

# Risk Management and Communication

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**BC Centre for Disease Control**  
AN AGENCY OF THE PROVINCIAL HEALTH SERVICES AUTHORITY



*Province-wide solutions.  
Better health.*

# Communication Public Website

[www.bccdc.ca](http://www.bccdc.ca)

Food safety information for  
Consumers (Public)

Guidelines for Industry and Inspection

## SHELLFISH safety notes

### Shellfish Advice for Consumers

**Shellfish** are animals living in the sea that have shells. Shellfish are generally edible but are not actually fish. Bivalve shellfish have two hinged shells and include oysters, clams, scallops, mussels and cockles.



Photo Source: BC Shellfish Growers Association

#### Recommendations for purchasing shellfish

- Buy shellfish from trustworthy sources such

- Place live shellfish on the lowest shelf in the refrigerator, and cover with a damp towel. Do not allow any juices or liquids to leak onto other food items.
- Store shucked shellfish (meaning without the shell) in a closed plastic or glass container, or a leak-proof bag.



Photo Source: BC Shellfish Growers Association

#### FROZEN SHELLFISH

- For optimum quality, commercially frozen seafood can be stored in the freezer for up

### RETAIL LIVE FISH HOLDING TANKS

Retail Name: \_\_\_\_\_ Date Inspected: \_\_\_\_\_  
 Owner/Supervisor: \_\_\_\_\_ Phone Number: \_\_\_\_\_  
 Address of Retail: \_\_\_\_\_

|   | Yes  | No                       | Comments                 |       |
|---|--|--------------------------|--------------------------|-------|
| <b>Record Keeping Compliance</b>                              |  |                          |                          |       |
| Maintenance Logs (i.e. cleaning, temperature checks, UV bulb) | <input type="checkbox"/>   | <input type="checkbox"/> | _____                    |       |
| Product Invoices (1 year)                                     | <input type="checkbox"/>   | <input type="checkbox"/> | _____                    |       |
| Shellfish Tags (fresh, 1 year)                                | <input type="checkbox"/>   | <input type="checkbox"/> | _____                    |       |
| Shellfish Tags (frozen, 2 years)                              | <input type="checkbox"/>   | <input type="checkbox"/> | _____                    |       |
| <b>Holding Tank Components</b>                                |  |                          |                          |       |
| Display Tank  | • kept clean   | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
|   | • kept in good repair  | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
|   | • free of cracks/crevices  | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| Pumping System  | • clean water supply in correct order (bivalves → crustaceans → finfish) | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
|   | • free of foreign objects (claws/legs/etc)                               | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
| Temperature Control System (Refrigeration)                    | • impeller is primed   | <input type="checkbox"/> | <input type="checkbox"/> | _____ |
|   | • liquid refrigerator is clear w/o bubbles                               | <input type="checkbox"/> | <input type="checkbox"/> | _____ |

<http://www.bccdc.ca/foodhealth/fish/default.htm>

<http://www.bccdc.ca/foodhealth/fish/Provincial+Fish+Inspection.htm>

# Risk Messaging – Cadmium in Shellfish (Dec 2010)

## **Who identified:**

Association for  
Responsible Shellfish  
Farming

## **How it was received:**

Via web-site inquiry

## **Is it an issue?**

Yes

## **Other stakeholders?**

Yes

## **Risk messaging**

**“eating one BC oyster is  
equivalent to consuming  
40 cigarettes in terms of  
cadmium absorbed”**

## Cadmium in BC Shellfish

### *What is cadmium?*

Cadmium is a chemical element, commonly associated with rechargeable (ni-cad) batteries. It does not have any known function in human metabolism. Ingestion of cadmium over long periods of time may lead to kidney and bone problems.

### *Updated health concerns about cadmium*

Cadmium reduces the kidney's ability to absorb essential nutrients, such as calcium, glucose, and amino acids into the body. In particular, the loss of calcium can result in decreased bone strength. Cadmium exposure has also been linked to other health effects, including diabetes and high blood pressure, but the scientific evidence to support a relationship between cadmium and these health effects is not strong <sup>[1]</sup>.

### *Levels of cadmium in BC shellfish*

On land and in ocean waters, cadmium is found in varying amounts dependant on the local geology. Levels of cadmium tend to be higher in the Pacific Ocean than the Atlantic due to a “conveyor belt system” that deposits cadmium circulating in the world's oceans into the northwest Pacific - located at the end of the “ocean conveyor belt” <sup>[2]</sup>. Man-made sources of cadmium in the environment derive from mining and agricultural activities <sup>[3-5]</sup>. Other than near to mines and waste disposal sites, natural sources (in particular, cadmium in soils and in ocean waters) are likely more important than man-made sources in determining levels of cadmium on land and in coastal waters.

There is a wide range of cadmium levels reported in oysters from the Pacific northwest. The amount of cadmium, reported as parts per million (ppm) wet weight in Pacific northwest oysters has been measured at between 1 and 4 ppm.



Generally, levels of cadmium are much lower in oysters elsewhere in the world.

### *Cadmium levels reported in oysters*

| Location   | Oyster Cadmium Levels<br>ppm wet weight | Reference      |
|------------|---|----------------|
| Alaska     | Average: 2.2<br>Range: 1.6 to 4.0       | <sup>[6]</sup> |
| BC         | Range: 1.5 to 3.5                       | <sup>[7]</sup> |
| BC         | Range: 1.2 to 3.6                       | <sup>[8]</sup> |
| Oregon     | Average: 1.3<br>Range: 0.7 to 2.0       | <sup>[9]</sup> |
| Washington | Average: 1.2<br>Range: 0.4 to 2.5       | <sup>[9]</sup> |
| California | Average: 0.6<br>Range: 0.4-0.8          | <sup>[9]</sup> |
| Hong Kong  | Average: 0.7                            | <sup>[9]</sup> |
| France     | Range: 0.04-0.7                         | <sup>[9]</sup> |
| England    | Average: 0.2                            | <sup>[9]</sup> |

### *Safe consumption of BC oysters and scallops for the general population*

Surveys of BC shellfish have shown that only oysters and scallops have higher than expected levels of cadmium – most clams and mussels surveyed have low cadmium levels <sup>[7]</sup>. Scallops are only a problem when consumed whole. The more commonly consumed adductor muscle (the fleshy part of the scallop) is low in cadmium <sup>[10]</sup>.

Not all of the cadmium you ingest is absorbed into your body. Recent scientific studies show that cadmium absorption varies widely between people <sup>[1, 11]</sup>. As the effects of cadmium on health relate to long-term exposure, clear hazard levels are hard to define. Recently, international authorities have recommended that exposure to cadmium from all sources (such as cigarettes, as well as oysters and scallops) be lowered in order to better protect the health of the public <sup>[12]</sup>.

The current Health Canada policy <sup>[13]</sup> on cadmium in BC oysters is to reduce risk by limiting consumption: for adults, Health Canada recommends a maximum of 12 oysters per month and for children, no more than 1½ oysters per month.

## Risk Messaging Botulism in home-prepared foods (Oct 2012)

### *Who identified:*

Department of Fisheries and Oceans

### *How it was received:*

Phone call, in preparation for court case

### *Is it an issue?*

Yes

### *Other stakeholders?*

Yes

### *Risk messaging*

**Fish products and home prepared canned products are higher risk.**

Table 1. Summary of documented home canned foods responsible for botulism in British to 2011

| Botulism Type   | Food                    | Processing                  | Number of Cases | Number Dead | Location (year)            |
|-----------------|-------------------------|-----------------------------|-----------------|-------------|----------------------------|
| ND <sup>1</sup> | Meat (venison)          | Home canned                 | 2               | 1           | Corbetton, ON (1934)       |
| ND              | Fish                    | Home canned                 | 5               | 2           | Maple Creek, SK (1941)     |
| E               | Salmon                  | Home canned                 | 3               | 3           | Nanaimo, BC (1944)         |
| ND              | Meat                    | Home canned                 | 4               | 0           | Masefield, SK (1949)       |
| E               | Trout                   | Home pickled                | 1               | 1           | Natal, BC (1952)           |
| A               | Corn on the cob         | Home canned                 | 2               | 2           | Grand Forks, BC (1953)     |
| A               | Spinach                 | Home canned                 | 2               | 0           | Rock Creek, BC (1953)      |
| ND              | Beets                   | Home canned                 | 1               | 0           | Gilpin, BC (1953)          |
| A               | String beans            | Home canned                 | 1               | 0           | Vancouver, BC (1964)       |
| A               | Green peppers           | Home canned                 | 3               | 2           | Lower Nicola, BC (1965)    |
| A               | Corn                    | Home canned                 | 1               | 0           | Surrey, BC (1983)          |
| A               | Vegetables              | Home-canned                 | 1               | 0           | North Vancouver, BC (1984) |
| B               | Mushrooms               | Home-canned                 | 1               | 0           | Montreal, PQ (1985)        |
| B               | Garlic-in-oil           | Restaurant-bottled          | 36              | 0           | Vancouver, BC (1985)       |
| A               | Mushrooms               | Restaurant-bottled          | 11              | 0           | Vancouver, BC (1987)       |
| A               | Asparagus               | Home-canned                 | 3               | 1           | Ottawa, ON (1991)          |
| A               | Beef and vegetable soup | Home-canned                 | 1               | 0           | Osoyoos, BC (1993)         |
| B               | Tomatoes                | Home-canned                 | 6               | 0           | Toronto, BC (1999)         |
| B               | Watermelon jelly        | Home-canned - sold publicly | 1               | 0           | Nanaimo, BC (2011)         |

<sup>1</sup> - ND=not determined

## Risk Messaging – Public Health Practitioners

### ***Who generates this data:***

CFIA & DFO (official site)

### ***Who receives this data:***

Industry, Federal shellfish plants, DFO, BCCDC-EH

### ***What can this data can tell us?***

Increases of marine toxins in shellfish

### ***What this data DOES NOT tell us....***

That there will be an increase in shellfish related illness

That these shellfish are commercially sold (they are not)

| Coastwide Martox<br>Unofficial Results for September 24, 2012: |          |                |               |                    |           |                                  |                   |
|--|----------|----------------|---------------|--------------------|-----------|----------------------------------|-------------------|
| Area   | Sub-area | Location       | Species       | PSP<br>ug<br>/100g | DA<br>ppm | Date of<br>Harvest<br>(mm/dd/yy) | Inspection<br>No. |
| 15   | 5        | REDONDA BAY    | F SEA MUSSELS | <25                |           | 09/19/2012                       | 9931829           |
| 26   | 3        | AMAI INLET     | F SEA MUSSELS | 530                | ND        | 09/17/2012                       | 9931831           |
| 26   | 5        | CHAMISS BAY    | F SEA MUSSELS | 72                 | 2.1       | 09/17/2012                       | 9931832           |
| 26   | 6        | WALTERS COVE   | F SEA MUSSELS | 210                | ND        | 09/19/2012                       | 9931830           |
| 26   | 8        | MALKSOPE INLET | F SEA MUSSELS | 910                | ND        | 09/17/2012                       | 9931833           |

### ***Question to Public Health Practitioners***

***(Environmental Health Officers, Medical Health Officers)***

Do you want to know when marine toxins (or *Vibrio parahaemolyticus*) levels increase?

When and under what conditions do you want to know?