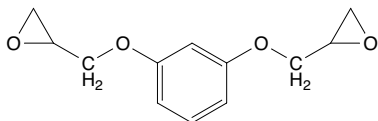


Diglycidyl Resorcinol Ether

CAS No. 101-90-6

Reasonably anticipated to be a human carcinogen

First listed in the *Fifth Annual Report on Carcinogens* (1989)



Carcinogenicity

Diglycidyl resorcinol ether is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of carcinogenicity from studies in experimental animals.

Cancer Studies in Experimental Animals

Oral exposure to diglycidyl resorcinol ether caused tumors in two rodent species. Diglycidyl resorcinol ether administered by stomach tube caused forestomach tumors (squamous-cell carcinoma and papilloma) in rats and mice of both sexes (IARC 1985, NTP 1986).

Cancer Studies in Humans

No epidemiological studies were identified that evaluated the relationship between human cancer and exposure specifically to diglycidyl resorcinol ether.

Properties

Diglycidyl resorcinol ether is an epoxy resin that exists at room temperature as a straw-yellow viscous liquid with a slight phenolic odor. It is slightly soluble in water and miscible with acetone, chloroform, methanol, benzene, and most organic resins). Diglycidyl resorcinol ether has the potential to form explosive peroxides (IARC 1985, Akron 2009, HSDB 2009). Physical and chemical properties of diglycidyl resorcinol ether are listed in the following table.

Property	Information
Molecular weight	222.2 ^a
Specific gravity	1.21 at 25°C/4°C ^a
Melting point	32°C to 33°C ^a
Boiling point	172°C at 0.8 mm Hg ^a
Log K_{ow}	1.23 ^b
Vapor pressure	4×10^{-5} mm Hg at 25°C ^c
Vapor density relative to air	7.7 ^c

Sources: ^aHSDB 2009, ^bChemIDplus 2009, ^cAkron 2009.

Use

Diglycidyl resorcinol ether is used as a liquid epoxy resin and as a reactive diluent in the production of other epoxy resins used in electrical, tooling, adhesive, casting, and laminating applications (IARC 1976). The cured resins made from diglycidyl resorcinol ether are used for coating metal and certain pavements to increase their tensile strength. Diglycidyl resorcinol ether is also used as a curing agent in the production of polysulfide rubber. In recent years, it has been used primarily in the aerospace industry (IARC 1999).

Production

Production of diglycidyl resorcinol ether started in the United States in 1974, and production by its sole U.S. manufacturer was estimated at 4,500 to 45,400 lb in 1977 (IARC 1985). In 2009, diglycidyl resorcinol ether was produced by two manufacturing plants worldwide (one in East Asia and one in China) (SRI 2009) and was available from five

suppliers, including three U.S. suppliers (ChemSources 2009). No data on U.S. imports or exports of diglycidyl resorcinol ether were found. Reports filed in 1986, 1990, 1994, 1998, and 2002 under the U.S. Environmental Protection Agency's Toxic Substances Control Act Inventory Update Rule indicated that U.S. production plus imports of diglycidyl resorcinol ether totaled 10,000 to 500,000 lb (EPA 2004).

Exposure

The primary route of potential human exposure to diglycidyl resorcinol ether is dermal contact, but exposure by inhalation may also occur (HSDB 2009, TRI 2009). According to EPA's Toxics Release Inventory, 510 lb of diglycidyl resorcinol ether was released to air in 1996. Since then, annual releases to air have remained at 20 lb or less, totaling 1 or 2 lb in 2002 through 2007. In 2001, about 1,100 lb was sent off site for treatment or disposal (TRI 2009). The National Occupational Exposure Survey (conducted from 1981 to 1983) estimated that 1,856 workers, including 222 women, in the Petroleum and Coal Products, Electric and Electronic Equipment, Transportation Equipment, and Instruments and Related Products industries potentially were exposed to diglycidyl resorcinol ether (NIOSH 1990).

Regulations

Environmental Protection Agency (EPA)

Emergency Planning and Community Right-To-Know Act
Toxics Release Inventory: Listed substance subject to reporting requirements.

References

- Akron. 2009. *The Chemical Database*. The Department of Chemistry at the University of Akron. <http://ull.chemistry.uakron.edu/erd> and search on CAS number. Last accessed: 5/09.
- ChemIDplus. 2009. *ChemIDplus Advanced*. National Library of Medicine. <http://chem.sis.nlm.nih.gov/chemidplus/chemidheavy.jsp> and select Registry Number and search on CAS number. Last accessed: 5/09.
- ChemSources. 2009. *Chem Sources - Chemical Search*. Chemical Sources International. <http://www.chemsources.com/chemonline.html> and search on diglycidyl resorcinol ether. Last accessed: 5/16/09.
- EPA. 2004. *Non-confidential IUR Production Volume Information*. U.S. Environmental Protection Agency. <http://www.epa.gov/oppt/iur/tools/data/2002-vol.html> and search on CAS number.
- HSDB. 2009. *Hazardous Substances Data Bank*. National Library of Medicine. <http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB> and search on CAS number. Last accessed: 5/09.
- IARC. 1976. Diglycidyl resorcinol ether. In *Cadmium, Nickel Some Epoxides, Miscellaneous Industrial Chemicals and General Considerations on Volatile Anaesthetics*. IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Humans, vol. 11. Lyon, France: International Agency for Research on Cancer. pp. 125-129.
- IARC. 1985. Diglycidyl resorcinol ether. In *Allyl Compounds, Aldehydes, Epoxides, and Peroxides*. IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Humans, vol. 36. Lyon, France: International Agency for Research on Cancer. pp. 181-188.
- IARC. 1999. Diglycidyl resorcinol ether. In *Re-evaluation of Some Organic Chemicals, Hydrazine, and Hydrogen Peroxide*. IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Humans, vol. 71. Lyon, France: International Agency for Research on Cancer. pp. 1417-1420.
- NIOSH. 1990. *National Occupational Exposure Survey (1981-83)*. National Institute for Occupational Safety and Health. Last updated: 7/1/90. <http://www.cdc.gov/noes/noes1/83725sic.html>.
- NTP. 1986. *Toxicology and Carcinogenesis Studies of Diglycidyl Resorcinol Ether (Technical Grade) (CAS No. 101-90-6) in F344/N Rats and B6C3F₁ Mice (Gavage Studies)*. Technical Report Series no. 257. NIH Publication no. 87-2513. Research Triangle Park, NC: National Toxicology Program. 222 pp.
- SRI. 2009. *Directory of Chemical Producers*. Menlo Park, CA: SRI Consulting. Database edition. Last accessed: 5/09.
- TRI. 2009. TRI Explorer Chemical Report. U.S. Environmental Protection Agency. <http://www.epa.gov/triexplorer> and select Diglycidyl Resorcinol Ether. Last accessed: 5/09.