

Decision POPRC-2/7: Pentachlorobenzene

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 pentachlorobenzene (Chemical Abstracts Service number 608-93-5) in Annexes A, B and/or C 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 pentachlorobenzene, 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 2 February 2007.

Annex to decision POPRC.2/7

Evaluation of pentachlorobenzene 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.2/INF/5.
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 and supporting documents;
- (ii) The chemical structure was provided;
The chemical identity of pentachlorobenzene is clearly established;

(b) Persistence:

- (i) The estimated half-life in water of pentachlorobenzene ranges from 194 to 1,250 days and the estimated half-life for anaerobic biodegradation in deeper water range from 776 to 1,380 days. These values clearly exceed the persistency criteria. In sediment cores the half-lives are estimated to be of several years and in soils half-lives of 194–345 days have been observed (Refs. 1, 2, 3 and 4);

- (ii) There are no specific monitoring data available demonstrating persistency but the substance is detected in sediments supporting the conclusion of high persistency (Ref. 1);

There is sufficient evidence that pentachlorobenzene meets the criterion on persistence;

(c) Bioaccumulation:

- (i) Log Kow of pentachlorobenzene varies between 4.8 and 5.18. Reported bioconcentration factors in aquatic species vary between 3,400 and 13,000 on whole body weight basis (Ref. 1.). Based on these data, the weight of evidence demonstrates that the bioconcentration factor for pentachlorobenzene is higher than 5,000 (Ref. 5). Bioaccumulation factors of 810 in mussels (*Mytilus edulis*) and 20,000 in rainbow trout (*Oncorhynchus mykiss*) have been reported (Ref. 6);

- (ii) and (iii) Toxicokinetic data on domestic birds indicate accumulation during food exposure and a half-life for adipose tissue of 53 days (Ref. 12);

Pentachlorobenzene has been detected in the air in remote areas, including Arctic air with a concentration range from 0.017– 0.138 ng/m³ (Refs. 1 and 10). There is also a good amount of monitoring data in Arctic mammals, birds, fish, lake sediments and moss, in remote areas (Refs. 1 and 11);

There is sufficient evidence that pentachlorobenzene meets the criterion on bioaccumulation;

(d) Potential for long-range environmental transport:

- (i) and (ii) Monitoring data show that the substance is found in remote areas. Pentachlorobenzene has been detected in the air in remote areas, including Arctic air with a concentration range from 0.017– 0.138 ng/m³ (Refs. 1 and 10). There is also a good amount of monitoring data in Arctic mammals, birds, fish, lake sediments and moss, in remote areas (Refs. 1 and 11);
- (iii) Pentachlorobenzene has a moderately high vapour pressure (2.2 Pa at 25°C) and modelling data show an estimated half-life in air significantly greater than two days. The estimated half-lives in air are between 45 and 467 days. There are also modelling data demonstrating the potential for long-range environmental transport (Refs. 1, 2, 7, 8 and 9);

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

(e) Adverse effects:

- (i) There are no specific data available on adverse effects to human health or to the environment;
- (ii) There are toxicity and ecotoxicity data available for pentachlorobenzene. In general, studies with laboratory mammals show moderate toxicity in acute exposure. Pentachlorobenzene demonstrates high acute toxicity in the aquatic environment with the lowest LC50 value for fresh water organisms being 250 µg/l for fish. The lowest no observed effect concentration (NOEC) is 10 µg/l for crustaceans (Refs. 1 and 7);

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

C. Conclusion

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

References

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