

## HARMFUL ALGAE BLOOMS (HABs)

Harmful algae are naturally occurring, but when they bloom into high concentrations they make shellfish toxic and unsafe to eat. These algae blooms are often referred to as “Red Tide” because they can turn the water a reddish brown color. **All types of shellfish can become toxic**, including clams, oysters, mussels, and scallops. These toxic shellfish can cause a variety of symptoms including nausea and paralysis, and in extreme cases even death. The Lummi Natural Resources Department, along with the Washington State Department of Health, monitor biotoxin levels in the area and close beaches to harvest when shellfish become unsafe to eat.

**Check for closures before you dig!**

(360) 380-6899

[www.lummi-nsn.gov](http://www.lummi-nsn.gov)



## HOW SHELLFISH BECOME TOXIC FROM HARMFUL ALGAE BLOOMS

### 1. Toxic algae bloom

Ideal water conditions for algae blooms include sunlight, nutrients for plant growth, and warm water temperatures.

### 2. Shellfish eat algae

Shellfish that feed on toxic algae blooms become toxic and unsafe to consume

### 3. People eat shellfish

Toxic shellfish are eaten, possibly making consumer sick in anywhere from minutes to 24 hours.

### 4. Over time shellfish become safe

With time the algae bloom dissipates so shellfish are no longer consuming toxic algae and eventually become safe to eat.

Stay safe when harvesting shellfish and remember to  
**CHECK BEFORE YOU DIG!**



Lummi 24-hr fishery hotline:  
**(360) 380-6899**

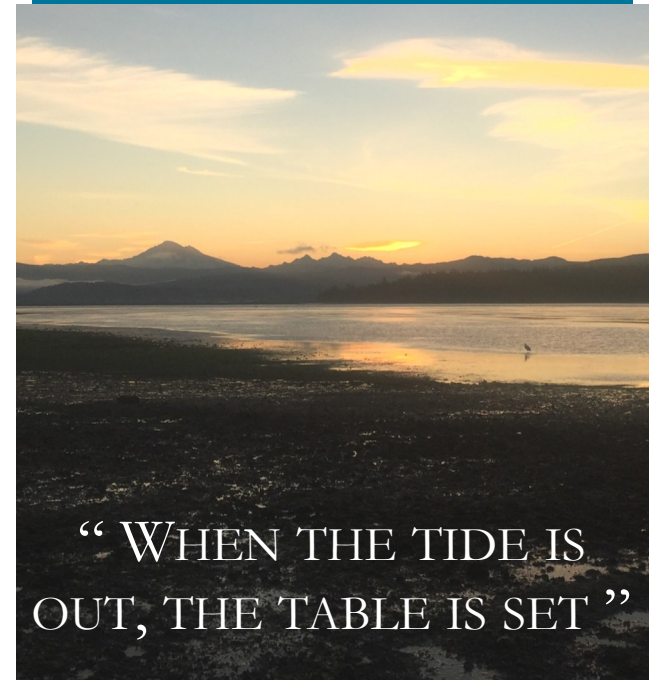
WA Department of Health Hotline:  
**1-800-562-5632**  
[www.doh.wa.gov/ShellfishSafety](http://www.doh.wa.gov/ShellfishSafety)

Lummi Natural Resources Website:  
**[www.lummi-nsn.gov](http://www.lummi-nsn.gov)**

Lummi Natural Resources Office  
**(360) 384-7119**

## Shellfish Biotoxins & Red Tide:

Risks and how to safely harvest



“WHEN THE TIDE IS OUT, THE TABLE IS SET”



LUMMI NATURAL RESOURCES DEPARTMENT  
HARVEST MANAGEMENT DIVISION  
FISHERY HOTLINE (360) 380-6899

## SHELLFISH BIOTOXINS AND THE SYMPTOMS THEY CAUSE

	PARALYTIC SHELLFISH POISONING (PSP)	DIARRHETIC SHELLFISH POISONING (DSP)	AMNESIC SHELLFISH POISONING (ASP)
TOXIN	Saxitoxin (Neurotoxin)	Okadaic Acid	Domoic Acid (Neurotoxin)
ALGAE	<i>Alexandrium sp.</i> (Dinoflagellate)	<i>Dinophysis spp.</i> (Dinoflagellate)	<i>Pseudo-nitzschia spp.</i> (Diatom)
SYMPTOMS	<b>Early/mild</b> – Tingling and numbness to the tongue and lips (within minutes to hours)	<b>Early/mild</b> – Nausea, vomiting, abdominal pain, diarrhea	<b>Early/mild</b> – Vomiting, nausea, diarrhea, and abdominal cramps (within 24 hours)
	<b>Moderate</b> – Symptoms progress to fingers and toes, leading to loss of control of arms and legs, followed by difficulty breathing	<b>Most common</b> – Diarrhea is the most common symptom	<b>Moderate</b> – Headache, dizziness, confusion, disorientation, short-term memory loss (neurological)
	<b>Severe</b> – Paralysis can move to lungs causing suffocation and possible death	<b>Severe</b> – Mild symptoms could become severe	<b>Severe</b> – Long term memory loss, seizures, coma, and possible death
LETHAL	<b>YES</b>	No	<b>YES</b>
CLOSURE LEVEL	≥80 µg/100g tissue	≥16 µg/100g tissue	≥20 ppm in tissue
PREVIOUS CLOSURES ON LUMMI?	<b>YES</b>	<b>YES</b>	Not yet...

### Climate change: Increased risk of Biotoxins

As our climate warms, we can expect to see an increase in Harmful Algae Blooms (HABs) and biotoxin risk in consuming shellfish. Warming water temperatures are expected to increase algae bloom friendly conditions for longer periods of the year resulting in HABs occurring **more frequently** and **lasting longer**. Locally, PSP (Paralytic Shellfish Poisoning) **blooms are already occurring earlier in spring and later in fall** and larger blooms are **increasing the toxicity** of shellfish to **lethal levels**.



## DANGEROUS MYTHS

- 🐚 **Cooking toxic shellfish in boiling water will make them safe to eat. False.** Cooking shellfish in boiling water will **NOT** remove or kill biotoxins.
- 🐚 **Freezing toxic shellfish will make them safe to eat. False.** Shellfish will remain toxic even after freezing.
- 🐚 **If you hold a piece of shellfish up to your tongue or lip and it does not tingle, the shellfish is safe to eat. False.** Symptoms can take hours to develop and the only way to know if shellfish are safe to eat is by being tested in a lab.
- 🐚 **Shellfish are not safe to eat when tide is red. False.** Not all red tides are toxic nor are toxic algae blooms always red.
- 🐚 **If wildlife have been eating the shellfish, they must be safe to eat. False.** Each animal has a different tolerance to biotoxins and you might not see wildlife experiencing symptoms.
- 🐚 **Shellfish only become toxic in the warmer summer months, so shellfish are safe to eat in the cooler months. False.** Shellfish can be toxic any time of the year. Climate change is increasing HAB friendly environmental conditions

## STAY SAFE

- 🐚 Always check for health closures before harvesting any shellfish:  
**Lummi Fisheries Hotline: (360) 380-6899**  
[www.lummi-nsn.gov](http://www.lummi-nsn.gov)
- 🐚 Know your risk! There is **no antidote or cure for biotoxins**
- 🐚 If you think you have consumed shellfish high in biotoxins, report it to a medical professional immediately & seek medical help—it could save your life!