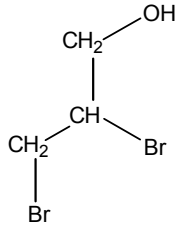
2,3-DIBROMO-1-PROPANOL
CAS No. 96-13-9

First listed in the *Tenth Report on Carcinogens*



CARCINOGENICITY

2,3-Dibromo-1-propanol (DBP) is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of carcinogenicity from studies in experimental animals, which indicates there is an increased incidence of malignant and/or a combination of malignant and benign tumors at multiple tissue sites in multiple species of experimental animals (NTP 1993). DBP painted onto the skin of rats for up to 55 weeks induced tumors of the skin, nasal mucosa, digestive tract, Zymbal gland, liver, kidney, tunica vaginalis, and spleen. Mice similarly exposed for up to 42 weeks had increased numbers of tumors of the skin, forestomach, liver, and lung.

No adequate human studies of the relationship between exposure to DBP and human cancer have been reported.

OTHER INFORMATION RELATING TO CARCINOGENESIS OR POSSIBLE MECHANISMS OF CARCINOGENESIS

DBP is genotoxic in bacterial and mammalian test systems, including *Salmonella typhimurium*, *Escherichia coli*, V79 hamster cells, and mouse lymphoma cells. It also induces sex-linked recessive lethal mutations and reciprocal translocations in *Drosophila melanogaster*. DBP induces chromosomal aberrations in Chinese hamster ovary cells in culture, but it does not induce micronuclei in bone marrow of mice administered DBP by injection.

No available data suggest that mechanisms thought to account for DBP's induction of tumors in experimental animals would not also operate in humans.

PROPERTIES

DBP is a clear, colorless, viscous liquid. It is a halogenated aliphatic alcohol and is soluble in water, dimethylsulfoxide, 95% ethanol, and acetone (NTP 2001).

USE

The major use of DBP is as an intermediate in the production of flame retardants, insecticides, and pharmaceuticals. DBP was used in the production of TRIS-BP, a flame retardant used in children's clothing and other products. DBP and TRIS-BP were banned from use in sleepwear in 1977 by the Consumer Product Safety Commission (CPSC) after studies showed that DBP was mutagenic in bacteria and that TRIS-BP was mutagenic and caused cancer

in laboratory animals (NTP 2001, HSDB 2001).

PRODUCTION

Only one U.S. producer of DBP was identified, but no production levels were provided (HSDB 2001). U.S. production of DBP was more than 10 million lb in 1976 (Fishbein 1979). Production of DBP decreased drastically after the CPSC ban on the use of DBP and TRIS-BP in sleepwear. Current production values have not been reported (NTP 1993). The U.S. Environmental Protection Agency (EPA) reported the annual U.S. production of DBP to be less than 1 million lb and did not list it among the high production volume chemicals (EPA 1994).

EXPOSURE

The primary routes of human exposure to DBP are inhalation and dermal contact. DBP has been determined to be a metabolite of TRIS-BP in humans (Blum, et. al. 1978). Over 50 million children who wore sleepwear treated with TRIS-BP may have been exposed to DBP (as a metabolite of TRIS-BP) before the 1977 CPSC ban (Blum *et al*. 1978).

Occupational exposure to DBP may occur through inhalation and dermal contact in those industries where DBP is used to produce flame-retardant materials, pharmaceuticals, and insecticides. No information on estimated occupational exposures to DBP was found (HSDB 2001). Releases of DBP into the environment have not been reported (TRI 2002).

REGULATIONS

The U.S. EPA regulated 2,3-dibromo-1-propanol under the Toxic Substances Control Act, requiring manufacturers and processors to report production, use, and any exposure-related information for chemicals with toxic or dangerous characteristics.

The Occupational Safety and Health Administration regulates 2,3-dibromo-1-propanol under the Hazard Communication Standard and as a chemical hazard in laboratories. Regulations are summarized in Volume II, Table 60.

REFERENCES

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title.

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