

# **Development of a Chloride Water Quality Guideline Based on Hardness and Consideration for Cation Toxicity**

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Various industries will benefit from an improved understanding of relationships between chloride exposure and aquatic life toxicity and potential health risks. These industries include oil and gas, salt storage, and, potash mining. The information may also assist municipalities in managing potential impacts of surface water bodies due to road salt and salt storage yard activities. The net impact of this work will be a reduction in potential volumes of soil and groundwater requiring remediation in regions where water hardness may mitigate the potential toxicity of chloride. This research may lead to potential revisions of provincial water quality guidelines as well as those published by the CCME, resulting in a national level impact. Improved environmental performance is always achieved with any science-based improvement to regulations, including the results of

this proposed work.

## **Policy Issue**

Regulatory Guidelines/Directives/Policies/Criteria

## **Knowledge Gap**

Inorganics (salinity, metals)

- Natural salt distribution,
- Fate and transport assessment
- Appropriate protection of various exposure pathways,
- SCARG criteria evaluation
- Risk-based soil quality guidelines for selected trace metals
- Knowledge on background concentrations of inorganics

2017 EQM September Update

2016 EQM\_FWAL Chloride Update Presentation

2018 RemTech Presentation

2019 Event Presentation – May 2, 2019

2020 Update

## **2021 Update**

Incorporate and finalize recently released research information into the hardness-chloride toxicity relationship, for the development of an aquatic life guideline for chloride. Pursue whether toxicity testing can be completed in another country by a

competent laboratory, on the freshwater mussel species *Epioblasma torulosa rangiana*. This species is endangered in Canada and cannot be re-tested. There is a scientific need to re-test this species to confirm its sensitivity to sodium chloride toxicity as it is currently driving the guideline. To have a species driving a water quality guideline in Alberta (and a country) that cannot be tested to confirm results, has scientific implications in terms of the quality and rigor of the guideline, and the entire process of guideline development. It is possible that this species is abundant in another country and thus is not endangered in that jurisdiction, and therefore amenable to testing.

Estimated date of completion: June 2022