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Alaska Marine Biotoxin Program

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State of Alaska
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Marine Biotoxin Program

The information below gives a general overview about biotoxins and the Marine Biotoxin Program

The goal of the Marine Biotoxin Program is to protect humans from illness and death caused by eating shellfish contaminated with biotoxins. The program targets commercially harvested molluscan shellfish (those that have a hinged shell such as clams, mussels, oysters, geoduck, and scallops).

Biotoxins are poisons that are produced by certain kinds of microscopic algae (a type of phytoplankton) that are naturally present in marine waters, normally in amounts too small to be harmful. However, a combination of warm temperatures, sunlight, and nutrient-rich waters can cause rapid plankton reproduction, or "blooms". These blooms are commonly referred to as *harmful algal blooms* or "HABs" because of their potential to cause illness.

Molluscan shellfish are filter feeders, so anything that's in the surrounding water flows into their system. Algae are a food source for molluscan shellfish, and HABs create an all-you-can-eat scenario for them. Unfortunately, when shellfish eat toxin-producing algae, the toxin remains in their system; large amounts of algae mean more toxins can concentrate in their tissue. Biotoxins don't harm shellfish and can accumulate to levels that are lethal to species that feed on shellfish, including humans.

We monitor biotoxin levels in molluscan shellfish year-round. Shellfish in commercial harvest areas are routinely tested for biotoxins known to be present in Alaska marine waters, such as Paralytic Shellfish Toxin (PST, also known as "red tide"), and Amnesic Shellfish Toxin (AST, also known as domoic acid). When toxins are detected at dangerous levels, we close the harvest area. We continue to test the closed area, and when lab results confirm that biotoxin concentrations have dropped again to safe levels, we reopen the area to harvest.

When the closure is in an area that is commercially harvested, we contact all licensed companies harvesting in that area and notify them to stop harvesting immediately. We also recall any commercial product on the market that came from the closed area.

Biotoxin testing must be done in a lab. All Alaska shellfish testing is currently performed at the state's Department of Environmental Conservation Environmental Health Laboratories in Anchorage. At this time there is no certified reliable biotoxin test that can be performed outside of a laboratory environment.

Biotoxin levels can be very unpredictable. They can rise quickly and remain high for long periods of time, and they can drop just as quickly to safe levels. There are no reliable indicators at this time to suggest when biotoxin levels will increase or decrease, although research is being conducted in this area.

Harmful algal blooms don't always color the water. An area may be experiencing a massive bloom even though the water appears clear. A popular misconception surrounds the term "red tide". This term is commonly associated with PST, but algal blooms that color the water red are generally harmless to humans.

Public Health Significance

There is no antidote for biotoxin poisoning. The victim must wait for the toxins to naturally flush from their body. Life support systems such as respirators and oxygen are used in extreme cases to keep the victim alive and stable.

Cooking does not destroy biotoxins. Cooking will kill the toxin-producing algae, but the toxin itself is not affected by cooking and remains in the shellfish tissue.

Mussels accumulate toxins more quickly than other types of shellfish and are a good indicator species, alerting us those levels are on the rise.

Butter clams store toxins longer than other species, and can remain toxic for more than a year after a bloom subsides.

LEGAL AUTHORITY TO IMPLEMENT THE MARINE BIOTOXIN CONTINGENCY PLAN

The Department of Environmental Conservation has the Legal Authority to develop, implement and enforce regulations for the state's Marine Biotoxin Control Contingency Plan as required by the Seafood Regulations found in the 18 AAC chapters 34 and by the National Shellfish Sanitation Program, (NSSP), Guide to Control of Molluscan Shellfish adopted by Reference in the Seafood Regulations.18AAC 34.

The contingency plan defines the administrative procedures and resources necessary to accomplish the following:

(a) Initiate an emergency shellfish sampling and assay program;
(b) Close growing areas and embargo shellfish;
(c) Prevent harvesting of contaminated species;
(d) Provide for product recall;
(e) Disseminate information on the occurrences of toxic algal blooms and/or toxicity in shellfish meats to adjacent states, shellfish industry, and local health agencies; and
(f) Coordinate control actions taken by Authorities and federal agencies.