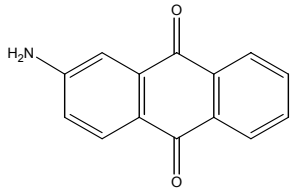
2-AMINOANTHRAQUINONE
CAS No. 117-79-3
First Listed in the *Third Annual Report on Carcinogens*



CARCINOGENICITY

2-Aminoanthraquinone is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of carcinogenicity in experimental animals (NCI 1978). When administered in the diet, 2-aminoanthraquinone increased the incidences of hepatocellular carcinomas and neoplastic nodules in male rats, hepatocellular carcinomas in mice of both sexes, and lymphomas in female mice. An IARC Working Group concluded that the evidence for the carcinogenicity of 2-aminoanthraquinone in experimental animals was limited (IARC 1982, 1987). In view of an NCI/OTA correlative interpretation, the evidence may be regarded as sufficient (Griesemer and Cueto 1980, OTA 1981).

No adequate data were available to evaluate the carcinogenicity of 2-aminoanthraquinone in humans (IARC 1982, 1987).

PROPERTIES

2-Aminoanthraquinone occurs as orange-brown to red needles with a melting point of 302°C. It is insoluble in water and diethyl ether, and soluble in alcohol, acetone, benzene, and chloroform. This chemical is stable under normal laboratory conditions, but may react with strong oxidizing agents. It forms salts with mineral acids, can be acylated or alkylated on the nitrogen atom, and nitrated or sulphonated in the ring. When heated to decomposition, it emits toxic fumes of nitrogen oxides (IARC 1982, HSDB 2001, NTP 2001).

USE

2-Aminoanthraquinone is used as an intermediate in the industrial synthesis of anthraquinone dyes. It is the precursor of five dyes and one pigment: Colour Index Vat Blues 4, 6, 12, and 24; Vat Yellow 1; and Pigment Blue 22 (NCI 1978). These dyes are used in automotive paints, high-quality paints and enamels, plastics, rubber, printing inks, and as textile dyes (Gosselin *et al*. 1984, Lewis 2000). It also has been used as a pharmaceutical intermediate (HSDB 2001).

PRODUCTION

2-Aminoanthraquinone was first produced commercially in the United States in 1921 (IARC 1982). One U.S. manufacturer was identified in the HSDB (2001). Recent production figures for 2-aminoanthraquinone are considered proprietary and were not available. Chem

Sources (2001) identified 14 suppliers of the compound. The EPA reported five producers and importers of the chemical between 1975 and 1977 (SRI 1986). In 1979 and 1980, U.S. imports of 2-aminoanthraquinone amounted to 10,000 lb and 250 lb, respectively (IARC 1982, HSDB 2001). In 2000, only 2.2 lb were imported and no exports were reported (ITA 2001).

EXPOSURE

The primary route of potential human exposure to 2-aminoanthraquinone is dermal contact. Potential consumer exposure to anthraquinone may occur through contact with products containing residues of anthraquinone dyes. Data were not available on the actual levels of impurities in the final products, the potential for consumer exposure, or the potential for human uptake. Because the chemical is used on a commercial scale solely by the dye industry, the potential for occupational exposure to the compound is greatest for workers at dye manufacturing facilities. No data were available on the number of facilities using 2-aminoanthraquinone. The National Occupational Hazard Survey, conducted by NIOSH from 1972 to 1974, made no estimate of the potential occupational exposure to 2-aminoanthraquinone alone, but estimated that 6,400 workers have possibly been exposed to anthraquinone dyes (NIOSH 1976).

REGULATIONS

EPA regulates 2-aminoanthraquinone under the Superfund Amendments and Reauthorization Act (SARA), subjecting it to reporting requirements.

OSHA regulates 2-aminoanthraquinone under the Hazard Communication Standard and as a chemical hazard in laboratories. Regulations are summarized in Volume II, Table 8.

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