



February 15, 2019

Dear Eisaku,

In response to the Decision MC-2/2, under which parties and stakeholders were invited to submit information to facilitate productive discussions among the Experts on the following topics:

- (b) Current practices of managing overburden, waste rock and tailings from mining other than primary mercury mining (e.g., laws, regulations and guidelines) and various approaches to thresholds for special care/handling, if any; and
- (c) Sampling and analysis methods that may be useful for verifying waste thresholds"

ICMM submits the following information for your consideration.

***Current practices of managing overburden, waste rock and tailings***

In many countries, regulation of mining waste tends to follow a broad approach to their sound environmental management rather than specifically focus on the mercury content of these materials.

In Canada, while mining is primarily regulated at the provincial level, the national Metal and Diamond Mining Effluent Regulations (MDMER) are applicable to tailings. Mine design, operation, and closure use various approaches to ensure minimum impacts from waste rock, overburden and tailings, in alignment with Best Practices Guidance and existing regulatory requirements. The goal is firmly established to minimize harm with no significant adverse effects on the environment or human health. Within Canada, decision-making regarding overburden, waste rock and tailings is virtually never driven by mercury considerations, with the vast majority of ores and wastes having concentrations of mercury at background levels or below analytical detection limits. In the province of British Columbia, tailings and waste rock are exempt from the hazardous waste regulations but where a site may have waste rock and/or tailings that are known to be hazardous, appropriate measures for environmental protection are determined through the permit process.

In Chile, while mining wastes are exempt from the hazardous waste regulations, there is a broad legal framework for mining operations, which include environmental and sectorial laws, regulations, and guidelines. Mining development projects, including prospecting, exploitation, processing plants and mining waste disposal projects, i.e., tailings and waste rock dumps, are included within the categories that require an environmental assessment. Furthermore, Supreme Decree No. 248, 2007, of the Ministry of Mining establishes the conditions required to design, construct, operate and close mine tailing deposits, with the purpose of achieving a range of technical conditions. In addition, it is important to note that, as per Chilean regulations, mining waste facilities, i.e., waste dumps and tailings dams, require sectorial permits for each type of waste; as such the environmentally sound management of

each type of waste prohibits the deposit of any other type of material/waste other than that specifically authorized in the respective administrative resolution.

In the United States, mine waste materials related to beneficiation (including overburden, waste rock and tailings) are exempted from the hazardous waste statute but all states with mining operations have comprehensive hard rock mining programs that regulate mining from exploration to mine development to mine closure, including groundwater quality. These regulations ensure that all mining materials are managed in an environmentally sound manner and minimize risk to the environment and public health. For example, states typically have environmental regulations based on environmental protection statutes, which establish minimum design and containment standards for tailings impoundments and any hazardous substances that may be present in the tailings impoundments. These regulations protect groundwater and surface water during operation, reclamation, closure, and post-closure of a tailings storage facility. A state's department of environmental protection or environmental quality administers the groundwater protection regulations applicable to tailings storage facilities.

### ***Relevance of leaching testing to assess risks of Mercury***

The objective of the Minamata Convention is defined in Article 1 as: "to protect the human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds."

Under Article 11 of the Convention, overburden, waste rock and tailings, except from primary mercury mining, are excluded from the definition of "mercury wastes" unless they contain mercury or mercury compounds above thresholds defined by the COP.

From a conceptual and established regulatory viewpoint, there are two potential ways to approach the setting of the mercury waste thresholds: i) based on hazard; or ii) based on risk. Hazard assessment (e.g., as per the UN's Globally Harmonised System and its European implementation, the CLP Regulation or) and risk assessment (e.g., as per EU REACH Regulation) require different approaches and methodologies, and the former must precede the latter.

Hazard is anything that has the potential to cause harm, and in the case of a chemical substance or a mixture (a waste may be either), it is determined by its intrinsic properties.

Risk is the likelihood that the harm occurs. Determining the risk requires assessing the extent to which humans or the environment may be exposed to a hazardous substance/mixture. Therefore, first a substance/mixture needs to be classified based on its hazard and then specific exposure scenario(s) need to be evaluated.

The primary method to assess risk for wastes is leaching assays. Leaching tests provide information on the potential risks associated to the migration of substances present in the waste from the disposal site to the target of protection - usually sources of water. Thus, the leaching concentration threshold for hazardous wastes is a function of water standards and the appropriate safety factors.

In many jurisdictions, such as the USA, EU, Mexico, Chile among others, risk scenarios are based on the nature of the disposal site and the likelihood of impacts to environment and human health, leading to a wide range of thresholds, depending on the methodology used.

Leaching test protocols use a variety of standard aqueous media to estimate the propensity for a substance to leach from a solid matrix. These media can include weakly acidic solutions found in municipal-industrial landfills, synthetic rainwater, or other media chemistries relevant for the exposure scenarios being assessed.

Looking specifically at the mercury present naturally in mined-ores, much is in forms that are essentially insoluble in aqueous media – and these persist after the rock is processed to extract the valuable metals. In overburden, waste rock and tailings disposal facilities, therefore these forms of residual mercury pose low levels of risk because of the low probability of migration. Other forms of mercury, such as mercury chloride, are soluble to varying degrees and pose a different risk. The main route of exposure of any such mercury in these disposal facilities is via leaching and subsequent release to the environment.

The EU CLP Directive cites widely ranging Concentration Limits values from 0.05 to 0.1% for mercury based on the form of mercury considered (i.e. elemental vs inorganic compounds vs organic compounds). Mercuric sulphide is exempt from the EU harmonized hazard classification entry for “inorganic compounds of mercury...”; this is particularly relevant for mining wastes such as tailings in which most mercury is found as sulphide.

In closing, I hope that the information in this submission is helpful for the discussion of the experts. I look forward to engaging on these important issues.

Best regards,

A handwritten signature in blue ink that reads "Melissa Barbanell". The signature is written in a cursive, flowing style.

Melissa Barbanell