

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

December 6, 1995

TO: File for Methyltriethoxysilane (CAS No. 2031-67-6)  
FROM: Marco Bianchi  
SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for methyltriethoxysilane is 23  $\mu\text{g}/\text{m}^3$  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.

A complete chemical evaluation was conducted for methyltriethoxysilane, but only limited information was available. A rat inhalation LC<sub>Lo</sub> was listed in RTECS with a value of 4000 ppm (29,176  $\text{mg}/\text{m}^3$ ) for an eight hour exposure. Clinical signs included dyspnea and changes in structure or function of salivary glands. In an LD<sub>50</sub> study conducted by the Bushy Run Research Center, groups of 5 male and 5 female Sprague-Dawley rats were given 3 to 5 doses of methyltriethoxysilane by gavage. The animals were observed for 14 days. Clinical signs included sluggishness, unsteady gait, salivation, and prostration, with death occurring between 7 minutes to 1 day. Necropsy (decedents) revealed red lungs, gas and liquid filled stomachs and intestines, red adrenals, and pale kidneys. Survivors showed no gross lesions. The LD<sub>50</sub> was determined to be 11.3 ml/kg in males, and 8.57 ml/kg in females, using the method of Thompson.

According to the Michigan Air Toxic Rules, the more conservative data obtained from the chemical evaluation will be used to derive an ITSL. The ITSL was derived as follows:

LD<sub>50</sub> female = 8.57 ml/kg

**ml/kg to mg/kg conversion:**

Density = 0.88913 g/cc

$8.57 \text{ ml/kg} \times 0.88913 \text{ g/cc} \times 1000 \text{ mg/g} \times 1 \text{ cc/ml} = 7,620 \text{ mg/kg}$

LD<sub>50</sub> = 7,620 mg/kg

ITSL =  $1/500 \times 1/40 \times 1/100 \times (7,620 \text{ mg/kg}) / (0.167 \times 0.971) = 0.023 \text{ mg}/\text{m}^3$

$0.023 \text{ mg/kg} \times 1000 \mu\text{g}/\text{mg} = 23 \mu\text{g}/\text{m}^3$  based on annual averaging.

The ITSL for methyltriethoxysilane = 23  $\mu\text{g}/\text{m}^3$  based on annual averaging.

**Reference:**

Myers, RC et al., 1993. Acute toxicologic evaluation of methyltriethoxysilane. Journal of the American College of Toxicology. 12:575.

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