

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

January 10, 2002

TO: 2,5-Dimethylphenol File (CAS #95-87-4)  
FROM: Gary Butterfield, Toxics Unit, Air Quality Division  
SUBJECT: Screening Level for 2,5-Dimethylphenol

The initial threshold screening level (ITSL) for 2,5-dimethylphenol is being set at 0.7  $\mu\text{g}/\text{m}^3$  with annual averaging.

2,5-Dimethylphenol is also commonly known as 2,5-xyleneol or 2,5-DMP. Dimethylphenol is a crystalline solid with a molecular weight of 122.18.

The following references or databases were searched to identify data to determine the screening level: U.S. Environmental Protection Agency (EPA) Integrated Risk Information System (IRIS), National Institute for Occupational Safety and Health (NIOSH) Registry for Toxic Effects of Chemical Substances (RTECS), American Conference of Governmental and Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), Michigan Department of Environmental Quality (DEQ) library, International Agency for Research on Cancer (IARC) Monographs, Chemical Abstract Service (CAS) Online (1967- July 2000), National Library of Medicine (NLM) - Toxline, and National Toxicology Program (NTP) Status Report.

On-line literature searches were conducted on May 22, 2001 of the CAS and on May 21, 2001 of NLM.

Very little toxicity information on this chemical is available. There are some occupational studies that report measuring the amounts of 2,5-DMP in exposed workers urine. These studies are not adequate for setting an ITSL due to a very limited amount of chemical air concentrations being measured, and no toxic endpoints were evaluated in these studies, just measured urine concentrations were reported.

The EPA 1980 document reports many details about a Russian acute oral study in rats, mice, and rabbits conducted by Maazik (1968). The LD-50s were determined after a 15-day observation period, via the probit method. The oral LD-50 for 2,5-DMP in white mice was reported to be 383 mg/kg, in albino rats the LD-50 was 444 mg/kg, and in rabbits the LD-50 was 938 mg/kg.

The best available data for calculation of the ITSL for 2,5-DMP is the LD50's reported by Maazik. The ITSL can be calculated from the equation in R232(h) using the above LD-50 for mice because that is the lowest of the available LD-50 values, as follows.

$$\text{ITSL} = \frac{383 \text{ mg/kg}}{500 \times 40 \times 100 \times 0.167} \times \frac{1}{1.7} = 0.7 \mu\text{g}/\text{m}^3 \text{ annual avg.}$$

Where 1.7  $\text{m}^3/\text{kg}$  is the default inhalation rate for mice.

References:

EPA. 1980. Ambient water quality criteria for 2,4-dimethylphenol.

Maazik. 1968. Dimethylphenol (xylenol) isomers and their standard contents in water bodies. Gig. Sanit. 33(9): 18-22. As cited in EPA (1980).

GB:DB

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