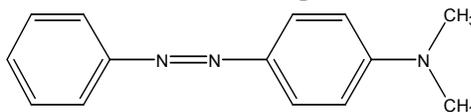


## 4-DIMETHYLAMINOAZOBENZENE

CAS No. 60-11-7

First Listed in the *Second Annual Report on Carcinogens*



### CARCINOGENICITY

4-Dimethylaminoazobenzene is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of carcinogenicity in experimental animals (IARC 1982, 1987). When administered orally in the diet, 4-dimethylaminoazobenzene induced lung tumors and hepatomas in mice and liver tumors in rats, including solid, alveolar, trabecular, or adenomatous tumors, with some metastases. In dogs, this chemical produced bladder papillomas when administered in the diet (IARC 1975). Subcutaneous injections of 4-dimethylaminoazobenzene induced hepatomas, liver carcinomas, and local sarcomas and fibrosarcomas in adult mice; liver tumors and lung adenomas were induced in newborn mice. Further, subcutaneous injections induced metastasizing liver tumors in rats. Intraperitoneal injections induced hepatomas in rats. Skin painting with 4-dimethylaminoazobenzene in acetone induced squamous cell, basal cell, and anaplastic carcinomas plus other miscellaneous epidermal tumors in rats, but not in mice.

No data were available to evaluate the carcinogenicity of 4-dimethylaminoazobenzene in humans (IARC 1975, IARC 1987).

### PROPERTIES

4-Dimethylaminoazobenzene is a yellow crystalline solid that is insoluble in water and soluble in pyridine, benzene, strong mineral acids, and oils (HSDB 2002).

### USE

4-Dimethylaminoazobenzene is an industrial chemical previously used to color polishes and other wax products, polystyrene, and soap. It was also used as a chemical indicator for free hydrogen chloride (HCl) in juice, as a spot test identification for peroxidized fats, and as a pH indicator (IARC 1975, Merck 1983, HSDB 2002).

### PRODUCTION

4-Dimethylaminoazobenzene is not currently produced or used commercially in the United States (SRI 1982, 1997, HSDB 2002). Chem Sources (2001) listed 19 suppliers of the compound in the United States. No import data were available. In 1974, 4-dimethylaminoazobenzene was one of a group of at least twenty colors for which individual production data were not available, but the U.S. production as a group totaled 1 million lb. Large-scale production of 4-dimethylaminoazobenzene in the United States was first reported in 1914 (IARC 1975).

## EXPOSURE

The primary routes of potential human exposure to 4-dimethylaminoazobenzene are inhalation and dermal contact. NIOSH (1990) (NOES survey 1981-1983) estimated that 1,454 workers were potentially exposed to 4-dimethylaminoazobenzene in the U.S. OSHA estimated that 2,500 workers were potentially exposed to 4-dimethylaminoazobenzene, possibly during the production of polishes, wax products, and polystyrene products in which 4-dimethylaminoazobenzene is used as a dye. Potential consumer exposure also may have occurred through contact with these products.

## REGULATIONS

EPA regulates 4-dimethylaminoazobenzene under the Clean Water Act (CWA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), and Superfund Amendments and Reauthorization Act (SARA). A reportable quantity (RQ) of 10 lb has been established for 4-dimethylaminoazobenzene under CERCLA and CWA. RCRA regulates it as a hazardous constituent of waste. Under SARA, it is subject to reporting requirements, and general threshold quantities have been established for its use and manufacture.

OSHA promulgated standards for 4-dimethylaminoazobenzene, based on its carcinogenicity, requiring protective clothing and hygiene procedures for workers, and engineering control measures for the manufacturing and processing of the chemical. OSHA regulates 4-dimethylaminoazobenzene under the Hazard Communication Standard and as a chemical hazard in laboratories. Regulations are summarized in Volume II, Table 74.

## REFERENCES

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#### **4-Dimethylaminoazobenzene (Continued)**

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