2,6-Dichloro-*p*-Phenylenediamine

2,6-Dichloro-*p*-phenylenediamine is an intermediate used in dye and resin manufacture. It is a metabolite of the fungicide Dicloran (2,6-dichloro-4-nitroaniline), and has been detected in soil. Studies do not indicate any appreciable uptake of dicloran or its metabolites from soil by plants, including vegetables. Exposure may occur in the dye and resin industries, and at sites treated with Dicloran.

2,6-Dichloro-*p*-phenylenediamine passed the animal data screen, underwent a preliminary toxicological evaluation, and is 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 in mice
  - 103-week exposure and additional 8-week observation in male and female B6C3F$_1$ mice: NTP (1982)
    - *Increased hepatocellular adenoma and carcinoma (combined) in males and females (by pairwise comparison and trend)*

- Long-term feeding studies in rats
  - 103-week exposure in male and female F344 rats: NTP (1982)
    - *No treatment-related tumor findings in males or females*

Other relevant data

- Genotoxicity
  - *Salmonella typhimurium* mutation assays (*positive*): Mortelmans *et al.* (1986), as reviewed in IARC (1986)
  - Syrian hamster embryo cell transformation assays: Hatch *et al.* (1986) (*some activity*); Tu *et al.* (1986) (*equivocal*)
  - Mouse lymphoma forward mutation assays (*positive*): McGregor *et al.* (1988)
  - *In vitro* chromosomal aberrations in Chinese hamster ovary cells (*positive*): Gulati *et al.* (1989), as reviewed in CCRIS (2006)

- Structure activity considerations
    - The level of carcinogenicity concern for 2,6-dichloro-*p*-phenylenediamine is rated 'high-to-moderate,' the highest rating by the U.S. EPA OncoLogic software, available at: (http://www.epa.gov/oppt/newchems/tools/oncologic.htm
    - Structurally similar to other phenylenediamine compounds that are listed under Proposition 65 as carcinogens, including 4-chloro-*o*-phenylenediamine, *o*-phenylenediamine and its salts, 2,4-dinitrotoluene, 2,6-dinitrotoluene and 2,4-diaminotoluene.

Review

- IARC (1986)

References[1]

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[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.