MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

April 1, 1993

TO: File for n-Pentyl Proprionate (CAS No. 624-54-4)

FROM: Cathy Simon

SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for n-pentyl proprionate is 21 ug/m3 based on an annual averaging time.

The following references or databases were searched to identify data to determine the ITSL: IRIS, RTECS, Environmental Protection Bureau Library, IARC Monographs, CAS Online (1967 - March 19, 1993), and NTP Management Status Report.

No RfC, RfD, ACGIH TLV or NIOSH recommended exposure level were available for n-pentyl proprionate. The only relevant toxicity data available were an acute inhalation and oral study in rats (Bushy Run Research Center, 1988). In the inhalation study, death occurred in 0 of 5 male and 0 of 5 female rats exposed to a substantially saturated vapor (static) for 6 hours. As the exposure concentration for this test could not be determined, it was not used to establish the ITSL. In the acute oral study, male and female Sprague-Dawley rats were administered a single oral dose of n-pentyl proprionate. Mortality observed in male rats include 2 of 5 given 16 ml/kg and 0 of 5 given 8 ml/kg. In female rats, 1 of 5 died from administration of 16 ml/kg and 0 of 5 died from 8 ml/kg. This data suggests that the oral rat LD50 is greater than 16 ml/kg. It is also recognized that the volume of material administered at this dose level is in the range of the maximum that might be reasonably administered to the test animals. However, given the small number of dose groups and animals used in this study, the statistical uncertainty, and a protocol which doesn't allow calculation of an LD50 with associated confidence limits, the lower dose level of 8 ml/kg was used as a conservative surrogate estimate of the LD50. Using a specific gravity of 0.8718 g/ml, the surrogate LD50 of 8 ml/kg is equivalent to 7000 mg/kg.

The ITSL for n-pentyl proprionate was determined from the surrogate oral LD50 for male rats as follows:

$$ITSL = \frac{1}{500} \times \frac{1}{40} \times \frac{1}{100} \times \frac{7000\ mg/kg \times 0.314\ kg}{0.167 \times 0.309\ m^3} = 21\ \mu g/m^3$$

Where, 0.314 kg is the mean body weight (W) of male rats reported in the study, and 0.309 m^3/day is the daily inhalation rate (I) as determined from the following allometric relationship:

$$I = 0.80W^{0.8206}$$

A similar value for the ITSL was determined using the data for female rats.

References

Bushy Run Research Center. 1988. UCAR N-Pentyl Proprionate. Acute Toxicity and Primary Irritancy Studies. Union Carbide. Project Report 51-69. July 27, 1988.

CAS:ma