

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

JANUARY 10, 1995

TO: File for Ethylene Glycol Dibutyl Ether (112-48-1)
FROM: Marco Bianchi
SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for ethylene glycol dibutyl ether is $10 \mu\text{g}/\text{m}^3$ based on an annual averaging time.

The following references or databases were searched to identify data to determine the ITSL: IRIS, HEAST, NTP Management Status Report, RTECS, EPB-CCD, EPB library, CAS-online, NLM-online, IARC, NIOSH Pocket Guide, and ACGIH Guide.

A review of the above databases provided only limited information for ethylene glycol dibutyl ether. RTECS listed a rat LD_{50} of 3250 mg/kg taken from a Union Carbide Data Sheet. Through additional data searching, it was discovered that this value was probably derived from range-finding toxicity data by H.F. Smyth (1954). Smyth single-dosed five male or female Carsworth-Wistar rats (non-fasted) in a logarithmic series. No details were given in the study whether the compound may have been diluted with a 1% solution of sodium 3,9-diethyl-6-tridecanol sulfate (Tergitol Penetrant 7) to adjust for volume. Animals were observed for mortality up to 14 days post-dosing. The LD_{50} of 3.25 g/kg was estimated by the method of Thompson using the tables of Weil. Because mortality was not complete, the LD_{50} value was recorded with a fiducial range of 2.82-3.74 g/kg.

The ITSL was derived as follows:

$$\text{LD}_{50} = 3250 \text{ mg/kg}$$

$$\text{ITSL} = \frac{1}{500} \times \frac{1}{40} \times \frac{1}{100} \times \frac{3250}{0.167 \times 0.900} = 0.010 \text{ mg/kg}$$

$$0.010 \text{ mg/kg} \times 1000 = 10 \mu\text{g}/\text{m}^3 \text{ based on annual averaging.}$$

The ITSL for ethylene glycol dibutyl ether = $10 \mu\text{g}/\text{m}^3$ based on annual averaging.

References:

Smyth, H.F. et al., 1954. Range-Finding Toxicity Data List V. AMA Archives of Industrial Hygiene and Occupational Health, 10:61-68.

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