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**United Nations  
Environment  
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**Stockholm Convention on Persistent Organic Pollutants  
Persistent Organic Pollutants Review Committee  
First meeting  
Geneva, 7–11 November 2005  
Item 5 (b) of the provisional agenda\***

**Consideration of chemicals proposed for inclusion  
in Annexes A, B and C of the Convention: Chlordecone**

**Chlordecone proposal\*\***

**Note by the Secretariat**

1. The annex to the present note reproduces the proposal by the European Union and its member States which are Parties to the Convention for listing chlordecone in Annex A of the Stockholm Convention on Persistent Organic Pollutants pursuant to paragraph 1 of Article 8 of the Convention. The proposal has been edited to be consistent with the other proposals before the Review Committee.

**Possible action by the Committee**

2. The Committee may wish to:
- (a) Consider the information provided in the present note;
  - (b) Decide whether it is satisfied that the proposal fulfils the requirements of Article 8 and Annex D of the Convention;
  - (c) Develop and agree on, if it decides that the proposal fulfils the requirements referred to in subparagraph (b) above, a work plan to prepare a draft risk profile pursuant to paragraph 6 of Article 8. In developing such a work plan, the Committee may wish to take into consideration the information given in document UNEP/POPS/POPRC.1/INF/11.

\* UNEP/POPS/POPRC.1/1.  
\*\* Stockholm Convention, Article 8.

## Annex

# Proposal for listing Chlordecone in Annex A of the Stockholm Convention on Persistent Organic Pollutants

### Introduction

1. Chlordecone is a synthetic chlorinated organic compound which has mainly been used as an agricultural insecticide. Chlordecone has been identified as a persistent organic pollutant chemical under the Protocol on Persistent Organic Pollutants to the Convention on Long-range Transboundary Air Pollution. Under the provisions of the Protocol, Parties are obliged to phase out all production and uses of chlordecone. Chlordecone is chemically very similar to mirex, another pesticide which is already listed under the Stockholm Convention.

2. The present dossier focuses solely on the information required under paragraphs 1 and 2 of Annex D of the Stockholm Convention and it is mainly based on information from the following review reports:

- Environmental Health Criteria (EHC) 43: Chlordecone. IPCS International Programme on Chemical Safety. United Nations Environment Programme. International Labour Organization. World Health Organization. Geneva 1990 (available at <http://www.inchem.org/documents/ehc/ehc/ehc43.htm>)
- Toxicological profile for mirex and chlordecone. United States Department of Health and Human Services. August 1995 (available at: <http://www.atsdr.cdc.gov/toxprofiles/tp66-p.pdf>).

3. Those reviews also serve as a source of the additional information referred to in paragraph 3 of Annex D of the Stockholm Convention on this candidate POP chemical.

## 1. Identification of the chemical

### 1.1 Names and registry numbers

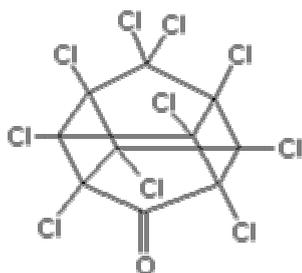
CAS chemical name: 1,1a,3,3a,4,5,5a,5b,6-decachloro-octahydro-1,3,4-metheno-2H-cyclobuta[cd]pentalen-2-one

Synonyms: decachloro-pentacyclo[5,2,1,0<sup>2</sup>,<sup>6</sup>,0<sup>3</sup>,<sup>9</sup>,O<sup>5</sup>,<sup>8</sup>]decan-4-one,  
decachloro-octahydro-1,3,4-metheno-2H,5H cyclobuta[cd]pentalen-2-one

Trade names: GC 1189, Kepone, Merex

CAS registry number: 143-50-0

## 1.2 Structure



(Structural formula source: [webbook.nist.gov/chemistry](http://webbook.nist.gov/chemistry))

Molecular formula:  $C_{10}Cl_{10}O$

Molecular weight: 490.6

## 2. Persistence

4. Chlordecone is highly persistent in the environment. According to the information given in the review reports, the estimated half-life of chlordecone in soil is between one and two years. It is not expected to hydrolyse or biodegrade in the environment. Direct photodegradation is not significant. The primary process for the degradation of chlordecone in soil or sediments is anaerobic biodegradation.

## 3. Bioaccumulation

5. Based on the lipophilic nature of this compound (high octanol-water partition coefficient (logKow)), chlordecone has a tendency to both bioaccumulate and biomagnify in aquatic food chains. Bioconcentration factors of over 60,000 have been measured in Atlantic silverside, an estuarine fish species.

LogKow:	4.50–6.00
Bioconcentration factor:	>60,000 (Atlantic silverside ( <i>Menidia menidia</i> )) >9,000 (Oysters ( <i>Crassostrea virginica</i> )) 16,600 (Fathead minnow ( <i>Pimephales promelas</i> ))

## 4. Potential for long-range environmental transport

6. The vapour pressure of chlordecone is below  $3 \times 10^{-5}$  mm Hg at 25°C. Chlordecone is not expected to be subject to direct photodegradation in the atmosphere. Its estimated half-life time in air is up to 50 years. Atmospheric transport of chlordecone particles was reported in the United States of America during production years.

## 5. Adverse effects

7. Chlordecone is moderately toxic to laboratory mammals with single exposures. Acute toxic symptoms in all species tested included severe tremor. It can cause skin irritation. In long-term studies, lower doses caused tremor and other neurological symptoms, and also liver hypertrophy.

8. Chlordecone interferes with reproduction and is fetotoxic in experimental animals. It is not generally active in short-term tests for genetic activity. Chlordecone is carcinogenic in both sexes of mice and rats, producing hepatocellular carcinomas. The International Agency for Research on Cancer concludes that there is sufficient evidence that chlordecone is carcinogenic in mice and rats. In the absence of adequate data in humans, it is reasonable to regard chlordecone as if it presented a carcinogenic risk to humans.

9. Chlordecone is very toxic to aquatic organisms. The few data available on terrestrial ecosystems indicate low acute toxicity but some long-term effects on vertebrate reproduction.

**6. Statement of the reasons for concern**

10. The proposal of the European Union and its member States which are Parties to the Convention contains the following statement of concern:

“Chlordecone is chemically very similar to mirex, an organochlorine pesticide already listed in the Stockholm Convention. According to the available data, chlordecone is very persistent in the environment. It has a great potential for bioaccumulation and in addition there is monitoring evidence of its biomagnification. Due to its physical and chemical properties, considerably long atmospheric half-life and based on findings in environmental samples, it can be assumed that chlordecone can be transported long distances in air, far from its sources. Chlordecone is associated with a wide range of harmful effects to both mammals and aquatic organisms.

Production and use of chlordecone has ceased over the last decades in developed countries but it is assumed that it is still produced or used as an agricultural pesticide in some developing countries. As chlordecone can move in the atmosphere far from its sources, single countries or groups of countries alone cannot abate the pollution it causes. Regional action has already been considered necessary and chlordecone is totally banned under the Convention on Long-range Transboundary Air Pollution Protocol on Persistent Organic Pollutants. Due to its harmful properties and the risks posed by its probable production and use, global action is warranted under the Stockholm Convention to eliminate this pollution.”

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