Decision POPRC-1/4: Chlordecone

The Persistent Organic Pollutants Review Committee,

Having examined the proposal by the European Community and its member States that are Parties to the Stockholm Convention on Persistent Organic Pollutants to list chlordecone (Chemical Abstracts Service Number 143-50-0) in Annex A to the Convention and having applied the screening criteria specified in Annex D to the Convention,

1. *Decides,* in accordance with paragraph 4 (a) of Article 8 of the Convention, that it is satisfied that the screening criteria have been fulfilled for chlordecone, as set out in the evaluation contained in the annex to the present decision;

2. *Decides furthermore,* in accordance with paragraph 6 of Article 8 of the Convention and paragraph 29 of decision SC-1/7 of the Conference of the Parties to the Stockholm Convention, to establish an ad hoc working group to review the proposal further and to prepare a draft risk profile in accordance with Annex E to the Convention;

3. *Invites,* in accordance with paragraph 4 (a) of Article 8 of the Convention, Parties and observers to submit to the Secretariat the information specified in Annex E before 27 January 2006.

Annex to decision POPRC-1/4

Evaluation of chlordecone against the criteria of Annex D

A. Background

1. The primary source of information for the preparation of this evaluation was the proposal submitted by the European Community and its member States that are Parties to the Convention, contained in document UNEP/POPS/POPRC.1/6.

2. Additional sources of scientific information included critical reviews prepared by recognized authorities and peer-reviewed scientific papers.

B. Evaluation

3. The proposal was evaluated in the light of the requirements of annex D, regarding the identification of the chemical (paragraph 1 (a)) and the screening criteria (paragraphs 1 (b)–(e)):

(a) Chemical identity:

(i) Adequate information was provided in the proposal. The Review Committee was informed about a further trade name for this substance: “Curlone”;

(ii) The chemical structure was provided. No isomers are possible. Mirex has a similar chemical structure;

The chemical identity of chlordecone is clearly established;

(b) Persistence:

(i) The half-life in soils exceeds the criterion value of six months. It is reported to be from 1 to 2 years (Refs. 1 and 2). By analogy with mirex, one report suggests that the half-life could be three years or longer (Ref. 3);

(ii) A new scientific paper indicates that, in the James River (Virginia, United States of America), downstream of a facility that produced Kepone (chlordecone), the chemical is still detected in fish samples more than 20 years after the production had been phased out (Ref. 4);

There is sufficient evidence that chlordecone meets the persistence criterion;

(c) Bioaccumulation:

(i) The reported bioconcentration factors are summarized below (Ref. 5):

Unicellular algae: 230–800

Aquatic invertebrates: 5,127–11,425

Fish: 1,800–16,600

(ii) and (iii) There is additional information supporting the potential for bioaccumulation and biomagnification, including an excretion half-life in mammals of several months and the detection of high levels of the chemical in fish and birds (Refs. 3 and 5). This bioaccumulation is a consequence of the lipophilic nature of the chemical, for which the log Kow value is 4.50–6.00 (Refs. 2, 3 and 5);

There is sufficient evidence that chlordecone meets the bioaccumulation criterion;

(d) Potential for long-range environmental transport:

(i) and (ii) No data on environmental levels were available reflecting long-range transport;

(iii) The vapour pressure of chlordecone (2.25×10^{-7} mm Hg at 25°C) (Ref. 6) is such that long-range transport in the atmosphere can be anticipated, and dissemination in particulate form has been observed. Modelling studies suggest life-times in air substantially in excess of the criterion value of two days (Ref. 2);

There is sufficient evidence that chlordecone meets the criterion on potential for long-range environmental transport;

(e) Adverse effects:

(i) Workers exposed in their work place showed clinical signs of chlordecone poisoning (Ref. 3);

(ii) There are extensive data showing potential for adverse effects on humans and ecosystems, including carcinogenicity and reproductive effects and very high toxicity for aquatic organisms (fish non-observed-effect concentration < 1 microgram per litre) (Ref. 5);

There is sufficient evidence that chlordecone meets the criterion on adverse effects.

C. Conclusion

4. The Committee concluded that chlordecone meets the screening criteria specified in Annex D.

References

1. *Regional reports of the regionally based assessments of persistent toxic substances.* UNEP. 2002.
2. Howard, Phillip H., *Handbook of Environmental Fate and Exposure Data for Organic Chemicals, Vol. 3: Pesticides*. Lewis Publishers. 1989.
3. *Toxicological Profile for Mirex and Chlordecone*. United States Department of Health and Human Services. 1995.
4. Luellen et al. *Science of the Total Environment 2005* (in press).
5. *Environmental Health Criteria No. 43: Chlordecone.* International Programme on Chemical Safety. UNEP, ILO, WHO. Geneva. 1984. (http://www.inchem.org/documents/ehc/ehc/ehc43.htm).
6. Kilzer et al. *Chemosphere 8.* 1979.