

# MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

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## INTEROFFICE COMMUNICATION

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December 19, 1996

TO: File for 1-hexadecene (CAS# 629-73-2)

FROM: Michael Depa, Toxics Unit

SUBJECT: Screening Level Determination

The initial threshold screening level (ITSL) for 1-hexadecene is 17  $\mu\text{g}/\text{m}^3$  based on an annual averaging time.

The following references or databases were searched to identify data to determine the IRSL: IRIS, RTECS, ACGIH Threshold Limit Values, NIOSH Pocket Guide to Hazardous Chemicals, Environmental Protection Bureau Library, IARC Monographs, CAS Online (1967 - November 26, 1996) National Library of Medicine, Health Effects Assessment Summary Tables, and NTP Status Report. Review of these sources found that EPA has not established an RfC or RfD for 1-hexadecene. The ACGIH and NIOSH have not established occupational exposure limits (OELs). The available toxicity studies are summarized below.

Groups of male Wistar rats weighing between 209 and 299 grams were exposed for 1 hour to saturated mists of 1-hexadecene (EPA/OTS Doc # 88-920000021). The animals were observed for toxic signs during exposure and were periodically weighted for 14 days after exposure. On the 14th day, the animals were sacrificed for the determination of gross pathological changes. Estimates of the mist concentration were made from measurement of the volume loss from the nebulizer reservoir and total air flow through the system. Additionally a sample holder containing a Millipore filter was positioned downward in the chamber and air drawn through at a rate calculated to collect suspended particles of 2 microns or less. The concentration was determined to be 8500  $\text{mg}/\text{m}^3$  ( $< 8 \mu$ ) and 150  $\text{mg}/\text{m}^3$  (0.45-2.0  $\mu$ ). Rats exposed for 1 hour to what the authors called "heaviest attainable aerosol concentration" of hexadecene showed only a drowsy appearance on removal from the chamber. The authors stated that the fur of the animals was quite oily from deposition of particles. There was no mortality within 14 days and no significant weight change or gross pathological change on autopsy. Because of the unreliable methods for determining the chamber concentration of 1-hexadecene this study was deemed inadequate to use to develop an ITSL.

In an acute oral study, groups of 5 male and 5 female Sprague-Dawley rats (weighing between 200 and 299 grams, average = 250 grams) were exposed by gavage to doses of 5 or 10 g/kg 1-hexadecene (EPA/OTS Doc # 88-920010498). The rats were observed for neurological symptoms and sacrificed after 14 days. Gross necropsy was performed.

Microscopic examination was made of several tissues. At 10 g/kg, 2 of 5 males and 2 of 5 females died. There were no deaths at the 5 g/kg dose level. The 5 g/kg dose level was chosen as a surrogate LD50 and used to develop the ITSL according to Rule 232(1)(h).

$$\text{ITSL} = 1/500 \times 1/100 \times 1/40 \times \text{LD50}/0.167 \times W_a/I_a$$

Where  $I_a$  is the default inhalation rate of the rat based on the average body weight ( $W_a = 0.25\text{kg}$ ) (EPA, 1988).

$$\text{ITSL} = 1/(2,000,000) \times (5000 \text{ mg/kg})/(0.167) \times (0.250 \text{ kg})/(0.214 \text{ m}^3)$$

$$\text{ITSL} = 1.74 \times 10^{-2} \text{ mg/m}^3$$

$$\text{ITSL} = 17 \text{ } \mu\text{g/m}^3 \text{ (based on an annual averaging time)}$$

The ITSL for 1-hexadecene is  $17 \text{ } \mu\text{g/m}^3$  based on an annual averaging time.

## REFERENCES

EPA. 1988. Recommendations for and documentation of biological values for use in risk assessment. PB 88-179874.

EPA/OTS Doc # 88-920010498. Toxicity Study Report with cover letter (dated Nov. 5, 1992) from Chevron Corporation.

EPA/OTS Doc # 88-920000021. Toxicological studies on several alpha olefins submitted to the Gulf Research and Development Company.