

Paralytic Shellfish Poisoning

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Naturally occurring toxins which may accumulate in bivalve shellfish (mollusks having 2 shells) can cause paralytic shellfish poisoning (PSP) in persons who eat the shellfish. These extremely powerful nerve toxins can cause temporary paralysis and even death. Clams, mussels, oysters and scallops have been involved in outbreaks of PSP in California. It is impossible to distinguish between toxic and safe shellfish, and normal cooking methods do not destroy the toxins.

PSP symptoms begin with tingling and numbness of the lips, tongue and fingertips. Later symptoms are lack of balance, lack of muscle coordination, slurred speech and problems in swallowing. Complete paralysis and death from suffocation can occur in severe poisoning.

Dinoflagellates are tiny one-celled organisms with both plant and animal characteristics. The dinoflagellate *Alexandrium catenella* (formerly *Gonyaulax catenella*) produces the toxins which cause PSP. Bivalve shellfish eat by filtering dinoflagellates and other organisms from the water. The toxins produced by *Alexandrium* do not harm shellfish. However, they can harm man and other animals when they eat toxic shellfish. Abalone, crab, shrimp and fish do not feed on *Alexandrium* and do not become toxic.

California's Mussel Quarantine

The California Department of Health Services places a quarantine on sport harvesting of mussels for food from May 1 to October 31. This is the period when large numbers of *Alexandrium* can occur off the California coast and when mussels may become toxic. If mussels contain large amounts of toxins, the quarantine may be expanded to include sport harvesting of all bivalve shellfish in the affected area.

Local health officers enforce the mussel quarantine. They post signs advising the public of the quarantine. These signs also warn the public that clams and scallops at times may contain toxins, and that sport harvesters should clean the viscera from these bivalves and eat only the white meat during the quarantine period. Absent or destroyed signs do not alter the quarantine period.

Annual Mussel Quarantine
May 1 - October 31

PSP Monitoring

The Department of Health Services conducts a year-round PSP monitoring program for sport and commercial shellfish growing areas. This program enables the Department to detect changes in toxin levels and to alert the public and local health agencies if necessary. The Department immediately closes commercial shellfish beds to protect the public if elevated toxin levels occur in or near the beds.

Elevated toxin levels sometimes occur during the nonquarantine period from November 1 to April 30. The Department of Health Services sets special local quarantines if shellfish toxins appear during this period. Fewer than 1% of reported cases of PSP have occurred during the nonquarantine months.

Commercially Harvested Shellfish

The quarantine does not apply to companies licensed by the State as certified shellfish harvesters. The Department of Health Services tests and certifies the shellfish from these companies to be free of toxins.

Oysters are the main bivalve shellfish harvested commercially in California, although clams, mussels, scallops, and oysters are available in California retail food stores and restaurants throughout the year. These products come from both local and out-of-state sources. State and federal agencies regulate all shellfish harvested for sale for human food in the United States. These regulations ensure that only wholesome and nontoxic shellfish are available to the consumer.

During the quarantine, mussels may be harvested and sold only for fish bait. Labels on containers of mussels for fish bait must state:

**"MUSSELS FOR BAIT ONLY --
UNFIT FOR HUMAN FOOD."**



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Safety Tips When Gathering Shellfish

- *Do not gather mussels for food during any quarantine period.* Toxins accumulate in the dark digestive organs or viscera of bivalve shellfish. Toxic mussels are particularly dangerous because people eat the entire mussel including the viscera.
- During any mussel quarantine period, thoroughly clean and wash all other bivalve shellfish before cooking or eating. Remove and discard the viscera of all clams and scallops.
- Scallop viscera can remain toxic year-round. Do not eat scallop viscera at any time.
- When a PSP outbreak occurs, or when high levels of toxins occur in mussels, do not eat any bivalve shellfish harvested in the same area.
- Following an outbreak of PSP, the necks or siphons of Washington clams, *Saxidomus nuttalli*, may retain toxins for a year or more. If this occurs, the Department of Health Services sets and publicizes special local quarantines on Washington clams.
- Be familiar with the California Department of Fish and Game sport fishing regulations. These regulations are available in stores selling sporting goods.
- Gather clams, mussels, and scallops only in areas free from sewage contamination. If in doubt, contact the local county health officer or sanitarian to find out if the shellfish are safe to eat.
- Forget the old saying about eating shellfish only during months with an "R" in them. Many people think the saying means shellfish are always safe to eat during the "R" months, but toxic shellfish can occur in California in the "R" months of September and October. This saying originated in Europe and concerned the reproductive cycle of European oysters, not PSP.

**Bivalve shellfish include
clams, mussels, oysters and scallops**

PSP Hotline

The Department of Health Services provides a recorded message on the status of PSP conditions in California. The messages also report on any special PSP quarantines or public warnings. The telephone number is (415) 540-2605. The Department updates the message weekly. Callers may leave a message at this number to request more detailed information. Annual reports on the shellfish monitoring program are available from:

Department of Health Services
Environmental Management Branch
714 "P" St., Room 616
Sacramento, CA 95814

Myths About Red Tides and PSP

During late spring, summer, or fall, localized patches or streamers of color appear in the ocean or bays along the California Coast. These reddish areas or "red tides" appear suddenly and last from a few days to a few months before disappearing. The color of the water comes from the millions of dinoflagellates or other plankton in the water. Water color varies from brown to red depending on the kinds and numbers of plankton.

Many people believe that red tides cause shellfish to be toxic. In fact, *most red tides are harmless*. *Alexandrium* does not generally cause red tides. Although the presence of a red tide is a warning that shellfish may be toxic, *the absence of a red tide does not mean they are safe to eat*. Shellfish can consume enough *Alexandrium* to become toxic even when there is no visible red tide.

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