

Summary of Public Comments - Draft Federal Environmental Quality Guidelines: Hexavalent Chromium

Summary of CEPA NAC and Mining Association of Canada Comments Received on the Draft Federal Environmental Quality Guidelines (FEQG) for Hexavalent Chromium

Comments were received on the draft FEQG for Hexavalent Chromium to be addressed as part of the Chemicals Management Plan.

A summary of comments and responses is included below, organized by topic.

| | |
|----------------------------------|---|
| FEQG protocol application..... | 1 |
| Recommended Changes | 2 |
| Environmental Influences | 2 |
| Approach and Application | 2 |
| Data & information updates | 3 |

| Topic | Comment | Response |
|---------------------------|---|---|
| FEQG Protocol Flexibility | Based on previous presentations from Environment and Climate Change Canada (ECCC), it is understood that there is some flexibility when applying the 2007 Canadian Council of Ministers of the Environment (CCME) protocol for developing Federal Environmental Quality Guidelines (FEQGs). This is interpreted as the federal house having some flexibility when implementing the protocol. However, FEQGs are scientifically robust guidelines that must follow a widely-accepted protocol. Given this flexibility, the types of studies selected for the Type 1 (Type A) approach that still meet the intent of the protocol should be identified. | The CCME (2007) protocol offers two types of approaches for developing Federal Water Quality Guidelines (FWQGs) (http://ceqg-rcqe.ccme.ca/en/index.html#void). The selection of the specific approach depends on the quality and quantity of relevant data. The preferred approach considers statistical distribution of all acceptable data to develop Type A guidelines. The second approach is based on the lowest acceptable toxicity endpoint to develop Type B guidelines for substances with limited data. The CCME prefers to develop Type A guidelines. Any modification of the CCME protocol is on a case-by-case basis, depending on the substance and the availability of toxicity data. In the case of hexavalent chromium, Cr(VI), sufficient data were available to develop a CCME Type A guideline. The selected toxicity |

Summary of Public Comments - Draft Federal Environmental Quality Guidelines: Hexavalent Chromium

| Topic | Comment | Response |
|--------------------------|---|--|
| | | endpoints for Type A FWQG for Cr(VI) are listed in Table 2 and related studies are identified in the reference section. |
| Recommended Changes | The National Guidelines and Standards Office (NGSO) should consider updating the guidelines for trivalent chromium (Cr(III)). The CCME water quality guidelines and other risk assessments (e.g., UK and EU) present guidelines for both Cr(VI) and Cr(III). | The FWQG for chromium focuses on Cr(VI) because it is considered more toxic than Cr(III). A guideline for Cr(III) may be developed at a later date. |
| Environmental Influences | There are noted differences in pH and other characteristics of natural receiving waters as compared to conditions in toxicity studies. These differences should be considered when applying the draft FEQGs to measured concentrations. | Available long-term toxicological studies do not show any clear relationship between Cr(VI) toxicity and the properties of receiving waters (UKTAG 2007). Similarly, the EU’s risk assessment of Cr(VI) does not show a relationship between chromium toxicity and environmental factors (EU 2005). |
| Approach and Application | As outlined in the 2007 CCME protocol, the geometric mean for toxicity data from multiple comparable records of selected species should be applied when completing FEQGs. Clarify if approach was used, rather than selecting a single study. | The 2007 CCME protocol was closely followed to select the preferred endpoint from available toxicity data for individual species. Multiple endpoints for calculating geometric means were also considered. Based on the available toxicity data, a geometric mean endpoint (EC ₁₀) could only be calculated for <i>Selenastrum capricornutum</i> (marked as * in Table 2). |
| | The concentration of total chromium appears to be typically measured in the environment, rather than Cr(VI) or other forms (see page 4 of the FEQG). To ensure relevance and consistency, include a discussion in the Cr(VI) FEQG about how to compare total chromium measurements to Cr (VI) measurements. Since this situation may be frequently encountered in Canada. | Canadian monitoring data are mainly for total chromium. Users are expected to apply the federal guideline in the same way that they have been using the earlier CCME (1999) guideline for Cr(VI). Generally, when monitoring data are only available for total chromium, users would compare the total chromium concentration to the Cr(VI) guideline. |
| | Upon final publication of this FEQG there will be two different hexavalent chromium guidelines available in Canada – one on the FEQG website and one on the | The FEQG for Cr(VI) meets the data requirements of the current CCME protocol (2007). FEQGs can be developed when CCME guidelines for a particular |

Summary of Public Comments - Draft Federal Environmental Quality Guidelines: Hexavalent Chromium

| Topic | Comment | Response |
|---------------------------------------|---|---|
| | <p>CCME website. Add context and discussion so that environmental practitioners and others may identify when each guideline should be applied.</p> | <p>substance do not exist or could be updated based on recent toxicity data and revised CCME protocols. The FEQG website will be updated to communicate this information (https://www.canada.ca/en/health-canada/services/chemical-substances/fact-sheets/federal-environmental-quality-guidelines.html).</p> |
| <p>Data & information updates</p> | <p>Page 5 of the FEQG only indicates the range of toxicity for various species, and not the criteria for selecting the studies referenced in the Species Sensitivity Distribution (SSD).</p> | <p>The factsheet references chronic freshwater toxicity data from EU (2005) and UKTAG (2007). The resulting data summary sheet was updated by ECCC in February 2016 and made available to the commenter. The specific endpoint selection follows the 2007 CCME protocol. All endpoints used in SSD are listed in Table 2 which includes a summary discussion.</p> |
| | <p>Explain why Gorbi et al. (2002) is used as the sole study for <i>Daphnia magna</i>, even though it is a secondary study that includes an atypical endpoint and is a secondary quality study. Other acceptable quality studies are available in the European Union Risk Assessment Report (EU 2005; i.e., Kuhn et al. 1989, Sloof and Canton 1983, and Van Leeuwen et al. 1987; No-Observable-Effect-Concentrations [NOECs] compared to the Gorbi et al. 2002 maximum acceptable toxicant concentration [MATC]). According to the Excel data summary sheet, the Kuhn et al. (1989) study is ranked higher than the Gorbi et al. (2002) study.</p> | <p>The Gorbi et al. (2002) study was used because the endpoint was the most sensitive among acceptable studies as per CCME (2007) protocol. Upon further review, Kuhn et al. (1989) was considered as a secondary study.</p> |