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June 08, 2023

Leah Klassen  
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Sent by email to: [info@nirb.ca](mailto:info@nirb.ca)

**Subject: Health Canada's response to the Comment Request for Agnico Eagle Mines Limited's Meadowbank Complex Project 2022 Annual Monitoring Report**

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Dear Leah Klassen:

Thank you for your letter dated April 26, 2023, requesting comments on the Meadowbank Complex Project 2022 Annual Monitoring Report provided by Agnico Eagle Mines Limited.

Health Canada (HC) participates in environmental assessments as a federal authority under the *Nunavut Planning and Project Assessment Act*, S.C. 2013, c. 14 (*NuPPAA*). HC makes available specialist or expert information or knowledge in its possession to review panels and responsible authorities, among others.

The objective and scope of HC's review is to verify that the potential health impacts of the project are properly identified and to support Responsible Authorities to prevent, reduce, and mitigate the potential health impacts of project activities.

HC has reviewed the 2022 Annual Monitoring Report and has provided its comments in the attachment. HC's review focused on topics related to Meadowbank Project Certificate Condition #67 (country foods) and Whale Tail Project Certificate Condition #63 (methylmercury monitoring), as well as air quality and noise monitoring.

Should you have any questions concerning HC's response, please contact Julie Anderson at [julie.c.anderson@hc-sc.gc.ca](mailto:julie.c.anderson@hc-sc.gc.ca).

Sincerely,

David Kitchen  
Regional Manager, MB/SK/NU Region  
EHP, ROEB  
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cc: Heather Jones-Otazo, A/Manager, Environmental Assessment and Contaminated Sites (EACS) Division, Healthy Environments and Consumer Safety Branch (HECSB), Health Canada  
Julie Anderson, Impact Assessment Specialist, EHP, ROEB, Health Canada  
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# Meadowbank Complex Project 2022 Annual Monitoring Report

## Health Canada Comments

<b>Comment Number:</b>	HC-01
<b>Subject/Topic:</b>	Cited references
<b>References:</b>	2022 Annual Monitoring Report, Appendix 48: 2022 Wildlife and HHRA Country Foods Screening Level Risk Assessment Plan v8
<b>Comment:</b>	<p><b>Use of outdated guidance to support the human health risk assessment (HHRA) Country Foods Screening Level Risk Assessment Plan.</b></p> <p>Some of the HC guidance documents cited in Appendix 48 have not been updated to their most contemporary versions (e.g., Health Canada 2010, 2012). HC notes that the young child or toddler receptor described in Section 1.11.2 (age 7 months – 4 years) differs from current HC guidance for defining this age group (i.e., 6 months to &lt;5 years). With respect to Table 5 of Appendix 48, more recent sources of country food consumption rates that are applicable to the Kivalliq Region might also be available and are recommended to be used for future revisions of the plan.</p>
<b>Conclusion/Request:</b>	<ol style="list-style-type: none"> <li>1. HC recommends that outdated HC guidance is replaced with updated versions (where applicable), such as the following: <ul style="list-style-type: none"> <li>○ Health Canada. 2019. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Human Health Risk Assessment;</li> <li>○ Health Canada. 2021. Federal Contaminated Site Risk Assessment in Canada: Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA), version 3.0;</li> <li>○ Health Canada. 2021. Federal Contaminated Site Risk Assessment in Canada: Toxicological Reference Values (TRVs), version 3.0.</li> </ul> </li> <li>2. If more recent country food consumption data are available and are representative of the Kivalliq Region, HC recommends updating Table 5 and the risk assessment accordingly.</li> </ol>

  

<b>Comment Number:</b>	HC-02
<b>Subject/Topic:</b>	HHRA problem formulation – exposure pathways and contaminants of potential concern (COPCs)

<b>References:</b>	<p>2022 Annual Monitoring Report, Section 8.14.1.4 – Air Quality Monitoring - Community Engagement, PDF pg. 365</p> <p>2022 Annual Monitoring Report, Appendix 48: 2022 Wildlife and HHRA Country Foods Screening Level Risk Assessment Plan Version 8, Section 1.11 – Human Health – Country Foods Assessment, Problem Formulation, PDF pg. 28-30</p>
<b>Comment:</b>	<p><b>The rationale provided is insufficient to support the exclusion of fish and berries in the Country Foods Screening Level Risk Assessment Plan and the screening of certain COPCs.</b></p> <p>The specific country food items to be evaluated in the Country Foods Screening Level Risk Assessment Plan are listed in Section 1.11.1 of Appendix 48 and include caribou and Canada goose. Fish was excluded due to the “no fishing policy” at the project site and because fish are non-migratory. However, mercury is required to be assessed under Whale Tail Certificate Condition 63 and sampling under the country foods plan will encompass Whale Tail sampling locations in 2022 (as per Appendix 48, PDF pg. 42). This implies the consumption of fish should also be considered in the potential exposure pathways or further information should be provided regarding the integration of results from the country foods plan with those from the Mercury Monitoring Plan (Appendix 53).</p> <p>Likewise, berries were excluded from the country foods HHRA plan due to the rationale that public access is prohibited past km 85 on the access road. It is indicated on PDF pg. 365 of the 2022 Annual Monitoring Report that a berry picking session was held with harvesters in August 2022 to help inform dust mitigation activities. Should the Inuit Qaujimajatuqangit (IQ) shared by harvesters support inclusion of berries within the country foods list for assessment, the plan should be updated accordingly.</p> <p>Finally, HC notes that it is not appropriate for a chemical to be screened out of a quantitative HHRA based on a rationale that the predicted concentrations are less than 10% above background (as proposed on PDF pg. 30 of Appendix 48), as there is no established justification that such concentrations would not have the potential to impact human health. A rationale would be recommended on a chemical-specific basis as well as a site-specific basis (Health Canada, 2019).</p> <p><a href="#">Health Canada. 2019. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Human Health Risk Assessment</a></p>
<b>Conclusion/Request:</b>	<ol style="list-style-type: none"> <li>1. HC recommends including consumption of fish in the potential exposure pathways for the Country Foods</li> </ol>

	<p>Screening Level Risk Assessment Plan or providing further justification for its exclusion from the country foods plan.</p> <ol style="list-style-type: none"> <li>2. HC supports updating the Country Foods Screening Level Risk Assessment Plan to include berries if IQ indicates potential for a complete exposure pathway.</li> <li>3. HC recommends that additional chemical-specific rationale be provided for screening out any COPCs where the use of maximum measured baseline + 10% is proposed as a screening value.</li> </ol>
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<b>Comment Number:</b>	HC-03
<b>Subject/Topic:</b>	Lake Trout sampling data
<b>References:</b>	2022 Annual Monitoring Report, Appendix 53: Whale Tail 2022 Mercury Monitoring Program Report, Appendix C
<b>Comment:</b>	<p><b>Additional data recommended for the Mercury Monitoring Program Report</b></p> <p>A small-bodied fish mercury database is provided in Appendix C of the Whale Tail 2022 Mercury Monitoring Program Report, but data for Lake Trout pre- and post-impoundment sampling events were not provided.</p>
<b>Conclusion/Request:</b>	<ol style="list-style-type: none"> <li>1. HC requests that future monitoring reports provide Lake Trout sampling data from baseline (i.e., 2015 and 2018) and post-impoundment (i.e., 2020) sampling events in Appendix C of the Mercury Monitoring Program Report. As was done for the small-bodied fish, future monitoring data can be added to the Lake Trout database.</li> </ol>

<b>Comment Number:</b>	HC-04
<b>Subject/Topic:</b>	Decision-making framework for implementing the mercury monitoring program
<b>References:</b>	<p>2022 Annual Monitoring Report, Appendix 54: Whale Tail Mercury Monitoring Plan Version 4, Table 5-2 (PDF pg. 26)</p> <p>Azimuth 2017. Whale Tail Pit Project: Predicted changes in fish mercury concentrations in the flooded area of Whale Tail Lake (South Basin). Prepared for Agnico Eagle Mines Ltd. 74 pp.</p> <p>Azimuth 2019. Technical Memorandum. Whale Tail Permitting Support – Revised predictions of fish mercury concentrations in Whale Tail Lake (South Basin) FINAL. 15 pp.</p>
<b>Comment:</b>	<b>Additional details are recommended in the future monitoring scenarios for managing methylmercury risks.</b>

	<p>In Appendix 54, Table 5-2 outlines four scenarios and the implications for managing methylmercury risks. Scenario 3 (Reservoir Effects Exceeds Predictions and is Ongoing) includes limited details relative to other scenarios and could be updated for consistency, i.e.:</p> <ul style="list-style-type: none"> <li>• Lake Trout mercury concentrations exceed predictions, and</li> <li>• evidence from other media (e.g., water, small-bodied fish) indicate the reservoir effect is ongoing (i.e., no indication that concentrations are decreasing).</li> </ul> <p>Also, Scenario 4 (Reservoir Effect Exceeded Predictions and have Decreased to New Baseline) does not account for a situation where both the reservoir effect <i>and</i> the “new baseline” are above predictions. Although HC acknowledges conservatism build into the mercury modelling, the original peak mercury predictions (Azimuth 2017) were updated in 2019 (Azimuth 2019) due to higher anticipated methylmercury production from modified activities, so further increases in peak mercury concentration (and subsequent “new baseline”) remain possible. Sediment monitoring results in the 2022 Annual Monitoring report (PDF pg.182) also indicate concentrations of sulphate above Final Environmental Impact Statement predictions that could potentially drive methylmercury production by sulphate-reducing microbes. As such, it is recommended that the decision-making framework consider this additional scenario.</p> <p>Finally, one of the key decision criteria in Table 5.2 is whether Lake Trout mercury concentrations are above or below predictions. It is unclear how the decision-making framework and reliance on the predicted concentration informs a decision on potential risks to human health (i.e., due to fish consumption). HC notes that a peak concentration of 1.55 mg/kg wet weight was used with a standard lake trout size of 550 mm to calculate tolerable servings per month (Azimuth 2019), however it is unclear how the monitoring decision framework interacts with this assessment or informs any need for mitigation or management to protect fish consumers.</p>
<b>Conclusion/Request:</b>	<ol style="list-style-type: none"> <li>1. HC recommends that Table 5-2 be updated to describe all scenarios with the same level of detail, including a scenario where the new baseline exceeds peak mercury predictions.</li> <li>2. HC requests that future versions of the Whale Tail Mercury Monitoring Plan include additional rationale for using Lake Trout predicted Mercury concentrations for decision-</li> </ol>

	making and explain how the decision-making framework is used to determine the potential for significant risks to human health due to fish consumption.
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<b>Comment Number:</b>	HC-05
<b>Subject/Topic:</b>	Noise monitoring at locations protective of off-duty workers
<b>References:</b>	2022 Annual Monitoring Report, Appendix 49 – Meadowbank and Whale tail 2022 Noise Monitoring Report
<b>Comment:</b>	<p><b>HC encourages noise monitoring in locations that are protective of off-duty workers.</b></p> <p>HC acknowledges and supports the Proponent’s stated intention to fully implement the Noise Monitoring and Abatement Plan through two surveys in 2023 after data were missed for 2022 (Appendix 49, PDF pg. 3).</p> <p>HC also sees value in a monitoring station located near the camp accommodations for off-duty workers to enable characterization of exposure for the closest human receptors. HC notes that adverse impacts to sleep may begin when average sound levels inside sleeping quarters exceed 30 dBA for continuous noise sources, or 45 dBA (max) for discrete noise events (WHO, 1999). As such, HC is of the view that the Proponent’s noise monitoring program should include noise monitoring at off-duty worker locations to allow for the implementation of additional mitigations should noise levels inside of dwelling spaces (i.e., sleeping quarters) exceed noise guideline levels.</p> <p><i>World Health Organization (WHO). 1999. Guidelines for community noise. Geneva: World Health Organization.</i></p>
<b>Conclusion/Request:</b>	<ol style="list-style-type: none"> <li>1. HC encourages locating noise monitoring stations where they can monitor future noise levels (particularly night-time levels) experienced inside of dwelling spaces (i.e., sleeping quarters) and inform the need for additional mitigations, should measured levels exceed noise guidelines.</li> <li>2. HC supports the implementation of additional mitigations under the Proponent’s noise abatement plan (Project Certificate Condition 10) should monitoring results indicate potential adverse noise-related health impacts for off-duty workers.</li> </ol>

<b>Comment Number:</b>	HC-06
<b>Subject/Topic:</b>	Monitoring for non-threshold air quality contaminants
<b>References:</b>	2022 Annual Monitoring Report, Appendix 50 – Meadowbank and Whale tail 2022 Air Quality and Dust Monitoring Report

<p><b>Comment:</b></p>	<p><b>HC encourages the use of the Canadian Ambient Air Quality Standards (CAAQS) in effect at the time of monitoring, and ongoing efforts to limit emissions of non-threshold air contaminants to the extent possible.</b></p> <p>HC considers nitrogen dioxide (NO<sub>2</sub>) and particulate matter with diameter less than 2.5 µm (PM<sub>2.5</sub>) non-threshold air contaminants, meaning that associations with different health outcomes have been demonstrated throughout the range of concentrations, therefore any increase in exposure will result in an increased health risk. Despite measured concentrations of air quality contaminants generally remaining below the CAAQS or other relevant guidelines (e.g., Appendix 50, Fig. 5 and Fig. 16), HC emphasizes the importance of reducing air emissions as much as possible, especially for non-threshold air contaminants such as PM<sub>2.5</sub> and NO<sub>2</sub>. Also, the applicable air quality standards, such as the CAAQS, should not be considered as “pollute up-to” levels and the project is encouraged to strive for continuous improvement.</p> <p>In addition, HC noted the continuous NO<sub>2</sub> monitoring instrument was only active from January to July due to mechanical failure (Appendix 50, PDF pg. 37). HC encourages efforts to prevent future instrument failures (e.g., securing spare instrument parts - Appendix 50, pg. 54), and the development of additional strategies to ensure robust future monitoring datasets. Considering the non-threshold nature of NO<sub>2</sub>, HC would also recommend using the 2025 CAAQS value for future reporting purposes.</p>
<p><b>Conclusion/Request:</b></p>	<ol style="list-style-type: none"> <li>1. HC recommends using the most stringent federal, provincial, or territorial air quality standards applicable to the given area. In many cases, although they are not based on health effects alone, the CAAQS will be the most stringent levels for key air pollutants, especially for longer-term projects with emissions after 2025.</li> <li>2. HC supports implementing all economically and technologically feasible mitigation measures to limit emissions of non-threshold air contaminants to the extent possible.</li> </ol>