

Diarrhetic Shellfish Poisoning Outbreak in BC, 2011

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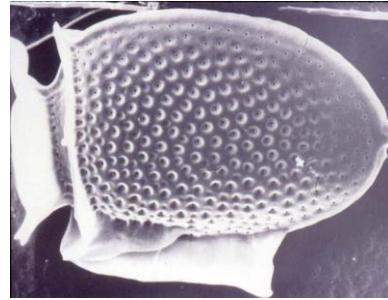
Outline

- Background
 - Symptom Profile, Causative agent, Historical Outbreaks
- Outbreak investigation in BC
- Lessons learned
- Future Considerations

Diarrhetic Shellfish Poisoning (DSP)

- Mild gastrointestinal symptoms
 - No chronic sequelae
 - Misdiagnosis and under-reporting
- Incubation:
 - 30 minutes – 12 hours
- Duration:
 - Up to 2 – 3 days
- Diagnosis:
 - Clinical
 - Toxin identification in implicated food

DSP cycle of illness



Algae

**Okadaic acid (OA),
DTX-1, 2 and 3
Toxins**

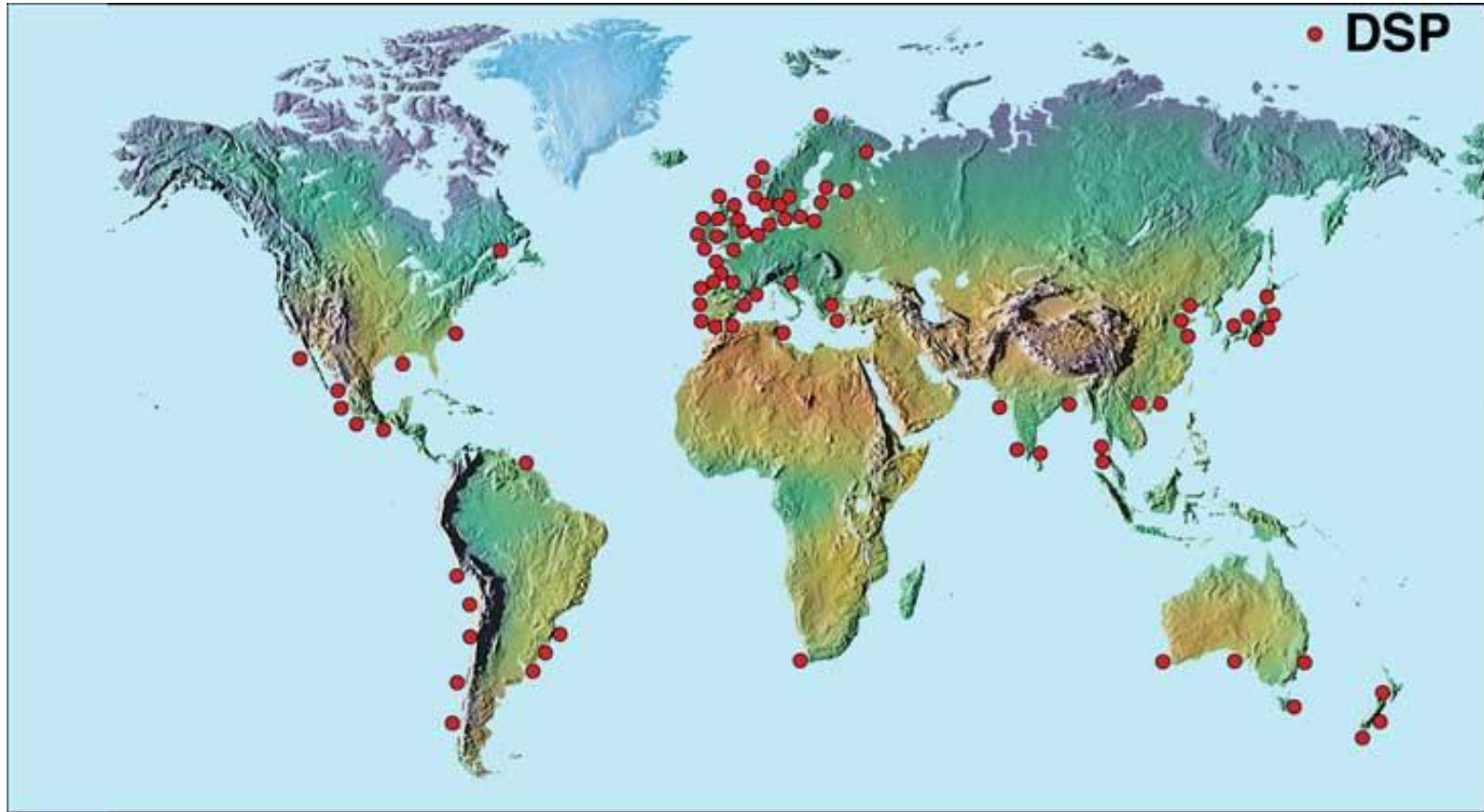


Consumption



Shellfish

Previous outbreaks of DSP



Previous outbreaks of DSP

- Canada
 - 1989: Okadaic acid detected in Gulf of St Lawrence
 - 1989: DTX-1 in Prince Edward Island mussels, 1993 DTX-1 Nova Scotia mussels & Newfoundland mussels
 - 1990: 13 cases in Nova Scotia consumed local mussels

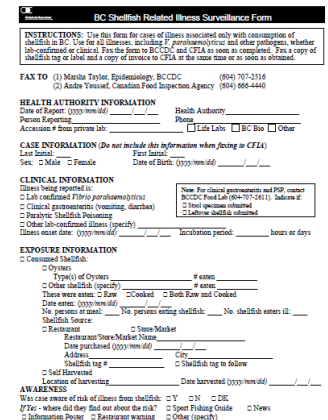


Outbreak notification

- Aug 3, 2011: Multiple cases of gastrointestinal illness identified, associated with multiple restaurants in 2 Health Authorities
 - Norovirus vs. DSP
- Restaurant complaints \longrightarrow shellfish harvester

Investigation methods

- Case and restaurant investigations
- Collection of tags to assist with traceback
 - Supplier
 - Date of harvest
 - Harvest area
 - Lot #
- Outbreak investigation team identified
 - BC Foodborne Illness Outbreak Response Protocol activated



BC Shellfish Related Illness Surveillance Form

INSTRUCTIONS: Use this form for cases of illness associated only with consumption of shellfish in BC. Use for all illnesses, including *V. parahaemolyticus* and other pathogens, whether lab-confirmed or clinical. Fax the form to BC CDC and CFIA as soon as completed. Fax a copy of shellfish tag or label and a copy of invoice to CFIA at the same time or to order as obtained.

FAX TO (1) Manila Taylor Epidemiology: BC CDC (604) 707-5116
(2) Asda Yousef, Canadian Food Inspection Agency (604) 666-4440

HEALTH AUTHORITY INFORMATION
Date of Report: (YYYY/MM/DD) _____/_____/_____
Person Reporting: _____ Health Authority: _____
Accession # from previous lab: _____ Lab Visit BC Bio Other

CASE INFORMATION (Do not include this information when faxing to CFIA)
Last Name: _____ First Name: _____
Sex: Male Female Date of Birth: (YYYY/MM/DD) _____/_____/_____

CLINICAL INFORMATION
Illness being reported to:
 Lab confirmed *Vibrio parahaemolyticus* (BC CDC Food Lab (604-707-5111), address if _____)
 Clinical diagnosis (vomiting, diarrhea) Other (specify) _____
 Parityric Shellfish Poisoning Lab/inv. shellfish obtained
 Other lab-confirmed illness (specify) _____ Incubation period: _____ hours or days
Illness onset date: (YYYY/MM/DD) _____/_____/_____

EXPOSURE INFORMATION
 Consumed shellfish:
 Oysters _____ # eaten _____
Type(s) of Oysters _____ # eaten _____
 Other shellfish (specify) _____ # eaten _____
These were eaten: Raw Cooked Both Raw and Cooked
Date eaten: (YYYY/MM/DD) _____/_____/_____
No persons at meal _____ No previous eating shellfish: _____ No shellfish eaten (I: _____)
Shellfish source:
 Restaurant _____
 Store Market _____
Restaurant/Store/Market Name _____
Date purchased (YYYY/MM/DD) _____/_____/_____
Address _____
City _____
Shellfish tag # _____ Shellfish tag to follow
 Self Harvested _____
Location of harvesting _____ Date harvested (YYYY/MM/DD) _____/_____/_____
AWAWARENESS
Was one aware of risk of illness from shellfish: Y N DK
If/Yes - where did they find out about the risk? Spent Fishing Outside News
 Information Poster Restaurant warning Other (specify) _____

July 2010

Case findings

- 62 clinical cases associated with 15 retail locations
 - Restaurants, markets & grocery stores
 - No self-harvesting
 - All consumed cooked mussels
- Signs and symptoms: diarrhea, nausea, vomiting, abdominal pain, cramps
 - Incubation period: 2-15 hours
 - Duration: 1-3 days
- Consumption dates between July 28 - Aug 6

Food safety investigation & traceback

- Single harvest area identified
- Single mussel harvester in harvest area
- Harvest dates associated with cases:
 - July 24 - July 31
- Challenges:
 - Collection of tags; timeliness for actions
 - Specific information on practices in retail locations (e.g., which mussels were served on which dates)

Laboratory findings

- CFIA
 - Tests for DTX 1-3, okadaic acid, other toxins
 - 7 mussel samples collected from implicated harvest area between July 31-August 17
 - 2 samples > 20 µg / 100 g DTX-1
 - Presence of DTX-3 in all samples after July 19
- Public Health
 - 6 clinical specimens: negative for norovirus & stool culture
 - 4 food samples (2 mussels, 2 sauces): negative for enteric pathogens

Investigation Actions

- Aug 3: Harvester began withdrawing product
- Aug 5: Harvest area closed
 - Re-opened on Aug 24 after 3 samples within 14 day period within acceptable levels
- Aug 6: Health hazard alert and product recall based on risk assessment
- Public communication
 - Website updates
 - Multiple media requests

The image shows two screenshots related to a food safety investigation. The top screenshot is a news article from Postmedia News dated August 29, 2011, titled "Shellfish toxin found in B.C. for the first time". The article reports that a shellfish toxin surfaced in B.C. for the first time, poisoning 60 people and raising concerns in the aquaculture industry. It details that investigators traced the outbreak to mussels harvested from Cortes Island between July 19 and August 2, which were then shipped to retailers and restaurants under various brand names. The article also notes that the mussels were contaminated with a biotoxin causing diarrhetic shellfish poisoning, marking the first documented DSP outbreak in Western Canada.

The bottom screenshot is a "HEALTH HAZARD ALERT" from the Canadian Food Inspection Agency (CFIA) dated August 6, 2011. The alert warns the public not to consume certain mussels due to the presence of diarrhetic shellfish poisoning (DSP) biotoxin. It specifies that the affected mussels were harvested by Island Sea Farms Inc. from the harvest location "Area: BC 13, Sub Area: 15" or "BC 13-15" between July 19 and August 2, 2011. A table lists the affected mussels by brand name, product name, size, and codes/lots.

Brand name	Product name	Size	Codes / Lots
Saltspring Island Mussels	Aquacultured Edulis Mussels	5 lbs (2.27 kg)	All lots up to and including Lot # 289; all harvest dates up to and including August 2, 2011 (2011AU02)
Albion Fisheries Ltd	Mussel N/Shell Saltspring Isl	5 lbs	All harvest dates up to and including August 4, 2011 (8/04/2011)
Pacific Rim Shellfish Corp.	Mussels or Gallo Mussels	Various weights	All harvest dates up to and including July 31, 2011
Albion	SSI Mussels	Various weights	Ship dates of July 20 to August 4, 2011 inclusive
B & C Food	Mussels	Various weights	Processing dates of July 20 to August 4, 2011 inclusive

Below the table, the alert states: "Retailers and restaurants are advised to check the tags or labels on mussel packages or with their supplier to determine if they have the affected product."

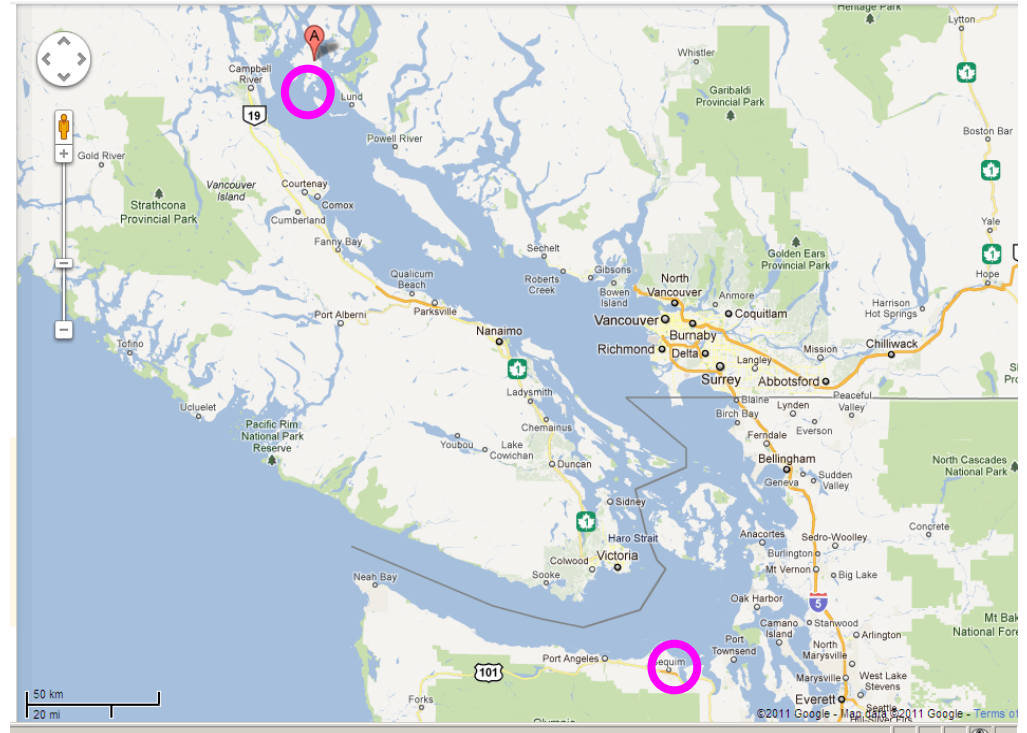
Lessons learned

How can we improve our response in the event of a future DSP outbreak?

- First documented experience
 - Changes to biotoxin monitoring programs and regulatory standards
- What factors led to this outbreak?
 - Learn and collaborate with experts
- Similar timing and location of first cases of DSP in WA State in 2011
 - Communication with partners

Why Here? Why Now?

- Environmental
- Ecological
- Has it happened before?



Future public health considerations

- Public health actions
 - Communication with public health
 - Use of biotoxin or other monitoring data
 - Communication within BC or with PNW partners
 - Communication with clinicians
 - Awareness and under-reporting
 - Communicating with the public
 - Annual media advisory
 - Improve tag availability in restaurants

Acknowledgements

- Vancouver Coastal Health Authority
- Vancouver Island Health Authority
- Fraser Health Authority
- BCCDC Public Health Microbiology and Reference Lab
- BC Ministry of Health
- Canadian Food Inspection Agency
- Health Canada
- BCCDC

Questions & Thank you