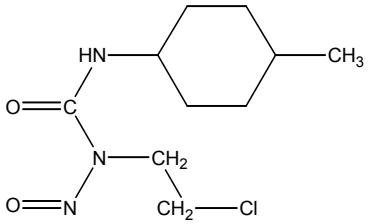
1-(2-CHLOROETHYL)-3-(4-METHYLCYCLOHEXYL)-1-NITROSOUREA (MeCCNU)
CAS No. 13909-09-6

First Listed in the *Sixth Annual Report on Carcinogens*



CARCINOGENICITY

1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea (MeCCNU) is *known to be a human carcinogen* based on sufficient evidence of carcinogenicity in humans (IARC 1987). Adjuvant treatment with the compound has been evaluated in 3,633 patients with gastrointestinal cancer treated in nine randomized trials. Among 2,067 patients treated with the compound, 14 cases of acute nonlymphocytic leukemia occurred, whereas one occurred among 1,566 patients treated with other therapies. Cumulative risk was not affected by concomitant radiotherapy or immunotherapy. A subsequent report described a strong dose-response relationship, giving a relative risk of almost forty fold among patients who had received the highest dose.

An IARC Working Group reported that there is limited evidence of carcinogenicity in experimental animals (IARC 1987). Data on MeCCNU were included in a report in which a large number of cancer chemotherapeutic agents were tested for carcinogenicity by repeated intraperitoneal injection in rats and mice (Weisburger 1977). The compound increased the incidence of tumors in rats, and slightly increased the incidence of leukemia and lymphosarcomas in female mice. When administered by intravenous injection, MeCCNU induced lung tumors in rats.

PROPERTIES

MeCCNU is a light yellow powder that is stable under normal conditions, but should be protected from moisture. It is incompatible with strong oxidizing agents and strong bases (MSDS 2000). It is slightly soluble in water (<1 mg/mL), and soluble in ethanol, acetone, and DMSO (NTP 2001). Hazardous combustion or decomposition products include carbon monoxide, hydrochloric acid, and nitrogen oxides (MSDS 2000).

USE

MeCCNU is an investigational drug used in chemotherapy to treat various types of cancers. These include Hodgkin's disease, malignant gliomas, gastrointestinal tract adenocarcinomas, breast carcinomas, and squamous-cell carcinomas (NTP 2001).

PRODUCTION

No production, import, or export values for MeCCNU were available. Two current U.S. suppliers were identified (Chem Sources 2001).

EXPOSURE

The National Occupational Exposure Survey estimated that 229 total workers, including 82 women, were potentially occupationally exposed to MeCCNU (RTECS 2000). Cancer patients are exposed during chemotherapy. Doses vary depending on the type of cancer and body weight of the individual (ACS 2000). The typical oral dose is 125 to 200 mg/m^2 body surface area and is repeated every six weeks (Parfitt 1999).

REGULATIONS

OSHA regulates MeCCNU under the Hazard Communication Standard and as a chemical hazard in laboratories. Regulations are summarized in Volume II, Table 36.

REFERENCES

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