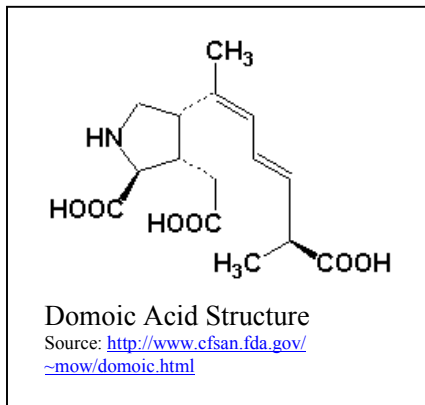


Domoic Acid

Source of Domoic Acid (DA): *Pseudo-nitzschia*, a diatom genus, can be found worldwide. Diatoms are microscopic marine plants with silica shells. Several species of *Pseudo-nitzschia* produce the toxin DA. These toxic species have been found on the east and west coasts of the US, as well as the Gulf of Mexico.



Chains of *Pseudo-nitzschia multiseries* Source: http://www.nwfsc.noaa.gov/hab/HABs_Toxins/HAB_Species/PseudoN/index.htm



Domoic Acid Structure
Source: <http://www.cfsan.fda.gov/~mow/domoic.html>

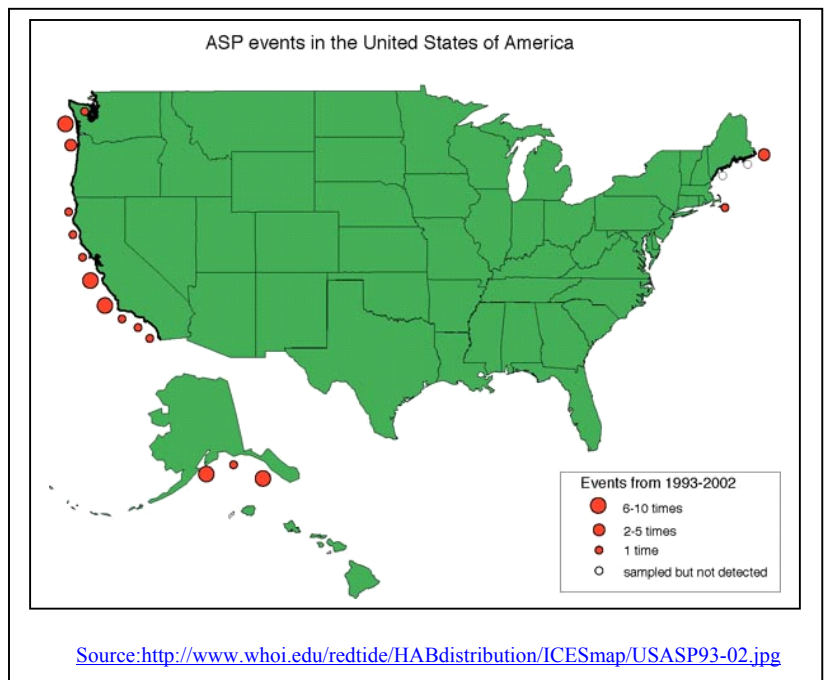
Toxin/Mode of Action: DA is a tricarboxylic acid that acts as a neurotoxin. It binds to glutamate receptors, which are involved in memory processing. When receptors are excessively activated, as occurs with DA, damage to neurons leads to permanent loss of neurological function.

Human Health Syndrome: DA causes the syndrome known as Amnesic Shellfish Poisoning (ASP). 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 occur which include headaches, hallucinations, confusion, short-term memory loss, respiratory difficulty, seizures, coma, and in extreme cases, death.

Syndrome Distribution: ASP was recorded for the first time off the Atlantic coast of Canada in 1987 when three deaths and over 100 confirmed cases of acute intoxications followed the consumption of cultured mussels. Milder cases have subsequently been reported.

Effects on Other Organisms: Since the 1987 human outbreak, DA has been identified as the causative agent in the mass mortality of pelicans and cormorants off of California, extensive die-offs of sea lions, dolphins, and otters off of California and whale deaths near Georges Bank. The toxin is transferred to higher trophic level carnivores via the food chain, usually from filter feeding fish or bivalves.



Source: <http://www.whoi.edu/redtide/HABdistribution/ICESmap/USASP93-02.jpg>

***Pseudo-nitzschia* and DA in the Gulf of Mexico:** *Pseudo-nitzschia* spp. are present, sometimes at very high abundance, in coastal waters of the Gulf of Mexico. There is evidence that their abundance has increased as a result of eutrophication from increased nutrient supply to some coastal areas. Although DA has been detected in natural plankton samples and in cultures of *Pseudo-nitzschia* isolated from the Gulf, no cases of human or animal illness or death due to DA have been documented in the Gulf of Mexico.