



## DOMOIC ACID FREQUENTLY ASKED QUESTIONS



### 1.) What is domoic acid?

Domoic acid is a naturally occurring toxin that is related to a “bloom” of a particular single-celled plant called *Pseudo-nitzschia*. The conditions that support the growth of *Pseudo-nitzschia* are impossible to predict. Crustaceans, fish and shellfish are capable of accumulating elevated levels of domoic acid without apparent ill effects on the animals.

### 2.) How do elevated levels of domoic acid in crustaceans, fish and shellfish affect those who consume them?

Elevated levels of domoic acid in crustaceans, fish and shellfish pose a significant risk to the public if these adulterated products are consumed. Domoic acid can be fatal to people if consumed in high doses.

### 3.) What are the symptoms of domoic acid?

Symptoms of domoic acid poisoning can occur within 30 minutes to 24 hours after eating toxic seafood. In mild cases, symptoms may include vomiting, diarrhea, abdominal cramps, headache and dizziness. These symptoms disappear within several days. In severe cases, the victim may experience trouble breathing, confusion, disorientation, cardiovascular instability, seizures, excessive bronchial secretions, permanent loss of short-term memory (a condition known as Amnesic Shellfish Poisoning), coma or death.

### 4.) What is the action level for domoic acid; specifically, for crabs or lobsters?

The action level for Dungeness crab viscera is >30 ppm and for crab meat  $\geq$  20 ppm. The action level for lobster (whole or in part / viscera, roe, and meat) is  $\geq$  20 ppm.

### 5.) How are harmful algal blooms and associated biotoxins being monitored along California’s coast?

California has the longest-standing biotoxin monitoring program in the U.S., beginning in 1927 in response to a massive paralytic shellfish poisoning (PSP) event. That event resulted in several deaths and over 100 illnesses that were associated

with mussel consumption. In 1991, the California Department of Public Health (CDPH) began monitoring state fisheries for domoic acid after it was first detected in Monterey Bay.

CDPH's monitoring program consists of the following elements:

- a) CDPH conducts a year round coastal bivalve shellfish monitoring program that serves to protect recreational harvesters and serves as an early warning for harmful algal blooms;
- b) CDPH conducts a coastal phytoplankton monitoring program for early detection of toxin producing species that could impact shellfish and other seafood resources. Early bloom detection, coupled with the ongoing bivalve shellfish monitoring provide strong indicators of when other seafood monitoring should be initiated;
- c) CDPH monitoring of commercial bivalve shellfish growing areas;
- d) Mandatory reporting of disease cases;
- e) CDPH increases sampling of small fin fish, crabs, lobsters and other impacted species when algal blooms or increased levels of domoic acid in bi-valve shellfish are observed;
- f) Pre- season testing of Dungeness crab and lobster.

## **6.) When does CDPH regularly monitor the domoic acid levels in crabs or lobsters?**

CDPH conducts pre-season testing of Dungeness crab and lobster to ensure that the species are not accumulating dangerous levels of domoic acid. If other indicators (increased levels of *Pseudo-nitzschia* in coastal waters or increased levels of domoic acid in bi-valve shellfish) are observed, CDPH will increase sampling of other species in the impacted area that are currently being caught. Once elevated levels are identified and an advisory is issued, CDPH will continue periodic monitoring until the levels of domoic acid fall below the action level and the advisory can be lifted. CDPH does not routinely test species during the months when the fishery is closed.

## **7.) Can domoic acid levels be decreased or removed by cooking?**

Cooking crabs or lobsters neither decreases nor removes domoic acid in the viscera, roe or body meat.

## **8.) How can I protect myself from exposure to domoic acid?**

CDPH recommends consumers not eat the viscera (internal organs, also known as "butter" or "guts") or roe of crabs or lobsters, as the viscera and roe usually contain much higher levels of domoic acid than the meat. When whole animals are cooked in liquid, domoic acid may leach from the viscera or roe into the liquid. CDPH recommends consumers follow best preparation practices by discarding water or broth used to cook whole crabs and lobsters. Do not use the liquid to prepare dishes

such as sauces, broths, soups or stews (for example, cioppino or gumbo), stocks, roux, dressings or dips.

The best ways to reduce risk are:

- a) Remove the viscera (or roe) and rinse out the body cavity prior to cooking, or
- b) Boil or steam whole animals, instead of frying or broiling, and discard cooking liquids.

**9.) Why can the recreational crab or lobster fishery be open while the commercial crab or lobster season is closed or delayed because of domoic acid?**

If any edible part of a crab (viscera or meat) or lobster contains domoic acid in concentrations higher than the action level, the animal is considered “adulterated”. State and federal laws prevent the commercial distribution of adulterated food products, but this restriction does not extend to recreational anglers who catch animals for their personal consumption. If only the viscera exceeds the action level, recreational anglers can make the crab or lobster safe to eat by following the best preparation practices described in question number 8 above.