

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

January 6, 1994

TO: File for TRIMETHYLCHLOROSILANE (CAS # 75-77-4)  
FROM: George Eurich, AQD - Toxics Unit  
SUBJECT: Screening Level for Trimethylchlorosilane

The ITSL for TRIMETHYLCHLOROSILANE has been set at 6.3 ug/m<sup>3</sup> based on annual average time.

A search of the following databases provided little information on this compound:

RTECS	NIOSH REL
IRIS	NTP MANAGEMENT STATUS REPORT
EPB LIBRARY	IARC MONOGRAPHS
ACGIH TLV	EPB CHEMICAL CRITERIA DATABASE
HEAST	CAS ONLINE SEARCH (1967-1993)
NLM SEARCH (1981-1993)	

The online searches noted an EPA document that listed physical/chemical properties as well as some health hazard and handling information. No information on setting a screening level could be obtained from this document.

The ITSL was determined from a Dow Corning in-house study that looked at the acute 1 hour inhalation toxicity of hydrogen chloride as well as several chlorosilanes, including trimethylchlorosilane. The basis for the ITSL is the 1 hour LC50 data included in the report. Young male and female Sprague-Dawley rats (5/sex/group, weight = 110-155 gm) were exposed via glass nose only exposure chambers to 0 ppm, 2314 ppm, 2855 ppm, 3289 ppm, and 3742 ppm trimethylchlorosilane. No deaths occurred in the control (0 ppm) group; 1/5 males, 0/5 females died at 2314 ppm; 3/5 males, 0/5 females died at 2855 ppm; all rats died at the two highest exposure levels. Noted toxicological responses to exposure to chlorosilanes (not only trimethylchlorosilane) included nasal crust and sores on the nose and face, along with the following noted upon autopsy: corneal opacity, diffuse or focal dark colored patches on the lungs, exudate in the nasal turbinate region, and in some cases gas in the GI tract. The report calculated the LC50 of trimethylchlorosilane to be 2928 ppm, but this exposure concentration was not tested. The ITSL will, therefore, be based on the next lower exposure level of 2855 ppm at which 3/10 rats died.

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This will be used as a surrogate LC50 with the screening level determined according to Rule 232 (1)(g).

$$\text{ITSL} = \frac{\text{LC50}}{500 \times 100 \times 40}$$

$$\text{LC50} = 2855 \text{ ppm} \times 108.66/24.45 = 12688 \text{ mg/m}^3$$

$$\text{ITSL} = \frac{12688 \text{ mg/m}^3}{2,000,000} = 6.3 \text{ ug/m}^3 \text{ based on annual averaging time.}$$

References:

Kolesar, G.B., et al. 1987. A comparison of acute inhalation toxicity of a series of chlorosilanes with hydrogen chloride in rats. Dow Corning in-house study.

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