Shellfish Poisoning; Paralytic, Domoic Acid, Diarrhetic

Investigative Guidelines

July 2026

REPORT IMMEDIATELY

1. DISEASE REPORTING

1.1 Purpose of Reporting and Surveillance

1. To identify potential outbreaks and to mitigate future exposure to contaminated shellfish or other seafood.
2. To identify the source of shellfish poisoning in Oregon
3. To reduce the risk of exposure to contaminated seafood available through commercial sale or individual collection that pose a risk of shellfish poisoning and educate the public on how to reduce the risk of illness.

1.2 Laboratory and Physician Reporting Requirements

Physician and Health Care Facilities are required to report suspected Paralytic and Domoic acid shellfish poisoning **immediately** to public health officials.

1.3 Local Health Department Reporting and Follow-Up Responsibilities

1. Follow up immediately with reported Paralytic and Domoic Shellfish poisoning cases. Diarrhetic shellfish poisoning should be investigated within one working day. Notify ACDP via phone (971-673-1111) of potential sources of exposure.
2. Assist with collection and transport of contaminated shellfish for laboratory testing at the Oregon Department of Agriculture/Fish and Wildlife or the Washington State Public Health Laboratory.
3. For recognized outbreaks, complete the appropriate investigation summary form (questions in Orpheus) in consultation with the assigned Acute and Communicable Disease Prevention (ACDP) epidemiologist when the investigation is (reasonably) complete.

2A. PSP: THE DISEASE AND ITS EPIDEMIOLOGY

2.1 Etiologic Agent

Paralytic shellfish poisoning (PSP) is caused by ingesting shellfish containing saxitoxins. Saxitoxins are heat-stable toxins produced by a type of phytoplankton called dinoflagellates, including *Alexandrium spp*. Molluscan shellfish with hinged shells, such as clams, mussels, oysters, and geoducks, are filter feeders

that ingest the phytoplankton and concentrate the toxins. The concentration of saxitoxins in shellfish often increases when sunlight, warm temperatures, and nutrient–rich water cause plankton to rapidly reproduce, causing a dinoflagellate "bloom." The presence of "red tides", or reddish discoloration of the water during an algae bloom, are not associated with higher levels of saxitoxins, and toxic algae blooms can occur without water discoloration. Blooms of the causative *Alexandrium* species occur several times each year, primarily between April through October. Most shellfish remain toxic for several weeks after a bloom subsides until the toxin is purged from the tissue of the mollusk. However, some shellfish species including butter clams may retain the toxin for more than a year after exposure, especially in the siphons and the blackened tips of the siphons.

2.2 Description of Illness

PSP presents with neurologic symptoms frequently accompanied by gastrointestinal symptoms. Paresthesia (tingling, numbness) of the mouth and extremities are the initial and most common neurologic complaint. In severe cases, ataxia (loss of coordination), dysphonia (difficulty speaking), dysphagia (difficulty swallowing), and total muscle paralysis with respiratory arrest and death may occur (if supportive care is not received). Symptoms usually resolve within a few days and recovery is complete.

2.3 Sources and Routes of Transmission

PSP is particularly common in bivalve mollusks (e.g., clams, mussels, oysters) harvested from colder waters above 30° N and below 30° S latitude, but may occur in tropical waters as well. In the United States, PSP is primarily a problem in Alaska, California, Oregon, Washington, and the New England states. In Oregon, shellfish samples are collected along the length of the coastline by the Oregon Department of Agriculture (ODA) and the Oregon Division of Fish and Wildlife (ODFW) staff twice a month and are analyzed at the ODA lab for marine toxins. The results of this monitoring program are used to protect consumers and the public alike by ensuring both commercial shellfish grown and harvested in Oregon are safe and that recreational shellfish harvesting is done safely.

2.4 Mode of Transmission

PSP is acquired by eating shellfish contaminated with the toxin. Cooking or freezing does not inactivate the toxin.

2.5 Incubation Period and Duration

Symptoms occur minutes to hours after eating contaminated shellfish and generally resolve in a few days.

2.6 Period of Communicability

PSP is not communicable from person to person.

2.7 Treatment

Treatment is supportive and may require extensive rehabilitation.

B. DOMOIC ACID: THE DISEASE AND ITS EPIDEMIOLOGY

2.1 Etiologic Agent

Domoic acid shellfish poisoning, also called amnesic shellfish poisoning, is caused by ingesting molluscan shellfish, crab or fish with high levels of domoic acid, a heat-stable toxin produced by marine diatom species of the genus *Pseudo-nitzschia*. Domoic acid is a naturally occurring neurotoxin. When it accumulates in shellfish, crustaceans or fish there is a risk of illness when consumed. The animals can accumulate toxin without apparent ill effects. Anchovies and sardines can also the toxin.

2.2 Description of Illness

Gastrointestinal symptoms of vomiting, diarrhea and abdominal cramps begin within 3 to 24 hours. Neurological symptoms occur within 48 hours and include headache, dizziness, confusion, permanent short-term memory loss, motor weakness or paralysis, seizures, profuse respiratory secretions, cardiac arrhythmias, and rarely coma and possibly death.

2.3 Sources and Routes of Transmission

Domoic acid shellfish poisoning is acquired by eating molluscan shellfish, crabs or other marine organisms containing the toxin. Cooking or freezing does not inactivate the toxin.

2.4 Incubation Period and Duration

Symptoms typically occur 15 minutes to 48 hours after eating contaminated product.

2.5 Period of Communicability

Not transmitted person-to-person, contaminated product must be ingested.

2.6 Treatment

Treatment is supportive and may require extensive rehabilitation.

2C. DIARRHETIC SHELLFISH POISONING: THE DISEASE AND ITS EPIDEMIOLOGY

2.1 Etiologic Agent

Diarrhetic shellfish poisoning (DSP) is caused by eating shellfish containing heat stable diarrhetic shellfish toxins produced by marine dinoflagellates including *Dinophysis*. Molluscan shellfish concentrate the toxins.

2.2 Description of Illness

Diarrhetic shellfish poisoning is characterized by diarrhea and/or vomiting, nausea, abdominal cramps, and chills which begin 30 minutes to a few hours after exposure.

2.3 Sources and Routes of Transmission

Diarrhetic shellfish poisoning is acquired by eating shellfish containing diarrhetic shellfish toxins. **Cooking or freezing does not inactivate the toxin.**

2.4 Incubation Period and Duration

Symptoms generally occur between 3 to 36 hours after consumption of contaminated products.

2.5 Period of Communicability

Not transmitted person-to-person

2.6 Treatment

Treatment is supportive and may require oral rehydration and electrolyte replacement.

3. CASE DEFINITIONS:

3.1 Paralytic Shellfish Poisoning (PSP)

Clinical Criteria: Onset of neurologic symptoms including numbness of the oral mucosa, paresthesia (tingling, numbness), ataxia (loss of muscle coordination), difficulty breathing (dysphonia), difficulty swallowing (dysphagia), paralysis and respiratory arrest. In severe poisoning, illness typically progresses rapidly and may include gastrointestinal distress (e.g., nausea, vomiting) and neurological symptoms (i.e., cranial nerve dysfunction, a floating sensation, headache, muscle weakness, paresthesia and vertigo). Respiratory failure and death can occur from paralysis.

Laboratory Criteria: Identification of saxitoxin in implicated food.

3.2 Confirmed Case Definition

A clinically compatible case in which laboratory tests have confirmed exposure.

3.3 Presumptive Case Definition

A clinically compatible case in which a high index of suspicion (credible threat or patient history regarding location and time) exists for saxitoxin exposure, or an epidemiologic link exists between this case and a laboratory-confirmed case.

3.4 Suspect Case Definition

A case in which a potentially exposed person is being evaluated by health-care workers or public health officials for poisoning by a particular chemical agent, but no specific credible threat exists.

3.5 Services Available at the Oregon State Public Health Laboratory (OSPHL)

OSPHL does not test food samples for saxitoxins. Consult with ACDP epidemiology about other sources of testing.

Laboratory diagnosis is achieved by:

Biologic specimen – A case in which saxitoxin in urine is detected, as determined by the CDC laboratory. - *OR* -

Environmental specimen – Detection of saxitoxin in shellfish or seafood sample.

3.6 Paralytic Shellfish Poisoning Laboratory Testing

Tests are not readily available to detect saxitoxin in clinical specimens from a patient and are not required for case classification. Confirm the diagnosis in a patient with compatible clinical symptoms or by toxin testing of epidemiologically implicated shellfish or seafood.

3.1 Domoic Acid Shellfish Poisoning (DASP)

Clinical Criteria: Gastrointestinal symptoms of vomiting, diarrhea and abdominal cramps that begin within 24 hours. Neurological symptoms may occur within 48 hours including headache, dizziness, confusion, permanent short-term memory loss, motor weakness or paralysis, seizures, profuse respiratory secretions, cardiac arrhythmias, coma and possibly death

Laboratory Criteria: Identification of domoic acid in epidemiologically implicated food

3.2 Confirmed Case Definition

A clinically compatible case in which laboratory tests have confirmed exposure.

3.3 Presumptive Case Definition

A clinically compatible case in which a high index of suspicion (credible threat or patient history regarding location and time) exists for domoic acid exposure.

3.4 Services Available at the Oregon State Public Health Laboratory (OSPHL)

OSPHL does not test food samples for domoic acid. Laboratory diagnosis is achieved by: Consult with ACDP epidemiology about other sources of testing.

3.1 Diarrhetic Shellfish Poisoning (DSP)

Clinical Criteria: Gastrointestinal symptoms of vomiting, diarrhea and abdominal cramps that begin within 30 minutes to 36 hours after shellfish consumption.

Laboratory Criteria: Identification of diarrheic shellfish toxin in epidemiologically implicated food

3.2 Confirmed Case Definition

A clinically compatible case in which laboratory tests have confirmed exposure.

3.3 Presumptive Case Definition

A clinically compatible case in which a high index of suspicion (credible threat or patient history regarding location and time) exists for diarrhetic shellfish toxin exposure.

3.4 Services Available at the Oregon State Public Health Laboratory (OSPHL)

OSPHL does not test food samples for diarrhetic shellfish toxins. Consult with ACDP epidemiology about available sources for testing.

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4. DIAGNOSIS AND LABORATORY SERVICES

A. Diagnosis

Tests are not readily available to detect saxitoxin, domoic acid, or diarrhetic shellfish toxins in clinical specimens from a patient and are not required for case classification. Confirm the diagnosis in a patient with compatible clinical symptoms by toxin testing of epidemiologically implicated shellfish or seafood.

B. Services Available at the Oregon State Public Health Laboratories (PHL)

OSPHL does not test shellfish for saxitoxins, domoic acid and diarrhetic shellfish toxins. If implicated product is available, consult the ACDP (971-673-1111) to arrange for testing. Include full details about the source of the product such as beach of collection, commercial shellfish tags from a restaurant, or point of purchase.

C. Food Specimen Collection

For instructions on collecting or shipping shellfish work with ACDP. When submitting commercial food specimens, keep the food item in the original package and include all available documentation regarding the purchase of the item including date and location of purchase, and receipts if available. Ship cold.

5. CASE INVESTIGATION

5.1 Identify Source of Infection

Review the clinical symptoms and determine risk of exposure. Ask the case about shellfish consumed in the hour prior to onset and up to two days before symptoms started. Identify sources of shellfish exposure, Collect details including the type of shellfish eaten, site of harvest/purchase, and date of harvest/purchase. Report the information to ACDP immediately (971-673-1111) if paralytic or domoic acid poisoning is suspected. Identify any other people with a shared exposure to the product.

All cases should be investigated as a matter of routine. Ask about possible exposures, including specifics of the meal recently consumed:

- What was consumed?
- Where and when was it consumed?
- Where and how was the product harvested – recreationally or commercially bought.
- How was it prepared?
- Are there leftovers (if so, have case please retain for testing)?

5.2 Management of Other Potentially Exposed Persons

Collect name, diagnosis, and phone number or address of any acquaintance or household member sharing the meal or with a similar illness. Although the disease is not transmitted from person to person, clusters of cases may allow a food source to be identified and removed from the marketplace.

5.3 Environmental Evaluation

Perform a trace-back investigation to determine where the implicated shellfish were harvested. Collect information about the supplier and harvest site of the shellfish. Obtain legally required shellfish tags from retail sites. If possible, obtain shellfish samples for testing at Oregon Department of Agriculture (ODA) or Oregon Department of Fish and Wildlife (ODFW). Prevent further consumption of shellfish from the same harvest area until information is gathered by placing a hold on shellfish (i.e., food embargo) from the same lot in a restaurant or grocery store. The ODFW/ODA Program is responsible for recalling shellfish harvested from the same site if needed and for initiating a closure for harvesting shellfish from a location.

6.CONTROLLING FURTHER SPREAD

6.1 Education

Cases should be educated about risk of illness from seafood consumption and to check the ODA Shellfish website for current information on harvest site closures. Cases can also receive consultation from the Oregon Poison Center.

Oregon Poison Center: (800) 222-1222

6.2 Isolation and Work or Day Care Restrictions

There are no restrictions to work. Case may return to work upon resolution of symptoms. (OR - Diarrhea and vomiting are not related to a communicable illness, and therefore the case may return to work upon satisfactory resolution of symptoms.)

6.3 Case Follow-up

There is no specific public health follow-up for cases of shellfish poisoning outside of reporting. Follow up and collection of left over shellfish or suspect seafood will be coordinated by ACDP epidemiology. Food samples may be sent to ODA/ODFW, WA state, CDC or another regional laboratory for testing. No clinical testing is available at this time.

7. MANAGING SPECIAL SITUATIONS

7.1 Suspected Outbreaks

If an outbreak of shellfish poisoning is suspected, notify the ACDP On Call Epidemiologist (971-653-1111) immediately an outbreak investigator will be assigned to assist in the investigation.

ODA and FDA will likely be involved in managing outbreak responses for commercial food products and would lead the regulatory “outbreak” investigation, whereas local public health and OPHD would conduct the public health outbreak investigation for affected persons.

Check the ODA Shellfish page for up-to-date information on harvest closures and testing https://www.oregon.gov/oda/food-safety/shellfish/Pages/default.aspx

REFERENCES

Adapted from Washington State Department of Health Shellfish Poisoning Reporting and Surveillance Guidelines (revised May 2022)

UPDATE LOG

Oct. 2025/July 2026 Guideline created (Madison Walton and June Bancroft) and published