MICHIGAN DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENT

INTEROFFICE COMMUNICATION

TO: Dimethysilane File (CAS # 1111-74-6)

FROM: Gary Butterfield

SUBJECT: Review/update of screening level for Dimethysilane

DATE: August 10, 2010

Dimethysilane had a default ITSL established in the early 1990s due to a lack of available toxicity data. Literature searches conducted June 21, 2010 also did not find any published toxicity studies for this chemical upon which the ITSL could be set.

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 - June 2010), National Library of Medicine (NLM) - Toxline, and National Toxicology Program (NTP) Status Report.

Due to a lack of available toxicity data on dimethylsilane, other possible means for establishing a screening level were considered. There have been several different substituted silane compounds reviewed in the past for screening level development. Some of those chemicals were looked at again. A trend indicating that with greater substitution the degree of toxicity of the silane compound decreases can be observed. This trend can also be seen when comparing the silane (CAS # 7803-62-5) screening level (30 ug/m^3 24-hour) to the higher substituted trimethyl silane (CAS # 993-07-7) screening level (340 ug/m^3 annual) and tetramethylsilane (CAS # 75-76-3) screening level (1300 ug/m^3 annual). In other words, dimethylsilane would probably be less toxic than the unsubsituted silane. Following this logic, because the dimethylsilane may be assumed to be less toxic than silane, the dimethylsilane ITSL (if there was toxicity data available) would probably be greater than the silane ITSL. This leads to the conclusion that using the ITSL for silane as a substitute for a dimethylsilane ITSL would probably be sufficiently protective for toxic effects from dimethylsilane exposure. Therefore, it is considered to be appropriate to set the dimethylsilane ITSL at 30 ug/m^3 with 24-hour averaging (equivalent to the silane ITSL) rather than continue use of the overly protective default ITSL of 0.1 ug/m^3 with annual averaging.

GB:lh