DOMOIC ACID FACT SHEET

WHERE DOES DOMOIC ACID COME FROM?

Domoic Acid is a nerve toxin produced by a naturally occurring Harmful Algal Bloom (HAB), usually (but not always) of the genus *Pseudonitzchia*.

WHAT ARE HARMFUL ALGAL BLOOMS (HABs)?

Harmful Algae are microscopic, single-celled plants that live in the sea. HABs derive their "harmful" stature because they produce extremely potent neuro-poisons or biotoxins. Most species of algae or phytoplankton are not harmful and serve as the energy producers at the base of the food web, without which higher life on this planet would not exist.

HOW DOES DOMOIC ACID ENTER THE MARINE FOOD WEB?

Phytoplankton are responsible for converting inorganic molecules into more complex organic nutrients. In turn, these microscopic organisms provide food for the larger organisms higher in the food web, such as fishes and mammals. In HABs, toxic compounds can enter the food web and accumulate in fish and shellfish. In most cases, fish and shellfish do not appear to be affected by these toxins, but organisms higher in the food web, such as marine mammals and humans, can be made ill or even die.

WHAT ARE THE EFFECTS OF DOMOIC ACID?

Scientists now suspect that Domoic acid poisoning was the cause of a massive bird poisoning in 1961, which resulted in gulls and shearwaters demonstrating frenzied, intoxicated behavior in a northern California town. This real-life event was the inspiration for the Alfred Hitchcock movie "The Birds." Domoic acid toxicity was first recognized during an outbreak of neurological symptoms among humans on Prince Edward Island in Canada in 1987 following mussel consumption. Filter feeders like mussels and small finfish such as sardines feed on the algae and concentrate the toxins. Domoic acid poisoning is almost exclusively a problem for marine mammals and seabirds that feed on sardines and anchovies that consume the algae.

ARE HUMANS AT RISK?

CDHS has issued several warnings to consumers advising them to avoid all sport-harvested species of bi-valve shellfish; oysters, mussels, scallops, and clams. The quarantine area is in effect for the state's entire coast, including bays and estuaries. Close monitoring of local shellfish and local fish caught for human consumption is needed to determine risk. Humans are usually unaffected by the toxin, though four deaths occurred among people who ate shellfish in Canada.

HOW IS DOMOIC ACID AFFECTING LOCAL WATERS?

National Marine Fisheries Service (NMFS, also known as NOAA Fisheries) has called the current series of strandings an "unusual mortality event." The Department of Fish and Game (DFG) and the California Department of Health Services (CDHS) are advising the public that dozens of marine mammals, including dolphins and sea lions, have been found beached from San Diego to Santa Barbara. "Those animals may have become ill by eating small fish containing the toxin. A large number of dead or ill seabirds recently found may also have been affected by the toxin."

Sanctuary Naturalist Corps

CHANNEL ISLANDS NATIONAL MARINE SANCTUARY

113 Harbor Way
Santa Barbara, CA 93109
(805) 966-7107

3600 S. Harbor Blvd., Suite 217
Oxnard, CA 93035
(805) 382-6149

DOMOIC ACID FACT SHEET

WHY IS THIS OUTBREAK HAPPENING?

It is generally accepted that the incidence of problems associated with toxic algae is increasing. Possible reasons to explain this expansion include natural mechanisms of species dispersal (currents and tides) to a host of human-related phenomena such as nutrient enrichment (agricultural run-off), climatic shifts, or transport of algal species via ship ballast water.

CAN THE OUTBREAK BE CONTROLLED?

Unfortunately, currents carry the algae in different directions. Greg Langlois, biologist with CDHS Marine Biotoxin Program stated, "This toxic bloom has reached shore at various locations from Monterey Bay to Ventura – and produced very high toxin levels. It is our hope that oceanic conditions will shift and push it farther out to sea, or that it will run out of steam in the next few weeks, before reaching shore farther south."

WHAT IS BEING DONE FOR SICK ANIMALS?

Marine mammal rescue centers throughout the state have been busy attending the sick animals. In Santa Barbara, since April 10, "we've been getting anywhere from four to eight animals a day," said Peter Howorth, director of the Santa Barbara Marine Mammal Rescue Center, who referred to the current situation as an "epidemic." "We all hope that this crisis will end soon. It has been a tremendous strain on personnel and resources throughout California. The good news is that many animals have been saved."

WHAT SHOULD YOU DO IF YOU FIND A SICK OR DEAD ANIMAL?

Please contact one of the listed agencies immediately. This is the best action that you can take in saving the animal's life. Approaching a marine mammal is not recommended except in the most extreme emergency. The last thing anyone who finds a stranded dolphin should do is push the animal back to sea. Instead, a bystander should keep other people or animals away from the dolphin and keep the creature wet. Any applied water should be directed away from the dolphin's blowhole. Beached seals and sea lions should be kept dry because they often suffer from pneumonia.

Marine Mammal Strandings: Injured or Sick
805/687-3255 Santa Barbara Marine Mammal Rescue Center

Marine Mammal Strandings: Deceased
562/980-4017 Joe Cordaro, Stranding Coordinator, NMFS

Sea Birds: Injured or Sick
805/966-9005 Santa Barbara Wildlife Care Network

Ventura County: All sick or deceased marine animals
805/388-4341 Ventura County Animal Regulation

Updates on shellfish biotoxins, quarantines and other information
800/553-4133 CDHS Shellfish Information Line

Sanctuary Naturalist Corps
CHANNEL ISLANDS NATIONAL MARINE SANCTUARY

113 Harbor Way
Santa Barbara, CA 93109
(805) 966-7107

3600 S. Harbor Blvd., Suite 217
Oxnard, CA 93035
(805) 382-6149