

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

August 22, 2001

TO: File for Tetramethyldivinyldisilazane (CASRN 7691-02-3)
FROM: Mary Lee Hultin, Toxics Unit, Air Quality Division
SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for tetramethyldivinyldisilazane (CASRN 7691-02-3) is 30 µg/m³ based on an annual averaging time.

The following references or databases were searched to identify data to determine the ITSL: IRIS, RTECS, CESARS, EPB-CCD, MDEQ library, CAS-online, NLM-online, NIOSH Pocket Guide, and ACGIH Guide. Only two acute studies were found.

An acute oral toxicity study was conducted by Bomhard and Ramm in 1985 (Parent, 2000). Seven groups of 5 rats/sex, strain unspecified, were dosed via gavage with 0.1, 0.31, 0.5, 0.63, 0.73, 0.8 and 1.0 ml/kg undiluted tetramethyldivinyldisilazane and observed for 14 days. Mortality rates were 0, 10, 40, 40, 60, 90, and 100%, respectively. Clinical signs of toxicity were poor general condition, narcosis, and ventral and lateral position. The animals exhibited these signs around 10 minutes post-dosing. Surviving rats were recovered by Day 6. No abnormalities were seen upon terminal necropsy. The LD50 was determined to be 0.57 ml/kg, corresponding to 468 mg/kg.

An acute inhalation toxicity study was conducted on Sprague-Dawley rats (10/sex/group; General Electric Company, 1978). The animals were exposed to a liquid droplet aerosol of the compound for one hour, followed by a 14-day observation period. The nominal concentrations were 8.9, 19.1, 45.2, 73.0, and 105.4 mg/L. No rats died in either of the two lowest concentration groups. Five rats died in the 45.2 dose group, 16 died in the 73.0 dose group, and 15 died in the highest dose group. Clinical signs were ataxia and mild stupor at the lowest level, and sedation and deep anesthesia lasting up to 24 hours in the other groups. The rats were normal after recovering from the anesthetic effects. Pathology revealed lungs with area of red or gray consolidation and slight to moderate hemorrhage. The LC50 (one hour) was calculated to be 60.8 mg/L.

Following the methodology for determining ITSLs in Rule 232, the LC50 study was used to establish the ITSL.

$$\text{ITSL} = \text{LC50}/(500)(100)(40) = (60.8 \text{ mg/L} \times 1000 \text{ L/m}^3)/(2\text{E}+6) = 0.0304 \text{ mg/m}^3 = 30 \text{ } \mu\text{g/m}^3$$

The ITSL for tetramethyldivinyldisilazane (CASRN 7691-02-3) = 30 µg/m³ based an annual averaging time.

References:

General Electric Company. 1978. "Initial Submission: Letter Submitting Multiple Studies on Multiple Chemicals with Attachments. (Case #7: Determination of the one hour LC50 for a compound identified as 88638)." EPA Doc. #8EHQ-1291-1717, OTS0534814.

Parent, R. 2000. Acute toxicity data submissions. *Inter. J. Toxicol.* 19:331-373.

MLH:CB:DB

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