe symptoms include a spread of the prickly areas, floating feeling, difficulty swallowing and speaking with slight difficulty in breathing and a rapid heart rate.
- Symptoms can progress to dizziness; double vision and paralysis and eventually breathing may stop

It is possible that these symptoms may take as long as 12 hours to start developing and then may progress rapidly causing respiratory failure within 2 hours. Overseas reports indicate that the affected person is aware of the symptoms throughout and can be quite calm.

If you are ill with these types of symptoms after eating shellfish from any area please consult your doctor immediately and advise health protection staff at your local public health service.

If somebody is seen to have these symptoms and to suffer breathing failure after eating shellfish, you will need to do rescue breathing and cardiac massage until you can get the person onto artificial respiration.

There is no antidote and the person has to be kept alive until the nerves become free of toxin and they are able to recover.

What shellfish are affected?

The species that appears to have taken in the highest amounts of toxins so far are Green-lipped mussels. Other species have been found with toxins that are in the range where illness is possible. These include tuatua, toheroa, cockles and pipi. Other species like oysters, paua, kina, scallops and other surf clams should not be taken from the affected areas. Whitebait appear to be unaffected so far. Crab and crayfish must be gutted prior to cooking.

We do not have enough information on the rates of toxin intake and loss from the shellfish to be able to advise the public on the safety of individual shellfish species.

Are the shellfish for sale in shops safe to eat?

Yes – all the commercial shellfish growing areas have in place a strict monitoring programme for shellfish toxins.

Why does the Ministry of Health issue warnings about areas of the coastline?

The Ministry issues warnings in advance as a precaution. Although comprehensive sampling programmes are in place, the results take time and it is simply not possible to tell from looking at the shellfish which are toxic and which are not. It is also not possible to say how quickly shellfish at a site can change so you may have got away with eating shellfish from a site one week and not do so days later. The area affected by closure is determined by the nearest point at which toxins were either absent, or at levels below the closure level.

How variable are the toxins within a shellfish species?

Overseas studies have shown that shellfish from the same site can have very different toxin levels. Some neighbouring shellfish have been found to vary by over 30 times. You may eat some shellfish from the same harvest with lower toxicity than your partner or children. It is not possible to tell from looking at the shellfish which is toxic and which is not. It is also not possible to say how quickly shellfish at a site can change in toxicity. What you were able to eat last week may be a very different proposition this week.

Do the toxins affect the flesh of fish?

The Ministry of Health is advising people that it is safe to eat the muscle of fish, but not the guts of fish that feed on algae or shellfish. The gut contents of these fish should be disposed of carefully, so that animals like cats and dogs cannot feed on them. We have already received reports of cats and dogs becoming ill from eating shellfish, and possibly the guts of fish. **Cooking does not destroy the toxin** and can spread it from the gut to other parts of the fish so it is important to gut species that may feed on shellfish or plankton before cooking.

Blooms overseas reached cell counts 126 times higher than those seen so far in New Zealand. Such blooms killed many fish by taking most of the oxygen from the water.

Are marine species other than shellfish affected?

Crabs that feed on shellfish may accumulate toxins in the area (hepatopancreas) under the top shell (carapace) of the crab. We therefore advise the public that this area of the crab should not be eaten until we can review its safety. Crabs and crayfish should all be gutted prior to cooking as cooking the animal whole spreads the toxins from the gut to the flesh.

How are the shellfish monitored?

MPI contractors in each region take regular samples of the shellfish flesh of a variety of species and phytoplankton in the area. There is a lot more monitoring being carried out during an transgression event than usual, firstly to track the progress and spread of this bloom and secondly to study what is happening with this particular event and its effect on the toxicity of different kinds of shellfish.

What precautions need to be taken by the public to help contain the spread of the algal bloom?

We request that the public do not move water or use potentially contaminated items that could have cells or cysts. The Ministry of Health has also asked that people do not remove young mussels and oysters (spat) from affected areas.

Fishermen and boaties should remove water from the sumps of boats, and wash fishing, scuba and surfing gear. If vehicles have been used on west coast beaches, they should be washed with fresh water, particularly the undercarriage of the vehicle.

Further Information

Further information is also available on the following website:
<http://www.foodsmart.govt.nz/food-safety/hunting-collecting-fishing/seafood-gatherers/>

You can also contact the local Public Health Unit, Taranaki Health on 06 753 7798.