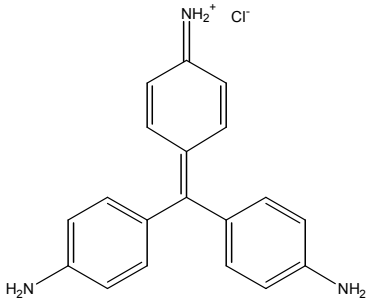
C.I. BASIC RED 9 MONOHYDROCHLORIDE
CAS No. 569-61-9
First Listed in the *Fifth Annual Report on Carcinogens*



CARCINOGENICITY

C.I. Basic Red 9 monohydrochloride is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of carcinogenicity in experimental animals (NTP 1986). When administered in the diet, the compound induced subcutaneous fibromas, thyroid gland follicular cell adenomas and carcinomas, and Zymbal gland carcinomas in rats of both sexes, and squamous cell carcinomas, trichoepitheliomas, sebaceous adenomas of the skin, and hepatocellular carcinomas in male rats. Increased incidences of mammary gland tumors in female rats also may have been related to exposure to the compound. C.I. Basic Red 9 monohydrochloride induced hepatocellular carcinomas in mice of both sexes and adrenal gland pheochromocytomas in female mice. Increased incidences of hematopoietic system tumors in female mice also may have been related to exposure to the compound. When administered by subcutaneous injection, C.I. Basic Red 9 monohydrochloride induced local sarcomas in rats (IARC 1974, 1987).

Evidence for the possible carcinogenicity of C.I. Basic Red 9 monohydrochloride in humans comes from an epidemiological study that indicated an increase in urinary bladder tumors in workers involved in the manufacture of magenta dye, of which C.I. Basic Red 9 monohydrochloride is a component. An IARC Working Group reported that it was not possible to determine whether the increased incidence of urinary bladder cancer in magenta workers was attributable to exposure to magenta or to one or more of its intermediates and impurities (IARC 1974). A subsequent Working Group determined that the evidence for the carcinogenicity in humans is inadequate for magenta and sufficient for the manufacture of magenta (IARC 1987).

PROPERTIES

C.I. Basic Red 9 monohydrochloride is a triphenylmethane pigment that ranges from colorless to red crystals, with its color changing as it forms bonds. As a free base, it is very combustible, but the monohydrochloride salt is not combustible. C.I. Basic Red 9 monohydrochloride is soluble in water, ether, and alcohol. When heated to decomposition, C.I. Basic Red 9 monohydrochloride emits toxic fumes of hydrochloric acid and nitrogen oxides (IARC 1974, 1987, HSDB 2000).

USE

C.I. Basic Red 9 monohydrochloride is used primarily in a nutrient agar for bacterium identification (75% of the C.I. Basic Red 9 monohydrochloride produced), and as a biological stain, basic fuchsin (about 25%) (EPA 1985, NTP 1986). It is also used as a dye for textiles (silks and acrylics), leather, and paper (SRI 1982). It is one of three components of commercial magenta which is used as a dye for coloring textiles (cotton, wool, silks, and acrylics), china clay products, leather, printing inks, and as a filter dye in photography (Colour Index 1971, IARC 1974). Its specialty applications include tinting automobile antifreeze solutions and toilet sanitary preparations (HSDB 2000).

PRODUCTION

C.I. Basic Red 9 monohydrochloride is not currently manufactured for commercial use; however, it is produced by two companies in the United States as an on-site intermediate in the production of the nitrate salt of C.I. Basic Red 9, which is used to produce Pigment Blue 61 that is widely used in blue printing inks (IARC 1993). At one of these firms, 1,500 lb of the nitrate salt is isolated and sold to a dye company that converts it to the hydrochloride salt (EPA 1985, CHIP 1986). The 1979 TSCA Inventory listed one manufacturer producing 1 million to 10 million lb of C.I. Basic Red 9 (nitrate salt) in 1977. Another manufacturer/importer was listed in the TSCA Inventory, but no data on production or imports were reported (TSCA 1979). U.S. production of C.I. Basic Red 9 monohydrochloride was reported to be over 1,000 lb in 1975 and approximately 2,000 lb in 1972 (IARC 1993). In 1974, the United States imported 4,410 lb of the chemical (EPA 1985, IARC 1974). No data on exports were available. Chem Sources (2001) identified 17 suppliers of C.I. Basic Red 9 in the United States.

EXPOSURE

The primary route of potential human exposure to C.I. Basic Red 9 monohydrochloride is dermal contact (NTP 1986). Potential consumer exposure could possibly occur through contact with products containing residual C.I. Basic Red 9 monohydrochloride. The compound is produced as an intermediate in the production of the nitrate salt of C.I. Basic Red 9 at two sites, but is used as an on-site or captive intermediate. Three workers per site spend up to 1 hour per day operating the production equipment. Workers potentially may also be exposed during transferring, packaging, and cleaning operations (SRI 1982). Laboratory personnel who use and handle basic fuchsin dye may account for additional exposure to the compound (CHIP 1986).

The National Occupational Exposure Survey (1981-1983) indicated that 770 workers, including 617 women, were potentially exposed to C.I. Basic Red 9 monohydrochloride (NIOSH 1984). This estimate was derived from observations of the actual use of the compound (27% of total observations) and the use of trade name products known to contain the compound (73%). The National Occupational Hazard Survey, conducted by NIOSH from 1972 to 1974, estimated that 223,910 workers were potentially exposed to C.I. Basic Red 9 monohydrochloride in the workplace (NIOSH 1976). This estimate was derived only from observations of the use of generic products suspected of containing the compound.

REGULATIONS

OSHA regulates C.I. Basic Red 9 monohydrochloride under the Hazard Communication Standard and as a chemical hazard in laboratories. Regulations are summarized in Volume II, Table 46.

REFERENCES

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