



Health impact assessment of the 2014 Mount Polley Mine tailings dam breach: Screening and scoping phase report

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EXECUTIVE SUMMARY

On August 4, 2014, the Mount Polley copper and gold mine tailings dam breached, and over the next three days the four-square-kilometre pond drained, releasing approximately 17 million cubic metres of tailings water and eight million cubic metres of tailings into Polley Lake, Quesnel Lake and Hazeltine Creek. Following the spill, the Government of British Columbia (BC) and the company released technical, environmental and assessment reports that described pre-event infrastructure issues, post-event impacts to the receiving environments, and future pathways for re-permitting. To date, no assessment has identified the communities impacted by this event, nor how they were impacted, from a social or health perspective.

The two main objectives of this project are to:

- (1) address this gap in knowledge by identifying potentially impacted communities and;
- (2) undertake the initial phases of a health impact assessment (HIA) of the Mount Polley Mine event, using international assessment standards.

This project was funded by the First Nations Health Authority (FNHA). Established in 2013, the FNHA plans, designs, manages, delivers and funds First Nations Health programs across BC. The following report describes findings from the screening and scoping phases of the Mount Polley Mine HIA.

Approach and Project Activities

The HIA screening and scoping phase involved:

- Identifying potentially impacted communities;
- Reviewing available environmental, industry and community health data;
- Identifying probable community-level impacts on determinants of health linked to Mount Polley Mine tailings dam breach;
- Undertaking a gap analysis based on existing literature to highlight existing data and identify additional evidence required for the full HIA; and
- Identifying interim measures that could reduce ongoing health impacts and risks for affected First Nations

Between September 21 and November 30, 2015, the project team contacted 47 communities (46 First Nation communities; one non-First Nation community) to participate in the screening phase of the Mount Polley Mine HIA. Of the 47 selected communities, 22 participated in this study. Community selection was based on the following criteria:

1. Experienced direct impacts to traditional land
2. Geographical location (community and/or traditional territory is in close proximity to the Mount Polley Mine site and/or are situated along the Quesnel or Fraser Rivers)
3. Community identified by the FNHA or FNHA Community Engagement Coordinator
4. Community identified by a First Nation leader (e.g., during the screening/scoping phase, participants recommended the project contact a specific First Nation community for additional information)

Findings

Aboriginal Health

The Aboriginal population in Canada is vulnerable to changes in environmental and socioeconomic conditions stemming from resource development projects. This vulnerability is primarily due to their physical, mental, spiritual, and emotional connections to traditional land and natural resources. And it is underpinned by a history of adverse cultural impacts of colonialism and subsequent assimilation practices spanning more than 150 years.

During the course of the project, First Nations representatives repeatedly expressed concerns over the health of the Fraser River system and for the viability of salmon. There is growing awareness of cumulative impacts on the river from multiple sources (e.g., tailings dam breaches and the direct discharge of tailings waste through permit approval, point source discharges, organic pollutants, fish farming impacts etc.).

Impacts and Risks to Identified Communities

Screening and scoping phase activities identified a broad range of existing and potential health impacts and risks. The impacts identified during the screening and scoping phase are described in Table 1. The following sections describe how the Mount Polley dam failure appears to have impacted community health in more detail. As the table demonstrates, similar key impacts were experienced across all communities, although there are some notable differences.

Table 1. Reported impacts/key issues related to the Mount Polley Mine tailings dam failure experienced by communities who participated in the scoping phase of the project.

Community	Reported impacts/key issues related to the Mount Polley Mine tailings dam failure experienced by community				
	Traditional territory directly impacted	Decrease in individual fishing practices	Impacts on commercial fisheries	Emotional stress	Increased administration burden experienced
Boston Bar First Nation					
?Esdilagh First Nation		X	X	X	X
Lhtako Dene First Nation	X	X		X	X
Likely				X	X
Nak'azdli Band		X		X	X
Simpcw First Nation		X		X	X
Sekw'el'wás First Nation		X		X	X
Spuzzum First Nation		X		X	X
Stswemecem'c Xgat'tem		X		X	X
T'it'q'et First Nation		X		X	X
T'exelcemc	X	X		X	X
T'eqt'aqtn'mux First Nation		X		X	X
T'it'q'et First Nation		X		X	X
Tl'azt'en Nation		X		X	X
Tl'esqox First Nation		X	X	X	X
Tl'etinqox First Nation		X	X	X	X
Tsal'ah First Nation		X		X	X
Tsi Deldel First Nation		X	X	X	X
Xaxli'p First Nation		X		X	X
Xat'sull First Nation	X	X		X	X

Community	Reported impacts/key issues related to the Mount Polley Mine tailings dam failure experienced by community				
	Traditional territory directly impacted	Decrease in individual fishing practices	Impacts on commercial fisheries	Emotional stress	Increased administration burden experienced
Xeni Gwet'in First Nation		X	X	X	X
Xwisten First Nation		X		X	X
Yunesit'in Government		X	X	X	X

As previously mentioned, First Nations communities experienced varying types and degrees of impacts. Three First Nations – Xat'sull, T'exelcenc and Lhatko Dene First Nation – suffered direct impacts that were immediate and ongoing. Access to sacred land and territory, traditional food sources and medicine has been lost. Although these three First Nations are experiencing impacts involving a wider range of potential pathways that can influence community health, similar impacts have been reported by all participating First Nations:

- A key health impact that appears to be shared among all communities is the continued emotional stress in relation to the Mount Polley incident. The level of emotional stress is linked to the severity of potential impacts and risks perceived by the community and the level of uncertainty and lack of trust in the information provided.
- The tailings dam breach has resulted in a decrease in fishing practice. As a result, shifts in diet composition, physical activity and cultural practices were reported. Commercial fishing activities were also affected, resulting in reduced community income and employment opportunity.
- Decreased fishing activities, as well as practice of fish-related cultural practices, has had a negative impact on the physical activity of affected communities, which is directly associated with their health status. Following the incident, all communities reported increased administrative burden. This increased burden was placed on community leadership who reported substantial workloads.

The similarity in impacts associated with the Mount Polley tailings dam failure for First Nations across BC (i.e., communities ranging in proximity to the impact zone from close to further away) is best understood through an in-depth understanding of the importance of the Fraser River as a source of salmon for their communities. This work highlights the extent of emotional trauma prompted by real or perceived threat to salmon health that was and has been exacerbated by a lack of reliable information from trusted sources in the aftermath of the breach. These factors led affected First Nations communities to cease or significantly reduce salmon fishing during 2014, and for some, this issue remains.

Likely, a small community located close to the Mount Polley Mine site, is the only non-First Nation community that participated in the study. While respondents in Likely also raised concerns over health impacts and over increased community conflict linked to the incident, their concerns focused on loss of income and livelihood, the safety of water for drinking, household, and recreational use. Conflicts emerged in Likely between groups that are satisfied that data suggest no significant impacts and those who perceive potentially serious impacts. The impacts to this community are discussed in Section 3.4.5.

Through an iterative process, the foundational finding from this work draws attention to the strong links between First Nations, the land and resources, culture and associated health outcomes. In

considering the importance of First Nations health and culturally appropriate health pathways the project team identified four key impacts including:

- Environmental dispossession
- Emotional stress
- Altered dietary patterns
- Changes in physical activity

Based on a gap analysis of the key culturally appropriate determinants of health and health outcomes, for which information is needed to provide the full HIA, the project team identified information requirements shown in Table 2 for HIA completion.

Table 2. Data required for the full HIA.

<p>Cultural determinants of health</p> <p>(Questionnaire survey will assess current and past practice/ behaviour)</p>	<ul style="list-style-type: none"> • Personal fishing practices • Ability to hunt, trap, fish, forage and travel on the land • Access to traditional territory • Fears over contaminated fish, land and water • Economic power • Cultural/traditional practices • Food security • Hunting and gathering activities • Conflict and violation of rights • Unhealthy behaviours • Dietary practices • Composition of diet • Self-esteem
<p>Clinical health assessment</p>	<ul style="list-style-type: none"> • Self-reported health status • Self-reported physical fitness • Mental health status • Systolic blood pressure • Fast Plasma Glucose Test (diabetes type 2; feasibility needs to be assessed) • Body mass index • Hair sampling for heavy metal analysis
<p>Assessment and analysis of routine health information system data</p> <p>(Data need to be specific for First Nations and might be compared to other population groups)</p>	<ul style="list-style-type: none"> • Cardiovascular disease diagnostic rates • Cancer diagnostic rates • Diabetes diagnostic rates • Mental disorder diagnostic rates • Neurologic disorders diagnostic rates • Nutritional disorders diagnostic rates • Miscarriages • Suicide

Environmental data collection	<ul style="list-style-type: none"> • Longitudinal, systematic sampling of fish and plankton for heavy metal analysis • Systematic and longitudinal monitoring of wildlife health • Potential additional environmental data required as important to those First Nations whose traditional territories have been directly impacted.
Economic data related to commercial fisheries	<ul style="list-style-type: none"> • Fish catch and fisheries economic data

The Future

The next step in completing the HIA process is the collection and participatory analysis of the data specific to the impacted First Nations that are identified in the above table. In view of the data gaps identified, this will require primary data collection in the affected First Nations, as well as an assessment and analysis of the data that are available through the routine health information system.

Overall, additional data collection will aim to:

- Add to and amend information at a local level to describe the current status of health determinants and outcomes in affected communities fully. Researchers will also include analysis of retrospective components in the data collection, to support the modelling of health impacts and associated management/mitigation measures; and
- Establish a solid health, environmental and socio/cultural baseline as part of an overarching surveillance and response mechanism to identify potential long/term impacts and monitor change over time. First Nations participating in the study viewed this as particularly important in light of the fact that the Mount Polley Mine is currently operating again and has recently received approval for tailings water discharge into Quesnel Lake.

In addition to contributing to the design of the full HIA, the screening and scoping phase work identified ongoing health impacts and risks for First Nations communities that could be significantly reduced through targeted interventions. Chronic emotional stress is known to be detrimental to health and strategies could be implemented in the short term to reduce the drivers of stress and to mitigate its symptoms and physiological impacts. These include:

- Improve access to counselling and cultural healing processes: One approach to reducing stress would be to ensure access to counselling for affected community members and to develop and implement a culturally appropriate healing process.
- Improve access to trusted information on a range of issues: Finding appropriate channels for providing information that can be trusted by impacted First Nations and working with them to develop data to address their concerns could alleviate the uncertainty and distrust. Community-based participatory processes could be considered. The FNHA appear to be in a strong position to facilitate the identification and delivery of trusted information.
- Address ongoing constraints to accessing traditional diets and medicine: It will take time to collect information needed to restore trust in the safety of consuming traditional food or to identify prudent alternatives that take into consideration the unique concerns of First Nations. In the interim, maintaining health levels depends on replacing the losses in salmon and other

foods/medicines with equivalent sources that communities trust to be safe.

- Instigate a grievance and compensation process for use by affected individuals and communities: Developing a grievance process acceptable to the affected First Nations would provide a channel to seek redress from the Mount Polley Mining Corporation (MPMC). In the interest of limiting ongoing and further damage, an interim compensation fund could be established by the MPMC to address the priorities identified in this report.

Another recommendation is to provide advocacy support to Lhtako Dene, as evidence contained in this report places their traditional territory within the Mount Polley Mine tailings breach area. It is recommended that they have access to meetings in Likely (or elsewhere) at no cost to determine appropriate actions for the BC Ministry of Environment (MoE) and MPMC.

Finally, this report identifies a series of policy recommendations based on the research and on experiences working with Indigenous communities and with international mining companies worldwide. The most important of these recommendations is for the First Nations Health Authority to play an advocacy role in explaining the central role that salmon fishing plays in a wide variety of determinants of First Nations health ranging from physical exercise to social cohesion, building and sharing cultural identity, and a wide range of factors affecting emotional health. More holistically these could be seen as a range of factors leading to a sense of environmental and cultural belonging (the opposite of environmental dispossession).

The project team recommend that FNHA advocates for studies and mitigation actions that will protect the river ecosystem and identify the causes of the observed impacts on salmon populations and health effectively. First Nations health appears to be intrinsically linked to an urgent need to protect the health of the Fraser River system in an integrated manner. This study calls for attention to the health of the Fraser River and to the importance of salmon for First Nations.

“We live on fish, this is who we are.”