

Mixtures Containing Pentabromochlorocyclohexane

Mixtures containing pentabromochlorocyclohexane are used commercially as flame retardants in foams that are used for insulation in homes and other buildings. One type of insulation foam is extruded polystyrene foam. A mixture that contains pentabromochlorocyclohexane is FR-651 (56.4% pentabromochlorocyclohexane, 27.1% tetrabromochlorocyclohexane, 7.1% tribromochlorocyclohexane and 9.4% other halogenated cyclohexanes). This chemical mixture is also used in making plastics such as those used in transparency material for making presentation slides using ink jet printers. The general public and construction workers in California may be exposed to products that are made with mixtures containing pentabromochlorocyclohexane.

Mixtures containing pentabromochlorocyclohexane passed the animal data screen, underwent a preliminary toxicological evaluation, and are being brought to the Carcinogen Identification Committee for consultation. This is a compilation of the relevant studies identified during the preliminary toxicological evaluation.

Epidemiological data

No cancer epidemiology studies were identified.

Animal carcinogenicity data

- Long-term feeding studies
 - Two-year studies in male and female F344 rats of a test substance with the major constituent the isomer pentabromochlorocyclohexane: Blair *et al.* (1981), as reviewed by U.S. EPA (1985)
 - *Increase in polypoid adenomas of the large intestines (by pairwise comparison and trend) in males and females*
 - Two-year studies in male and female F344 rats containing as its major constituent a mixture of pentabromochlorocyclohexane and other halogenated cyclohexane isomers: Keyes *et al.* (1982), as reviewed by U.S. EPA (1985)
 - *Increase in polypoid adenomas or adenocarcinomas combined of the large intestines (by pairwise comparison and trend) in females*
 - *No treatment-related response in males*

Other relevant data

- Genotoxicity
 - *Salmonella* reverse mutation assays (*negative*): U.S. EPA (1985) and Zeiger *et al.* (1992)

References¹

Environmental Protection Agency, Cincinnati, OH. Office of Research and Development (US EPA, 1985). *Health and Environmental Effects Profile for 1,2,3,4,5-Penta-Bromo-6-Chlorocyclohexane*. EPA document No. PB 88-182225

Zeiger E, Anderson B, Haworth S, Lawlor T, and Mortelmans K. (1992). *Salmonella* mutagenicity tests: V. Results from the testing of 311 chemicals. *Environ Mol Mutagen.* **19 Suppl 21**:2-141.

¹ Excerpts or the complete publication have been provided to members of the Carcinogen Identification Committee, in the order in which they are discussed in this document.