MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: n-Dodecyl mercaptan file (CAS # 112-55-0)

FROM: Gary Butterfield

SUBJECT: Screening level for n-Dodecyl mercaptan

DATE: May 7, 2008

n-Dodecyl mercaptan is also known as 1-dodanethiol, and lauryl mercapatan. It is a colorless to pale yellow liquid. The molecular formula is $C_{12}H_{25}SH$. The molecular weight is 202.4 g/mol. The melting point is -8C. The boiling point is 266C. The vapor pressure is 2.4 mmHg at 25C. The odor threshold has been reported to be 2 ug/m^3, and is extremely malodorous. n-Dodecyl mercaptan is used as a polymerization modifier for styrene-butadiene rubbers and specialty polymers. It can also be used in pharmaceuticals, insecticides, and as a complexing agent in non-ionic detergents.

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 - Mar 2008), National Library of Medicine (NLM) - Toxline, and National Toxicology Program (NTP) Status Report.

The CAS and NLM on-line literature searches were conducted on March 31, 2008. There is no published toxicity data for n-dodecyl mercaptan. The literature search found a few unpublished short term studies that have been submitted to EPA's ToSCA program. There has also been an ACGIH TLV of 0.1 ppm (or 800 ug/m^3), and a NIOSH short term REL of 0.5 ppm (or 4 mg/m^3) established. The TLV documentation identifies selection of the 0.1 ppm (or 800 ug/m^3) as being protective of adverse health effects (irritation and systemic toxicity) observed in animal studies at higher concentrations (7 to 8 ppm). This chemical has also been found to be sensitizer in humans and animal studies. The screening level will be set using 1% of the TLV under R232(1)(c), as follows.

ITSL = 800 ug/m3 x 1/100 = 8 ug/m^3 with an 8-hour average

References:

ACGIH. 2004. Documentation of the Threshold Limit Values and Biological Exposure Indices, 7th edition.

GB:lh