

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

July 9, 1997

TO: File for Tripropylene Glycol Methyl Ether (Dowanol 62B) (20324-33-8)

FROM: Marco Bianchi, Toxics Unit, Air Quality Division

SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for tripropylene glycol methyl ether, or Dowanol 62B, is 10 ug/m³ 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, and ACGIH Guide, and Patty's Industrial Hygiene and Toxicology.

Tripropylene glycol methyl ether is a mixture of eight isomeric forms. Although general toxicologic information is found for this isomeric mixture, specific information for each isomer was difficult to obtain. A detailed database search was conducted for tripropylene glycol methyl ether (TPGME), but only limited information was available. Patty's Industrial Hygiene and Toxicology listed an oral LD₅₀ for rats and dogs at 3.1 g/kg and 4.8 g/kg, respectively. The primary effect of the compound appeared to be narcotic or central nervous system depression, with death from large doses due to respiratory failure. A 9-day inhalation study was listed in Patty's Industrial Hygiene and Toxicology, but this study was specifically for TPGME (CAS#25498-49-1). In this subacute inhalation study, rats and mice exposed to an aerosol at 0.15, 0.36, or 1.01 mg/l, for 6 hr/day for 9 days exhibited only increased liver weights in both sexes of both species. The liver weight changes were not accompanied by histopathological changes. This response was considered to be an adaptive effect rather than a toxicologic response.

The acute dermal LD₅₀ in rabbits was greater than 20 ml/kg, indicating very low acute dermal toxicity; however, when TPGME was applied repeatedly to skin of rabbits (1.0, 3.0, 4.0, and 10.0 ml/kg; 65 doses over a period of 90 days), seven out of eight animals died within 10 days at the top dose. Lower doses caused some narcosis that was associated with development of tolerance. Only a very mild skin irritation was observed. Some kidney toxicity was apparent even at the lowest dose administered.

The only obtainable information for which an ITSL could be derived was an LD₅₀ study by Rowe et al., (1954). In this study, 190 white rats of both sexes (strain undetermined) were administered

one dose by intubation of TPGME. All animals were observed for two weeks post-dosing. The dose-response data were treated statistically according to the method described by Litchfield and Wilcoxon, resulting in 95% confidence limits of 3.1 to 3.5 ml/kg and a LD₅₀ of 3.3 ml/kg. This LD₅₀ will be used to derive the ITSL.

The ITSL was determined as follows:

$$LD_{50} = 3.3 \text{ ml/kg.}$$

$$\text{Specific Gravity of TPGME} = 0.961$$

Conversion of ml/kg to mg/kg

$$3.3 \text{ ml/kg} \times (0.961 \text{ mg/ml}) \times 1000 = 3171 \text{ mg/kg}$$

$$\text{ITSL} = \frac{1}{500} \times \frac{1}{40} \times \frac{1}{100} \times \frac{3171 \text{ mg/kg}}{0.167 \times 0.945} = 0.01000 \text{ mg/m}^3$$

Conversion of mg/m³ to ug/m³

$$0.01000 \text{ mg/m}^3 \times 1000 = 10.00 \text{ ug/m}^3$$

The ITSL for tripropylene glycol methyl ether, or Dowanol 62B = 10 µg/m³ based on an annual averaging.

References:

1. Rowe, VK. 1954. Toxicology of mono-, di, and tri-propylene glycol methyl ethers. Arch. Ind. Hyg. Occup. Med. 9, 509-525.

MB:SLB