

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

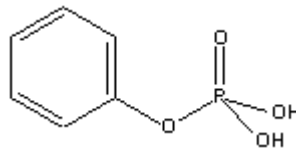
September 12, 2000

TO: File for Monophenyl Phosphoric Acid (CAS #701-64-4)  
FROM: Michael Depa, Toxics Unit, Air Quality Division  
SUBJECT: Screening Level Determination

The initial threshold screening level (ITSL) for monophenyl phosphoric acid is 3  $\mu\text{g}/\text{m}^3$  based on annual averaging time.

The following references or databases were searched to identify data to determine the screening level: U.S. EPA Integrated Risk Information System (IRIS), Registry for Toxic Effects of Chemical Substances (RTECS), American Conference of Governmental and Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), National Institute for Occupational Safety and Health (NIOSH) Pocket Guide to Hazardous Chemicals, Environmental Protection Bureau Library, International Agency for Research on Cancer (IARC) Monographs, Chemical Abstract Service (CAS) Online (1967- June, 2000), National Library of Medicine (NLM), Health Effects Assessment Summary Tables (HEAST), and National Toxicology Program (NTP) Status Report. The EPA has not established a reference concentration (RfC) or reference dose (RfD) monophenyl phosphoric acid. The ACGIH and NIOSH have not established occupational exposure limits (OELs). The molecular weight of monophenyl phosphoric acid is 144.2g. The molecular formula is  $\text{C}_8\text{H}_{10}\text{O}_4$ . The molecular structure is shown in Figure 1. The boiling point is 228°C and the melting point is -59°C. The water solubility of monophenyl phosphoric acid is 0.1 g/100 mL at 29°C. 2-ethyl hexanoic acid is a clear liquid.

**Figure 1. Monophenyl Phosphoric Acid**



**Toxicity Studies**

Groups of 4 male and female Wistar rats were gavaged with 1.28, 2.0, 2.56, 3.2, 3.84 g/kg body weight of monophenyl phosphoric acid and observed for 14 days (EPA, 1992). The LD50 was determined to be 2.29±0.21 g/kg.

No other toxicity information was available for monophenyl phosphoric acid.

**Screening Level Development**

The ITSL was calculated according to Rule 232(1)(h). Since an average body weight and inhalation rate for the male and female rats was not given they were estimated from EPA, 1988. The estimated average body weight ( $W_a$ ) was 0.41 kg and the estimated inhalation rate ( $I_a$ ) was 0.38 m<sup>3</sup>.

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

$$\text{ITSL} = (5 \times 10^{-7}) \times (2920 \text{ mg/kg})/(0.167) \times (0.41 \text{ kg})/(0.38 \text{ m}^3)$$

$$\text{ITSL} = 0.0026 \text{ mg/m}^3$$

$$\text{ITSL} = 3 \text{ } \mu\text{g/m}^3 \text{ (annual averaging time)}$$

The ITSL for monobutyl phosphoric acid is 3  $\mu\text{g/m}^3$  based on annual averaging time.

**References**

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

EPA. 1992. Initial Submission: Acute oral toxicity study with phenyl acid phosphate in rats with cover letter dated 063092. Doc I.D. 88-920004082

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