CANADA – submission to Waste Expert Group [24/11/2022]

Introduction

In Canada, mercury waste is defined at the federal, provincial and territorial levels, and, for the purposes of domestic implementation of the Basel Convention, using either a leachate or total concentration approach.

From 2017 (post-COP1) to date, Canada notes that the waste expert group has not been able to agree on a threshold for category C waste, that various Parties are in need of a method to identify mercury waste in their countries, and that such an approach needs to consider specific situations faced by developing parties. Canada understands that no one method alone would be able to satisfy the expert group, or the COP, and that alternative approaches might be necessary. We would therefore like to offer information that can be considered in developing a flexible risk-based approach as a path forward for the work of the group with respect to category C waste.

1) Overview

In order to facilitate the development of a practical risk-based approach to mercury waste, Canada would like to submit information on the risk-based framework that has been used to assess the need for action in contaminated sites in Canada. *Link:* National Classification System for Contaminated Sites (NCSCS)

The NCSCS is a tool that helps assess and classify the risk posed by substances by evaluating the hazard potential of the site. The system classifies sites into various levels of risk in a systematic and rational manner, according to their current or potential adverse impact on human health and/or the environment.

A similar framework, such as the example shown in this tool, could be used by the expert group to develop an approach that assesses the risk posed by mercury waste not only at its source, but where relevant, during transportation and at its final destination to provide a risk score value to help determine when environmentally sound management (ESM) is needed.

This flexible framework would allow Parties to take appropriate action in high and low risk scenarios, which has so far been challenging to address when a single concentration threshold approach was pursued. Depending on the characteristics of the waste, disposal method, proximity to water sources and communities, and other parameters, a single concentration threshold value may be insufficient to ensure human health and environmental protection in one case, but be overly conservative in another situation and result in more effort and resources than necessary to manage the waste.

We would like to clarify that the approach we are suggesting is not a method to define mercury waste on a site-specific basis. Instead, the approach would indicate the level of risk, identify priorities for action and provide information on the specific areas of concern where ESM measures might be needed.

In addition, Canada notes that the COP has already agreed in decision MC-3/5 that numerical thresholds are not necessary for categories A and B waste.

2) Evaluation Factors

The NCSCS takes into consideration the chain of events from source to receptor to identify characteristics and factors that pose a risk. Similar characteristics and factors are assembled under the following groups:

1. **Contaminant Characteristics** – This category relates to the relative hazard of contaminants present at the Site. The contaminant characteristics include contaminant specific factors such as residence media, toxic potency, exceedance of guidelines, contaminant quantity and modifying factors;

2. **Migration Potential** – This category allows for the determination of the potential for contaminants to leave the original residency media and move to another media, another portion of the site, or off-site. Contaminants that are mobile and have the potential to move off-site may require action on a higher priority basis than those which are stable; and,

3. **Exposure** – This category includes aspects of both the exposure pathway and receptors analysis. The exposure pathway is the route a contaminant may follow (e.g., groundwater, surface water, direct contact, and/or air) to a receptor. Receptors are living beings or resources that may be exposed to and affected by contamination (e.g., humans, plants, animals, or environmental resources). Human and ecological exposures have been segregated due to differences in the types of potentially operable exposure pathways and receptor scenarios. Ecological receptors are further divided into terrestrial receptors and aquatic receptors.

If mercury waste is transported for environmentally sound disposal, it would be necessary to consider exposure pathways and receptors at multiple points along the way. For Parties to the Basel Convention, the applicability of this framework would not replace their obligations stemming from that Convention with regards to transboundary movements and environmentally sound management.

Table 1. NCSCS characteristics and factors.

I Contaminant Characteristics	II Migration Potential	III Exposure
1. Residency Media	1. Groundwater Movement	1. Human Receptors A. Known Impact B. Potential a. Land Use b. Accessibility c. Exposure Route
2. Chemical Hazard	2. Surface Water Movement	2. Human Modifying Factors
3. Contaminant Exceedance Factor	3. Soil	3. Ecological Receptors A. Known Impact B. Potential a. Terrestrial b. Aquatic
4. Contaminant Quantity	4. Vapour	4. Ecological Modifying Factors A. Species at Risk B. Aesthetics
5. Modifying Factors	5. Sediment Movement	5. Other Receptors A. Permafrost
	6. Modifying Factors	

The expert group has already gathered valuable information that can be used to determine specific characteristics or factors relevant to category C waste. Areas of risk can be linked directly to ESM actions to facilitate implementation of article 11 paragraph 3(a).

3) Risk Scoring system

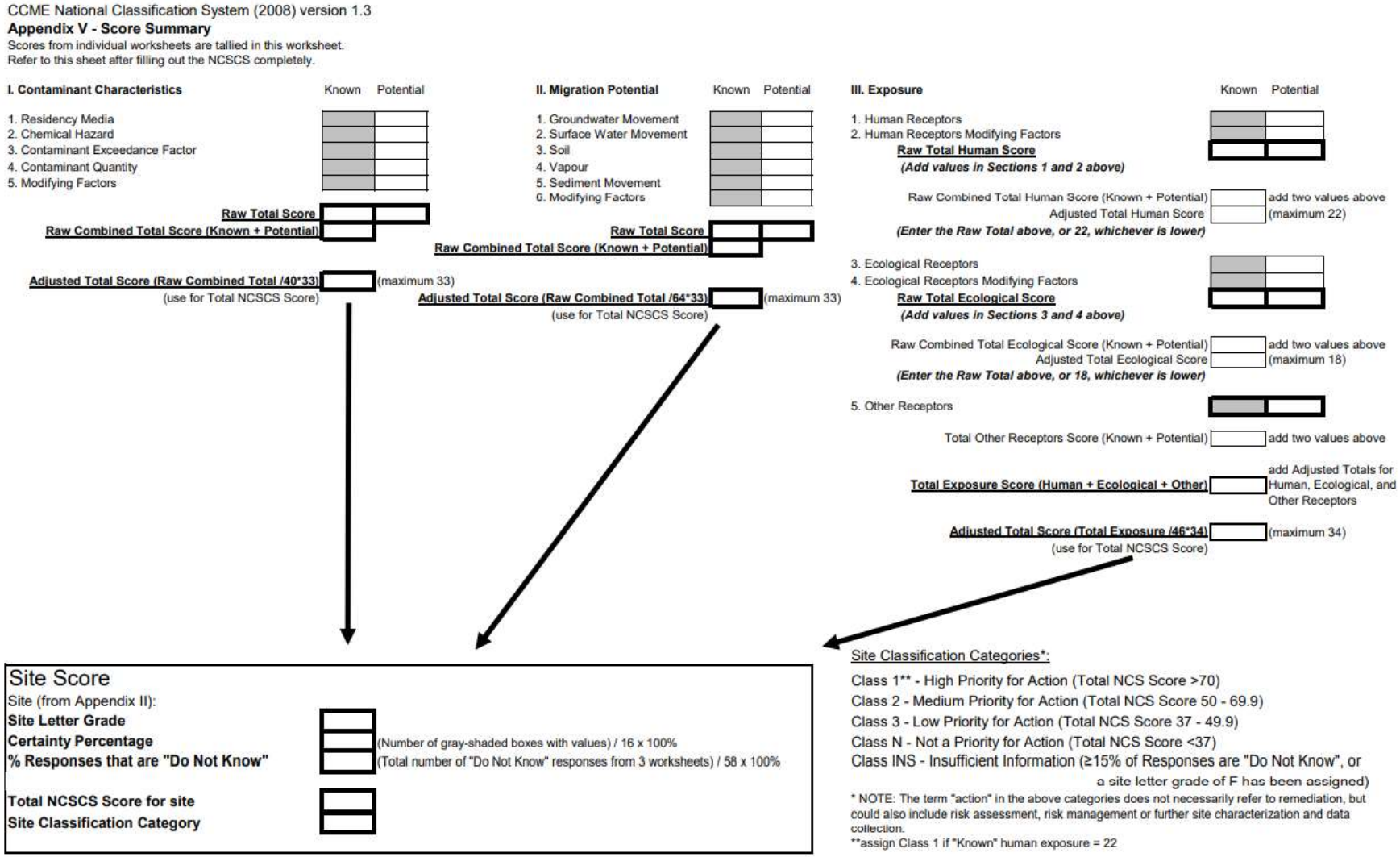
The NCSCS provides instructions on how to assign scores to each individual characteristic (e.g. groundwater movement, surface water movement). The NCSCS takes into consideration situations where an individual characteristic's information is known or situations where just the potential can be estimated and provides guidelines for the scores accordingly. The risk exposure is estimated by adding the number of point for each characteristic.

4) Classification process

For the purposes of evaluating contaminated sites, the results of the assessment are classified into high, medium, low risk for action, not a priority for action, or it is determined that insufficient information is available to complete the assessment.

A similar classification method, using relevant characteristics applicable to Category C waste, could provide a risk score that could be used to identify the appropriate ESM measures to be implemented and the priority for action.

Example of a Risk Assessment Framework for Identifying Needed Action
Graph 1) NCSCS Score summary table



Graph 2) Example of a Possible Mercury Waste Summary Table

Waste Source	**1) Waste Source characteristics**	**Known**	**Potential**
	1.1) Waste prevention and minimization		
	1.2) Waste prevention and minimization for mercury-added products		
	1.3) Extended producer responsibility		
	2) Exposure		
	2.1) Human receptors		
	2.2) Human Receptors and modifying factors		
	2.3) Ecological Receptors		
	2.4) Ecological Receptors and modifying factors		

Transportation	**3) Transportation characteristics**		
	3.1) Distance from source to final destination		
	3.2) Transportation method		
	4) Exposure		
	4.1) Human receptors		
	4.2) Human Receptors and modifying factors		
	4.3) Ecological Receptors		
	4.4) Ecological Receptors and modifying factors		

Final Destination	**5) Migration Potential**		
	5.1) Groundwater movement		
	5.2) Surface water movement		
	5.3) Soil		
	5.4) Vapour		
	5.5) Sediment movement		
	5.6) Modifying Factors		
	6) Exposure		
	6.1) Human receptors		
	6.2) Human Receptors and modifying factors		
	6.3) Ecological Receptors		
	6.4) Ecological Receptors and modifying factors		
	Total Score		

Classification Categories

Waste with a score above an agreed pre-established value could be considered as requiring ESM action.

5) Considerations for applying a similar risk-based approach for mercury waste

- A risk based assessment is applicable to all category C wastes and potential scenarios, and it can be updated to include emerging trends.
- If the expert group is interested in pursuing this approach, considerations and scores could be developed specifically for Category C wastes.
- The assessment directly indicates the areas of concern where ESM should be implemented, regardless of mercury concentration or leaching potential.
- The approach is flexible enough to include the identification of appropriate ESM with respect to transportation.
- The assessment is inexpensive to complete.
- Such an approach would be useful for developing parties to make best use of limited resources in managing waste in an appropriate ESM manner. Meanwhile, parties who already implement ESM can continue to manage waste according to their existing regulatory requirements.
- An analogy could be made with respect to the establishment of emissions inventories under Article 8. Parties who have pollutant release and transfer registries (PRTRs) in place continue to use their existing inventories, while parties who do not have PRTRs use the UNEP Mercury Toolkit to estimate their emissions.