

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

February 13, 2001

TO: File for Neodol 23 (alcohols C12-13) (75782-86-4)
FROM: Marco Bianchi, Toxics Unit, Air Quality Division
SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for Neodol 23 is $31 \mu\text{g}/\text{m}^3$ based on an annual averaging time. This compound was initially evaluated by Air Quality Division (AQD) staff in 2000, but due to a lack of toxicological data, the ITSL was set at trace ($0.1 \mu\text{g}/\text{m}^3$ annual averaging). Since that time, the Shell Chemical Company has provided the minimum acute toxicity data requirements for AQD to re-evaluate this compound.

The Shell Chemical Company conducted an LD_{50} study on Wistar albino rats. A total of 4 male and 4 female rats were dosed with 10,000 mg/kg of Neodol 23 neat by intra-esophageal intubation. The observation period lasted for 21 days. Adverse effects included piloerection, diarrhea, and epistaxis within 7 hours post-dosing, and greasy, soiled fur on days 2 and 3. No other toxic signs were observed, and there were no mortalities.

The purpose of this study was to determine the LD_{50} for Neodol 23, but no deaths occurred to study animals at a dose of 10,000 mg/kg. There is some uncertainty at where the true LD_{50} lies, since a small number of animals were dosed only once with the compound. However, if this single dose were used as a surrogate LD_{50} to derive an ITSL, uncertainty factors are built into the screening level formula to adequately protect sensitive individuals in the general population. Therefore, the surrogate LD_{50} for this study is 10,000 mg/kg.

The ITSL was derived as follows as per Rule 232(1)(h):

$\text{LD}_{50} = 10,000 \text{ mg/kg}$

$$\text{ITSL} = \frac{1}{500} \times \frac{1}{40} \times \frac{1}{100} \times \frac{10,000}{0.167 \times 0.952} = 0.031 \text{ mg}/\text{m}^3$$

$0.031 \text{ mg}/\text{m}^3 \times 1000 = 31 \mu\text{g}/\text{m}^3$ based on annual averaging.

The ITSL for Neodol 23 (alcohol C12-13) = $31 \mu\text{g}/\text{m}^3$ based on annual averaging.

References:

1. Shell Chemical Company. Minimum data reporting requirements for acute toxicity studies. Email communication; 2/7/01; 10:03am.

MB:DB

cc: Cathy Simon, AQD
Mary Lee Hultin, AQD
Sheila Blais, AQD

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

September 7, 2000

TO: File for Alcohols C12-13 (CAS# 75782-86-4)
FROM: Michael Depa, Toxics Unit, Air Quality Division
SUBJECT: Screening Level Determination

The initial threshold screening level (ITSL) for Alcohols C12-13 is 0.1 $\mu\text{g}/\text{m}^3$ based on an annual averaging time.

The following references or databases were searched to identify data to determine the screening level: U.S. EPA Integrated Risk Information System (IRIS), Registry for Toxic Effects of Chemical Substances (RTECS), American Conference of Governmental and Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), National Institute for Occupational Safety and Health (NIOSH) Pocket Guide to Hazardous Chemicals, Environmental Protection Bureau Library, International Agency for Research on Cancer (IARC) Monographs, Chemical Abstract Service (CAS) Online (1967- April, 2000), National Library of Medicine (NLM), Health Effects Assessment Summary Tables (HEAST), and National Toxicology Program (NTP) Status Report. The EPA has not established a reference dose (RfD) or a reference concentration (RfC) for alcohols C12-13. There are no occupational exposure limits (e.g., ACGIH TLV or NIOSH REL).

Since there was no toxicological data with which to derive a screening level the ITSL was based on Rule 232(1)i.

MD:DB