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2017

IN THE FACE OF DISASTER:  
WHAT ARE THE RESILIENCY

# CHALLENGES

FOR FIRST NATIONS COMMUNITIES?

# Lessons Learned and Good Practices

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**CHALLENGES**

## Health Effects of Oil Spills: Implications for Impacted First Nations Communities

May 25, 2017

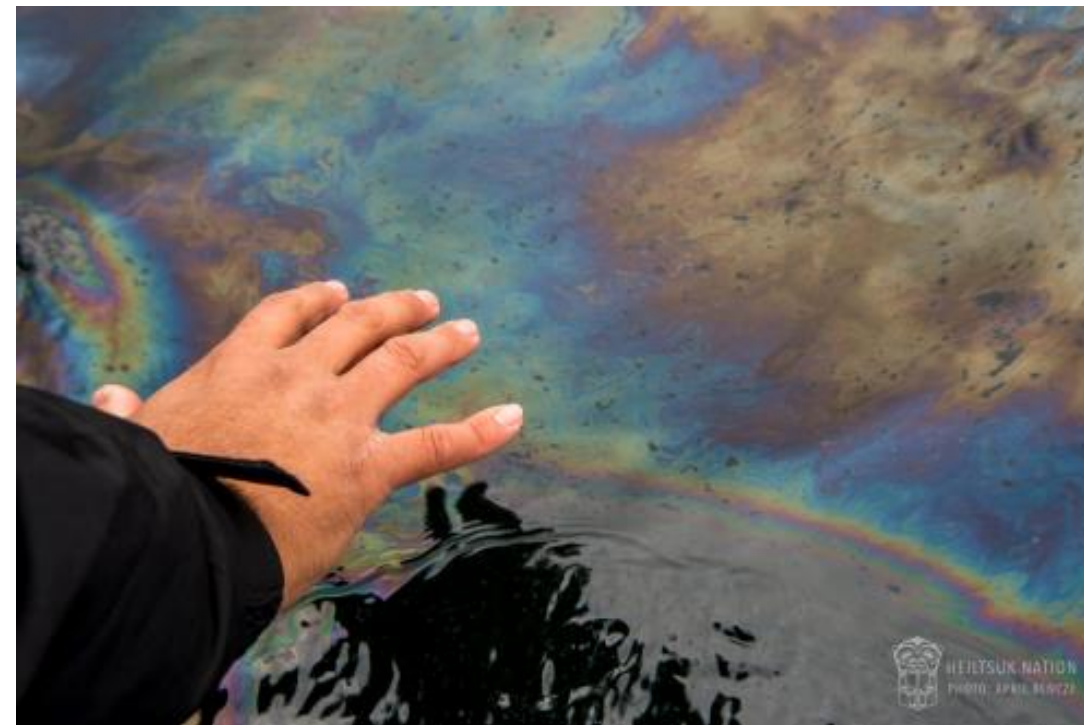
**Dr. Angela Eykelbosh**

*Environmental Health and Knowledge  
Translation Scientist*

In Collaboration with:

**Heiltsuk Nation**

**First Nations Health Authority (BC)**



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# Oil Spills Are Complex Events

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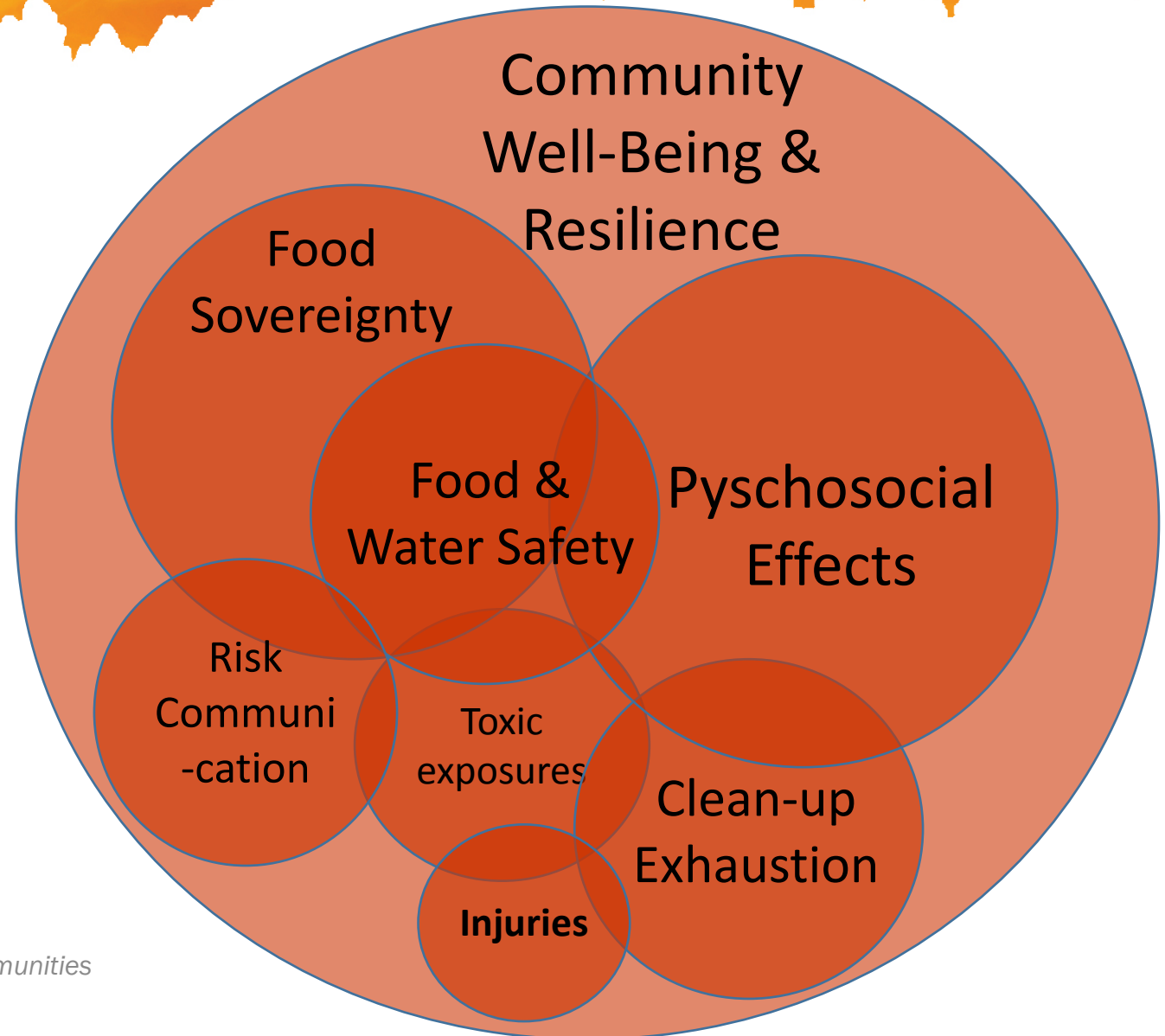


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**WHEN A FUEL SPILL  
OCCURS, COMMUNITIES  
AND PUBLIC HEALTH  
PARTNERS MUST RESPOND  
TO A NUMBER OF  
DIFFERENT CONCERNS.**

**HOW CAN PUBLIC HEALTH  
PRACTITIONERS IMPROVE  
RESPONSE TO SPILLS  
IMPACTING INDIGENOUS  
COMMUNITIES?**

*Implications of Oil Spills for First Nations Communities*



# Objectives

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- What is known regarding the short- and long-term impacts of oil spills?
- What do we know about indigenous community impacts in past spills?
  - Exxon Valdez Oil Spill
  - Bella Bella Diesel Spill
- Lessons and Challenges



*Image provided by Heiltsuk Nation  
(Photo: April Bencze)*

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# Past Marine Spills

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Spill	Region Impacted	Product	Spill Volume	Human Impact Indicators
<i>Deepwater Horizon</i> , 2010	Gulf of Mexico	Crude oil	650,000 t	11 fatalities; 170,000 clean-up workers; 1,500 km of shoreline oiled
<i>Odyssey</i> , 1988	Nova Scotia, Canada	Crude oil	132,000	Offshore spill; little known
<i>Exxon Valdez</i> , 1989	Alaska, USA	Crude oil	104,000 t	1,900 km of shoreline oiled
<i>Braer</i> , 1993	Shetland, UK	Light crude	85,000 t	5 km off the coast
<i>Sea Empress</i> , 1996	Southwest Wales, UK	Light crude	72,000 t	200 km of shoreline oiled
<i>Prestige</i> , 2002	Northwestern Spain	Heavy fuel oil	62,000 t	300,000 clean-up workers, 1,000 km of shoreline oiled
<i>Tasman Spirit</i> , 2003	Karachi, Pakistan	Light crude	36,000 t	10 km of residential shoreline oiled
<i>Erika</i> , 1999	Bay of Biscay, France	Fuel oil	25,000 t	400 km of shoreline oiled
<i>Hebei Spirit</i>	Daesan, South Korea	Crude oil	10,800 t	8 km from coast
<i>Nakhodka</i>	Western Honshu, Japan	Crude oil	6,000 t	1,200 km of shoreline oiled



# Health Effects of Oil Spills

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## Short-term or acute toxic effects

- Most studies focus on clean-up workers; few examine residents.
- **Clean-up workers:**
  - Headache, respiratory symptoms, gastrointestinal symptoms, irritated eyes and throats (reversible)
  - Effects lasted days to months depending on duration and type of work and use of personal protective equipment.
- **Residents:**
  - Include more vulnerable members of society (children, elderly, and the ill).
  - Tasmin Spirit spill (Pakistan, 2003): Headaches, eye and throat irritation related to distance from the shore.

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# Health Effects of Oil Spills

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## Injuries and Physical Hazards

- Slip and fall injuries
- Exhaustion and related conditions
  - E.g., heart attack, psychological effects.
- Wildlife-related injuries
- Explosion
  - E.g., Lac-Mégantic derailment (2013)
- Traffic/marine accidents

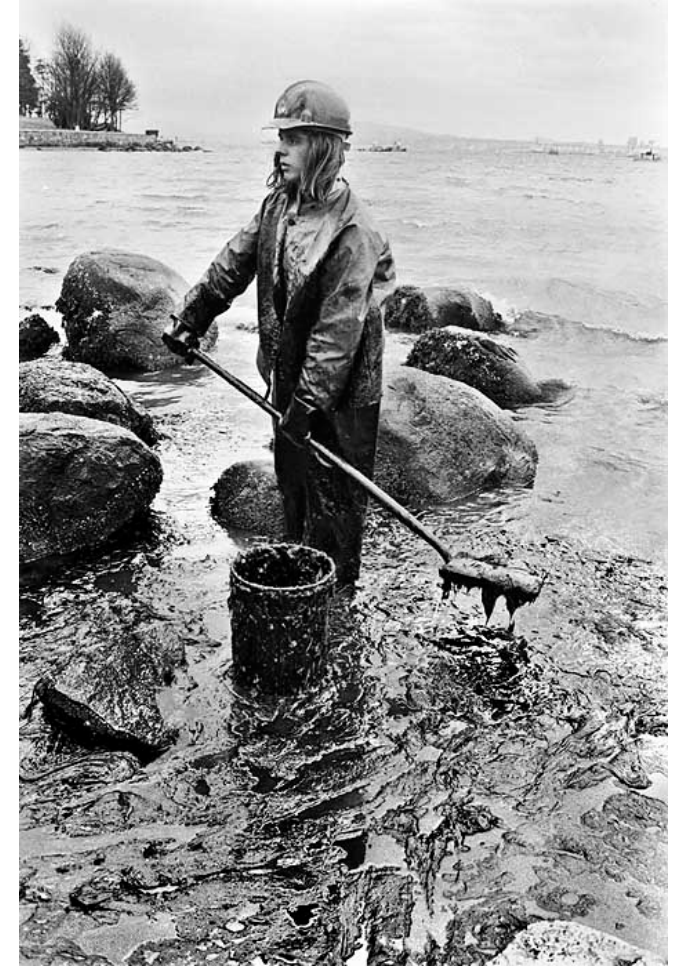


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*Clean-up in Stanley Park after a bunker oil spill in 1973. Kheraj, S. Burrard Inlet, Beaches, and Oil Spills: A Historical Perspective (2015) Available at: <http://activehistory.ca/2015/04/burrard-inlet-beaches-and-oil-spills-a-historical-perspective/>*



# Health Effects of Oil Spills

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## Long-term or Chronic Impacts

- Fishermen involved in the *Prestige* spill clean-up:
  - Respiratory, endocrinologic, immunologic, and genotoxic effects observed 1 to 7 years after the spill.
  - Effects were “sub-clinical”
    - Are these changes meaningful at the individual level? In the long term?
  - No evidence of teratogenic or carcinogenic effects.



Photo credit: BBC News November 2013

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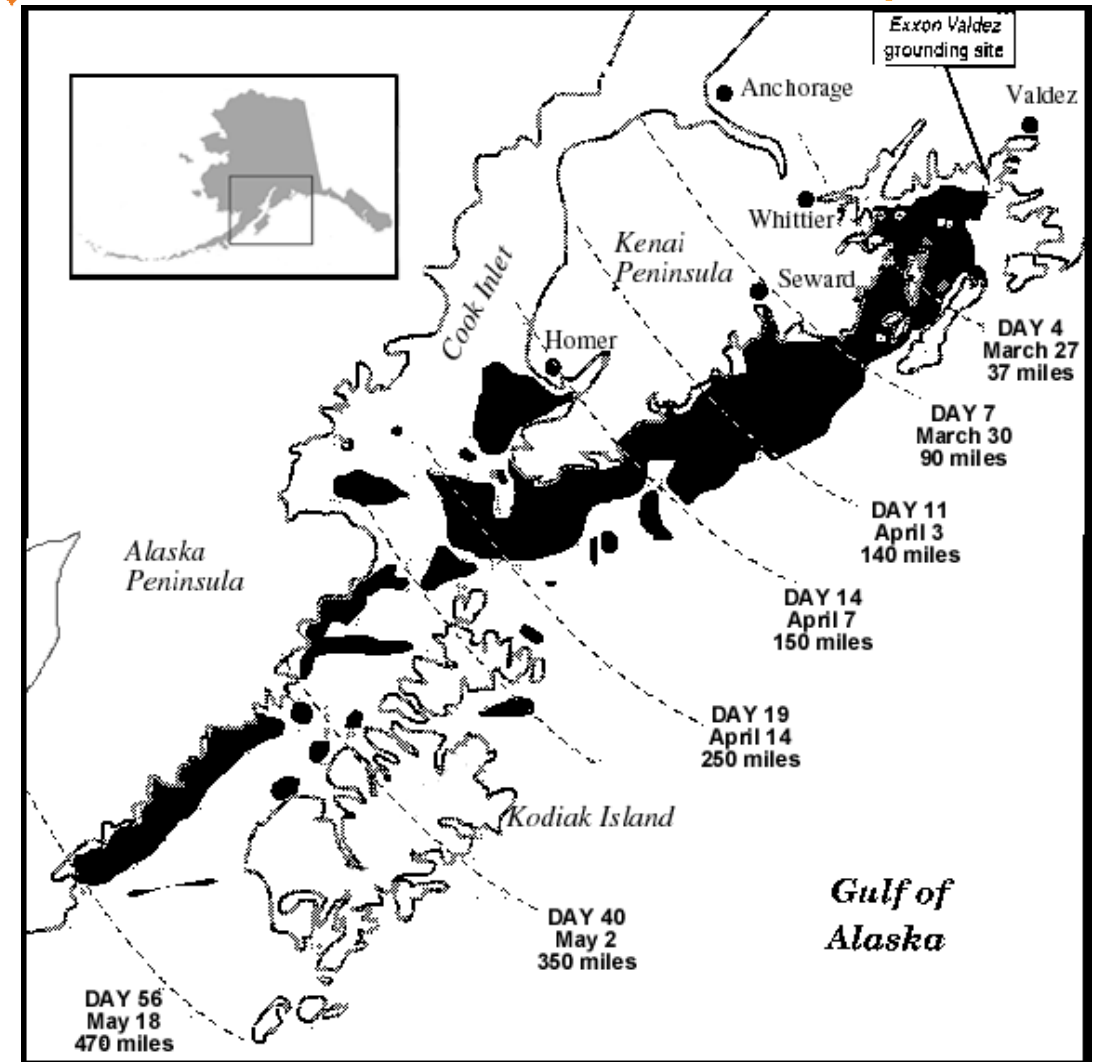
# Exxon Valdez Spill

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**March 24, 1989**

- Exxon Valdez tanker ran aground near Valdez, AL
- Spilled 104,000 tonnes of crude oil, eventually contacting 1,900 km of shoreline.



Source: 1993 State On-Scene Coordinator's Report. Available from:  
<http://www.evostc.state.ak.us/index.cfm?FA=facts.map>



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# Exxon Valdez Spill

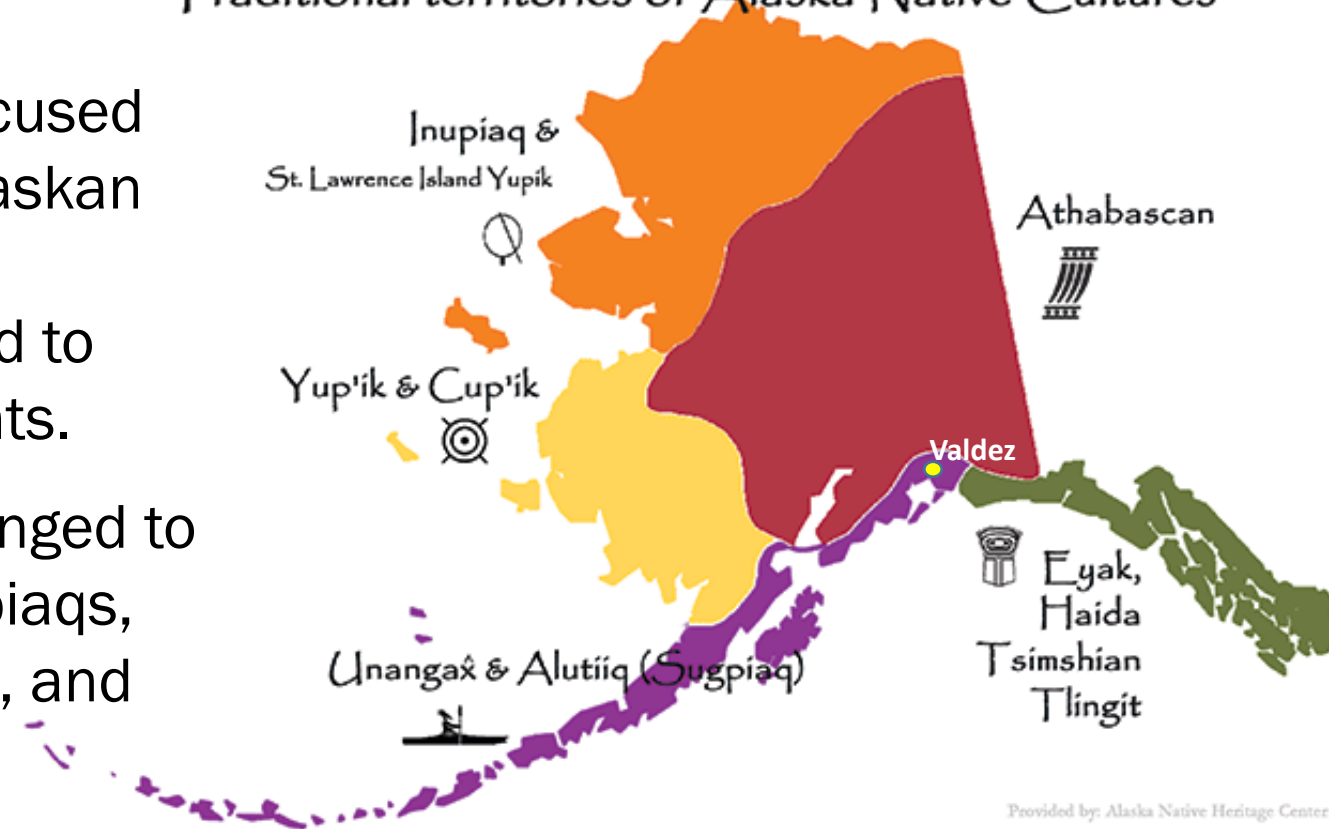
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## A Focus on Indigenous Communities:

- A number of studies focused on effects on Native Alaskan and Native American communities, compared to non-indigenous residents.
- Most respondents belonged to the Koniag, Aleut, Sugpiaqs, Eyak, Tsimshian, Tlingit, and Haida peoples.

### Traditional territories of Alaska Native Cultures



Provided by: Alaska Native Heritage Center



# Exxon Valdez Oil Spill

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## Mental Health Impacts on Native Alaskan Individuals

- Native Alaskans were more likely to be “exposed” than non-native Alaskans:
  - Exposure = losing access to harvest area, being involved in clean-up, etc.
- Exposed people showed increased symptoms of **depression**, **anxiety** and **post-traumatic stress**.
- Decreased subsistence food gathering and sharing due to lost access, distrust, or lack of time because of clean-up work.
- **Continued long-term psychological stress** due to perceived threat to health, resource dependency, etc.
- **Secondary trauma**: stress related to pursuing litigation, loss of traditional activities or cultural erosion, lingering oil.

*Oil present in sediments on  
Smith Island in **June 2011**  
(David Janka, R/V Auklet,  
NOAA)*



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# Exxon Valdez Oil Spill

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## Impacts on Native Alaskan Communities

- Many issues related to the availability of highly-paid clean-up work:
  - Median household income increased, but...
  - Decreased social visiting, religious activities, and volunteer work;
  - Conflicts over fairness getting jobs;
  - Social stratification due to clean-up boom money;
  - Less consensus decision making, more hierarchical.
- General issues:
  - Deterioration of kin and non-kin relationships, leading to loss of social support.
  - Within-community conflict, loss of privacy, litigation stress/dissatisfaction.



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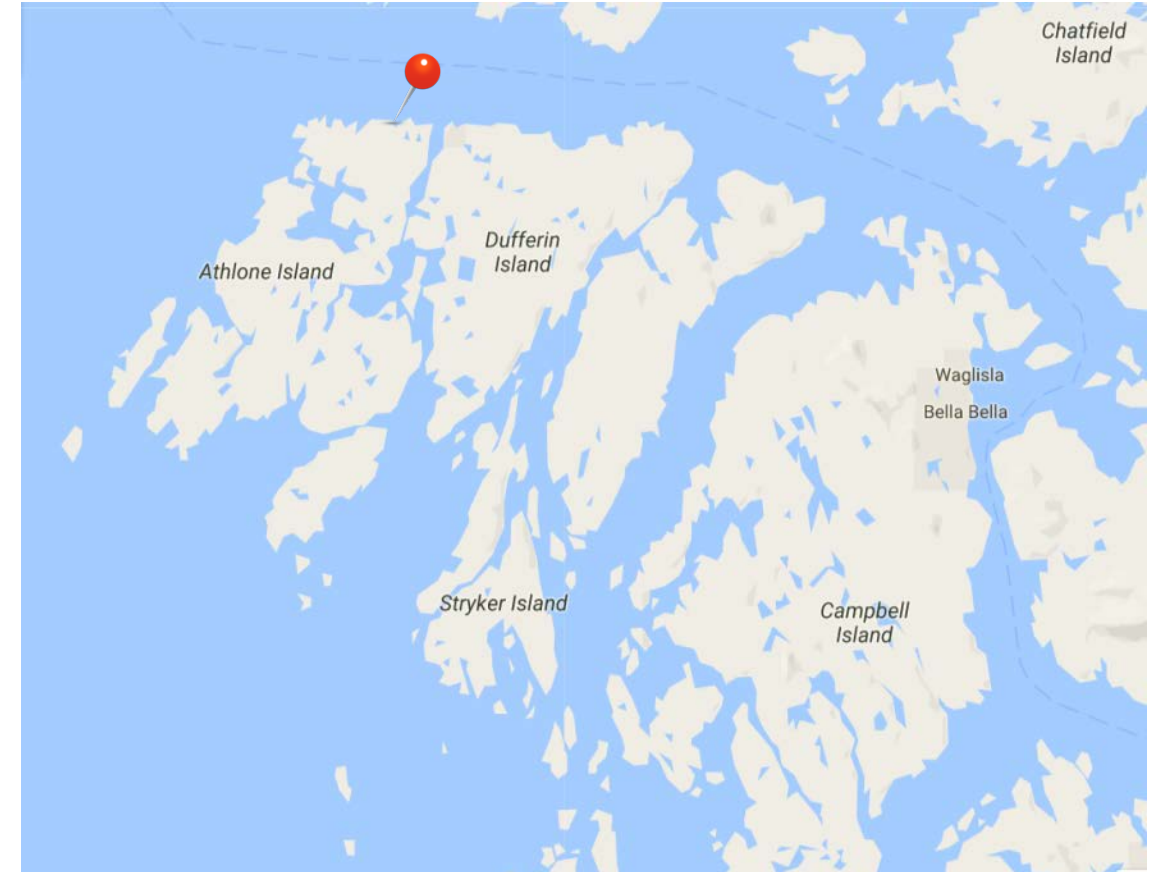
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## October 13th, 2016:

- A tugboat, the Nathan E. Stewart, runs aground while pulling an empty fuel barge.
- >237,000 L of marine diesel and other hydrocarbons on board (130,000 L lost).
- **Response delayed to due remote location.**
- Heiltsuk first responders had inadequate personal protective equipment.



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# Bella Bella Diesel Spill

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## Community Impacts of Fuel Spills: A Case Study from BC's Central Coast

BCCDC Environmental Health Seminar Series  
December 15<sup>th</sup>, 2016



Chief Councillor  
Marilyn Slett



Linda Pillsworth



First Nations Health Authority  
Health through wellness

Angela Eykelbosh



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[https://www.youtube.com/watch?v= B0RJC5KGKo](https://www.youtube.com/watch?v=B0RJC5KGKo)

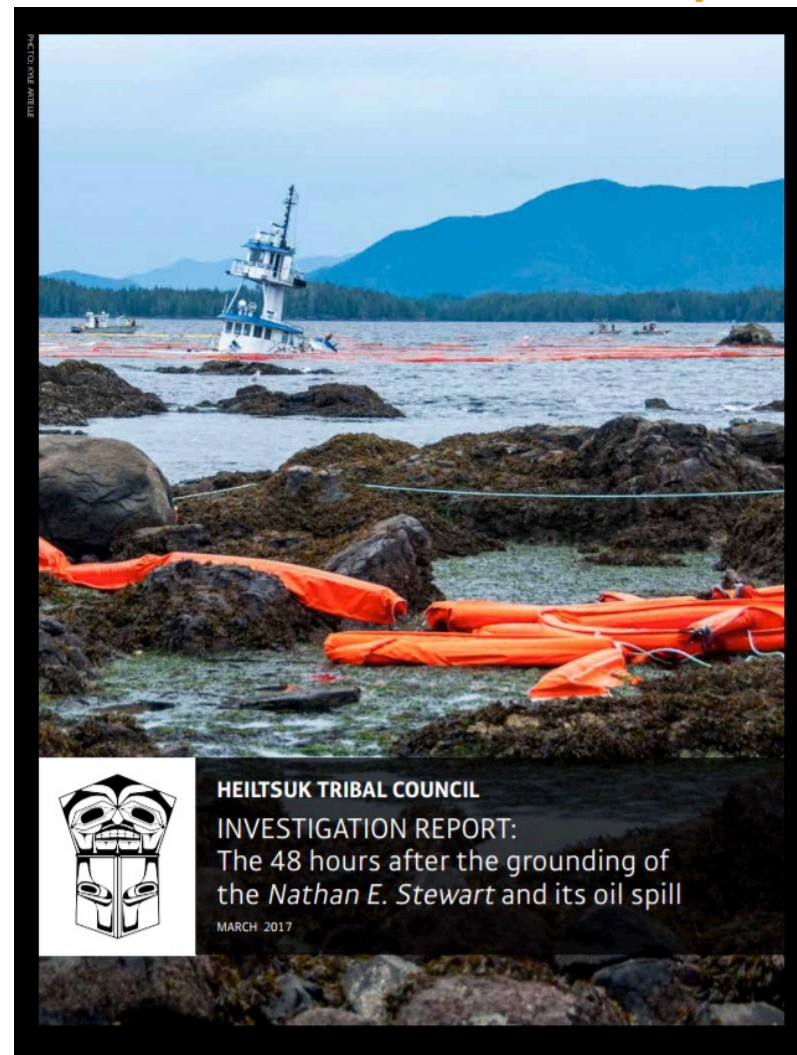


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<https://www.nes-investigation.org/>



# Bella Bella Diesel Spill

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## Who was involved?

- Heiltsuk Tribal Council hosted Unified Command
- Health Authorities:
  - FNHA, VCH
  - PHSA, BCCDC, NCCEH
  - Health Canada
- Kirby Corporation (responsible party), Western Canadian Marine Response Corporation
- Federal government : Canadian Coast Guard, Department of Fisheries and Oceans, Transportation Safety Board,

**130 arrivals within 48 hours**  
**Accommodations for 200**  
**people for 6 weeks!**

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# Bella Bella Diesel Spill

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## Initial Public Health Actions:

- Onsite presence
- Risk communication materials:
  - Guidance for Volunteer Crews, Diesel and Health FAQ
- Rapid health assessment
- Based on past knowledge, **multi-pronged mental health approach**:
  - PHSA: Disaster psychosocial services
  - FNHA: Regional mental wellness advisor
  - Cultural service providers.

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*Image provided by Heiltsuk Nation*



# Bella Bella Diesel Spill

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## The impacts of the spill have been profound...

*It is difficult to stress this vast difference in mainstream Canadian society where the grocery store is your main supplier of food. For the Heiltsuk the ocean and the land is our bread basket, our deep freezer or refrigerator. It is our grocery store today as it was thousands of years ago. Each month there is a season related to traditional food harvesting, whether it is fish, crab, prawns, seaweed, or deer, seal, mountain goat, this is a way of life that varies drastically from anyone outside of our world.*

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**Please click below to view a short video on the impact of the spill on the Heiltsuk community:**

<http://www.ngariss.com/wp-content/uploads/2017/04/48h-Report-Video-720p.m4v>

# Lessons & Challenges

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## Exxon Valdez Spill:

- Indigenous peoples experience this type of technological disaster differently than non-indigenous residents.
  - Mental health impacts are complex but related to degree of « exposure ».
  - How can we adequately capture that degree of exposure for future follow-up?
- Paid clean-up work is often posed as a means to offset the immediate economic losses caused by fuel spills. However...
  - It can also elicit harmful community impacts.
  - The long-term consequences of lost access and/or resource uncertainty are severe.

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# Lessons & Challenges

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## Bella Bella Diesel Spill:

- Communities must be able to respond safely and quickly to incidents in their traditional territories. This is central to **resilience**.
  - Who is responsible for training, equipping, and monitoring community responders?
- Mental health impacts continue to be a primary impact of this type of event.
  - Immediate response is **critical**.
  - How do we adequately **assess and support** the mental health impacts of spills?
  - How do we accurately reflect the true cost of these impacts? (HHRA vs. HIA)

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# Lessons & Challenges

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## Bella Bella Diesel Spill:

- We must continue to improve our public health response to fuel spill events through analysis and information-sharing.
  - Collaboration was useful for risk communication and rapid health assessment.
  - De-briefings are **critical** to evaluation and building capacity.
  - **Symposium**: identify lessons learned & improve preparedness & risk assessment.
  - **Reconciliation**: how can we collaborate more meaningfully, and communicate more effectively regarding indigenous (holistic) views of health?



Image provided by Heiltsuk Nation  
(Photo: April Bencze)

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# Thank you!

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Special thanks to our valued partners:

**Heiltsuk Tribal Council:** Chief Marilyn Slett & Councillor Pamela Wilson  
(pamela.wilson@heiltsuk.ca)

**First Nations Health Authority:** Linda Pillsworth & David Reid

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*Image credit: Microsoft PowerPoint 2013*