

January 17, 2008

Mr. N. Richea,  
Bellanca Building, 3rd Floor  
P.O. Box 1500  
4914-50th St.  
Yellowknife, NT X1A 2R3

Re: **Response to BHP Review Comment**

Dear Nathen:

I am writing in response to the concern expressed by BHP regarding the unfair nature of the comment “numerous theoretical flaws” as brought to the attention of the WLWB. This phrase is made in my review, and if read by itself, does appear “unfair” as stated by BHP. However the phrase does not stand by itself; it is made in the context of the conclusions section which itself is in the context of the preceding 6 pages of comments. I apologize to BHP for my failure to ensure that phrase was strongly supported within the third point of the conclusions section. I will make those connections now.

The theoretical flaws of the chloride criterion derivation are:

1. Lack of rationalization for each datum comprising the dataset. As noted by BHP, the effect of a single observation is important (see sections 3.2.1 and 3.2.2 of the BHP chloride document).
2. Protection of particularly sensitive species such as diatoms which may comprise a numerically important component of the one set of dominant phytoplanktonic groups (the Bacillariophyceae) is not considered. The SSD literature stresses protection of keystone species as an adjunct to the general SSD approach to deriving environmental quality guidelines.
3. The selection of the 10 most sensitive species to generate a chloride criterion does not follow the citations provided by BHP. Therefore the method should be labelled as a modification of the method cited.
4. The toxicity test exposure conditions do not reflect those of the receiving environment with respect to at least one important toxicity modifying factor for chloride; namely hardness.
5. The method cited and also the method used is not used by any jurisdiction across the globe that I am aware of. The method consists of a linear regression model applied to a subset of the dataset. The linear model is used to predict a concentration that will result in 5% response (using IC25s, TOECs, etc. as model inputs). This approach is FUNDAMENTALLY different than the SSD approach where the parameters of a species-level tolerance distribution are estimated to predict the concentration at which a 5% cumulative response is elicited. A detailed discussion is beyond the scope of this letter; BHP is encouraged to study the difference between regression analysis and the use of cumulative distribution functions.

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In closing, BHP states that the comment is “unconstructive”. However the sentence immediately following the offending phrase does provide a path forward. It states: “BHP should recalculate the chloride criteria in a manner consistent with the cited documents and/or the additional documents provided above.” If the citations provided are insufficient, perhaps a seminar on SSDs for BHP and other stakeholders might be beneficial, particularly as SSDs become more commonly used in the North.

Sincerely,

A handwritten signature in cursive script, appearing to read "B Zajdlík".

B. Zajdlík  
Principal