

Domoic Acid Toxicity

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Domoic Acid

Domoic acid is a naturally occurring toxin that may accumulate in filter-feeding fish and shellfish. Cooking does not destroy the toxin.

Toxicity symptoms can include nausea, vomiting, diarrhea, or abdominal cramps within 24 hours. Symptoms may also include severe headache, confusion, disorientation, memory loss, and weakness within 48 hours. Severe cases of domoic acid toxicity can cause permanent brain damage or death.

Some marine algae of the genus *Nitzschia* produce domoic acid. *Nitzschia* algae are common in coastal waters of the Atlantic, Pacific, and Indian Oceans. The algae can live at a wide range of temperatures, and can grow at the low salt concentrations found in estuaries. Until 1987, scientists thought *Nitzschia* species were harmless.

Algae occasionally multiply rapidly or "bloom" when ocean conditions are favorable. Natural *Nitzschia pungens* populations produce large amounts of domoic acid only when these blooms occur. During a bloom, filter feeding fish and shellfish can consume large numbers of the algae. The toxin produced by the algae may not harm the fish or shellfish, but may harm birds, animals, and humans that eat the contaminated fish and shellfish.

Domoic Acid in Canada

In 1987, tests identified domoic acid as the cause of 107 illnesses and four deaths. All the people involved ate mussels from Prince Edward Island, Canada. A bloom of *N. pungens* off the coast of Prince Edward Island produced the domoic acid. The mussels fed on the algae and became toxic. This was the first reported outbreak of domoic acid toxicity in North America.

Domoic Acid in the U.S.

In September 1991, the Native American Rescue Center in Santa Cruz, California reported many dead or dying brown pelicans and Brandt's cormorants. Stomach contents of sick pelicans, and of anchovies in the same area, contained domoic acid. The major food source for the pelicans then was anchovies. The stomach contents of healthy pelicans did not contain the toxin.

At the time the birds were sick and dying, a bloom of *N. pseudoseriata* occurred near Santa Cruz. Anchovies ate the algae and the birds ate the contaminated fish. This was the first report of domoic acid occurring on the West Coast. It is also the first case where fish contained the toxin.

In November 1991, 11 people became ill after eating razor clams from the Long Beach Peninsula in southern Washington. Tests identified domoic acid as the cause of the illnesses. This was the first known domoic acid toxicity in humans on the West Coast.

Following the outbreak, the California Department of Health Services (CDHS) advised consumers not to eat anchovies or razor clams from California, Oregon and Washington. California also extended the quarantine on sport-harvesting of mussels because of concern about domoic acid.

Commercially Harvested Seafood

The U.S. Food and Drug Administration, U.S. Department of Commerce, and the CDHS monitor fish and shellfish for domoic acid. This monitoring ensures that only wholesome and nontoxic seafoods are available to consumers.

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