

Harmful Algal Blooms

PARALYTIC SHELLFISH POISONING (PSP) IS THE MAJOR HARMFUL ALGAL BLOOM (HAB) CONCERN IN ALASKA.

Caused by dinoflagellates, PSP toxins accumulate in filter-feeding shellfish and transfer through the food web to those who feed on shellfish. People with PSP poisoning feel symptoms that can include tingling or numbness in the lips and extremities, nausea, dizziness, shortness of breath, and in extreme cases, paralysis and death.

OTHER PROMINENT ISSUES :: Harmful Algal Blooms

Community Monitoring for Shellfish Poisoning

Project 644

THROUGH PROJECT 644, THE BOARD SUPPORTED AN effort to educate local residents in the Aleutians and Commander Islands about PSP and train them to use test kits to monitor the toxin. Shellfish specimens were collected and analyzed from 21 communities extending the length of the Aleutians. Only low levels of PSP were found. Test kits provided an efficient method for rapid screening for PSP, but the technique had a high percentage of false positives.

The project also included interviews of 13 local residents in Sand Point, Alaska, and 30 in Nikolskoye on Bering Island in Russia. The respondents were asked about learning and teaching about shellfish, indicators of shellfish safety, and shell collection and preparation habits. The project sought to develop a complementary relationship between scientific research and traditional knowledge, and between natural and social sciences that would improve understanding of the risks of PSP to human health in Aleut communities. Researchers concluded that local and traditional knowledge, on its own, cannot equip local residents with sufficient knowledge about safe harvesting of shellfish.

PSP toxins, caused by dinoflagellates, accumulate in filter-feeding shellfish and transfer through the food web to those who feed on shellfish.



Ray Rolonde

A researcher digs for clams for PSP testing.



Bruce Wright

A Sand Point technician and her assistant prepare a sample of butter clams to be tested for PSP.



Ray Rolonde

These developed Jellett PSP test strips are from the first shellfish samples ever tested for PSP in Sand Point, Alaska.

OTHER PROMINENT ISSUES :: Harmful Algal Blooms

Testing for Domoic Acid Toxins

Project 821

PROJECT 821 SUPPORTS A SHELLFISH TESTING PROGRAM for domoic acid for multiple coastal sites from Southeast Alaska to Dutch Harbor. Domoic acid is produced by several diatom species and can be incorporated as a toxin in shellfish, similar to other toxins, such as PSP. The seriousness of domoic acid as a toxin with human health implications was first discovered in North America in 1987 when an outbreak occurred in Eastern Canada, causing 107 illnesses and three deaths. Toxicity is extremely variable depending on the general health and age of the victim. Low doses cause gastrointestinal illness and moderate neurological symptoms including loss of short term memory (termed amnesiac shellfish poisoning). At high

doses domoic acid is fatal, particularly among the elderly and immuno-compromised shellfish consumers. The occurrence of domoic acid poisoning is underreported in Alaska, even though it could have devastating impacts for the marine environment, coastal economies, and human health. The intent of this project is to determine if domoic acid is prevalent in Alaska, measure concentration levels in blue mussels as an indicator species, and design a sampling and testing program that will enable Alaska to adequately monitor for domoic acid. Local residents are being trained to test for domoic acid and send samples to the Fishery Industrial Technology Center in Kodiak for analysis.

