IN THE FACE OF DISASTER: WHAT ARE THE RESILIENCY CHALLENGES FOR FIRST NATIONS COMMUNITIES?
Lessons Learned and Good Practices

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

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In Collaboration with:
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Oil Spills Are Complex Events

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

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.
Implications of Oil Spills for First Nations Communities

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

Health Effects of Oil Spills

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
Exxon Valdez Spill

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.

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, Suqpiqs, Eyak, Tsimshian, Tlingit, and Haida peoples.

Exxon Valdez Oil Spill

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)
Exxon Valdez Oil Spill

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.
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.
Implications of Oil Spills for First Nations Communities

Bella Bella Diesel Spill

https://www.youtube.com/watch?v=_B0RJC5KGKo

https://www.nes-investigation.org/
Bella Bella Diesel Spill

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!
Implications of Oil Spills for First Nations Communities

**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.

*Image provided by Heiltsuk Nation*
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.

Implications of Oil Spills for First Nations Communities

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.
Lessons & Challenges

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)
Lessons & Challenges

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)*
Special thanks to our valued partners:

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

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