

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

September 1, 1993

TO: File for 2-Octanone (CAS# 111-13-7)

FROM: Michael Depa, Toxics Unit

SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for 2-octanone (also known as methyl hexyl ketone) is being established at 7 ug/m³ based on an annual averaging time.

The following references or databases were searched to identify data to determine the ITSL: IRIS, RTECS, ACGIH Threshold Limit Values, NIOSH Pocket Guide to Hazardous Chemicals, Environmental Protection Bureau Library, IARC Monographs, CAS Online (1967-August 21, 1993), and NTP Management Status Report. Review of these sources found that EPA has not established a RfC or RfD for methyl hexyl ketone. Occupational exposure limits from ACGIH, NIOSH or OSHA were not available for methyl hexyl ketone. There was no data available meeting the minimum criteria for establishing a RfC or RfD. There was no inhalation data available for methyl hexyl ketone. Hall and Carlson (1976) conducted a 16 day oral toxicity study to evaluate effects on cholesterol and fatty acid synthesis. Doses of 1, 5, 20, 50, and 100 mg/kg were administered to male Holtzman rats and CF₁ mice. Cholesterol was reduced in rats at all dose levels. However, it is not clear if this can be considered to be an adverse effect. Spleen organ weights were increased significantly at doses of 5, 50, and 100 mg/kg, but not at 20 mg/kg. This was considered to be inconsistent and not dose related. No NOAEL can be identified from this study. Therefore the ITSL was based on an oral LD50 reported by Tanii (1986) using 4 animals per dose level and 4 different doses (pretreated with an

interperitoneal injection of 0.16 ml of olive oil). The LD50 was determined to be 29.82 mmol/kg (3.82 g/kg). The ITSL was determined as follows:

$$\text{ITSL} = 1/500 \times 1/40 \times 1/100 \times \text{LD50}(\text{mg/kg}) / 0.167 \times W_a / I_a$$

Where I_a = Inhalation rate of the animal ($I = 1.99 \times W^{1.0496}$), the default value equals 0.0423 m³/day (EPA, 1988),
 W_a = Weight of the animal, in this case equals 25.5 g, and
LD50 = 3820 mg/kg in male ddy mice

EPA. 1988. Recommendations for and documentation of biological values for use in the risk assessment. PB 88-179874.

Hall, I., and Carlson, L. 1976. Cycloalkanones 9, comparison of analogs which inhibit cholesterol and fatty acid synthesis. Journal of Medicinal Chemistry. 19(10):1257-1261.

Tanii, H., Tsuji, H., and Hashimoto, K. 1986. Structure activity relationship of monoketones. Toxicology Letters. 30:13-17.