

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: 1,3-Bis(aminomethyl)benzene file (CAS # 1477-55-0)

FROM: Gary Butterfield

SUBJECT: Screening level for 1,3-Bis(aminomethyl)benzene

DATE: April 3, 2009

1,3-Bis(aminomethyl)benzene is also known as 1,3-benzenedimethanamine, and m-xylene-alpha, alpha'-diamine. 1,3-Bis(aminomethyl)benzene is a colorless liquid with a faint ammonia like odor. The molecular formula is $C_8H_{12}N_2$. The molecular weight is 136.2 g/mol. The boiling point of 1,3-bis(aminomethyl)benzene is > 200C. The freezing point is 14.7C. The vapor pressure at 25C is 0.03 mmHg.

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 - March 2009), National Library of Medicine (NLM) - Toxline, and National Toxicology Program (NTP) Status Report.

The CAS and NLM on-line literature searches for this evaluation were conducted on March 23, 2009. There were few published toxicity studies available for 1,3-bis(aminomethyl)benzene. A few unpublished acute toxicity studies were located through the EPA's TSCA web pages. There has been UNEP SIDS document put out by Japan in 2001 that also summarized those few acute studies. The SIDS document did not identify any longer term studies. Due to a lack of long term study information it is not possible to calculate an RfC type screening level.

There is an ACGIH ceiling TLV of 0.1 mg/m^3 for 1,3-bis(aminomethyl)benzene. The NIOSH ceiling REL is also equivalent to this TLV value. The TLV documentation does report some experience from workers being exposed to 1,3-bis(aminomethyl)benzene. However, there is not much specific toxicity data for the basis of that TLV. 1,3-bis(aminomethyl)benzene is similar to another chemical for which there is adequate data available, p-phenylenediamine. The TLV for 1,3-bis(aminomethyl)benzene is set equivalent to the p-phenylenediamine TLV. Thus 1,3-bis(aminomethyl)benzene TLV should be protective of irritation and possible sensitization from exposure to 1,3-bis(aminomethyl)benzene.

The ACGIH ceiling TLV provides the best basis for setting a screening level. The ITSL will be established at 1 percent of the ceiling TLV with a 1-hour averaging time under R232(1)(c).

$$\text{ITSL} = 1/100 \times 0.1 \text{ mg/m}^3 = 1 \text{ ug/m}^3 \text{ with 1-hour average}$$

References:

ACGIH. 2001. Threshold limit value and documentation of biological exposure level. M-Xylene-a,a'-diamine.

SIDS. 2003. Screening Information Data Set (SIDS) for High Production Volume Chemicals: 1,3-bis(aminomethyl)benzene. UNEP Publications.