

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

September 28, 1993

TO: File for 2-methylaminoethanol (methylethanolamine)
CAS # 109-83-1

FROM: Dennis Bush, Surface Water Quality Division

SUBJECT: ITSL Derivation

No RfC, RfD or OELs are available for 2-methylaminoethanol (MAE). A search of RTECS (1993) revealed a rat oral LD50 of 2340 mg/kg which was reported in a study conducted by Smyth et al. (1954).

CAS, NTIS and Toxline searches were conducted on August 21, 1993. These searches revealed a teratogenicity study conducted by Nelson et al. (1984). In this study, 15 pregnant Sprague-Dawley rats were exposed to 150 ppm MAE for 7 hours/day on gestation days 7 through 15. The dams were sacrificed on gestation day 20. Fetuses were first weighed individually and then 2/3 were examined for soft-tissue anomalies and 1/3 were examined for skeletal defects. No evidence of toxicity was observed in dams or fetuses. The dose of 150 ppm was considered to be the NOAEL for this study.

The ITSL for MAE was calculated using the NOAEL of 150 ppm found in the study by Nelson et al. (1984). An uncertainty factor of 10x was used for each intraspecies and interspecies extrapolation. An additional uncertainty factor of 35 was used because the study was substantially less than chronic. The value of 35 was derived from a study by Weil (1969).

Conversion (EPA, 1989):

$$\begin{aligned} \text{ppm} \rightarrow \text{mg/m}^3 &= \frac{\text{ppm} \times \text{mol. wt.}}{24.45} = \frac{150 \text{ ppm} \times 75.1114}{24.45} \\ &= 460.81 \text{ mg/m}^3 = 460 \text{ mg/m}^3 \end{aligned}$$

ITSL Derivation:

$$ITSL = \frac{NOAEL}{35 \times 100} \times \frac{\text{hours exposed per day}}{24 \text{ hours per day}}$$

$$ITSL = \frac{460 \text{ mg/m}^3}{3500} \times \frac{7}{24}$$

$$ITSL = 0.038 \text{ mg/m}^3 = 38 \text{ } \mu\text{g/m}^3, \text{ annual averaging time}$$

REFERENCES

- Nelson, B.K., J.V. Setzer, W.S. Brightwell et al. 1984. Comparative inhalation teratogenicity of four glycol ether solvents and an amino derivative in rats. Environ. Hlth. Persp. 57:261-271.
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- Smyth, H.F. Jr., C.P. Carpenter and C.S. Weil. 1951. Range-finding toxicity data, list IV. AMA Arch. Ind. Hyg. Occup. Med. 4:109-122.
- U.S. EPA. 1989. Interim Methods for Development of Inhalation Reference Doses. EPA/600/8-88/066F.
- Weil, C.S. et al. 1969. Relationship between single-peroral, one-week and ninety-day rat feeding studies. Toxicol. Appl. Pharmacol. 14:426-431.

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