

## **Northern Pulp Focus Report Response: Mercury Concerns**

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### **Introduction**

I am a resident of Antigonish who frequents Pictou County for work and recently ran for the position of Member of Parliament in Central Nova.

I wish to register some concerns about Northern Pulp's proposed Replacement Effluent Treatment Facility (ETF). Specifically, the proposal fails to account for the serious environmental risk posed by the underground mercury deposit beneath the site of the decommissioned Canso Chemicals plant, which is adjacent to the site of the proposed ETF.

We know that:

- There is mercury in the bedrock very close to where Northern Pulp Nova Scotia Corporation (NPNS) plans to build its ETF;
- The company's plan includes digging at the proposed site;
- The marine environment is already threatened by the mercury mass, which is slowly spreading towards Pictou Harbour; and
- Excavation could disturb the underground mercury, posing additional risks to the environment and human health.

NPNS' Environmental Assessment Registration Documents and Focus Report neglect this set of facts and their implications for the proposed project. The omission is particularly glaring given that the company hired to prepare the Focus Report (Dillon Consulting) is the same company that conducted the decommissioning report for the Canso Chemicals plant, and which conducts annual mercury monitoring at the site which is reported to the Nova Scotia Department of Environment (NSE).

These facts indicate that constructing the ETF in this location could cause adverse effects or serious environmental effects that cannot be mitigated. It would be irresponsible to consider proceeding without first dealing with a series of unanswered questions, discussed below. Based on the information currently available the Minister of Environment should not allow this project to go ahead.

### **Risks of Mercury**

The dangers of mercury are well known and documented. A "naturally occurring element," mercury can do serious harm to human health even in small quantities. It "is a threat to the

development of the child in utero and early in life,” and can have “toxic effects on the nervous, digestive and immune systems, and on lungs, kidneys, skin and eyes.”<sup>1</sup>

Mercury exposure to humans usually happens through consumption of contaminated fish and shellfish, or vapour inhalation in industrial settings. It biomagnifies, meaning that the concentration of mercury in organisms increases as it moves up the food chain.<sup>2</sup>

Exposure to mercury is a risk that should be taken extremely seriously when it is a known environmental factor in any proposed industrial development. Its physical effects can be devastating and irreversible, and it can be lethal.

### **Mercury at former Canso Chemicals site**

Opened in 1970, the Canso Chemicals chlor-alkali plant produced chemicals for the mill’s pulping process, using large quantities of mercury. In the 1970s the Canadian Press shed light on significant “unaccountable mercury losses” from the plant. When new regulations came in requiring the mill to change its bleaching process, the plant was closed in 1992. The 8-year decommissioning turned up “mercury-contaminated soil and bedrock [which] were excavated to a depth of eight metres”, and the Dillon decommissioning report that followed identified a mass of mercury in the bedrock below the site that was 18 metres wide and 10 metres deep.<sup>3</sup> The mass is beneath the water table, posing a risk of groundwater contamination that threatens the marine environment:

*...the receptor of the mercury-impacted groundwater is expected to be Pictou Harbour, and the plume is expected to eventually discharge to the harbour approximately 700 m northwest of the former cell room ... both water quality and sediment quality could be affected ...<sup>4</sup>*

The mass was not removed due to the risk of the underground mercury becoming destabilized and spreading further into the environment.<sup>5</sup> The Dillon Report said that excavating the bedrock, which was more than 8 metres underground, would risk “increasing the areal extent and depth of mercury impact due to mercury’s physical properties.”<sup>6</sup>

Although NSE says Canso Chemicals is responsible for yearly monitoring of the mercury mass, there is no publicly available information about the results of the monitoring.<sup>7</sup> The threshold for mercury concentration set by Dillon Consulting, which conducts testing on behalf of the company, is much higher than the accepted levels established by the Canadian Council of

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<sup>1</sup> World Health Organization, *Mercury and health* (2019).

<sup>2</sup> Ibid.

<sup>3</sup> Joan Baxter, “Nova Scotia has a mercury problem.” *Halifax Examiner* (2019), p. 11.

<sup>4</sup> Dillon Consulting Limited, *Canso Chemicals Site Decommissioning Final Report* (2000).

<sup>5</sup> Joan Baxter, “Nova Scotia has a mercury problem.” *Halifax Examiner* (2019), pp. 10-12.

<sup>6</sup> Dillon Consulting Limited, *Canso Chemicals Site Decommissioning Final Report* (2000).

<sup>7</sup> Joan Baxter, “Nova Scotia has a mercury problem.” *Halifax Examiner* (2019), pp. 14-15.

Ministers of Environment for freshwater and marine environments. According to Dr. Tony Walker, a Dalhousie professor who specializes in marine systems and contaminated sites:

*I'm not sure why it is this high, as the guideline for freshwater is 0.026 ug/L ... If it is migrating into a marine environment where there's organic material and biological life in an active fishing industry, then that would merit an investigation.*<sup>8</sup>

### **Proximity to proposed ETF site**

According to NPNS' Environmental Assessment Registration Documents submitted to NSE in February 2019, the company is planning to put an activated sludge treatment facility at a location on Abercrombie Point next to the former Canso Chemicals site. The basins which are part of the design would reach depths of 7 metres or more.<sup>9</sup>

In the company's words:

*The former Canso Chemicals plant is located on the adjacent property south of the NPNS facility industrial site...Similar to the pipeline, there is limited potential for encountering contaminants; however, NPNS' contingency plan for encountering contaminated materials during construction will apply to the construction of the ETF as well.*<sup>10</sup>

The submission did not acknowledge the mercury mass beneath the former Canso Chemicals site.<sup>11</sup> In an email to the Halifax Examiner about mercury monitoring, an NSE spokesperson confirmed that the location of the deposit "is next to the site of the proposed Northern Pulp effluent treatment plant."<sup>12</sup>

### **Downplaying the problem**

Despite its ownership of 50% of Canso Chemicals (and therefore its access to all available knowledge about the mercury mass), and despite numerous concerns raised in public responses to the EA submission, NPNS has failed to acknowledge the serious risk associated with excavating for and constructing an ETF in close proximity to a known underground mercury mass.

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<sup>8</sup> Dr. Tony Walker, quoted in Brendan Ahern, "What we know about mercury at Abercrombie Point." *New Glasgow News* (2019), p. 2.

<sup>9</sup> Joan Baxter, "Northern Pulp's environmental documents: Missing mercury, a pulp mill that never was, and oodles of contradictions." *Halifax Examiner* (2019), pp. 10-11.

<sup>10</sup> Northern Pulp Nova Scotia Corporation, *Environmental Assessment Registration Document* (2019), Section 8, p. 165.

<sup>11</sup> Joan Baxter, "The Canso Chemicals mystery: With the chemical plant long gone, why is the company still alive? And what about all that mercury pollution?" *Halifax Examiner* (2019), p. 7.

<sup>12</sup> Joan Baxter, "Northern Pulp's environmental documents: Missing mercury, a pulp mill that never was, and oodles of contradictions." *Halifax Examiner* (2019), p. 9.

The main document of the Focus Report submitted by the company to NSE in October 2019 does no more than acknowledge the former existence of the Canso Chemicals plant and its use of mercury:

*Canso Chemicals also used the BHETF from 1972 until the manufacturing operations concluded in 1992. Canso Chemicals was a chlor-alkali electrolysis facility that generated sodium hydroxide, chlorine, and hydrogen using a mercury cell process and brine solution.*<sup>13</sup>

It is only in the Concordance Table where the mercury mass is identified as a concern, thanks to submissions by members of the public responding to the EA registration documents. Comments and questions about the mercury mass appeared under the Valued Environmental Component (VEC) headings of Atmospheric Environment, ETF Design Concerns, Human Health Evaluation and Soil and Geology.

In most instances NSNP gave a uniform response: “Monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.”<sup>14</sup> Additionally, NPNS’ responses made reference to:

Section 2.4 - Treated Effluent Characterization  
Section 9.2 - Human Health Risk Assessment

Section 2.4 makes zero mentions of mercury. Section 9.2 identifies mercury as a Contaminant of Potential Concern (COPC) in effluent discharge, but does not acknowledge the presence of mercury near the site of the proposed activated sludge treatment facility.

Nowhere is there an explanation of the “contingency plans” NPNS will implement, for instance, if excavation for the ETF disturbs bedrock containing mercury. Nor does the focus report explain whether it is a sound approach to deal with mercury “if identified” given the environmental risk of disturbing the underground mass, acknowledged by Dillon Consulting itself.

### **Unanswered questions**

There are many unknowns about the mercury mass on the former Canso Chemicals site and how it might be impacted by Northern Pulp’s plan.

According to Joan Baxter, who consulted with Queen’s University Professor and fish toxicologist Peter Hodson, the following questions remain to be answered:

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<sup>13</sup> Northern Pulp Nova Scotia Corporation, *Focus Report - Replacement Effluent Treatment Facility* (2019), Project Overview, p. xxvi.

<sup>14</sup> Northern Pulp Nova Scotia Corporation, *Focus Report - Replacement Effluent Treatment Facility* (2019), Appendix 1.1 - Concordance Table, p. 4.

1. *There was no estimate made of how much residual Hg [mercury] was in soil or bed rock underneath the chlor-alkali cell. Without such an estimate, it is difficult to have any confidence in models predicting future movement of Hg from the site. If the Hg has penetrated deep into fissures in bedrock, and there are deep pathways for groundwater flow, what is the total movement of Hg off-site at all depths, and is any Hg migrating vertically (up or down)?*
2. *The groundwater surveys (flow, Hg concentration) were made within a few years of dismantling and excavating the site. How much has groundwater flow changed in response to these surface disturbances and to subsequent re-vegetation? Is the model still valid?*
3. *The monitoring of Hg in groundwater demonstrated that one sample well (W-4) was particularly contaminated. However, the [Dillon] report included a recommendation that this sampling well be closed (p 49)! This seems counter-intuitive if the intent of long-term monitoring is to track Hg concentrations over time.*
4. *Was a long-term monitoring program implemented and are the results available? Has the database of groundwater flow and Hg concentrations and overall assessment of risks been updated to reflect the two decades of Hg movement since the last studies? Is monitoring well W-4 still sampled?*
5. *Have surveys been done of soil and groundwater Hg concentrations around the sludge-disposal sites, and are there groundwater wells that are sampled regularly? Even though these sites are described as 'secure,' they can age and start to leak due to frost damage, disturbance by animals, and construction or maintenance activities.<sup>15</sup>*

It is clear that NPNS has not done its due diligence in assessing the risks associated with the presence of mercury near the site where it plans to construct a replacement ETF.

## **Conclusion**

According to Section 12 of the Environmental Assessment Regulations, in making a decision on a Class 1 assessment the Environment Minister must consider a variety of physical, ecological, social and legal factors.<sup>16</sup> When one brings these considerations to bear on the question of mercury present in the property adjacent to the site of the proposed ETF, there are numerous outstanding concerns:

- NPNS has not adequately assessed the sensitivity of the surrounding area with respect to underground mercury contamination;

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<sup>15</sup> Joan Baxter, "Nova Scotia has a mercury problem." *Halifax Examiner* (2019), p. 22.

<sup>16</sup> Province of Nova Scotia, *A Citizen's Guide to Environmental Assessment* (2019), p. 11.

- Concerns expressed by the public about the mercury mass under the Canso Chemicals site have not been adequately addressed and steps taken by the company to address environmental concerns expressed by the public have been insufficient;
- Baseline information submitted by the company is insufficient for predicting the full range of adverse effects or environmental effects related to construction of the ETF next to a site containing a known underground mercury mass;
- Potential and known adverse effects or environmental effects of the proposed undertaking - including disturbance of underground mercury and the subsequent risk of air and water pollution - have not been assessed; and
- The focus gives inadequate attention to planned or existing land use in the area of the undertaking and other undertakings in the area - i.e. the former Canso Chemicals site.

These concerns alone should be enough to warrant rejection of the proposal by the Minister. Without a thorough investigation of a series of unanswered questions related to mercury in the vicinity of the proposed ETF site, it is impossible to determine that there will be no adverse effects or significant environmental effects; or if they are present, that they can be mitigated. NPNS' blanket statement about a "contingency plan" serves to downplay what is a very real environmental and human health risk. The company has provided no facts to support its assertion that it is safe to build an activated sludge treatment facility on the site adjacent to the former Canso Chemicals plant. The construction of the ETF should not go ahead as planned.

## References

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