

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

August 22, 2001

TO: File for Methyltriacetoxysilane (CASRN 4253-34-3)

FROM: Lee Hultin, Toxics Unit, Air Quality Division

SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for methyltriacetoxysilane (CASRN 4253-34-3) remains at 0.1 µg/m³ based on an annual averaging time.

During a reference check for other siloxanes and silicones, information surfaced regarding CASRN 4253-34-3. The following references or databases were searched to identify data to determine the ITSL: IRIS, RTECS, EPB-CCD, MDEQ library, CAS-online, NLM-online, NIOSH Pocket Guide, and ACGIH Guide. Two acute oral toxicity studies were found.

In research conducted for General Electric Co. (Bier, 1979), Sprague-Dawley rats (5/sex/group, 175-225 g) were dosed via gavage with 'acyloxy silane,' a compound containing 63.6% methyltriacetoxysilane. The other components of the mixture were: di-t-butoxydiacetoxysilane (23.1%), acetic anhydride (6.4%), acetic acid (6.4%), and dibutyl tin dilaurate (0.6%). The vehicle was corn oil. Doses were 2500, 2746, 3017, 3314, 3641, and 4000 mg/kg BW. Cumulative deaths at 14 days post-dosing were 1 male, 3 males and 2 females, 2 males and 4 females, 3 males and 4 females, 3 males and 3 females and 5 males and 4 females, for the respective dose groups. Signs of toxicity included decreased activity in all animals; piloerection and lacrimation in most of the animals; salivation, diarrhea, and polyuria in the lower dosed animals; tachypnea, and dyspnea in the higher dosed animals; and a "tip-toe gait" in the highest dose group. Signs were evident for 5 to 6 days post-dosing, then all animals behaved normally. Pathology revealed hemorrhage of the gastric mucosa with subsequent ulceration and erosion of the mucosal surface, bloody ascites, distension of the stomach and necrosis of the margin of the left lateral lobe of the liver. The LD50 for the mixture was calculated to be 3050 mg/kg BW for males, 2900 mg/kg BW for females, and 3100 mg/kg BW for all animals. This study will not be used in derivation of the ITSL for CASRN 4253-34-3 due to the uncertainty of possible synergistic or antagonistic effects between mixture components.

A second LD study was performed on rats using an undiluted white caulking (semi-solid) compound (General Electric Co., 1981). The percent of methyltriacetoxysilane was not indicated for this study, however.

Therefore the ITSL will be remain at trace.

The ITSL for methyltriacetoxysilane is 0.1 $\mu\text{g}/\text{m}^3$ based on annual averaging.

References:

Bier, C. B. 1979. "Letter from General Electric Co. Submitting a Battery of Toxicity Studies with Silicones in Mammals [Case #3. Acute oral toxicity in albino rats administered test article]." EPA Doc. # 8EHQ-0692-4667, OTS0539961.

General Electric Co. 1981. "Letter from General Electric Co. Submitting a Battery of Toxicity Studies with Silicones in Mammals [Case #19. Acute oral LD50 assay in rats]." EPA Doc. # 8EHQ-0692-4667, OTS0539961.

MLH:CB:DB

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