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PMN 12-7 20-J; 2023

$\sigma^2 = \frac{1}{n} \sum_{j=1}^n x_j^2 - (\bar{x})^2$



Health Canada's Final Hearing Presentation

(Prepared for the Nunavut Impact Review Board)

September 12-20, 2023

Rankin Inlet, Nunavut

YOUR HEALTH AND SAFETY... OUR PRIORITY.



2025

- $baCT_c \dot{V}^o \sigma \nabla^{\mathfrak{b}} b^{\mathfrak{b}} C \Delta c L \dot{\chi} c n_{\mathfrak{b}} \mathfrak{b} \mathfrak{d} c$
 $\wedge \mathfrak{z}^{\mathfrak{b}} \mathfrak{b} \triangleright n^{\mathfrak{b}} c$
- $baCT_c \dot{V}^o \sigma \nabla^{\mathfrak{b}} b^{\mathfrak{b}} C \Delta c L \dot{\chi} c n_{\mathfrak{b}} \mathfrak{b} \mathfrak{d} c$
 $\mathfrak{b} \mathfrak{b} \mathfrak{d} n \triangleright \sigma^{\mathfrak{b}} c \mathfrak{f} p \mathfrak{f} \mathfrak{p} \sigma^{\mathfrak{b}} c$
- $baCT_c \dot{V}^o \sigma \nabla^{\mathfrak{b}} b^{\mathfrak{b}} C \Delta c L \dot{\chi} c n_{\mathfrak{b}} \mathfrak{b} \mathfrak{d} c$
 $\mathfrak{p}^{\mathfrak{b}} c^{\mathfrak{b}} \mathfrak{b} \mathfrak{p} n^{\mathfrak{b}} c$
- $\Delta L^o \dot{\mathfrak{d}}^{\mathfrak{b}} \mathfrak{b} \mathfrak{z} \triangleright C \triangleright \mathfrak{c}$

Outline

- **Health Canada's Mandate**
- **Health Canada's Scope of Review**
- **Health Canada's Limitations**
- **Recommendations**

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Mandate

- The Department provides information and knowledge to the Nunavut Impact Review Board regarding the potential impacts of a proposed project on human health.

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Δθσ[♯]Γ₂:

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Review Limitations

Health Canada does not:

- Validate the Proponent's modelling; therefore, Health Canada assumes that the modelling yields correct results.
- Make any decisions or issue any licenses, permits or authorizations in relation to the Project.
- Provide comments on occupational health or on socio-economic impacts.

Resolved Comments

| Topic | Comment ID# |
|------------------------------------------------------------------------------------------------------------|-------------|
| Clarification requested on the assessment of risks from exposure to diesel particulate matter and aldehyde | HC-AQ-01 |
| Clarification requested on boundaries of local study area for noise | HC-N-03 |
| Clarification requested on calculations of “percent highly annoyed” | HC-N-04 |
| Potential for groundwater and surface water contamination during post-closure phase | HC-WQ-02 |

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Resolved Comments

[illegible]

| Topic | Comment ID# |
|----------------------------------------------------------------------------------------------|-------------|
| Guidelines used to assess methylmercury levels in fish tissue applicable to commercial foods | HC-HHRA-01 |
| Clarification requested on baseline and predicted soil concentrations used | HC-HHRA-02 |
| Clarification requested on the sediment quality assessment | HC-HHRA-05 |

Դժվարություններ լուծված խնդիրներ

| Լրացված | Դժվարություն առաջացրեց |
|--------------------------------------------------------------------------------------|---------------------------------------------------------|
| Գնահատված ռիսկի մակարդակի մեղմումը համապատասխանեցնում էր հիմնական չափանիշներին | HC-AQ-02 Համապատասխանում է Լուծված խնդիրներ 23 |
| Շրջակայի ռիսկի մակարդակի վերաբերյալ համապատասխան համաձայնագրերի կնքում | HC-AQ-03 Համապատասխանում է Լուծված խնդիրներ 23 |
| Համապատասխանում է Համապատասխանում է Համապատասխանում է Համապատասխանում է | HC-N-01 Համապատասխանում է Լուծված խնդիրներ 30 |

Comments Resolved through Commitments

| Topic | Comment ID# |
|----------------------------------------------------------------------|------------------------------------|
| Rationale needed for not updating air quality modelling | HC-AQ-02 Refer to commitment 23 |
| Additional information requested on air quality assessment scenarios | HC-AQ-03 Refer to commitment 23 |
| Clarification requested on the use of existing noise monitoring data | HC-N-01 Refer to commitment 30 |

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Comments Resolved through Commitments

| ᐱᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕ | ᐃᑦᑲᐃᓯᐃᑦᑕ ᐱᑦᑕᑦᑕᑦᑕᑦᑕ |
|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
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| ᐱᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕ ᐃᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕ ᐃᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕ ᐃᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕ ᐃᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕ | HC-HHRA-04 ᑕᑦᑕᑦᑕᑦᑕ ᐱᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕ 26 and 31 |

| Topic | Comment ID# |
|----------------------------------------------------------------------------------------|----------------------------------------------|
| Clarification requested on receptor locations used in the human health risk assessment | HC-HHRA-03 Refer to commitment 30 |
| Clarification requested on assumptions regarding recreational land user exposure | HC-HHRA-04 Refer to commitments 26 and 31 |

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Summary of Recommendations

| ጥያቄው | ጋፍ ርዕስ |
|----------------------------------------|------------|
| ዓለፈ ፍቃድ ጋፍ ርዕስ ለፍቃድ ጋፍ ርዕስ ለፍቃድ ጋፍ ርዕስ | HC-AQ-04 |
| ፍቃድ ጋፍ ርዕስ ለፍቃድ ጋፍ ርዕስ | HC-N-02 |
| ፍቃድ ጋፍ ርዕስ ለፍቃድ ጋፍ ርዕስ | HC-WQ-01 |
| ፍቃድ ጋፍ ርዕስ ለፍቃድ ጋፍ ርዕስ | HC-CF-02 |
| ፍቃድ ጋፍ ርዕስ ለፍቃድ ጋፍ ርዕስ | HC-HHRA-06 |
| ፍቃድ ጋፍ ርዕስ ለፍቃድ ጋፍ ርዕስ | HC-CF-02 |
| ፍቃድ ጋፍ ርዕስ ለፍቃድ ጋፍ ርዕስ | HC-CF-01 |
| ፍቃድ ጋፍ ርዕስ ለፍቃድ ጋፍ ርዕስ | HC-CF-02 |
| ፍቃድ ጋፍ ርዕስ ለፍቃድ ጋፍ ርዕስ | HC-CF-02 |

| Topic | Comment ID# |
|-------------------------------------------------------------------------------------------------------|-------------|
| Insufficient information regarding air emissions | HC-AQ-04 |
| Need for more noise monitoring and mitigation | HC-N-02 |
| Clarification whether traditional land users informed the assessment of arsenic | HC-WQ-01 |
| Elevated concentrations of contaminants of potential concern in soil under baseline conditions | HC-HHRA-06 |
| Measured concentrations of contaminants of potential concern in country foods are not provided | HC-CF-01 |
| Insufficient rationale to support conclusion of incomplete country foods exposure pathway for arsenic | HC-CF-02 |

$\Delta \sigma^{\text{fb}}_e C_{\text{fb}} > C_{\text{fb}} \Delta \sigma^{\text{fb}}_e$

- [illegible]

Air Quality

- Exposure to air pollution can result in human health impacts at any levels of exposure. Poor air quality has been linked to lung and heart problems, hospitalizations, and even premature death.
- Only qualitative air quality information from existing monitoring was provided, and results were not compared to the Canadian Ambient Air Quality Standards.
- Health Canada compared current air quality levels (before the project extension) to predicted future air quality conditions (with the project extension) and examined how these changes may affect human health within the project area.

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ΔL^aq^{fb}∇n^alc #1

- [illegible]

Health Canada Recommendation #1

- Continue to monitor air quality contaminants (including but not limited to fine particulate matter, sulfur dioxide, nitrogen dioxide, cadmium, and iron) for all phases of the Project;
- Continue implementing all economically and technically feasible mitigation measures to limit emissions of non-threshold contaminants to the extent possible; and,
- Compare measured air quality contaminants to their respective Canadian Ambient Air Quality Standards and develop strategies to avoid data loss or missing samples in future air quality monitoring reports.

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(aP_2bC^εb
σΛ^εb^εσ^εb^εb_2^εb)

Noise
(Acoustic
Environment)

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- [illegible]

Noise

- Health Canada reviewed noise assessments for scientific validity and potential risks to human health from project-related changes in environmental noise.
- Current noise levels (before the project extension) were compared to predicted future noise levels (with the project extension) to examine how human health may be affected within the project area.
- Noise levels predicted at several locations were approaching levels that could potentially impact sensitive humans.

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**Human Health Risk
Assessment,
Water Quality,
and Country Foods**

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 $\Delta L \triangleright \epsilon_b \sigma \Delta^{\epsilon_b} \sigma^{\epsilon_b}, \nabla L \triangleright \Delta \sigma \Delta^c$
 $\sigma^{\epsilon_b}\sigma^{\epsilon_b}$

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Human Health Risk Assessment, Water Quality, and Country Foods

- Arsenic is a naturally occurring element in soil and minerals.
- Health Canada identified uncertainty in the assessment of potential exposure to arsenic in water and country foods.
- Humans can be exposed to arsenic through food, air, soil, and water that contain elevated levels of arsenic.
- There is uncertainty in the assessment of arsenic in soil, water, and foods as soil monitoring data from 2017 and 2019 were not used as part of the risk assessment.

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Δ^oσΔ^{fb}ΔcLzcN^bdc
ΔL^oΔ^{fb}Δ^oN^uLc #3

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Health Canada Recommendation #3

- Continue to monitor arsenic in soils and other relevant environmental media (e.g., surface water) during all project phases; and,
- Provide details on how the results of the monitoring program will inform adaptive management measures in all phases of the Project.
- If arsenic increases over time, update the Human Health Risk Assessment with arsenic monitoring data, monitor relevant country foods, and implement any necessary additional mitigation or adaptive management.

L^cQ

Thank You

