Risk Communication Case Study

Long-term Waste Management

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Port Hope Area Initiative

One Initiative, Two Projects

- Canada’s commitment to clean up and safely manage historic low-level radioactive waste from former Canadian Crown Corporation, Eldorado Nuclear Limited (1933-88), and its private-sector predecessor
- Federal funding of $1.28 billion (CAD)
- One initiative, two projects – Port Hope Project and Port Granby Project
Low-level Radioactive Waste in Port Hope

What is historic low-level radioactive waste?
Predominantly soil, contaminated with uranium, radium and arsenic, resulting from past activities involving the refining of radium and uranium by Eldorado Nuclear
Historic Waste Locations

After 1955 to Port Granby

Planned
Unplanned
The Path to a Solution

Mid-1970s
- **Historic LLW problem identified**

1976-82
- **Initial Cleanup**
  - 100,000 m³ remediated and transported to AECL’s Chalk River Laboratories

1986-96
- **Independent Siting Task Force**
  - Province-wide search to find willing host community for the waste unsuccessful

1997-99
- **Community Solutions**
  - Proposed to federal government – siting of facilities in each of the two municipalities

2001
- **Legal Agreement**
  - Canada Clarington
  - Town of Port Hope
  - Hope Township
  - Paving way forward
Phases of the PHAI

1. Phase 1 – COMPLETE
   - Environmental assessments
   - Detailed designs
   - Regulatory review and licensing

2. Phase 2 – IN PROGRESS
   - Construct two engineered aboveground mounds and remediate waste sites
   - In Port Hope, radiological survey of 4,800 public and private properties

3. Phase 3 – HUNDREDS OF YEARS
   - Long-term monitoring and maintenance of both facilities
Port Granby Project
Pre-Excavation - 2012
Port Granby Project (cont’d)
Port Hope Project - Small-Scale Sites

Property Radiological Investigations

• ~4,800 Port Hope properties to confirm presence/absence of historic LLW
• Projecting 800+ properties requiring cleanup

Survey Investigations

• Radon monitoring
• Interior gamma testing
• Exterior gamma testing
• Borehole drilling/soil sampling
Small-Scale Sites: Radiological Survey

INVESTIGATION
- 65% complete
- ~800 known to require cleanup

DESIGN
- ~170 properties in design phase
- ~80 design discussions underway

REMEDIATION
- underway

~4,800 PROPERTIES
~4,400 participating to date

~800 known to require cleanup

~170 properties in design phase
~80 design discussions underway

~160 ROAD ALLOWANCES

~160 ROAD ALLOWANCES
Small-Scale Sites Remediation/Restoration
Safely Transporting Waste

Transportation Routes
- North
- Central
- South

Controlled loading
Secured load
Confirming truck clean
PHAI logo displayed

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PHP Long-Term Waste Management Facility
Public Contact

- Average 350 contacts a month, via phone, email and in person – volume increases as residential property remediation gets underway

- Radiation safety a concern primarily to non-residents who:
  - Want to move to Port Hope
  - Have family or friends who live or want to live in Port Hope
  - Have family or friends pressuring them not to live in Port Hope

- Also may be of concern to new residents with little or no knowledge of the low-level radioactive waste or the PHAI
They Don’t Know What They Don’t Know

Residents
• Often complete lack of context about radiation
• Desire to see ‘something being done to fix this’
• Mistrust of government and industry

Non-Residents
• Often complete lack of context about radiation
• Unaware radiation is naturally occurring
• Do not differentiate between low-level, high-level or naturally occurring radiation
• Unaware man-made radiation contributes significantly to dose
• May express a desire to live where “there is no radiation”

Learning curve for most people seeking information is very steep
Influences on perception of risk

Sensationalized media coverage

• For decades following the initial cleanup in the 1970s, Port Hope’s image was negatively influenced by national media

• Recurring sensationalism heightened public perception of risk

• Broader misinformation and lack of knowledge about radiation fuels fear of nuclear and radioactive waste
  • Chernobyl, TMI, Fukushima
  • Nuclear weapons
  • Etc.
Communication approaches

Use Science to Counteract Misinformation

• Nuclear regulator (Canadian Nuclear Safety Commission) Health Synthesis Report – concluded that “no adverse health effects have occurred or are likely to occur in Port Hope as result of the nuclear industry’s operations in the town.”

• PHAI environmental assessments

• PHAI environmental compliance plans
  o Mitigation and monitoring

• PHAI fact sheets

• Health physicist team on staff

• Peer-reviewed journal articles
Communication Approaches

Give Context to Radiation Levels

• Average natural radiation dose
• Canada – 2.4 mSv/y
• Port Hope – less than 2 mSv/y, same as anywhere in Southern Ontario, including downtown Toronto during and after the cleanup
• Yellowknife, Regina, Winnipeg all have higher doses

Explain that Radiation is all Around Us

<table>
<thead>
<tr>
<th>Canadian City</th>
<th>Total (mSv/y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whitehorse</td>
<td>1.9</td>
</tr>
<tr>
<td>Yellowknife</td>
<td>3.1</td>
</tr>
<tr>
<td>Vancouver</td>
<td>1.3</td>
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<td>Edmonton</td>
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<tr>
<td>Montreal</td>
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<td>Fredericton</td>
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<tr>
<td>Halifax</td>
<td>2.5</td>
</tr>
<tr>
<td>Charlottetown</td>
<td>1.8</td>
</tr>
<tr>
<td>St. John’s</td>
<td>1.6</td>
</tr>
</tbody>
</table>

46% Medical
23% Atmosphere
12% Food
12% Cosmos
6% Rocks & Soil
.66% Other
Communication Approaches

Isolate the Root of Fear or Concerns

Airborne radiation through dust during cleanup and transportation? Refer to:
- PHAI Dust Management Requirements and Plan
- Dust monitoring results posted on website

Radon gas in home? Refer to:
- Property Radiological Survey results
- Radiological Status Letter
- Radon gas fact sheet

Groundwater contamination? Refer to:
- Ongoing environmental monitoring

Potential for property value loss because of project impact? Refer to:
- Property Value Protection Program
Communication Approaches

Tell Our Own Stories

• Share personal perspective about growing up, moving to or living in Port Hope
• Give people the information they need so they can assess risk for themselves and their families
• Empower people to make an informed decision—no one should feel unsafe in their home
• PHAI public attitude surveys continue to confirm – confidence increases with knowledge
Responses from Public

• Confusion lifted
  “That makes more sense. We didn’t understand how 16,000 people could be living here if things were so bad.”

• Relief
  “We fell in love with the town and we really want to feel good about moving here.”

• Surprise at our willingness to answer all questions and provide as much information as possible

• Not always positive – some people may never be comfortable living in a community with low-level radioactive waste
Knowledge is Power...

• Nature of project means that most residents have a vested interest in knowing more and understanding the project
  • Truly a ‘in my backyard’ scenario
• All hands on deck in terms of communication tools: social media, print/radio advertising, newsletters, individual mailouts, neighborhood meetings, one-on-one meetings, etc.
• Level of effort and engagement is extremely high, which has been leading to positive results
  • Positive survey results
  • ‘Self monitoring’ community on social media

...But people need to be willing to listen
New Challenges Emerging

• Local/community disruption by project activities is now leading some people to oppose some activities of the project
  • E.g. Tree removal to remove contaminated soil
• Accommodating community concerns, but to what level/what impacts on project?
  • E.g. no transportation during school bus time
• In all cases, solutions being developed closely with community and municipality