



Maryland Department of the
Environment

FACTS ABOUT:

Okadaic Acid in Shellfish from Maryland's Coastal Bays

What is okadaic acid?

Okadaic acid is a naturally occurring marine biotoxin that is produced by microscopic algae, specifically, the dinoflagellate *Dinophysis spp.* Shellfish, such as oysters and clams, that eat these algae potentially concentrate and retain the toxin. Sometimes the toxin may be high enough to make people sick if the shellfish are consumed. Okadaic acid causes Diarrhetic Shellfish Poisoning (DSP) in humans. Symptoms include vomiting, stomach pain, and diarrhea. The illness is usually self limiting.

What types of Shellfish are affected?

All species of shellfish including clams, oysters, mussels, and scallops have the ability to concentrate the toxin. Shellfish are filter feeders. They pump water through their systems when they feed. When shellfish eat biotoxin producing algae the biotoxin can accumulate in their tissue.

What causes unsafe levels of DSP?

The dinoflagellate *Dinophysis spp.* has been present in Maryland's coastal bays, at low levels, for a long time. A recent study conducted by the Department of Natural Resources (DNR), in cooperation with the US Food and Drug Administration, showed the toxin was detected below the threshold levels in oysters, hard clams, scallops, and ribbed mussels. The study also showed at least one instance when the threshold level for the toxin (levels that could cause illness) was exceeded in ribbed mussels. Ribbed mussels are not typically eaten by humans and are not a commercial species. It is strongly recommended that the ribbed mussel not be gathered or consumed under any circumstances. What causes the algae to produce toxin is unknown. Although the toxin has been present in marine coastal waters worldwide for some time, only recently has the toxin been identified in North America. In 2011, for the first time, three people were ill in Washington State and sixty-three people became ill in British Columbia, Canada from okadaic acid. It has also been found in waters in the Gulf of Mexico and along the Atlantic Coast. No illnesses have ever been reported from consumption of shellfish from Maryland's coastal bays.



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Can I tell the shellfish are toxic by the way they look?

No. Shellfish containing toxic levels of DSP do not look or taste any different from shellfish that are safe to eat. The toxin does not affect the shellfish and is not destroyed by cooking. MDE and DNR routinely monitor Maryland's coastal bays and Maryland's portion of the Chesapeake Bay for the presence of *Dinophysis spp.* and other marine algae. MDE is currently developing protocols in partnership with Department of Natural Resources (DNR) and the Department of Health and Mental Hygiene (DHMH) to monitor for the presence of okadaic acid in shellfish meats. *Dinophysis spp.* are typically present in late winter and early spring when there is very little recreational harvest of hard clams, but can be present year round

How can I protect myself from DSP?

The Maryland Department of Environment will close waters to shellfish harvesting upon finding levels of concern or a confirmed reported illness. Information will be provided to warn recreational harvesters that hard clams and oysters in the coastal bays are unsafe to eat after consulting with the Department of Natural Resources, Department of Health & Mental Hygiene, the National Park Service, Ocean City and the Worcester County Health Department. Commercial harvest will also be restricted. Additional information will be on MDE's website.

What should I do if I think I have DSP?

Remember, this is an emerging concern in Maryland's coastal bays and no illnesses have ever been reported. However, anyone who eats shellfish contaminated with okadaic acid is at risk for DSP. The toxin is non-lethal to humans. If you think you have mild symptoms, call your health care provider. If you think you have symptoms that are severe, call 911 or have someone take you to a local clinic or your family doctor. Report the illness to Worcester County Health Department, 410-352-3234.

For more information about the marine biotoxin okadaic acid contact:

**Science Services Administration
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