MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: N-(3-(Trimethoxysilyl)propyl)-ethylenediamine file (CAS # 1760-24-3)

FROM: Gary Butterfield

SUBJECT: Screening level for N-(3-(Trimethoxysilyl)propyl)-ethylenediamine

DATE: December 17, 2007

N-(3-(Trimethoxysilyl)propyl)-ethylenediamine is know by many different manufacturers' names. It is a liquid with a boiling point of 264C, and a vapor pressure of 0.003 mmHg at 20C.

In the past, a screening level for this material was set at the default due to a lack of available toxicity data. This evaluation was conducted to look for any currently available toxicity data.

The following references or databases were searched to identify data to determine the screening level: U.S. Environmental Protection Agency (EPA) Integrated Risk Information System (IRIS), National Institute for Occupational Safety and Health (NIOSH) Registry for Toxic Effects of Chemical Substances (RTECS), American Conference of Governmental and Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), Michigan Department of Environmental Quality (DEQ) library, International Agency for Research on Cancer (IARC) Monographs, Chemical Abstract Service (CAS) Online (1968 - December 2007), National Library of Medicine (NLM) - Toxline, and National Toxicology Program (NTP) Status Report.

The CAS and NLM on-line literature searches were conducted on Dec 13, 2007.

There are no published toxicity studies available that were conducted with this material. The search found that this material is one of EPA's High Production Volume (HPV) chemicals. There was a robust summary on EPA's HPV webpage that summarizes an unpublished rat oral LD50 study, Wacker Chemie (1992). The LD50 study was performed in 1992 following the OECD guideline # 401 – acute oral toxicity. Groups of five male and five female Sprague-Dawley rats were administered N-(3-(trimethoxysilyl) propyl)-ethylenediamine via gavage without a vehicle (neat) at doses of 0, 2009, 2519 or 3162 mg/kg. The observation period lasted 14 days. The LD50 was determined by the method of Litchfield and Wilcoxon and determined to be 2451 mg/kg.

The ITSL can be calculated by use of the LD50 under R232(1)(h) as follows.

$$\text{ITSL} = \frac{2451\ \text{mg/kg}}{500 \times 40 \times 100 \times 0.167} \times \frac{1\ \text{kg}}{0.9\ \text{m}^3} = 8\ \text{ug/m}^3\ \text{annual average}$$

References:

Wacker Chemie. 1992. Test to evaluate the acute toxicity following a single oral administration (LD50) in the rat. Report # 203308, Marc Lheritier, Hazelton France. As cited in the robust summary by Silicones Environmental, Health and Safety Council (2000) available at http://www.epa.gov/chemrtk/pubs/summaries/aminosil/c12560tc.htm

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