

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

July 2, 2003

TO: Carbonyl Fluoride File (CAS #353-50-4)

FROM: Mary Lee Hultin, Toxics Unit, Air Quality Division (AQD)

SUBJECT: Initial Threshold Screening (ITSL) Level for carbonyl fluoride

The ITSL for carbonyl fluoride is 54 µg/m³ based on an 8-hour averaging time.

The following references or databases were searched to identify data to determine the ITSL: Integrated Risk Information System, Health Effects Assessment Summary Tables, National Toxicology Program Management Status Report - online, Registry for Toxic Effects of Chemical Substances (RTECS), Michigan Department of Environmental Quality's Chemical Criteria Database, EPB library, Chemical Abstract Service (CAS) - online, National Library of Medicine - online, International Agency for Research on Cancer - online, National Institute for Occupational Safety and Health Pocket Guide, and the American Conference of Governmental and Industrial Hygienists Guide.

A review of the above databases found limited toxicological information on carbonyl fluoride. RTECS listed a rat LC₅₀ of 360 ppm/1 hour as published by the American Industrial Hygiene Association in 1968. The American Conference of Governmental Industrial Hygienists has a TLV-TWA of 5.4 mg/m³ and a TLV-STEL of 13 mg/m³. The National Institute for Occupational Safety and Health has an REL -TWA of 5 mg/m³ and a short term limit of 15 µg/m³. The federal OSHA has PEL and STEL values of 5.4 mg/m³ and 13 mg/m³, respectively.

The ITSL was derived as follows:

No inhalation reference concentration or dose (RfC or RfD) were available from U.S. EPA, nor was there sufficient data to derive an RfC or RfD. There were occupational exposure levels available through ACGIH, NIOSH and OSHA. These values were virtually identical. The value for an 8-hour time weighted average from all three organizations is 5 mg/m³ (5.4 for OSHA and ACGIH). The methodology in Act 451, Part 2, Rule 232 (1) (c) yields the following ITSL for this compound:

$$\text{ITSL} = 5.4 \text{ mg/m}^3 / 100 = .054 \text{ mg/m}^3$$

Conversion of mg/m³ to ug/m³

$$.054 \text{ mg/m}^3 \times \frac{1000 \text{ ug}}{1 \text{ mg}} = 54 \text{ ug/m}^3$$

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References:

ACGIH. 1992. Documentation of the TLV and BEI for Carbonyl Fluoride

NIOSH Pocket Guide to Chemical Hazards, online, 6/5/2003

U.S. DHHS, OSHA, Occupational Safety and Health Guideline for Carbonyl Fluoride, online, 6/5/2003

cc: Cathy Simon, AQD