MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

November 19, 2001

TO: File for Methane Sulfonamide (CAS No. 3144-09-0)

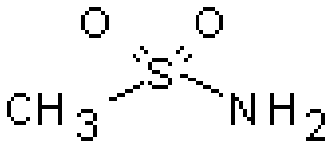
FROM: Michael Depa, Toxics Unit, Air Quality Division

SUBJECT: Development of the Screening Level

The initial threshold screening level (ITSL) for methanesulfonamide is 44 µg/m³ (annual averaging time).

The following references or databases were searched to identify data to determine the screening level: Environmental Protection Agency's (EPA's) Integrated Risk Information System (IRIS), the Registry of Toxic Effects of Chemical Substances (RTECS), the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV), National Institute of Occupational Safety and Health (NIOSH) Pocket Guide to Hazardous Chemicals, Environmental Protection Bureau Library, International Agency for Research on Cancer (IARC) Monographs, Chemical Abstract Service (CAS) Online (1967- May 2001), National Library of Medicine (NLM), Health Effects Assessment Summary Tables (HEAST), and National Toxicology Program (NTP) Status Report. The EPA has not established a reference concentration (RfC) or reference dose (RfD) for methanesulfonamide. The ACGIH and NIOSH have not established Occupational Exposure Limits (OELs). The melting point is 88-90ºC. Its physical state is a solid. The molecular weight is 95.12 g, and the molecular formula is CH_5NO_2S. The molecular structure is pictured in Figure 1.

Figure 1. Molecular Structure of Methanesulfonamide



Animal Toxicity Studies

In an inhalation study, a group of 5 male and 5 female Sprague-Dawley rats were exposed to 2.19 mg/L (2190 mg/m³) methane sulfonamide for 4 hours and observed for 14 days (Springborn, 1997). The mass median aerodynamic diameter and geometric standard deviation of the sampled particles were 3.0 µm±1.8. The percentage of particles ≤ 4.0µm was determined to be 69%. No mortality occurred during the study. The most notable clinical abnormalities observed occurred mainly on day 0 and included salivation, rough haircoat, urine stain and dark material around the facial area. Body weight gain was noted for all animals during the test period. No gross internal findings were observed at necropsy on day 14. Under the conditions of this test the 4-hour inhalation LC-50 of methane sulfonamide was estimated to be greater than 2190 mg/m³ in

the rat. For the purposes of this risk assessment, 2190 mg/m^3 was considered to be a surrogate LC-50.

In an oral LD50 study, groups of 5 male and 5 female Sprague-Dawley rats were gavaged with 2000 or 5000 mg/kg and observed for 14 days (Springborn, 1994). No mortality occurred during the study period. No significant clinical abnormalities were noted during the study. Body weight gains were mixed. No significant gross internal findings were observed at necropsy on study day 14. Under the conditions of this study, the acute oral LD-50 of methane sulfonamide was estimated to be greater than 5000 mg/kg in the rat.

Derivation of Screening Level
The ITSL was based on the surrogate LC50 study sited above (Sprinborn, 1997) as this provides a conservative estimate of an LC50. It was calculated pursuant to Rule 232(1)(f) as follows:

ITSL = LC50/(500 x 100)

ITSL = (2190 mg/m^3)/50000

ITSL = 0.0438 mg/m^3

ITSL = 44 µg/m^3

The ITSL for methane sulfonamide is 44 µg/m^3 with an annual averaging time.

References
Springborn. 1997. An acute whole-body inhalation toxicity study in rats with methane sulfonamide. Springborn Laboratories, Spencerville, OH. Study No. 3255.104 Author Deborah Douds. Submitted to Elf Atochem North America.

Springborn. 1994. An acute oral toxicity study in rats with methane sulfonamide. Springborn Laboratories, Spencerville, OH. Study No. 3255.22 Author Deborah Douds. Submitted to Elf Atochem North America.

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