

National Guidelines and Standards Office
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Dr. Bob Sebastien
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RE: *Review of the Decision Document on Lindane*

Dear Dr. Sebastien,

It was a pleasure to review the Decision Document on Lindane you sent us. We commend this effort towards the identification of “candidate substances for regional action under the Sound Management of chemical initiative”.

1) *Review of the Decision Document on Lindane*

The Decision document has many good ideas and the management approach is logical. In terms of recommending a NARAP, from an environmental perspective, we strongly recommend, however, the presentation of a better case demonstrating the risk.

Pesticides are by definition designed to be selectively toxic. Human health and environmental risk from pesticides is a question of exposure, i.e., the dose. The document does not address exposure and would benefit from a review of the literature in this regard which could simply be summarised from “evaluation stage” II.

As well, with regards to the environmental effects section, although we are aware that there is a paucity of data, the section should be elaborated upon to highlight the environmental impacts that appear to be prevalent. There are several contradictions in the analysis of toxicity that should be addressed. For example, in the report, lindane is stated to be persistent and is eliminated rapidly... Further, lindane seems to be highly bioaccumulative, but the BAF of 4.1 does not represent a significantly high value. As well, for the BCF value do you mean $\log 2.26 - 3.85$? Toxicologically, it is apparent this has not been thought through thereby raising an element of uncertainty with the proposed plan of action. When verifying databases about toxicological data of pesticides, BCFs were for example, for fathead minnow 180, brine shrimp 183, and rainbow trout 319 that represent values of $\log K_{ow}$ of 3.61 - 3.89. Please verify toxicological studies about aquatic biota.

Below we offer specific comments for your consideration (also please find enclosed hand-written suggestions and remarks on the copied pages):

a.) The report seems to be a draft document and requires more work on quality and should be reviewed by an editor. A spell check would help.

b.) The document might benefit from a “Diagram describing the lindane cycle in the environment, including humans” as well as a “Model of the transformations of the different HCH isomers” in chapter 2.

c.) Throughout the document, whenever scientific units are mentioned, please provide consistency, e.g., $\text{mg}\cdot\text{L}^{-1}$, $\text{mg}\cdot\text{kg}^{-1}$, and $\text{mg}\cdot\text{kg}^{-1}\cdot\text{d}^{-1}$ and use the fewest number (e.g., $1,000\mu\text{g L}^{-1} \rightarrow 1 \text{ mg L}^{-1}$).

d.) Could you please specify the three fish species mentioned on page 6, chapter 4, line 6? In the same chapter, examples of scientific names for the LC_{50} range for fish and invertebrates and marine crustaceans could be of interest.

e.) Throughout the report, when exposure of biota and environmental endpoints are mentioned, please provide more detailed information including the species names and the scientific name in brackets.

f.) As mentioned on page 7, chapter 7, line 1, lindane does not appear mutagenic, but on page 1 in chapter 2, line 9 lindane can be mutagenic. Please clarify these contradictions.

g.) On page 16, chapter 2, line 8, you are citing Appendix C which is entitled “Toxicological endpoints of lindane”, but you mean Appendix B.

h.) In the list of major reasons to take tri-national action, page 17, chapter 3, points 2 and 3 could be fixed under one common point (The topics “long-range transport” and “cross national boundaries” may belong together).

i.) Please verify the reference section. In some cases there are commas between the authors missing, or the authors’ first names are missing or not capitalised. Some titles are underlined.

j.) Please ensure a balanced view on the exposure and toxicity of lindane and cite the “Canadian Environmental Quality Guidelines for lindane” (Environment Canada 1999) in the section “Environmental concentrations”.

We hope these comments and suggestions will be helpful to you.

Sincerely Yours,

Dr. Pierre-Yves Caux
Aquatic Guidelines and Assessments Section