

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: File for Ethoxylated C16-18 alcohols (CAS # 68439-49-6)

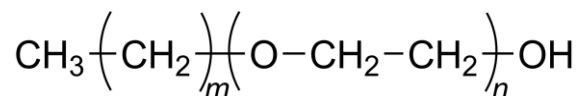
FROM: Doreen Lehner, Toxics Unit, Air Quality Division

SUBJECT: Initial Threshold Screening Level for Ethoxylated C16-18 alcohols (CAS # 68439-49-6)

DATE: June 23, 2011

The Initial Threshold Screening Level (ITSL) for Ethoxylated C16-18 alcohols is 4 ug/m³ based on an annual averaging time.

Ethoxylated C16-18 alcohols (CAS # 68439-49-6) is known by many names the most common names include cetareth-n (n can be between 2 and 100), polyethylene glycol (n) cetyl/stearyl ether (n can be between 2 and 2000), and polyoxyethylene (n) cetyl/stearyl ether (again n can be between 2 and 100). Ethoxylated C16-18 alcohols are used as leveling agents, penetrating agents, additives, foaming agents, stabilizers, lubricants, solubilizing agents, softening agents, antistatic agents, washing agents, dispersing agents, parting agents, degreasing agents, plasticizing agents, thickening agents, viscosity conditioning agents, chemical intermediates, and as emulsifiers in pharmaceutical and cosmetic applications such as ointments and creams.



A literature review was conducted to determine an initial threshold screening level (ITSL) for ethoxylated C16-18 alcohols. The following references and databases were searched to derive the above screening level: EPBCCD, Integrated Risk Information System (IRIS), National Institute for Occupational Safety and Health (NIOSH), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV)/Biological Exposure Indices (BEI) 2010 guide, DEQ library, National Toxicology Program (NTP) Study Database, International Agency for Research on Cancer (IARC), Acute Database, CAS Online search (4/26/11), National Library of Medicine (NLM)-online, Environmental Protection Agency (EPA) Aggregated Computational Toxicology Resource (ACToR) Database, Agency for Toxic Substances and Disease Registry (ATSDR) database, and the Toxic Substances Control Act (TSCA) Database.

RfC or RfD values were unavailable. There is no NIOSH recommended exposure limit data available or a threshold limit value from ACGIH. There are also no 7-day inhalation studies for ethoxylated C16-18 alcohols that would give a NOAEL or LOAEL

and no acute inhalation studies, which would give an LC₅₀. However, there is an acute oral toxicity study, which determined an LD₅₀ for ethoxylated C16-18 alcohols at 1,260 mg/kg in male and female Sprague-Dawley rats (NTIS, 1992). Based on Rule 232 (1) (h) the ITSL is determined as follows:

$$ITSL = \frac{1}{500} \times \frac{1}{40} \times \frac{1}{100} \times \frac{LD_{50} \text{ mg/kg} \times W_A}{0.167 \times I_A}$$

Where:

W_A = Body weight of Sprague-Dawley rat in kilograms (kg).

I_A = Daily inhalation rate of experimental animal in cubic meters/day.

The W_A is the default value for a non-gender Sprague-Dawley rat is 0.4305 kg. The I_A is determined by the following equation taken from EPA 1988 determined below:

$$I_A = 0.80 \times W_A^{0.8206} = 0.80 \times 0.4305 \text{ kg}^{0.8206} = 0.4006 \text{ m}^3/\text{day}$$

Adding the values to the above ITSL equation gives.

$$ITSL = \frac{1}{500} \times \frac{1}{40} \times \frac{1}{100} \times \frac{1,260 \text{ mg/kg} \times 0.4305 \text{ kg}}{0.167 \times 0.4006 \text{ m}^3/\text{day}} = 0.004053861 \text{ mg/m}^3 = 4.054 \text{ } \mu\text{g/m}^3 = 4 \text{ } \mu\text{g/m}^3$$

Based on Rule 232 (2) (c) the averaging time for this ITSL is annual.

The initial threshold screening level (ITSL) for ethoxylated C16-18 alcohols is 4 μg/m³ based on an annual averaging time.

References:

Act 451 of 1994, Natural Resources and Environmental Protection Act and Air Pollution Control Rules, Michigan Department of Environmental Quality.

EPA. 1988. Recommendations for and Documentation of Biological Values for use in Risk Assessment. Cincinnati, OH: U.S. Environmental Protection Agency, Environmental Criteria and Assessment Office EPA-600/6-87-008.

NTIS. OTS0555170. 1992. National Technical Information Service. Springfield, VA 22161.

DL:lh