

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

February 11, 2002

TO: T-Butylaminoethanol File (CAS #4620-70-6)

FROM: Gary Butterfield, Toxics Unit, Air Quality Division

SUBJECT: Screening Level for T-Butylaminoethanol

Tert-Butylaminoethanol is also known as 2-tert-butylaminoethanol, t-butylethanolamine, or 2-(1,1-dimethylethyl)aminoethanol. T-Butylaminoethanol has a molecular weight of 117.22. This material is a solid with a melting point of 42 degrees Celsius.

The following references or databases were searched to identify data to determine the screening level: U.S. Environmental Protection Agency (EPA) Integrated Risk Information System (IRIS), National Institute for Occupational Safety and Health (NIOSH) Registry for Toxic Effects of Chemical Substances (RTECS), American Conference of Governmental and Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), Michigan Department of Environmental Quality (DEQ) library, International Agency for Research on Cancer (IARC) Monographs, Chemical Abstract Service (CAS) Online (1967- Dec 2001), National Library of Medicine (NLM) - Toxline, and National Toxicology Program (NTP) Status Report.

The CAS and NLM on-line literature searches were conducted on December 13, 2001, in order to locate relevant toxicity information. There were no published toxicity studies that could be used to establish a screening level for this material.

An unpublished oral acute study was located during the literature search of NLM and found to be located in EPA's library - CARNEGIE-MELLON INST RES (1979). Groups of 5 male Wistar rats, weighing 90 to 120 g, and being 3 to 4 weeks old were administered test material via gavage. There was a 19-day observation period. The LD-50 was calculated by the moving averages method. The LD-50 was found to be 1620 mg/kg.

Another unpublished study (Wil Research Labs (1997)) was also found in the NLM search, this study evaluated the embryonic development in rats. Groups of five pregnant female Sprague Dawley rats were administered, via gavage, t-butylaminoethanol dissolved in water on gestation days 0 to 11 at doses of 0, 10, 30, 100 or 300 mg/kg. The females were sacrificed on gestation day 12 for uterine examination. There appeared to be a maternal effect on maintaining pregnancy at 100 and 300 mg/kg as there was reduced numbers of gravid females. There was also a loss of body weight and increased numbers of pre-implantation losses at 100 mg/kg and higher. The authors reported the NOAEL to be 30 mg/kg for both maternal and embryonic development. This study is of limited value for calculation of the screening

level because it did not look for full developmental and teratogenic effects in the developing fetuses, as well as only a limited evaluation of the dosed females.

It is considered to best base the screening level on the rat oral LD50 of 1620 mg/kg reported by CARNEGIE-MELLON INST RES (1979), and equation from R232(1)(h) the ITSL can be calculated as follows.

$$\text{ITSL} = (1620 \text{ mg/kg}) / (500 \times 40 \times 100 \times 0.167) \times 1 \text{ kg} / 0.9 \text{ m}^3 = 5 \text{ } \mu\text{g/m}^3 \text{ annual avg}$$

Where the default rat inhalation rate of $0.9 \text{ m}^3/\text{kg}$ was used in the above calculation.

References

CARNEGIE-MELLON INST RES. 1979. T-BUTYL ETHANOLAMINE: RANGE FINDING TOXICITY STUDIES (FINAL REPORT). NTIS/OTS 0534931.

Wil Reserach Labs. 1997. A study to evaluate early embryonic development in rats. NTIS/OTS 0559210.

GB:DB

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