North American Metals Council
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July 3, 2018

Via E-Mail

Ms. Joanne Little
Water Quality Guidelines Specialist
Water Policy Branch
9820 – 106 St. NW
Edmonton, AB
T5K 2J6 CANADA

Re: Clarification Regarding Alberta Environment's Decision to Adopt British Columbia Aquatic Life Guidelines for Selenium (Se)

Dear Ms. Little:

Thank you for your response to our recent queries regarding Alberta (AB) Environment's decision to adopt British Columbia (BC) Environment's aquatic life guidelines for Se (water and fish tissue) (Beatty & Russo, 2014[1]). The North American Metals Council (NAMC)[2] and the NAMC Selenium Work Group (NAMC-SWG)[3] submit these comments regarding AB Environment's above-mentioned decision.

First and foremost, it is our assumption that a significant change such as this one, with substantial implications for our industry members in AB (some of whom are impacted by

[1] Beatty JM, Russo GA. 2014. Ambient water quality guidelines for selenium technical report update. BC Ministry of Environment, Victoria, BC, Canada, 254 pp. + appendices.

[2] NAMC is 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. NAMC members include trade associations as well as individual companies.

[3] The NAMC-SWG (http://www.namc.org/selenium.html) is engaged in technical research on issues pertaining to Se. Activities include the development of water and 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, the NAMC-SWG develops papers on these topics and shares them publicly on its website or through the peer-reviewed scientific literature.

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any changes in the regulation of Se, particularly relating to aquatic ecosystems), would have been accompanied by adequate stakeholder consultation and public review. This is particularly the case for Se, given that the Canadian Council of Ministers of the Environment (CCME) has not revised its guideline in over 30 years, and the fact that the NAMC-SWG has been proposing a contributed guideline per CCME guidance (https://www.ccme.ca/files/Resources/environ_qual_guid/contrib.gdlneproc_final_e.pdf). Our members had little to no notice regarding this change, and, as a result, there was no opportunity for proper review and comment on technical and procedural issues related to AB adopting BC aquatic life guidelines for Se. We are indeed aware of the May 17, 2018, teleconference, in which AB Environment and Parks engaged with certain industry members. We, however, were not a part of that exchange and would have appreciated the opportunity to engage in dialogue on this issue.

We appreciate your having addressed several queries in an e-mail exchange with Guy Gilron (around June 20, 2018). As you will recall, in response to one of our queries regarding the above-mentioned action, we requested details pertaining to the reasons that the U.S. Environmental Protection Agency (EPA) criteria "*did not work well for the Alberta context. . . .*" In that communication, we inquired as to what made the BC guideline more "in line" with AB than the U.S. EPA criteria, especially if one considers the fact that BC does not apply the Species Sensitivity Distribution (SSD) approach in the derivation of guidelines, and this differs from all other provinces, the federal government (Environment and Climate Change Canada), and the CCME.

Your response to this query was as follows: "*As noted in the DeForest et al. papers, the US EPA guideline assumes the Enrichment Factor [EF] used in the food web modeling is a linear function, but this is not accurate. In Alberta, enrichment factors tend to fall at the high end of the spectrum and are therefore, not well represented by the linear function. Data from Alberta was used in the validation. The result was that the food web modeling approach consistently under-predicted fish tissue concentrations*."

	US EPA	Alberta
Median EF (lotic)	0.43	2.0
Equivalent Percentile (compared to all data used by US EPA)		94th
Median EF (lentic)	1.11	7.43
Equivalent Percentile (for all data used by US EPA)		79th

We would appreciate the opportunity to clarify your response. In developing its Se water quality criteria, the U.S. EPA compiled EFs and Trophic Transfer Factors (TTF) for several lentic and lotic sites, back-calculated water Se concentrations from the fish tissue-based criteria for each of those sites, and then applied the 20th percentiles of those lentic and lotic sites to calculate lentic and lotic criteria. By using that approach, the U.S. EPA made the assumption that EFs and TTFs were constant for each site and we are assuming that this is what was meant by your comment above, that EFs are "*linear*." Our assertion is that U.S. EPA's assumption results in a flawed approach, since "low Se" sites tended to have relatively high EFs (which is not unusual). When these high EFs were consequently applied to the fish tissue criterion, the back-calculated water Se concentrations were unexpectedly low. For example, in some cases, the "low Se" site was a reference location and the water SE concentration back-calculated from the fish tissue criterion was less than the current water SE concentration for that reference location. In our view, this is the reason that U.S. EPA used the 20th percentile instead of deriving lentic and lotic water column criteria, using, say, the more commonly applied 5th percentile (*i.e.*, the water column criteria would have been in the range of the reference water body concentration).

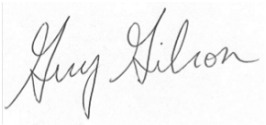
Given the lack of consultation on the technical rationale for the guideline mentioned above, confusion around this issue, and the importance and implications of adopting

these guidelines in AB, we seek an opportunity to offer our assistance in evaluating this information. We propose a teleconference with you and your staff to discuss this at your earliest convenience.

The NAMC-SWG strongly supports the need for reasonable and scientifically-defensible guidelines, regulations, approaches, best available technology - economically achievable (BATEA), and acceptable risk.

Thank you for the opportunity to provide these comments.

Sincerely,



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