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July 11, 2023

Cory Barker
Technical Advisor III
Nunavut Impact Review Board
P.O. Box 1360
Cambridge Bay, NU
X0B 0C0

Sent by email to: info@nirb.ca

Subject: Health Canada's response to the Comment Request for Baffinland Iron Mines' Mary River Project 2022 Annual Monitoring Report

Dear Cory Barker:

Thank you for your letter dated May 26, 2023, requesting comments on the Mary River 2022 Annual Monitoring Report provided by Baffinland Iron Mines.

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. These pertain to results from the Proponent's Air Quality Monitoring, Freshwater Fish Health Program, Noise Monitoring, and Terrestrial Environment reports.

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

Sincerely,

for
David Kitchen
Regional Manager, MB/SK/NU Region, EHP
ROEB, Health Canada

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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
Claudia Schiocchet, Environmental Officer, EHP, ROEB, Health Canada
Ninon Lyrette, Senior Environmental Health Specialist, EACS, HECSB, Health Canada
Wendy Wilson, Environmental Assessment Coordinator, EACS, HECSB, Health Canada

Mary River Project 2022 Annual Monitoring Report

Health Canada Comments

Comment Number:	HC-01
Subject/Topic:	Non-threshold air contaminants
References:	<p>2022 Annual Monitoring Report, Section 4.2.6 – Air Quality (PC Terms and Conditions 7 through 12; PDF pg. 129-144)</p> <p>Table 4.8: Air Quality Impact Evaluation (PDF pg. 129-130)</p> <p>Appendix G.2.1: 2022 Air Quality, Dustfall, and Meteorology Report, Table 1.1 (PDF pg. 15)</p>
Comment:	<p>HC encourages the use of Canadian Ambient Air Quality Standards (CAAQS) in effect at the time of monitoring, and ongoing efforts to limit emissions of non-threshold air quality contaminants to the extent possible.</p> <p>In Table 4.8 it is stated that, “2022 air quality monitoring for SO₂ and NO₂ were within Nunavut Ambient Air Quality Standards (AAQS) and FEIS predictions. TSP (and PM_{2.5}) results were at times above the AAQS, however these exceedances are not due to combustion.” HC notes that nitrogen dioxide (NO₂) and PM_{2.5} (particulate matter <2.5 µm in diameter) are 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.</p> <p>HC recommends using the relevant CAAQS value in effect at the time of monitoring for future reporting purposes. The applicable air quality standards, such as the CAAQS, should not be considered as “pollute up-to” levels and the Proponent is encouraged to strive for continuous improvement.</p>
Conclusion/Request:	<ol style="list-style-type: none"> 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. 2. HC supports implementing all economically and technologically feasible mitigation measures to limit emissions of non-threshold air contaminants to the extent possible.

Comment Number:	HC-02
Subject/Topic:	Inappropriate guideline used to assess mercury levels in fish tissues

References:	<p>2022 Annual Monitoring Report, Section 4.6.10 Marine Environment (PC Terms and Conditions 76 through 98) (PDF pg. 331, 353, 355, 463, 464)</p> <p>2022 Annual Monitoring Report, Appendix 6.4.3 – Milne Inlet Freshwater Fish Health Program (PDF pg. 5)</p> <p>HC Final Written Submission, Final Comment HC-FC-03, Phase 2 Development Proposal. NIRB PRI: 326953</p>
Comment:	<p>HC recommends that mercury in country foods, and specifically fish tissues, be assessed using the provisional tolerable daily index (pTDI) values and consumption patterns.</p> <p>As described in HC-FC-03 from HC’s Final Written Submission for the Phase 2 Development Proposal, elevated concentrations of methylmercury (MeHg) and inorganic mercury were present under baseline conditions for some country foods. As such, HC encourages the Proponent to assess mercury monitoring data using an approach that is protective of human health.</p> <p>In Section 4.6.10 of the Annual Monitoring Report and Appendix 6.4.3, all fish tissues sampled for mercury concentrations were compared to a guideline of 0.5 mg/kg wet weight. This guideline value is applicable to commercial foods only. For species consumed by local communities, HC recommends using the pTDI value of 0.47 µg of MeHg per kg body weight per day (kg-bw/day) for adults and 0.2 µg MeHg per kg-bw/day for women of childbearing age and young children up to 12 years of age (Health Canada, 2007) to assess potential risks to local consumers based on consumption patterns informed by community consultation.</p> <p><i>Health Canada. 2007. Human Health Risk Assessment of Mercury in Fish and Health Benefits of Fish Consumption.</i></p>
Conclusion/Request:	HC recommends that the pTDI values and local consumption patterns be used to assess potential human health risks of mercury in country foods, and specifically, fish tissues, in future project reporting.

Comment Number:	HC-03
Subject/Topic:	Noise complaint resolution process and additional mitigation measures to be protective of off-duty workers and community members.
References:	<p>2022 Annual Monitoring Report, Section 4.6.3 - Noise and Vibration (PC Terms and Conditions 13 through 15)</p> <p>2022 Annual Monitoring Report, Appendix G.2.3 - 2022 Noise and Vibration Surveys – Accommodation Facilities</p>

<p>Comment:</p>	<p>HC encourages mitigating noise to levels that are protective of off-duty workers.</p> <p>In fulfillment of Term and Condition 14, the Proponent completed noise and vibration monitoring at accommodation facilities on the mine site and at Milne Inlet Port. Based on data presented in Appendix G.2.3, average indoor noise levels in accommodation facilities located at the mine site and Milne Port were 39.1 to 50.9 A-weighted decibels (dBA) during the 2022 surveys. The Annual Monitoring Report (PDF pg. 150) indicates an increasing trend in noise levels over time at the accommodations, with an average measured noise level of 46.78 dBA in 2022 compared to 28 dBA in 2017. According to the Proponent, this trend may be due to additional construction activities at the mine site since 2017.</p> <p>Adverse impacts on 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). In addition, when evaluating impulsive noise sources, 60 dBA (LA_{max}) should not be exceeded more than 10-15 times per night to be protective of sleep disturbance (Health Canada, 2017). The available noise monitoring data suggest that current noise levels could have health impacts on human receptors, including off-duty workers. As such, continued noise monitoring as part of the Project Certificate terms and conditions is warranted, and HC suggests that the noise complaint resolution mechanism remains in place. HC also recommends that noise be mitigated to the extent possible, particularly impulsive noise during sleeping hours, to protect against sleep disturbance.</p> <p><i>World Health Organization (WHO). 1999. Guidelines for community noise. Geneva: World Health Organization.</i></p> <p><u>Health Canada. 2017. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise.</u></p>
<p>Conclusion/Request:</p>	<ol style="list-style-type: none"> 1. HC encourages maintaining an active complaint resolution mechanism and implementing additional noise monitoring and/or mitigation if noise levels exceed their approved limit or in the event of public or worker complaints. 2. HC supports ongoing monitoring and the implementation of additional mitigations under the Proponent's Air Quality and Noise Abatement Management Plan to limit noise and noise-related health impacts for off-duty workers and community members to the extent possible.

<p>Comment Number:</p>	<p>HC-04</p>
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Subject/Topic:	Monitoring of metals in soil and vegetation
References:	<p>2022 Annual Monitoring Report, Appendix G.5.1 – Terrestrial Environment Reports, Sections 9.1.2 and 9.2.</p> <p>Qikiqtani Inuit Association (QIA). 2023. Written Submission and Technical Comments of the Qikiqtani Inuit Association to the Nunavut Impact Review Board regarding the Baffinland Iron Mines Corporation 2023 Sustaining Operations Proposal. June 26, 2023.</p>
Comment:	<p>HC supports continued monitoring of metals in soils and other environmental media and assessment of any Project-related trends.</p> <p>Appendix G.5.1 of the 2022 Annual Monitoring Report presents monitoring results for metals in soil (Tables 9-3 to 9-15 and Figures 9-1 to 9-14) and lichen (Tables 9-16 to 9-28 and Figures 9-15 to 9-34). While it is reported that no statistically significant increasing trends were found compared to pre-mining levels for metals in soil, monitoring results show increased concentrations (relative to pre-mining baseline) of lead (including exceedances of lichen lead concentration thresholds), arsenic, copper, selenium, and cadmium in lichen. HC also notes that the QIA raised concerns about increasing trends in reported metal concentrations in soil and lichen in their Written Submission and Technical Comments on the 2023 Sustaining Operations Proposal (QIA, 2023). HC recommends ongoing monitoring and implementation of additional mitigation measures should results continue to indicate increasing concentrations of metals in soil and/or vegetation over time.</p>
Conclusion/Request:	<ol style="list-style-type: none"> 1. HC supports continued monitoring of metals in soil and other relevant environmental media (e.g., vegetation) during all project phases as part of the Project Certificate Terms and Conditions. 2. If monitoring indicates increasing concentrations of metals over time in the environmental media, HC encourages implementation of additional monitoring, mitigations, or adaptive management measures developed in consultation with the Terrestrial Environment Working Group.