



North American Metals Council  
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February 20, 2019

Via E-Mail

Mr. James Arnott  
Mining and Processing Division  
Environment and Climate Change Canada  
Place Vincent Massey 351 Blvd St-Joseph, 18th Floor  
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**Re: Input on Proposed Approach for federal *Coal Mining Effluent Regulations* -- re: “Signal Check: Proposed *Coal Mining Effluent Regulations*” and “*CMER EEM – Key Areas Considered for Change from Nov. 2017 consultation document*” Slide Presentations (ECCC, December, 2018)**

Dear Mr. Arnott:

The North American Metals Council (NAMC) Selenium Work Group (NAMC-SWG)<sup>1</sup> is pleased to submit these comments on Environment and Climate Change Canada’s (ECCC) December 2018 “Signal Check” Update slide presentations, regarding proposed approaches for the *Coal Mining Effluent Regulations (CMER)*.

ECCC conducted a ten-year review of the *Metal Mining Effluent Regulations (MMER)* (ECCC, 2012). It has been determined, based on this review, that a federal effluent

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<sup>1</sup> NAMC-SWG is engaged in technical research on issues pertaining to selenium (Se). Activities by this group have been used to inform development of water quality tissue-based standards for Se, the implementation of such standards, the development of effects thresholds, and the identification of analytical methods pertinent to such standards. As part of its ongoing efforts, NAMC-SWG develops papers on these topics and shares them publicly on its website or through the peer-reviewed scientific literature. NAMC-SWG is organized under NAMC, an unincorporated, not-for-profit group formed to provide a collective voice for North American metals producers and users (*i.e.*, the North American “metals industry”) on science- and policy-based issues that affect metals in a generic way.



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regulation for the coal mining sector be established separately from the revised *MMERs* (now *MDMERs*) applicable to the metal and diamond mining sectors.<sup>2</sup>

Primary aspects of the proposed *CMER* include:

- Federal effluent limits for pH, total suspended solids (TSS), nitrate, and Se;
- Non-acute lethality requirements (Rainbow Trout and *Daphnia magna*);
- Effluent monitoring reporting requirements (volumes and loadings); and
- Program specifications for Environmental Effects Monitoring (EEM).

The document “*Proposed Approach for Coal Mining Effluent Regulations -- Consultation Document, November 2017*” (ECCC, 2017) had previously been released and was the final of three discussion documents released by ECCC during 2017. This consultation document provided numerical effluent limits for the above-mentioned parameters of concern, and in some cases (*e.g.*, Se trigger value approach; flow chart in Section 1.4.4.2; ECCC, 2017), specific compliance strategies, and processes for implementation. It was released and distributed to obtain feedback from diverse stakeholders across Canada in advance of the issuance of *Canada Gazette I*. Subsequent to the distribution of the consultation document, information/Q&A sessions were conducted during January 2018. Several NAMC-SWG members attended these sessions, and submitted a comprehensive set of comments to your office on February 5, 2018.

More recently (December 2018), as an update to the responses to the November 2017 document, ECCC released the two above-mentioned slide presentations to update stakeholders on its progress in the development of a revised approach to the *CMER*. The two presentations adhered to the following general format:

- “What was proposed [in the November (ECCC, 2017) document]”;

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<sup>2</sup> See *Regulations Amending the Metal Mining Effluent Regulations*, available at <http://www.gazette.gc.ca/rp-pr/p1/2017/2017-05-13/html/reg2-eng.html>.



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- “What was heard”; and
- “What ECCC is thinking.”

A follow-up teleconference was held on January 9, 2019, to provide context, present the slide decks, and field questions and feedback on the “Signal Check.”

This submission provides comments on ECCC’s “What we are thinking” slides; **the focus of the review is on those sections of ECCC (2018) slide decks that relate specifically to the proposed regulation of Se.**<sup>3</sup>

## 1.0 General Approach -- Se

Limits proposed in the November document (ECCC, 2017), specifically 10 µg/L (for maximum authorized monthly mean concentration) and 20 µg/L (for maximum authorized concentration in a grab sample) for existing mines and 5 µg/L and 10 µg/L, respectively, for new mines, will not change based on the comments in the “Signal Check.” We have noted that in this version of the approach, ECCC has removed the compliance aspect of fish tissue benchmarks (*i.e.*, 6.7 µg/g (for muscle) and 14.7 µg/g (for egg/ovary) to be attained during an initial fish study.

NAMC-SWG’s comments on this change are as follows:

- Scientific rationale or derivation methodology has not been provided for the Se limits proposed by ECCC. We recall that during the *MMER* ten-year review and stakeholder consultations (*e.g.*, outcomes of the Se Sub-group deliberations), there was a great deal of discussion and consensus pertaining to the development of a hybrid approach between technology- and risk-based derivation of effluent limits for Se.
- Some specific questions in this regard:

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<sup>3</sup> Limits for other parameters (*i.e.*, nitrate, TSS, pH), non-lethality requirements, effluent monitoring, and aspects of the EEM Program are not addressed herein.



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- Are the limits proposed risk-based, and if so, how were they derived? Were bioaccumulation models (which are key to understanding Se dynamics in aquatic systems) used to develop these limits?
- If not, are the limits proposed technology-based? If so, upon which technologies are they based? What is the basis for this choice?
- With respect to the knowledge base regarding technology-based limits, we wanted to make ECCC aware that NAMC-SWG is currently commissioning an updated report to our previous treatment technology reviews (NAMC-SWG, 2010, available at <http://www.namc.org/docs/00180231.pdf>; and NAMC-SWG, 2013, available at <http://www.namc.org/docs/00113597.pdf>). This report will address the issue of what a technologically-achievable limit might be. The past review and addendum have already been referenced in previous regulatory consultation documents, and we believe that it is important for ECCC to be aware that the report is currently being updated. This report will be completed, and possibly published, by the **end of 2019**.
- The use of differing limits for existing and new mines poses a significant challenge for industry, in our view. If the 10 µg/L / 20 µg/L limits to be used for existing mines are environmentally protective, what is the reasoning behind the requirement for new mines to have more stringent limits than existing mines? Ultimately, these limits should be risk-based, and with the rationale requested above, could make a strong case for sustainable, yet environmentally-protective, limits.
- In the setting of limits, there does not appear to be consideration of site-specific baseline concentrations of Se. Also, by excluding the requirement for fish tissue data to be used to develop site-specific objectives for effluent -- which are now used in some Canadian jurisdictions (*e.g.*, British Columbia Ministry of Environment and Climate Change Strategy (BCMOECCS); Science-Based Environmental Benchmarks; BCMOE, 2017), there does not appear to be recognition of the use of bioaccumulation factors informing overall effects in the receiving environment. As an example, certain genetic cohorts of fish species, on a



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site-specific basis, could be more or less tolerant of Se concentrations in water, depending on: chemical speciation of local water bodies, local confounding variables, food chain structure, and history of exposure.

## **2.0 Se and Nitrate -- Alternative Approach**

Notwithstanding concerns about the derivation of the national effluent limits (comments provided above in the General Approach section), we support ECCC's decision to consider a receiver-based compliance approach for Se at Environmental Compliance Points (ECP).

With respect to ECCC's proposed use of "an adaptive management approach [to] review EEM results and advancements in mitigation measures to assess effectiveness and appropriateness of compliance limits for selenium," we assert that this description is not specific enough -- without further detail -- to be included in a regulation. We would appreciate the opportunity to review details of specifically how this would be implemented (*e.g.*, what are the criteria to be used, and how will these decisions be made?).

We acknowledge and appreciate the modifications that have been made to the "staged" reductions over time. As indicated in our previous submission (February 5, 2018), the revised approach of "increasingly stringent compliance limits every 10 years until **2036**" is very impractical, from an operational perspective. Once an environmentally-protective technology is implemented, especially given the cost and effort in implementation, there is no need to "re-implement" a new technology after ten years, unless it is demonstrated that the Se reductions are not effective and/or do not result in compliance with the *CMER* effluent limits.

## **3.0 Se in Fish Tissue -- EEM Slides**

*Question #2: What are your views on the methods and conditions that could be considered for studies of Se in fish tissue?*

- Given the various unique characteristics of Se (*e.g.*, chemical speciation, bioaccumulation, and species-specific toxicology), it has been reiterated throughout the consultation that Se requires a site-specific approach to be practical and defensible. A trigger-response approach to Se management and regulation that considers Se in effluent, Se in a river at the downstream ECP, and Se in fish tissue at the Environmental Monitoring Point (EMP)/EEM sampling location (ideally also at/near the ECP) is



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more environmentally-relevant, scientifically-defensible, and cost-effective than simply using a national, generic effluent limit.

- A great deal of effort has been expended by the U.S. Environmental Protection Agency (EPA) in developing their soon-to-be-published draft implementation guidance (EPA 2017a, b) to accompany their national Se water quality criteria (EPA, 2016). We assert that the information and guidance provided in those documents will be very useful in understanding the state of science related to “methods and conditions that could be considered for studies of Se in fish tissue.”

NAMC-SWG supports the need for reasonable and scientifically-defensible effluent limits that consider Best Available Technology-Economically Achievable and acceptable risk.

Thank you for the opportunity to provide these comments.

Sincerely,

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