Health Canada Santé Canada

Environmental Health Program
Regulatory Operations and Enforcement Branch,
Health Canada
391 York Ave Winnipeg, MB
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June 11, 2019

Nunavut Impact Review Board
P.O. Box 1360
Cambridge Bay, NU
X0B 0C0

Subject: Health Canada's review of materials for Baffinland Mary River Project – Phase 2 Proposal (NIRB File No. 123910 / 08MN053)

Dear Nunavut Impact Review Board:

Health Canada has reviewed material submitted by Baffinland(the Proponent) pre- and post-technical meeting, held April 2019, for the proposed Mary River Project – Phase 2 Proposal (the Project) which is currently undergoing review pursuant to section 92(1)(b) of the *Nunavut Planning and Project Assessment Act*. Health Canada has no regulations or permits related to the environmental assessment of this project.

Health Canada has reviewed the materials and has suggestions, which could be addressed outside of the technical review. Health Canada's suggestions focus on the best practices for assessment of project-related activities and are listed in the attached table for consideration. In general, they pertain to the assessment of project-related impacts to human health in the areas of country foods.

Should you have any questions regarding Health Canada's comments, please feel free to contact me at matthew.gale@canada.ca.

Sincerely,

Matthew Gale
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Health Canada, Manitoba/Saskatchewan/Nunavut Region
Tel.: 204-295-6574

CC: David Kitchen, Regional Manager, Environmental Health Program Health Canada
Gregory Kaminski, Senior Environmental Health Assessment Specialist Healthy Environments and Consumer Safety Branch Health Canada

Attached: Appendix A Health Canada - Santé Canada Table Addendum

Appendix A

Health Canada - Santé Canada Table Addendum

Document/ Section	Comment
1) Technical Comment Responses Phase 2 Proposal – Mary River Project March 25,2019 ***RE: HC-TIR-3a & 3b & 3c*** And 2) 12_ConfirmationOf DataAvailability AndInfluence OnAssessment.pdf	Baseline occurrence data were not collected for the majority of country foods as surrogate data were identified in studies from the literature. Most of the data from these studies were collected in proximity to Baffin Island, Nunavut and were therefore considered by the proponent to be representative of the project area, with the exceptions of snow goose, ptarmigan and Arctic hare. Baseline data reflective of the project area were unavailable for snow goose and ptarmigan. In the case of snow goose, data for Canadian geese from the northeastern US were used as a surrogate in the human health risk assessment (HHRA) whereas for ptarmigan data were collected from a number of areas across Northern Canada. A comparison of baseline data for both these country foods was made to data from a study conducted by Kuhnlein et al. (2000); these were for single samples of Canadian geese and ptarmigan consumed by Inuit communities, although the location from which the samples were collected was not specified. While there were differences observed in COPC (contaminants of potential concern) concentrations reported in both datasets and employing surrogate data for country foods harvested at locations distant from the project area introduces uncertainty into the assessment, employing data with the larger sample size to account for potential variability in COPC concentrations was considered to be more appropriate by the proponent. For Arctic hare, data from studies conducted by Pedersen and Lierhagen (2006) and Mallory et al. (2004) were considered when characterizing baseline COPC concentrations. The proponent selected data from the Pedersen and Lierhagen (2006) study as it had a higher sample size even though it was from a location further from the project area, albeit still within Nunavut. It was further noted that the lead data from the Mallory et al. (2004) appeared to be contaminated with leaded ammunition. Based on the additional clarification from the proponent, it appears as though the majority of baseline occurrence data for country foods from literature sources are in proximity to the project area and therefore Health Canada would have no objections with their use in the HHRA. While the data employed for ptarmigan and Arctic hare were not collected in close vicinity to the project area, they were from Northern Canada and from another region in Nunavut and thus the Health Canada would also have no major concerns with their use. However, Health Canada questions how reflective the baseline data employed for snow goose, that is, Canadian geese data from the northeastern US, are of the project area. We concur that adequate sample size is an important factor to consider when selecting data for use in the HHRA but are also of the opinion that baseline data should be as representative as possible of the area in question. An additional literature search was conducted that did not yield any relevant data for COPC concentrations in snow goose. Therefore, it was determined by the proponent that the snow goose data, that is Canadian geese data from the northeastern US, obtained from the Horak et al. (2014) study were the most appropriate surrogate data for use in the health risk assessment.

	Health Canada still has the same concerns regarding how reflective the data employed for snow goose are of the project area. As well, the studies from which the baseline data for Narwhal and ringed seal (meat and liver) were obtained (i.e. Wagemann (1983) and Wagemann et al. (1989) are quite dated. *Health Canada suggests that for country foods where adequate baseline occurrence data are not available, other options that could be considered by the proponent include collecting empirical data and/or employing models to derive concentration estimates in foods using data for COPCs in environmental media from the project area*.
Technical Comment Responses Phase 2 Proposal – Mary River Project March 25,2019 ***RE: HC-TIR-4a***	The proponent provided further clarification regarding the surrogate foods obtained from the Schoof et al. (1999) study assumed to be representative of country foods considered in the HHRA. It was also indicated that inorganic arsenic ratios from this study were used instead of the 70% ratio for foods of all terrestrial origin recommended by the EFSA (2014) as these values were considered to be more specific to meat products and thus more appropriate for game meat. It is further indicated that even if a higher percentage of inorganic arsenic is assumed, this would not significantly impact the incremental cancer risk estimates from exposure to inorganic arsenic from the project. Health Canada has no objections to the surrogate foods assumed to be representative of the country foods considered in the HHRA. We also concur that assuming a higher ratio of inorganic arsenic would not significantly impact the overall conclusions of the HHRA regarding this trace element. However, Health Canada suggests that the proponent considers using a more recent study to derive inorganic arsenic ratios. As the Schoof et al. (1999) study is considered dated and the methodology at the time the study was conducted has since then improved. Alternatively, applying a precautionary approach similar to that of the EFSA and assuming that inorganic arsenic represents 70% of the total arsenic concentration in foods of terrestrial origin would be considered more appropriate.
Technical Comment Responses Phase 2 Proposal – Mary River Project March 25,2019 ***RE: HC-TIR-4c, 4d***	Even though exceedances of the HQ benchmarks were observed under baseline and project + baseline scenarios for cadmium, methylmercury and inorganic mercury, the proponent rationalized that further refinement of the HHRA was not needed as the impact from project activities was minimal. As well, the proponent stated that monitoring the country foods contributing most notably to exposure to cadmium (caribou organs, narwhal, seal liver), inorganic mercury (caribou organs, narwhal and seal liver) and methylmercury (narwhal, seal liver, and seal muscle) exposures was also not warranted for the following reasons: • the impact from project activities was expected to be negligible; • monitoring programs for environmental media will be in place for all phases of the project, and • the limited time these country foods are expected to be present in the project area.

	Health Canada is of the opinion that given the existing baseline conditions may present a concern to local consumers with respect to cadmium, methylmercury and inorganic mercury exposure from the consumption of caribou organs, narwhal and/or seal (liver and muscle) and the proponent may wish to refine the HHRA, where possible. As previously noted, the proponent may further consider the baseline occurrence data employed for narwhal and ringed seal (muscle and liver), which appear to be from dated literature sources, collect empirical data for country foods identified as drivers of COPC exposure, or model baseline COPC concentrations in country foods using data from environmental media. *It is within the proponent's interest to accurately characterize baseline COPC concentrations in country foods in order to distinguish baseline conditions from project-related impacts.* Nonetheless, the above rationale provided by the proponent is reasonable and Health Canada would support the implementation of monitoring programs for all identified COPCs in all environmental media, which the proponent has indicated will be in place during each project phase. ***Given the exceedances of the HQ benchmark for cadmium, methylmercury and inorganic mercury, Health Canada supports refining the assessment of risk to human health from country foods to address some of the uncertainties such as COPC concentrations, the absence of certain food sources in estimating project impacts, and the lack of community-specific food consumption data.*** ***If increases in COPC concentrations are consistently observed in environmental media during any project phase, the monitoring program should be extended to include country foods.***