Amnesic Shellfish Poisoning from Domoic Acid

What is domoic acid?

Domoic acid is a marine biotoxin called Amnesic Shellfish Poison (ASP), which is produced by the diatom Pseudo-nitzschia sp., a type of naturally occurring microscopic algae. Shellfish eat these algae and can retain the toxin. People can become ill from eating shellfish contaminated with ASP. Severe cases of Amnesic Shellfish Poisoning can result in permanent short-term memory loss.

How do shellfish become contaminated with Amnesic Shellfish Poison?

Shellfish are filter feeders. They pump water through their systems, filtering out and eating algae and other food particles. When shellfish eat biotoxin producing algae, the biotoxin can accumulate in their tissue.

What types of shellfish are affected?

Razor clams are most often affected by ASP because the algae that produce the toxin are more commonly found in coastal areas. ASP has also been detected in mussels, clams, and oysters in Puget Sound. Dungeness crab, because they feed on razor clams and other shellfish, can also become toxic. Even if the crab meat is safe, ASP tends to accumulate in crab gut and butter (the white-yellow fat inside the back of the shell). Clean crab thoroughly by removing all the butter and discarding the guts.

What causes unsafe levels of Amnesic Shellfish Poison?

It's normal for biotoxin-producing algae to be present in marine water. They are usually at very low concentrations and pose no problems for most people that eat moderate amounts of shellfish – see our razor clam consumption interim advisory by searching “domoic acid in razor clams” at www.doh.wa.gov. But when the algae "blooms," the amount of biotoxin-producing algae can increase. The increased algae become a greater food source for shellfish. The more algae the shellfish eat, the more biotoxin they accumulate. Biotoxins don't harm shellfish, so the level in their tissue will rise until the bloom subsides. When the number of toxin-producing algal cells returns to normal low levels, the shellfish eventually flush the toxin from their bodies. It can be several days to several months or longer before they're safe to eat again.

What causes Amnesic Shellfish Poison blooms?

When water conditions are favorable, the algae "blooms" and reproduces. Continuing research has pointed to certain cause and effect situations, but the exact combination of conditions that cause the blooms is not yet known. Learn more by searching “harmful algae” at www.nwfsc.noaa.gov.

Can I tell if shellfish are toxic by how they look?

No. Shellfish containing toxic levels of ASP don't look or taste any different from shellfish that are safe to eat. Laboratory testing of shellfish meat is the only known method of detecting ASP.

Does cooking the shellfish make it safe to eat?

No. ASP toxin isn't destroyed by cooking or freezing.

What are the symptoms of Amnesic Shellfish Poisoning?

Symptoms include vomiting, nausea, diarrhea, and abdominal cramps within 24 hours of ingestion. In more severe cases, neurological symptoms develop within 48 hours and include headache, dizziness, confusion, disorientation, short-term memory loss, motor weakness, seizures, profuse respiratory secretions, cardiac arrhythmias, coma, and possible death. Short term memory loss can be permanent.

DOH 332-057 March 2018

Who is most at risk?

Anyone who eats ASP contaminated shellfish is at risk for illness.

What should I do if I think I have Amnesic Shellfish Poisoning?

If symptoms are mild, call your health care provider and your local public health agency (www.doh.wa.gov/localhealth). If symptoms are severe, call 911 or have someone take you to the emergency room immediately.

What is the treatment?

There is no antidote for ASP. The only treatment for severe cases is the use of life support systems until the toxin passes from the victim's system.

How can I protect myself from Amnesic Shellfish Poisoning?

- Check the Shellfish Safety Map at www.doh.wa.gov/shellfishsafety for beach closures and advisories on the day you plan to harvest shellfish.
- Recorded Hotline for Biotoxin Closures: 1-800-562-5632
- Questions? Call us at 360-236-3330 or the local county health department (www.doh.wa.gov/localhealth) during weekday business hours.

We regularly test shellfish for biotoxins and close areas when unsafe levels are detected. Beaches are sometimes posted with warning signs. Don't assume a beach is safe if there are no signs – beach closure signs sometimes "disappear."

Are there any other illnesses associated with shellfish?

Yes. Other types of biotoxins found in the northwest can cause paralytic shellfish poisoning and diarrhetic shellfish poisoning. Harmful bacteria can cause vibriosis. Raw sewage contamination can cause norovirus illness. Some people can have an allergic reaction to shellfish.

What about shellfish offered by restaurants, stores, and farmers' markets?

Shellfish harvested commercially and sold to the public come from licensed, certified growers. Commercial harvest operations must meet stringent state and federal health standards, and the shellfish they harvest are regularly tested for biotoxins.

More Resources

www.doh.wa.gov/shellfish – Learn more about shellfish-related illnesses and how to prevent them.

www.doh.wa.gov/shellfishsafety – Check for beach closures and advisories using our interactive map.

For people with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TDD/TTY call 711).