

# MICHIGAN DEPARTMENT OF NATURAL RESOURCES AND THE ENVIRONMENT

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## INTEROFFICE COMMUNICATION

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TO: File for 1,3,2-Dioxathiolane-2,2-dioxide (CAS #1072-53-3)

FROM: Doreen Lehner, Toxics Unit, Air Quality Division

SUBJECT: Screening Level for 1,3,2-Dioxathiolane-2,2-dioxide (CAS #1072-53-3)

DATE: March 10, 2011

The initial threshold screening level (ITSL) for 1,3,2-dioxathiolane,2,2-dioxide (CAS #1072-53-3) is 0.1 µg/m<sup>3</sup> annual averaging time.

1,3,2-dioxathiolane-2,2-dioxide (CAS # 1072-53-3) is also known as glycol sulfate, ethylene sulfate, and ethylene glycol cyclic sulfate in pure form is a yellowish crystal and has a molecular weight of 124.11136. 1,3,2- dioxathiolane-2,2-dioxide is used in the following: to introduce substituents into nitrogen heterocycles, especially in cyanine dyes; added with fluorinated derivatives in wash-and wear-treatments of cotton textiles; in formation of high- impact plastic) rubber, and lithium polymers; mixed with cyanoacrylate monomer to improve polymer thermal stability to act as heat stabilizers; crosslinking agents in copolymerization; chiral organic conductors and superconductors; synthesis of unnatural sugars such as 6-deoxy-D-mannoheptopyranoside; synthesis of optically active compounds nipradiol virucidal and ceramide of GM1 ganglioside; as calcium dependent neutral proteases and other enzyme inhibitors; and biodegradable polymers (Katritzky, 1997).

A literature review was conducted to determine an initial threshold screening level (ITSL) for 1,3,2-dioxathiolane,2,2-dioxide. The following references and databases were searched to derive the above screening level: EPBCCDP United States Environmental Protection Agency (US EPA) Integrated Risk Information System (IRIS)) National Institute for Occupational Safety and Health (NIOSH), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values and Biological Exposure Indices (TLV/BEI) 2008 guide, National Toxicology Program (NTP) Study Database, International Agency for Research on Cancer (IARC), Acute Database, Chemical Abstract Service (CAS) Online (searched 3/1/11), National Library of Medicine (NLM)-online, EPA Aggregated Computational Toxicology Resource (ACToR) Database, US EPA TSCATS database, and Hazardous Substances Data Bank (HSDB).

RfC or RfD values were unavailable. There is no NIOSH recommended exposure limit data available for this compound or a threshold limit value from ACGIH. No 7-day

inhalation studies which would yield a LOAEL or NOAEL and no acute inhalation data where an LC50 can be derived. Based on Rule 232(1)(i) the ITSL is set at the default of 0.1  $\mu\text{g}/\text{m}^3$ . According to Rule 232(2)(c), the averaging time is annual.

Based on the above data, the ITSL for 1,3,2-dioxathiolane-2,2-dioxide is 0.1  $\mu\text{g}/\text{m}^3$  based on an annual averaging time.

**References:**

Act 451 of 1994, Natural Resources and Environmental Protection Act and Air Pollution Control Rules, Michigan Department of Environmental Quality.

Katritzky, A.R. 1997. Advances in Heterocyclic Chemistry volume 68. Academic Press, San Diego, CA. pp. 167-169.

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