



***Pseudo-nitzschia* Bloom Fact Sheet**

Species Distribution

Species belonging to the diatom (microalgal) genus *Pseudo-nitzschia* can be found worldwide. Several of these species can produce the neurotoxin domoic acid. These potentially toxic species have been found on the Pacific and Atlantic US coasts and in the Gulf of Mexico, and can form dense blooms called Harmful Algal Blooms (HABs). *Pseudo-nitzschia* is common in Alaskan waters in low numbers. Toxicity of these blooms is influenced by both the species present and the environmental factors that regulate toxin production. Scientists still don't know exactly why some become toxic and some do not.

Toxins/Mode of Action: Domoic Acid (DA)

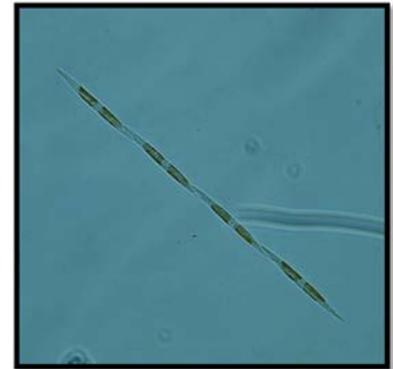
Domoic acid (DA) binds glutamate receptors, which are involved in memory processing. When these receptors are excessively activated, as occurs with excess DA exposure, damage to neurons may lead to permanent loss of neurological function.

Human Health Syndrome: Amnesic Shellfish Poisoning (ASP)

Amnesic shellfish poisoning (ASP), caused by ingestion of DA, produces gastrointestinal and neurological effects. Mild cases arise within 24 hours of consumption of contaminated shellfish. Symptoms include nausea, vomiting, diarrhea, and abdominal cramps. In more severe cases, neurological symptoms include headaches, hallucinations, confusion, short-term memory loss, respiratory difficulty, seizures, coma and rarely death. Cases have been reported from both the northeast and northwest coast of North America. While ASP cases have not been reported in the Gulf of Mexico, both *Pseudo-nitzschia* spp. and low levels of DA have been observed there. Shellfish beds are closed when DA levels in the shellfish meats exceed 20 parts per million. Domoic Acid is persistent and stable. You cannot cook it out of shellfish.

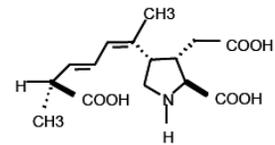
More on *Pseudo-nitzschia* blooms:

- Domoic Acid virtually vectors into every aspect of the food chain.
 - Marine mammals tend to hang onto Domoic Acid a long time.
 - Some fish can carry DA to their predators, but are not affected by the toxin unless at extremely high levels.
 - Birds are difficult to test, need fresh stomach, GI or urine samples.
- The number of *Pseudo-nitzschia* cells in the water does not reflect how much toxin is in the water.
- Most severe blooms occur when the ocean water is nutrient poor. The cells are very specialized to absorb nitrates better than other diatoms so can thrive when other diatom groups are limited.
- *Pseudo-nitzschia* begins to grow when the water is at 6 ° C. Growth can continue to be strong even when 16 ° C.



Pseudo-nitzschia

Photo credit: Catie Bursch



Structure of domoic acid