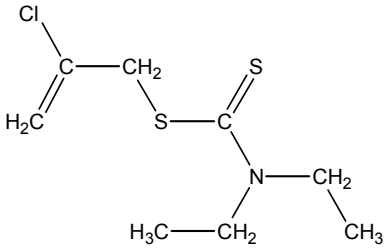
SULFALLATE
CAS No. 95-06-7
First Listed in the *Second Annual Report on Carcinogens*



CARCINOGENICITY

Sulfallate is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of carcinogenicity in experimental animals (IARC 1983, NCI 1978). When administered in the diet, sulfallate induced mammary adenocarcinomas in female rats and mice, squamous cell carcinomas of the forestomach in male rats, and alveolar-bronchiolar adenomas in male mice. When administered intraperitoneally, sulfallate induced pulmonary-bronchiolar adenomas in mice of both sexes (Maronpot *et al*. 1986).

No adequate human studies of the relationship between exposure to sulfallate and human cancer have been reported (IARC 1983).

PROPERTIES

Sulfallate is the generic trade name for *N*,*N*-diethyldithiocarbamic acid 2-chloroallyl ester. Sulfallate is a clear amber oil that is slightly soluble in water and soluble in acetone, benzene, chloroform, ethyl acetate, ethyl alcohol, and most organic solvents. When heated to decomposition, it emits toxic fumes of hydrochloric acid and other chlorinated compounds as well as nitrogen oxides and sulfur oxides. It is combustible (flash point 93.3^{o}C) and incompatible with strong oxidizers and alkaline chemicals (HSDB 2001, NTP 2001).

USE

Sulfallate was first introduced as a herbicide in 1954. The primary use of sulfallate in the U.S. was as a pre-emergent selective herbicide to control certain annual grasses and broadleaf weeds around vegetable and fruit crops. Sulfallate was also used to control weeds among shrubbery and ornamental plants (IARC 1983, HSDB 2001). All sulfallate products were discontinued by the manufacturer in the early 1990s (HSDB 2001, EPA 2001).

PRODUCTION

Commercial production of sulfallate in the U.S. was first reported in 1955 (IARC 1983). There are no current data available on the production of sulfallate. Chem Sources (2001) identified six current suppliers of sulfallate. The USITC identified a single company producing sulfallate from 1975 through 1982, with an implied annual production of >5,000 lb (USITC 1983); this same company indicated in 1985 that they no longer produced the compound (Farm Chem. Hdbk. 1985). Approximately 100,000 lb of sulfallate were used in the U.S. in 1975 and 1978 (HSDB 2001). No data were available on imports or exports of this chemical.

EXPOSURE

Sulfallate is no longer used in the U.S.; therefore the potential for exposure is low. In the past, the general population may have been exposed to sulfallate through ingestion of residues in food crops. In addition, the potential for exposure existed during the manufacture, formulation, and application of the herbicide. Agricultural workers had the greatest possible risk of sulfallate exposure and rural residents of agricultural communities were possibly exposed to airborne residues of sulfallate after spraying operations. No estimate of the number of people exposed was found (HSDB 2001).

REGULATIONS

Under the Food, Drug, and Cosmetic Act (FD&CA), EPA established tolerances for sulfallate residues on a variety of raw agricultural commodities. Enforcement of these tolerances is vested in FDA.

OSHA regulates sulfallate under the Hazard Communication Standard and as a chemical hazard in laboratories. Regulations are summarized in Volume II, Table 166.

REFERENCES

Chem Sources. Chemical Sources International, Inc. http://www.chemsources.com, 2001.

HSDB. Hazardous Substances Data Bank. Online database produced by the National Library of Medicine. Sulfallate. Profile last updated August 8, 2001. Last review date, December 10, 1993.

EPA. U.S. Environmental Protection Agency, Office of Pesticide Programs. Chemical Ingredients Database Query, http://www.cdpr.ca.gov/docs/epa/epachem.htm, 2001.

Farm Chemicals Handbook `85. Willoughby, OH: Meister Publishing Co., 1985.

IARC. International Agency for Research on Cancer. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Miscellaneous Pesticides. Vol. 30. 424 pp. Lyon, France: IARC, 1983.

Maronpot, R.R., M.B. Shimkin, H.P. Witschi, L.H. Smith, and J.M. Cline. Strain A Mouse Pulmonary Tumor Test Results for Chemicals Previously Tested in the National Cancer Institute Carcinogenicity Tests. J. Natl. Cancer Inst. Vol. 76, No. 6, 1986, pp. 1101-1112.

NCI. National Cancer Institute. Carcinogenesis, Technical Report Series No. 115. Bioassay of Sulfallate for Possible Carcinogenicity (CAS No. 95-06-7). DHEW (NIH) Publication No. 78-1370. 62 pp. National Institutes of Health, Bethesda, MD, 1978.

NTP. National Toxicology Program. NTP Chemical Repository. Sulfallate. Last updated August 13, 2001. (http://ntp-server.niehs.nih.gov and search 95-06-7).

USITC. U.S. International Trade Commission. Synthetic Organic Chemicals, United States Production and Sales, 1982. USITC Publication No. 1422. Washington, DC: U.S. Government Printing Office, 1983.