

**MICHIGAN DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENT**

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**INTEROFFICE COMMUNICATION**

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TO: Tetramethylsilane File (CAS # 75-76-3)

FROM: Gary Butterfield

SUBJECT: Review/update of screening level for tetramethylsilane

DATE: August 10, 2010

Tetramethylsilane had an ITSL of 7 ug/m<sup>3</sup> annual average established in the early 1990's based on an unpublished rat oral LD50 of 2000 mg/kg from Dow Corning. At this time the ITSL was re-evaluated to see if better data was available and a different value for the ITSL would be appropriate.

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 (1968 - June 2010), National Library of Medicine (NLM) - Toxline, and National Toxicology Program (NTP) Status Report.

Literature searches conducted June 21, 2010 found an abstract for a 28-day rat inhalation reproductive/developmental study in the Toxicologist (Siddiqui et al., 2005). That study has not been published as a full journal article. A copy of this study's original report was obtained directly from Dow Corning so that additional details could be reviewed (Dow Corning 2005). Groups of 10 Sprague-Dawley rats of each sex were exposed to 0, 200, 1000 or 5000 ppm (converts to 0, 722, 3610 or 18041 mg/m<sup>3</sup>) of tetramethylsilane 6 hours a day, seven days a week for 28 days. There were no effects observed in any of the dose groups on survival, clinical observations, body weights, hematology, serum chemistry, organ weights, or macroscopic examination of organs and tissues. There were also no effects observed on reproductive parameters, behavioral, and neurotoxicity endpoints. No microscopic changes were found in controls and high dose rats – the only groups examined microscopically. The high dose group was determined by authors to be the NOAEL.

NOAEL = 5000 ppm = 18041 mg/m<sup>3</sup>

The screening level was calculated using the equation from R232(1)(d) as follows.

$$\text{ITSL} = \frac{18041 \text{ mg/m}^3}{35 \times 100} \times \frac{6}{24} = 1300 \text{ ug/m}^3 \text{ annual average}$$

References:

Dow Corning. 2005. Combined repeated dose toxicity study with the reproductive/developmental toxicity screening test for tetramethylsilane in Sprague-Dawley rats. Dow Corning # 2005-i0000-55273

Siddiqui et al. 2005. 28-Day Inhalation And Reproductive/Developmental Screening Toxicity Studies Of Tetramethylsilane In Sprague-Dawley Rats. Toxicologist abstract # 949.

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