**C H L O R I N A T E D  P A R A F F I N S**

**I N D U S T R Y  A S S O C I A T I O N**

1250 Connecticut Avenue, N.W. • Suite 700 • Washington, D.C. 20036 • 202-419-1500 • Fax: 202-659-8037

February 5, 2008

Ms. Fatoumata Keita Ouane
Secretariat of the Stockholm Convention
POPs Review Committee
United Nations Environment Programme
11-13 chemin des Anémones
CH-1219, Châtelaine, Geneva
Switzerland
Via E-mail: ssc@pops.int

**Re: Comments on Draft Risk Profile for Short-Chained Chlorinated Paraffins**

Dear Ms. Ouane:

I am pleased to submit the attached comments on the United Nations Environment Programme's (UNEP) Draft Risk Profile for Short-Chained Chlorinated Paraffins (SCCPs) in response to UNEP's invitation of Parties and Observers to the Stockholm Convention. These comments are submitted on behalf of the Chlorinated Paraffins Industry Association (CPIA), which represents the North American chlorinated paraffins (CP) industry and the CEFIC Chlorinated Paraffins Sector Group, which represents the European industry (collectively referred to as the "CP Industry").

The CP Industry was pleased with the outcome from the November 2007 POPRC meeting, i.e., the recognition by several POPRC members that the information presented in the draft risk profile was "insufficient" to document that SCCPs should be listed as a POP under the Stockholm Convention. As indicated in the report of the meeting, several representatives of the POPRC noted that SCCPs "did not demonstrate either toxicity to humans or to higher predators or that the chemical was subject to long-range transport." Moreover, POPRC members correctly recognized the very low environmental concentrations specifically noting that concentrations of SCCP "even near production facilities appeared to be very low."

The CP Industry welcomes the opportunity of remaining engaged in the discussions regarding SCCPs and working with the POPRC as they further review the

draft risk profile at its next meeting (scheduled for October 2008). We continue to believe that SCCPs is a good example of a substance that may possess properties that arguably could be ascribed to the criteria of environmental toxicity, persistence and bioaccumulation but at the same time, does not rise to the level of concern that warrants its inclusion under the Stockholm Convention.

It is our contention that additions to the Stockholm Convention requires thoughtful consideration of the Article 8, paragraph 7 provisions that a substance is *likely as a result of its long-range environmental transport to lead to significant adverse human health and/or environmental effects, such that global action is warranted*." Additionally, Annex D, paragraph 2, specifies that "w*here possible, a comparison of toxicity or ecotoxicity data with detected or predicted levels of a chemical resulting or anticipated from its long-range environmental transport."* We therefore believe that in order to assess whether to add SCCPs to the Convention, it is incumbent on POPRC to compare quantitatively the levels found (or projected) in regions remote from local emission sources, with those levels projected to cause adverse effects.

The inability of POPRC to reach consensus on this issue at the November 2007 meeting, is testament to the fact that the available information on SCCPs does not justify support classification as a POP under the Stockholm Convention. While the draft Risk Profile makes assertions that SCCPs are likely to lead to significant adverse effects, there is no technical rationale presented to justify such a position. To the contrary, the draft Risk Profile accurately describes the environmental concentrations in remote areas as "low" (page 4, Executive Summary). We recognize that part of the debate within the Committee is attributable to the fact that some members believe that the mere presence of a compound in remote regions (irrespective of concentration) is sufficient evidence to support a conclusion of "significant adverse effects." We believe that such a position is contrary to the Convention's purpose which is to focus international attention on chemicals that are of a serious nature that require global restrictions.

The CP Industry appreciates the desire of the POPRC to limit the amount of SCCPs in the environment. At the same time, the inference that unless restrictions are imposed, environmental levels of SCCPs are likely to increase is also without any technical merit. SCCPs have been used for over 60 years and there is no indication that environmental levels are rising, let alone approaching concentrations that would be of a concern.

The attached summarizes the available information on levels of SCCPs found in water, sediment and biota and contrasts these against effects levels of concern. As is readily apparent, environmental levels, including levels in industrial areas, are several orders of magnitude below those found to cause adverse effects in experimental studies, and at least one order of magnitude below the predicted no-effect concentrations after the application of appropriate safety factors.

Please let me know if we can provide any further clarification.

Sincerely,

Robert J. Fensterheim
Executive Director

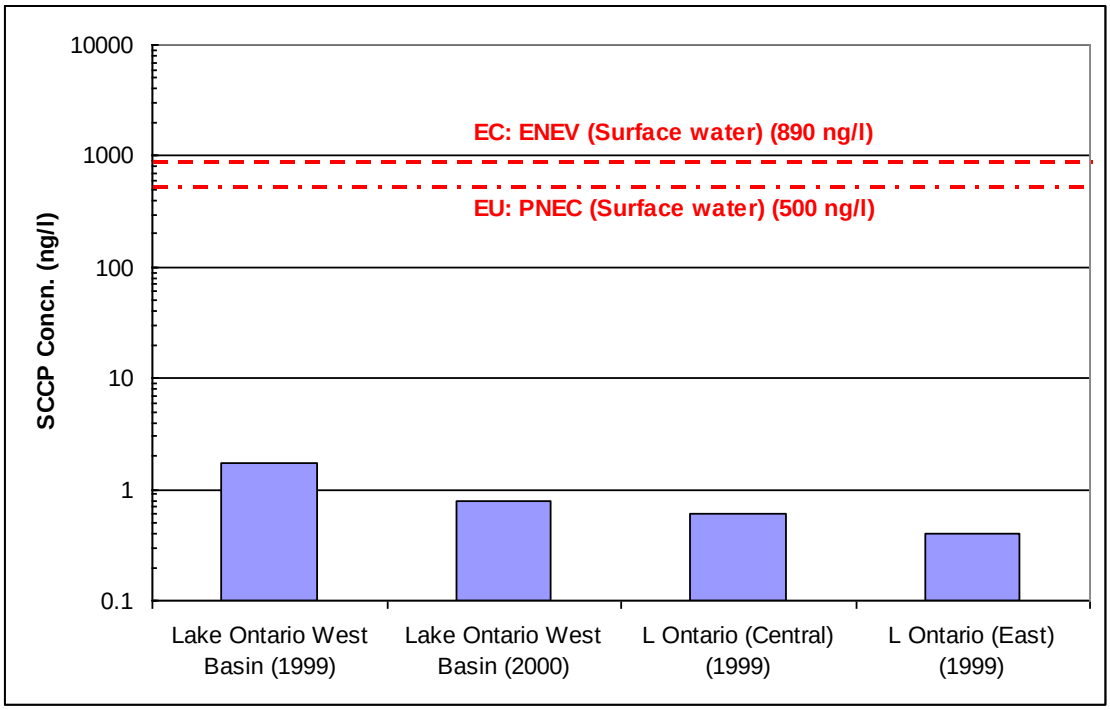
**CHLORINATED PARAFFINS INDUSTRY**

**COMPARISON OF ENVIRONMENTAL LEVELS WITH EFFECT LEVELS OF CONCERN**

Surface Waters

There is a lack of monitoring data for SCCP in surface waters that are remote from local emissions. However, recent (1999-2000) values for Lake Ontario, although subject to local emissions from the large urbanized areas nearby, such as Toronto and Hamilton, showed that the maximum concentration found was 1.75 ng/l (Figure 1).

Figure 1: SCCP in surface water, Lake Ontario (Muir *et al*, 2001; Canada, 2007) compared with Canadian ENEV (Canada, 2007) and European PNEC (European Commission, 2000)



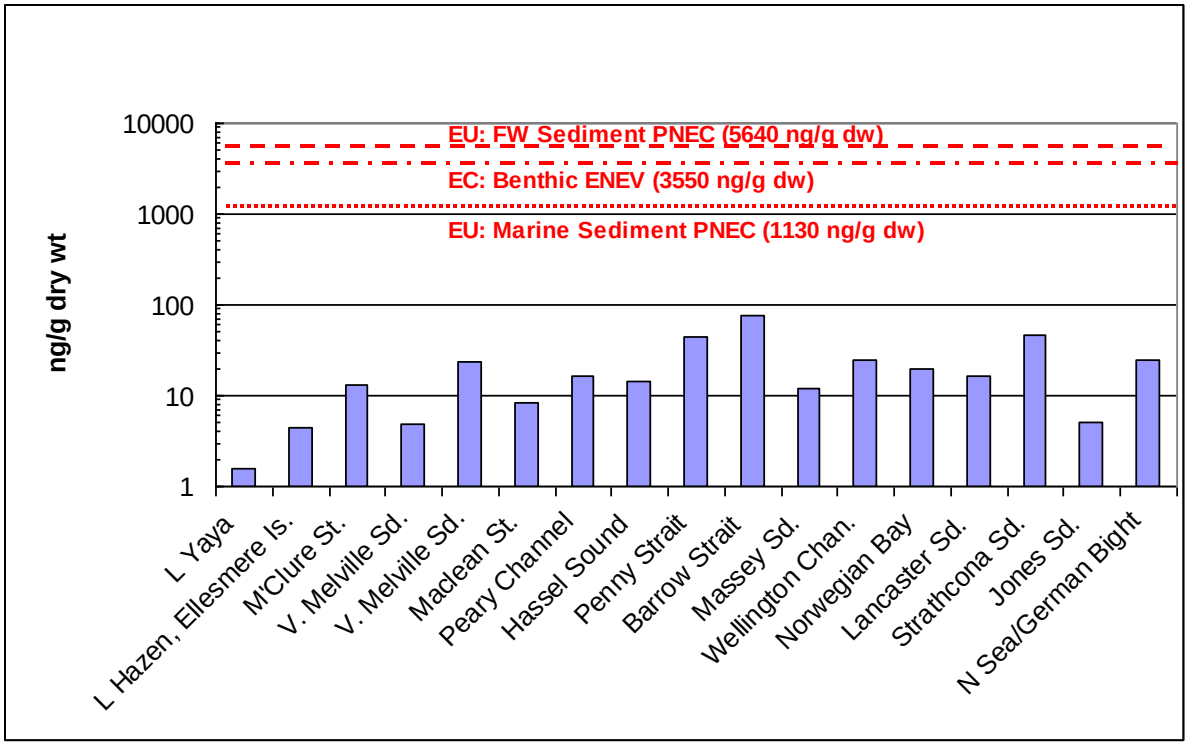

This is more than 2 orders of magnitude lower than the European Predicted No Effect Concentration (PNEC) of 500 ng/l and the Canadian Estimated No-Effect Value (ENEV) of 890 ng/l. The PNEC and ENEV are derived using an assessment factor of 10 on the lowest experimental NOEC (5000 ng/l) and LOEC (8900 ng/l), respectively, for the most sensitive aquatic organism (*Daphnia magna*).

It is reasonable to assume that the surface water concentrations of SCCP in remote regions would be considerably lower than those from Lake Ontario, and thus would show an even larger margin of safety compared with the PNEC and ENEV.

Sediment

Monitoring data are available for sediments from 2 lakes (Yaya and Hazen) and 14 marine locations in the Canadian Arctic and for (less remote) locations (latitudes 53º to 56ºN) in the North Sea and German Bight (Figure 2).

Figure 2: SCCP in sediment from lakes (Yaya and Hazen) and marine locations in the Canadian Arctic (Canada, 2007) and from the North Sea/German Bight (mean of 14 values; Hüttig & Oehme, 2005), compared with European marine and freshwater PNECs (European Commission, 2000; 2005) and the Canadian ENEV (Canada, 2007)

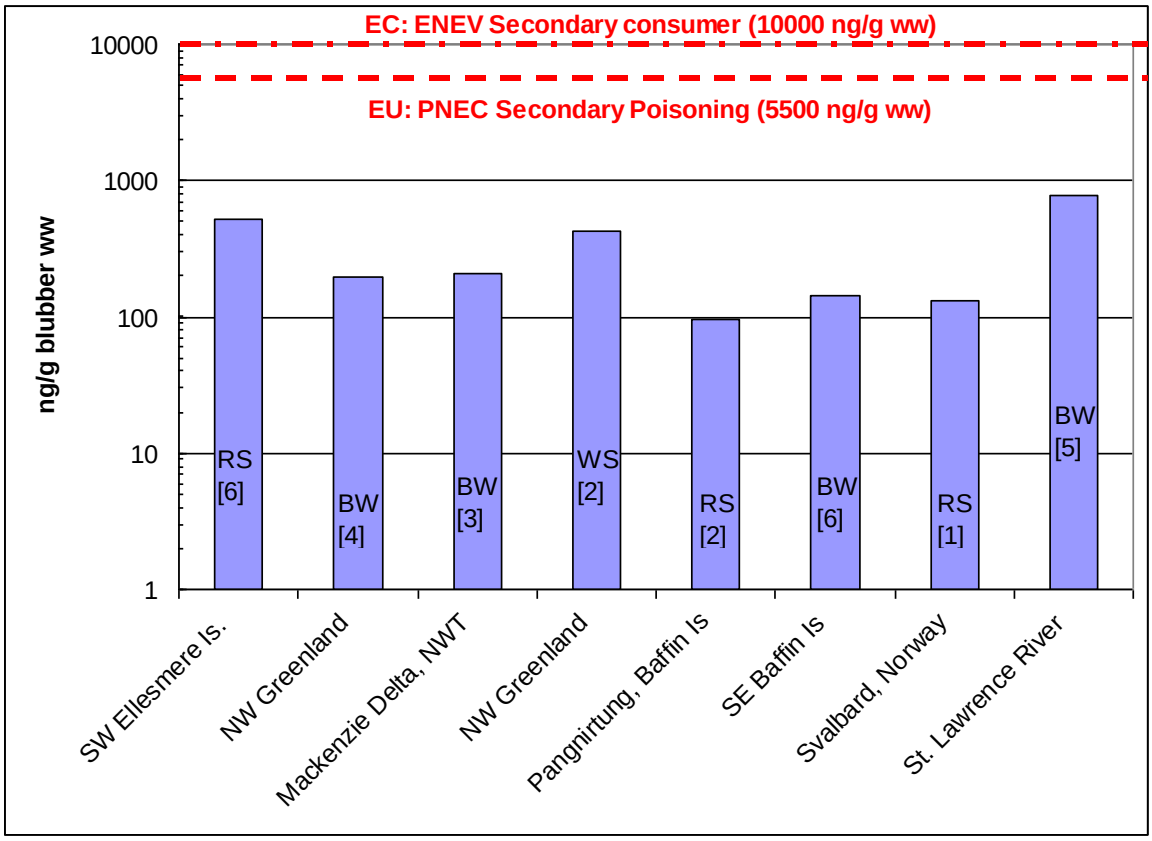



The maximum value from the marine Arctic was 77.4 ng/g dry weight, for Barrow Strait. This is over an order of magnitude lower than the European PNEC for marine sediment-dwelling organisms (1130 ng/g dw) and the Canadian benthic ENEV (3550 ng/g dw). Of the freshwater lakes, the highest value was from Lake Hazen, Ellesmere Island (4.5 ng/g dw), over 2 orders of magnitude lower than the European PNEC for freshwater sediment-dwelling organisms (5640 ng/g dw) and the Canadian ENEV (3550 ng/g dw). The PNECs and ENEV are derived from the aquatic organism NOEC and LOEC, respectively, using different assumptions of the organic carbon (OC) content of the sediment and different assessment factors. For example, the Canadian ENEV is based on 2% OC, giving a predicted LOEC (CTV) of 35500 ng/g dw, with an assessment factor of 10 to derive the ENEV.

Biota

Monitoring data are available on the SCCP levels in the blubber of marine mammals from 7 locations in the Canadian Arctic, Svalbard in the Norwegian Arctic, as well as for the St Lawrence river (Figure 3).

Figure 3: SCCP in the blubber of marine mammals from the Canadian Arctic, Norwegian Arctic and St. Lawrence River (Tomy et al, 2000; Jansson et al, 1993), compared with European PNEC Secondary poisoning (European Commission, 2005) and Canadian ENEV Secondary consumers (Canada 2007).




**RS = Ringed seal; BW = Beluga whale; WS = Walrus; [number of samples]**

The highest level for Arctic locations was from Ringed Seal blubber from Ellesmere Island at a mean of 527 ± 174 ng/g ww (n = 6). This was over an order of magnitude lower than the European PNEC for secondary poisoning and the Canadian ENEV for secondary consumers, both of which predict the no-effect concentration in the food of top predators (including humans and polar bears). The PNEC is derived from the NOEC (166000 ng/g) from a reproduction study in mallard ducks, with an assessment factor of 30. The ENEV is derived from a CTV of $10^6$ ng/g derived from a rat oral study, with an assessment factor of 100. Mean levels in Beluga from the St Lawrence River were higher (785 ± 362 ng/g n = 5) than from the arctic locations, reflecting local sources of emissions, but were still factors of 7 and 13 lower than the European PNEC and Canadian ENEV, respectively.

Few data are available for levels of SCCP in fish from remote locations. Reth et al (2006) determined concentrations in the liver of cod from the Norwegian and Icelandic coast (11 to 70 ng/g ww in liver) and in Arctic char from a lake on Bear Island (11 – 27 ng/g ww in liver, 7 – 13 ng/g ww in muscle). Muir et al (2001) found mean levels in trout from Lake Ontario of 59 and 73 ng/g ww, at Niagara-on-the –lake and Port Credit, respectively. It is clear from Figure 3 that, although including locations subject to local emissions, these levels are about 2 orders of magnitude lower than the PNEC and ENEV derived for predators eating fish. Furthermore, a concentration in fish of 70 ng/g ww is equivalent to approximately 0.0002 mM/kg ww, assuming a typical molecular weight of 360. This is approximately 3 orders of magnitude lower than levels recognized to be associated with chronic effects resulting from a non-specific (narcotic) mode of action (McCarty, 1986; Jarvinen & Ankley, 1999). Cooley *et al* (2001) concluded that the mode of action to fish of various $C_{10-13}$ chlorinated alkanes was probably narcosis, based on the symptoms of toxicity observed. This is confirmed by a 168-day NOEC of 17 µg/l for the growth of rainbow trout (Madeley & Maddock, 1983c) and a parallel bioconcentration study (Madeley & Maddock, 1983a) in which rainbow trout exposed to the same aqueous concentration accumulated tissue residues of 75 mg/kg ww (0.2mM/kg) after 168 days exposure. Thus, levels found in fish are well below those that would cause adverse effects on the fish, or higher predators feeding on such fish.

Conclusions

The available recent monitoring data for SCCP, although not exclusively remote from local sources of emissions, shows that the levels in water, sediment and biota are at least an order of magnitude below those that are likely to cause adverse effects. Therefore, the requirement of the Convention (Article 8 paragraph 7) is not satisfied.

References (otherwise as per Draft Risk Profile, UNEP/POPS/POPRC.3/16/Rev.1, November 2007).

Canada (2007). Canadian submission to POPRC of Annex E information for SCCPs, 1 February 2007. http://www.pops.int/documents/meetings/poprc/prepdocs/annexEsubmissions/Short-chained%20chlorinated%20paraffins%20Canada%20info.doc

European Commission (2005). Final Draft. Updated Risk Assessment of Alkanes, C10–13, Chloro-, Combined draft of August 2005. R010_0508.

Hüttig J and Oehme M (2005). Presence of chlorinated paraffins in sediments from the North and Baltic seas. Arch. Environ. Contam. Toxicol. 49, 449-456.

Jarvinen AW and Ankley GT (1999). Linkage of effects to tissue residues: Development of a comprehensive database for aquatic organisms exposed to inorganic and organic chemicals", SETAC Technical Publication 99-1, Society of Environmental Toxicology and Chemistry, Pensacola, FL.

Madeley, JR and Maddock BG (1983). Effect of a chlorinated paraffin on the growth of rainbow trout. Imperial Chemical Industries PLC, Devon, U.K. (Brixham Report No. BL/B/2309).

McCarty LS (1986). The relationship between aquatic toxicity QSARs and bioconcentration for some organic chemicals. Environ. Toxicol. Chem., 5, 1071-1080.