

Diarrhetic Shellfish Poisoning in Washington, Summer 2011



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Canadian Diarrhetic Shellfish Poisoning Symposium
November, 2012

Outline

- Shellfish Poisoning Reporting in WA
- Biotoxin Monitoring Program in WA
- Outbreak Summary
- 2012 Updates
- Risk Communication

Previous Outbreaks of DSP

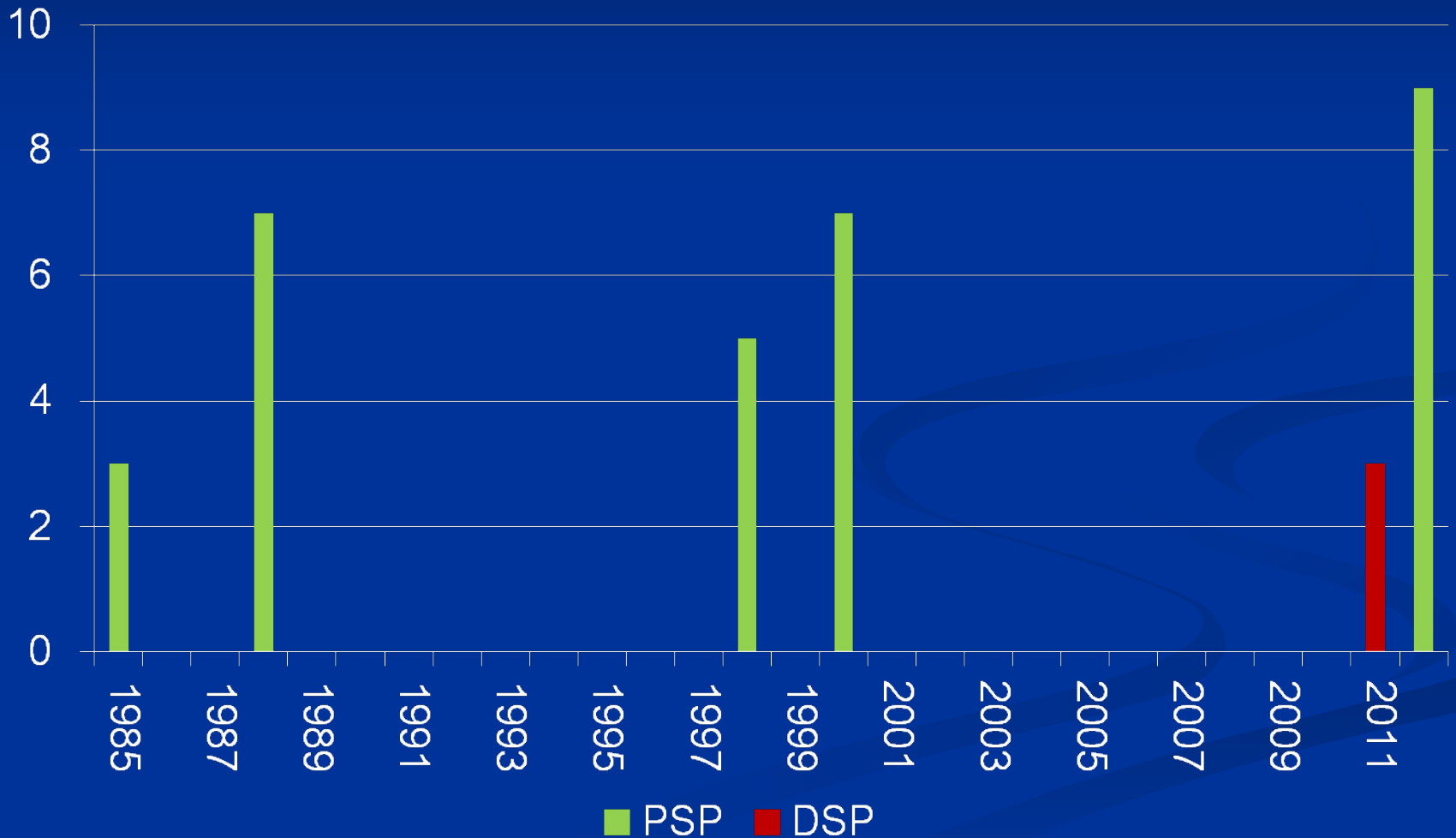
- U.S.
 - Illness reports in 1980's on East Coast
 - No testing of implicated shellfish
 - 2008: Harvest area closures due to okadaic acid in TX Gulf coast oysters
 - No illnesses reported



Shellfish Toxin Reporting in WA

- Paralytic Shellfish Poisoning reportable since 1985
- Domoic Acid Shellfish Poisoning added in 2010
- Immediately notifiable
- DSP not yet reportable
 - Captured under outbreaks of suspected foodborne origin

Shellfish Poisoning in Washington State, 1985 – 2012 YTD



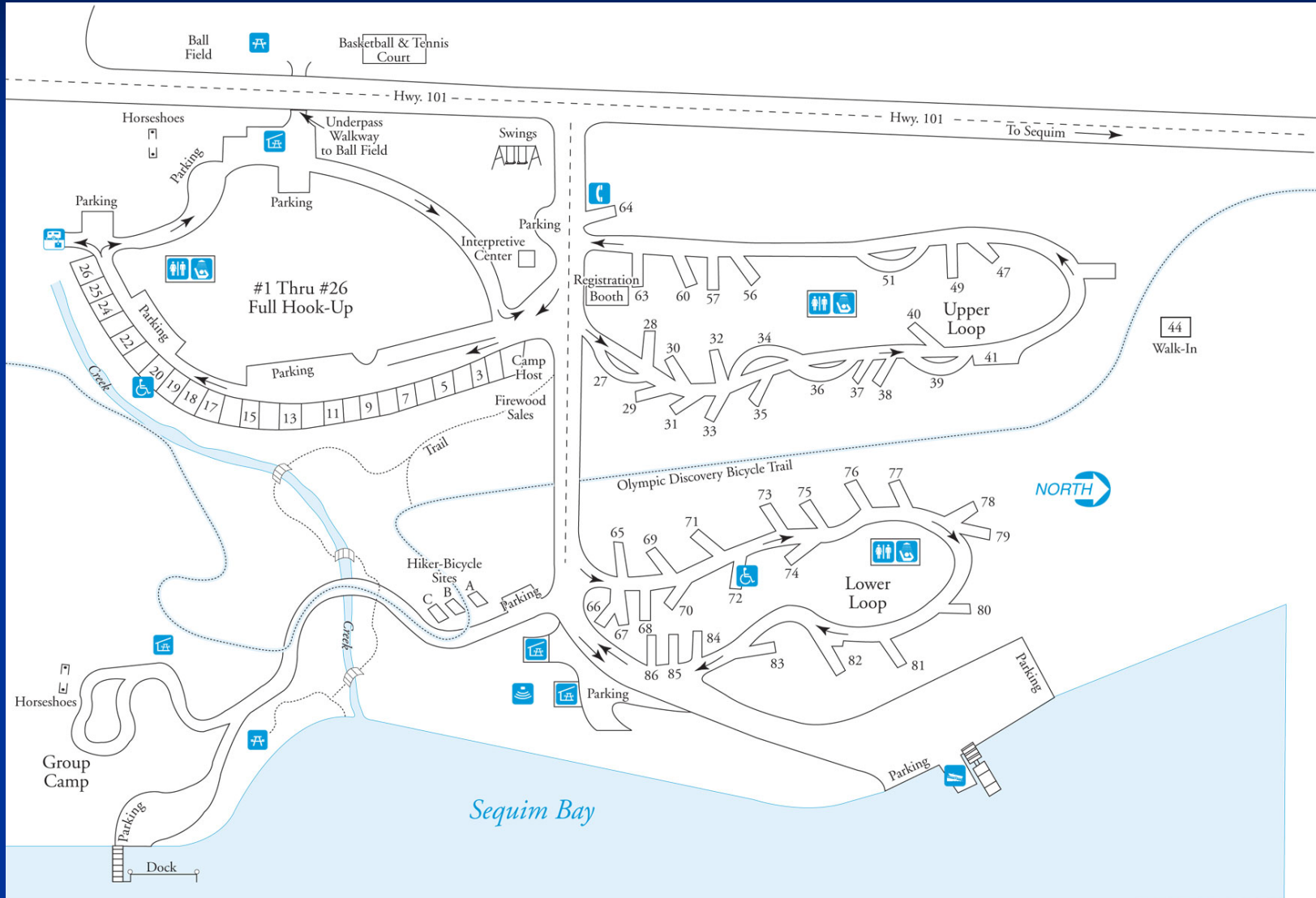
WA Monitoring Program

- WA Office of Shellfish and Water Protection (OSWP) – Marine Biotoxin Program & external partners
- Prior to 2010, routine monitoring of bivalve molluscs from commercial and recreational areas for amnesic (ASP) and paralytic shellfish poisoning (PSP) toxins
- 2010 Pilot study: 18 growing areas with historically high levels of *Dinophysis* algae monitored weekly
- 2011: Less funding results in fewer sites (6) monitored
 - Focus on areas with commercial production of mussels

Public Health Goals

- ID sources of major PH concern & prevent further transmission
- ID others with shared exposure - educate about symptoms to facilitate rapid diagnosis
- When risk to few individuals, inform them how they can reduce risk of future exposure

King County, WA Investigation



King County Investigation Notification & Investigation Methods

- Case reports:
 - Family harvested & consumed mussels last week in June
 - Sought information online - Contacted OSWP
 - Family referred to PHSKC Communicable Disease Epidemiology (CD Epi) section on July 8 for in-depth investigation.
- Investigation methods:
 - Family interviewed by phone and email
 - Harvest information shared with DOH CD Epi and OSWP
 - Shellfish from harvest area collected and tested for DSP toxins at FDA Gulf Coast Seafood Laboratory

King County Investigation

Harvest & Preparation Details

- Family camped at WA state park
- Harvested mussels from underside of public dock (mussels submerged in water)
- Mussels held in bucket with seawater for 2 hours
- Boiled for 10 minutes and consumed
- Family frequently harvests shellfish; first time at this location

King County Investigation Case Findings

- Family of 4; all consumed mussels
 - 1 adult, 2 children (ages 2 and 5!) became ill
 - No underlying health conditions
 - Ills consumed 8 – 15 mussels each (vs. 4 consumed by non-ill)
- Median incubation: 7 hours (range 4-14 hr)
- Signs and symptoms: nausea, vomiting, cramps, diarrhea, subjective fever, chills, body aches
 - No neurological symptoms
 - No known secondary cases
- Median duration: 36 hours (range 15-96 hr)
- No one sought health care; no over-the-counter meds

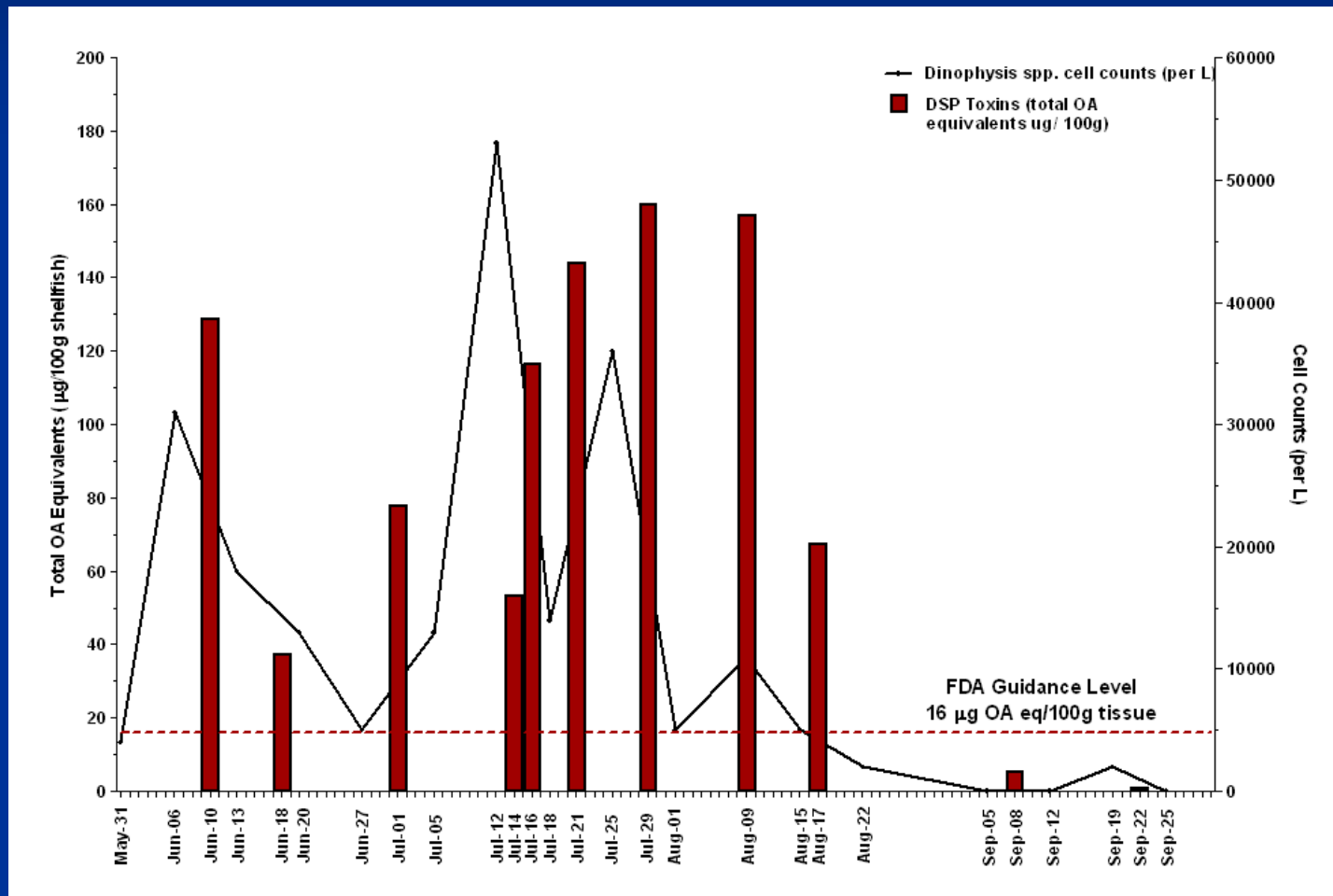
King County Investigation Laboratory Findings

➤ OSWP

- Mussels sampled from implicated harvest area throughout summer
- Testing performed at FDA laboratory
 - Liquid Chromatography-Mass Spectrometry (LC-MS) Analysis
 - Results: 10 mussel samples with toxin levels above regulatory threshold
 - Two collected prior to harvest date associated with illnesses
 - Range: 37.6 – 160.3 μg DSP toxin* / 100 g shellfish (ref. 16 μg / 100 g)

*Test for toxin “cocktail” including DTX-1, DTX-2, OA + acyl esters

Dinophysis Cell Counts and DSP Toxin Levels



King County Investigation

Public Health Actions

- Aug 8: Commercial and recreational closure of area around state park
 - Commercial product recalled back to Aug 1
- Aug 11: Press release issued on risk of DSP; educational information posted on Public Health website
- Warning signs posted at public beach
- Ongoing monitoring for illnesses consistent with DSP
- No additional reports of illness
- Commercial growing areas re-opened Sep 2
- Recreational harvest areas opened in late Oct

2012 Updates

- Partnership with NOAA Northwest Fisheries Science Center – monitoring through the summer
- 2012 summer: 13 sites with high levels DSP toxins
 - 8 recreational closures
 - 3 commercial closures
 - Peak level 184 μg DSP toxin/100 g shellfish
 - No illnesses reported
- WA PHL DSP testing operational Oct 2012

WA Public Beach Warning Sign

DANGER

TOXIC SHELLFISH

Shellfish in this area are unsafe to eat due to the biotoxin Diarrhetic Shellfish Poison (DSP).

DO NOT EAT clams, oysters, mussels, or scallops.

Vietnamese

SÒ, NGHÊU, HẾN, HÀO BỊ NHIỄM ĐỘC. ĐỪNG NÉN ĂN!

Korean

유독성 조개류. 먹지마십시오!

Cambodian

សត្វសត្តានគ្រី លៀសដែលពុល។ ចូរកុំបរិភោគ!

Lectian

សត្វនាំឯងយេនមិលើវា ប្រើវាមិនបាន!

Chinese

有毒貝類。切勿食用！

Spanish

MARISCOS TÓXICOS. ¡NO COMER!

Russian

ЯДОВИТЫЕ МОЛЛЮСКИ. НЕ ПРИНИМАТЬ В ПИЩУ!

Always check the biotoxin hotline:

1-800-562-5632 or
www.doh.wa.gov/shellfishsafety.htm

For more information, contact:



360-236-3330



Recreational Shellfish Program, Washington State Department of Health

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Message

128 likes

Government Organization

The Washington State Department of Health's Recreational Shellfish Program provides information about where, when, and how to harvest safe molluscan shellfish, such as clams, mussels, oysters, geoduck, and scallops.



128

About

Photos

Likes

Highlights



Public Health - Seattle & King County shared a link.

July 24

There's a public hearing in New York today about Mayor Bloomberg's proposal to limit portion sizes for sodas. What do you think about the idea?



Hold The Ice: Rhetoric Gets Hot Over New York's Big Soda Ban : NPR

www.npr.org

At a public hearing today, the opponents to New York Mayor Bloomberg's

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1



Public Health - Seattle & King County shared a link via Washington State Department of Health.

July 20

Paralytic Shellfish Poison (PSP) has been detected at levels of concern in shellfish samples collected from King County beaches. As a result, the Washington State Department of Health has closed King County to the recreational harvest of shellfish.



Emergency Closures Due to Marine Biotoxins

www.doh.wa.gov

The list of closed beaches that are closed due to marine biotoxin



July 25

Ever wonder who is keeping an eye on food prep in the restaurants you enjoy?



Public Health Restaurant Inspector

See how King County's health inspectors keep an eye on the restaurants you enjoy. <http://www.kingcounty.gov/kctv> You can watch KCTV programs on Channel 22 on...

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Public Health - Seattle & King County shared a link.

July 23

Interesting online map illustrating the prevalence of HIV in the U.S., along with critical resources like testing and treatment center locations. You can also filter data by race/ethnicity, sex and age, to see how HIV prevalence is related to various social determinants of health like educational attainment and poverty.



Map | AIDSvu.org

www.aidsvu.org

AIDSvu is an interactive online map depicting the HIV epidemic in the U.S.

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2

THE TODAY FILE

Your guide to the latest news from around the Northwest



MORNING MEMO

THE BLOTTER

TRAFFIC & TRANSIT

WEATHER BEAT

July 20, 2012 at 10:43 AM

All King County beaches closed to recreational shellfish harvesting

Posted by [Nick Provenza](#)

Share:



Recommend 26

Comments

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The state Health Department has closed all King County beaches to recreational shellfish harvesting after paralytic shellfish poison (PSP) has been found at levels of concern in shellfish samples on county beaches.

Advisory signs are going up at beaches to warn visitors not to collect any shellfish, according to Public Health – Seattle & King County officials.

The closure means you can't harvest oysters, mussels, scallops, other species of mollusks and invertebrates such as the moon snail. Crabmeat isn't known to contain the PSP toxin, but the guts can contain unsafe levels. To be on the safe side, the health officials say to thoroughly clean crab meat and toss the guts ("butter"). This closure doesn't apply to shrimp.

The toxin is not destroyed by cooking or freezing.

Commercial beaches are checked separately and commercial products should be safe to eat.

Resources

- WA DOH Marine Biotoxin Program:
<http://www.doh.wa.gov/AboutUs/ProgramsandServices/EnvironmentalPublicHealth/ShellfishandWaterProtection/ShellfishProgram/Biotoxins.aspx>
- WA DOH Shellfish Poisoning Surveillance Guidelines:
<http://www.doh.wa.gov/PublicHealthandHealthcareProviders/NotifiableConditions/ShellfishPoisoningParalyticDomoicAcid.aspx>
- WA Shellfish Safety Hotline: 1-800-562-5632

Acknowledgements

➤ WA


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- Harold Ruark, WA PHL
- Alison Robertson, US FDA

➤ BC

- Marsha Taylor, BCCDC

Extras

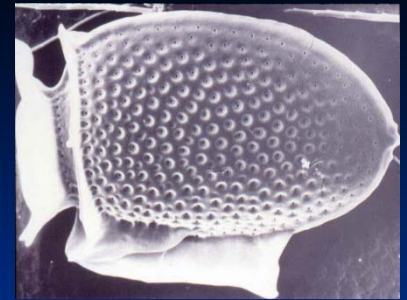
Diarrhetic Shellfish Poisoning (DSP)*

- Mild gastrointestinal symptoms: 
- Incubation:
 - 30 minutes – 12 hours
- Duration:
 - Up to 2 – 3 days
- Diagnosis:
 - Clinical
 - Toxin identification in implicated food
- Sequelae:
 - None

Nausea	Vomiting
Diarrhea	Abdominal Pain
Chills	Headache
Fever	

- Frequency of illnesses largely unknown:
 - mild illnesses (no healthcare)
 - misdiagnosis / under-diagnosis
 - under-reporting

DSP Cycle of Illness



- **Algae:** Dinoflagellates, *Dinophysis* species
 - **Toxins:** Okadaic acid (OA), DTX-1, 2 and 3
 - Produced by the algae
 - Heat stable (not destroyed by cooking)
 - **Shellfish:** Mussels, oysters, scallops, clams
 - Feed on the algae, and concentrate the toxins
 - **People** eat the contaminated shellfish

Laboratory Testing-DSP

- Cannot detect toxin in clinical samples
- Methods for detecting toxins in shellfish
 - Traditional method: mouse bioassays
 - Current method:
 - Instrumental – liquid chromatography / mass spectrometry
 - Identifies each type of toxin in a sample in addition to amount of toxin present
 - Used in U.S. and Canada