Ethylene Dibromide

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Ethylene dibromide (1,2-dibromoethane) is a nonflammable colorless liquid with a sweet chloroform-like odor at room temperature above 10ºC. It is slightly soluble in water and soluble in most organic solvents. It is heavier than water. When heated to decomposition, it may release gases and vapors such as hydrogen bromide, bromine, and carbon monoxide. Ethylene dibromide should be stored in a dry place at ambient temperature [ATSDR].

Usage and exposure

Ethylene dibromide was used in the past as an additive to leaded gasoline; however, since leaded gasoline is now banned, it is no longer used for this purpose. Ethylene dibromide was used as a fumigant to protect against insects, pests, and nematodes in citrus, vegetable, and grain crops, and as a fumigant for turf, particularly on golf courses. In 1984, EPA banned its use as a soil and grain fumigant. Ethylene dibromide is currently used in the treatment of felled logs for bark beetles and termites, and control of wax moths in beehives. Ethylene dibromide is also used as an intermediate for dyes, resins, waxes, and gums and in waterproofing preparations [EPA, IARC].

Exposure to ethylene dibromide may occur in pest control, petroleum refining and waterproofing. Dermal exposure is possible when handling leaded gasoline containing ethylene dibromide. It has been detected at low levels in air and water [IARC, 1999].

Routs of exposure

Inhalation, skin absorption, ingestion, skin and/or eye contact.

Possible sources of ethylene dibromide emissions to the ambient air are production and processing facilities. Exposure could occur from inhalation of

ambient air near industries that use ethylene dibromide or through the ingestion of contaminated drinking water [EPA].

Target organs

Eyes, skin, respiratory system, liver, kidneys, reproductive system.

Health hazards

Ethylene dibromide causes irritation of eyes, skin, respiratory system; dermatitis with vesiculation; liver, heart, spleen, kidney damage; reproductive effects; [potential occupational carcinogen] [CDC]

There is inadequate evidence in humans for the carcinogenicity of ethylene dibromide. There is sufficient evidence in experimental animals for the carcinogenicity of ethylene dibromide. In making the overall evaluation, the Working Group took into consideration that ethylene dibromide is genotoxic in a broad range of in-vitro and in-vivo assays and binds covalently with DNA in vivo.

Ethylene dibromide is probably carcinogenic to humans (Group 2A) [IARC].

References:

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- IARC. International Agency for Research on Cancer. Vol 71, Re-Evaluation of Some Organic Chemicals, Hydrazine And Hydrogen Peroxide. ETHYLENE DIBROMIDE (1,2-DIBROMOETHANE) pp:603-690,1999. https://publications.iarc.fr/_publications/media/download/2308/315c5ffce4795c85ebc1259e01f8e3b431f11469.pdf