

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

May 26, 1998

TO: File for Amylamine (CAS #110-58-7)

FROM: Marco Bianchi, Toxics Unit, Air Quality Division

SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for amylamine is $1 \mu\text{g}/\text{m}^3$ based on an annual averaging time. The critical effect of amylamine exposure appears to be strong dermal and mucous membrane irritation.

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 complete reference check was conducted for amylamine, but only one study was available for review. In an acute range-finding toxicity study by Smyth et al. (1969), Carworth-Wistar rats were exposed orally or by inhalation to amylamine (mixed isomers). In the oral portion of the study, groups of 5 male or female rats were given a single dose in a logarithmic series by gastric intubation. The animals were observed for 14 days, and the LD_{50} value was estimated by the method of Thompson. The LD_{50} for amylamine was determined to be 0.47 ml/kg (352.5 mg/kg). In the inhalation portion of the study, 6 male or female rats were exposed to a *virtually saturated* or to a *known* vapor concentration. The *virtually saturated* vapor concentration resulted in the death of all the test animals within 30 minutes, while the *known* vapor concentration (2000 ppm) resulted in four out of six test animals dying after 4 hours of exposure. Typically, inhalation data would be used to derive an ITSL, but the authors did not determine an LC_{50} from the *known* vapor concentration exposure. Therefore, the ITSL will be based on the LD_{50} of 352.5 mg/kg.

The ITSL was derived as follows:

$$\begin{aligned}\text{LD}_{50} &= 0.47 \text{ ml/kg} \\ \text{Sp. Gr.} &= 0.75 @ 20^{\circ}\text{C}\end{aligned}$$

$$\text{LD}_{50} = 0.47 \text{ ml/kg} \times 0.75 \times 1000 = 352.5 \text{ mg/kg}$$

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$$\text{ITSL} = \frac{1}{500} \times \frac{1}{40} \times \frac{1}{100} \times \frac{352.5}{0.167 \times 0.931} = 0.0011 \text{ mg}/\text{m}^3$$

$$0.0011 \text{ mg}/\text{m}^3 \times 1000 = 1 \text{ ug}/\text{m}^3 \text{ based on annual averaging.}$$

The ITSL for amylamine = 1 ug/m³ based on annual averaging.

References:

Smyth, HF. et. al., 1949. Range-Finding Toxicity Data List III. Journal of Industrial Hygiene and Toxicology. 31:60-62.

Smyth, HF. et. al., 1969. Range-Finding Toxicity Data: List VII. American Industrial Hygiene Association Journal. 30:(5)470-476.

MB:SLB

cc: Mary Lee Hultin, AQD