MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

July 1, 1998

TO: File for sec-butylamine (CAS #13952-84-6)

FROM: Marco Bianchi, Toxics Unit, Air Quality Division

SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for sec-butylamine is 5 $\mu g/m^3$ 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, ACGIH Guide, and Patty's Industrial Hygiene and Toxicology.

A review of the above databases provided only limited information to derive an ITSL for sec-butylamine. In an acute oral toxicity study by Cheever et al., (1982) groups of 10 male and 10 female rats were dosed by gavage in a series of doses in increments of one hundred between 100 and 600mg/kg. All doses were dissolved in corn oil to a 4 ml volume. Animals were observed 14-days post-dosing for adverse effects. The LD50 for sec-butylamine was calculated by the probit method of Finney at 152 mg/kg for male and females.

In a subacute inhalation study by Gage (1970), seven male rats were exposed to 233ppm ($697mg/m^3$) for thirteen, 6.5-hour exposures. The result of these exposures caused discomfort, lethargy, and retarded weight gain. The organs appeared normal at autopsy. Although only one dose level was used, discussions with other staff toxicologists concurred it was still appropriate to use it as a LOAEL. Adverse effects were interpreted as minimal, and the description "*organs normal at autopsy*", was defined by the author as "*examination revealed no changes to organs which could be attributed to the treatment*". Therefore, a LOAEL of $697mg/m^3$ will be used to derive an ITSL.

LOAEL = 697 mg/m3
NOAEL to LOAEL safety factor = 10
35-fold safety factor

$$\text{ITSL} = \frac{\text{LOAEL}}{35 \times 10 \times 100} \times \frac{\text{hours exposed per day}}{24 \text{ hrs/day}}$$

$$ITSL = \frac{697\ mg/m^3}{35 \times 10 \times 100} \times \frac{6}{24\ hrs/day} = 0.0049\ mg/m^3$$

$0.0049\ mg/m3 \times 1000 = 5\ ug/m^3$

The ITSL for sec-butylamine = 5 $\mu g/m^3$ based on annual averaging.

References:

Cheever K.L. et al., 1982. The acute oral toxicity of isomeric monobutylamines in the adult male and female rat. Toxicology and Applied Pharmacology. 63, 150-152.

Gage J.C. 1970. The subacute inhalation toxicity of 109 industrial chemicals. Brit J Ind Med., 27, 1-18.

MB:SLB
cc: Mary Lee Hultin, AQD