



Shore Stewards News

GUIDELINES AND RESOURCES FOR LIVING NEAR WATER | ESTABLISHED 2003

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This issue of Shore Stewards News focuses on toxins in our sea water. The newsletter is written by Ann Precup, WSU Extension Island County Shore Stewards program coordinator.

Biotoxins in our Marine Environment

The Puget Sound region is home to an abundance of tasty shellfish species, including those with hinged shells, like oysters, scallops, clams and mussels. These molluscan shellfish are filter feeders and pump sea water through their systems, filtering out and absorbing particles that are in that water. Algae, a type of phytoplankton, is a main food source of shellfish. Certain types of algae produce poisons, and levels of these poisons in shellfish are normally too low to be harmful to people, animals and the marine habitat. However, a combination of variables, including warm temperatures, sunlight and nutrient-rich waters, can cause a rapid plankton reproduction, or “bloom”. These blooms are commonly called harmful algae blooms, or “HABs”, because of their potential to cause illness.

When shellfish eat toxin-producing algae, the toxin remains in their system; large amounts of algae means more toxin can build up in their tissue. These biotoxins don’t harm the shellfish, but they can accumulate in shellfish to levels that can cause illness or death in people and other mammals that eat them. There is no change to the taste, smell, or appearance of shellfish with high levels of biotoxins. Cooking or freezing does not destroy these marine toxins. (Note that these biotoxins are not to be confused with norovirus, which can affect shellfish, that is killed at high temperatures.)



Varnish clams retain marine biotoxins longer and at higher levels than other clams. They are often found near fresh water sources, which makes them more susceptible to runoff pollution. They are also bi-modal feeders (they filter feed and bottom feed) which may account for the higher toxin levels typically found in this species. Photo and caption: Washington State Department of Health website.



*Due to the 'Red Tide' misnomer, blooms of red-colored algae, like this Noctiluca sp. (a dinoflagellate) seen here in Eastsound, Washington (July 2016), can cause undue public concern about harmful algal blooms.
Photo: Jordan Cole. Caption: Encyclopedia of Puget Sound website.*

Our 3 primary biotoxins

Different types of marine biotoxins cause different illnesses. The 3 most commonly found biotoxins found in Washington's marine waters include Paralytic Shellfish Poison (PSP), Diarrhetic Shellfish Poison (DSP) and Amnesic Shellfish Poison (ASP), and each type causes different illnesses.

PSP, or Paralytic Shellfish Poison, is a neurologic condition caused by eating shellfish contaminated with marine biotoxins called "saxitoxins". Symptoms of PSP can appear within minutes or hours and usually begin with tingling lips and tongue, moving to the hands and feet, followed by difficulty breathing and potentially death.

High concentrations of PSP during algae blooms are known as "red tides". It's important to note that "red tide" is misleading because red tides are not "tides" at all, and many are not even red. This term is used by scientists to describe an area of discolored water, usually amber, brown, purple, red or pink, that is formed by accumulations of large numbers of affected algae. A discolored area or red tide can be a relatively small patch or can cover several acres or square miles of sea. Most of us have heard or used the term "red tide" when identifying that toxic algae is present. But not all marine biotoxins cause water to turn color and it's especially dangerous to believe that just because the water is clear, shellfish are safe to consume. In Washington, most outbreaks of poisonous shellfish occur when there has been no discoloration of the water at all.

DSP, or Diarrhetic Shellfish Poisoning, is caused by consuming mollusks (primarily mussels) that are contaminated with "okadaic acid" or other related toxins. Symptoms of DSP include nausea, vomiting, diarrhea, abdominal pain, fever and chills and occur within 12 hours of consuming contaminated shellfish.

ASP, short for Amnesic Shellfish Poisoning, results when shellfish are contaminated with "domoic acid". ASP symptoms include vomiting, nausea, diarrhea and abdominal cramps within 24 hours of eating. In more severe cases, short term memory loss can result and be permanent.

Truth or fiction?

Toxin shellfish look different than non-toxic shellfish.

False. There are no clues on shellfish to tell you if they are toxic or safe. They look exactly the same.

A good test to see if shellfish are toxic is to touch one to your tongue. If your tongue tingles, it's toxic. If it doesn't, it's safe to eat.

False. Don't try this! It's a very risky test. If your tongue doesn't tingle, the shellfish can still contain high enough levels of toxin to make you ill. If your tongue does tingle, the shellfish is extremely toxic.

I should view the Shellfish Safety Bulletin or call the Hotline a few days before I go to the beach to make sure the area is safe to harvest.

True and False. You *should* check these resources but do so *just before harvesting* to make sure the area is safe where you'll be harvesting shellfish. Toxin levels can change quickly, and there can be several closures over the course of one day.

I should call the county health department before digging shellfish.

True. Calling the health department of the county where you'll be digging will provide you with current information on beach closures.

You know shellfish are safe to eat if you see seagulls or other wildlife eating them and they don't look sick or have any symptoms.

False. The tolerance level for biotoxins in wildlife is not known. Observing birds or other animals that have eaten shellfish is not a good indicator that the shellfish are safe to eat.

Cooking shellfish in boiling water will remove toxins, making them safe to eat.

False. Biotoxins are not destroyed by cooking or freezing.

Biotoxins are related to water pollution.

False. There is no relationship between biotoxins and pollution. Biotoxins can be present in clear, pristine waters, and heavily polluted waters can be biotoxin-free.

You should only harvest shellfish in months that have the letter "r".

False. Shellfish can be toxic (or safe) at any time of the year, including September, October, November and December.

References

<https://www.doh.wa.gov/CommunityandEnvironment/Shellfish/RecreationalShellfish/Illnesses/Biotoxins>

<https://www.doh.wa.gov/CommunityandEnvironment/Shellfish/RecreationalShellfish/IllnessPrevention>

<https://www.eopugetsound.org/articles/harmful-algal-blooms-salish-sea>

<https://wsg.washington.edu/wordpress/wp-content/uploads/Gathering-Safe-Shellfish-in-Washington.pdf>

<https://restorationfund.org/projects/psp>

<https://www.tpchd.org/home/showdocument?id=834>

<https://www.nwfsc.noaa.gov/publications/documents/Forecasting%20HABs%20and%20Pathogens%20508.pdf>

Resources and beach closure information

Paralytic Shellfish Poisoning Hotline - (800) 562-5632

<https://fortress.wa.gov/doh/eh/maps/biotoxin/biotoxin.html>

<https://wdfw.wa.gov/fishing/shellfish/beaches/>

<https://www.doh.wa.gov/CommunityandEnvironment/Shellfish/RecreationalShellfish/Illnesses/Vibriosis>



Thank you for reading [Shore Stewards News](#).

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