

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

July 20, 1999

TO: File for Naphtha, Full Range Straight Run (CAS No. 64741-42-0)
FROM: Michael Depa, Toxics Unit, Air Quality Division
SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for full range straight run naphtha is 18 $\mu\text{g}/\text{m}^3$ (annual averaging time).

The following references or databases were searched to identify data to determine the ITSL: EPA's Integrated Risk Information System (IRIS), Registry of Toxic Effects of Chemical Substances (RTECS), American Conference of Governmental and Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), National Institute of 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 27, 1999), National Library of Medicine (NLM), Health Effects Assessment Summary Tables (HEAST), and National Toxicology Program (NTP) Status Report.

The CAS Registry file for 64741-42-0 defines "full range straight run naphtha (petroleum)" as:

A complex combination of hydrocarbons produced by distillation of crude oil. It consists of hydrocarbons having carbon numbers predominantly in the range of C4 through C11 and boiling in the range of approximately minus 20 degree C to 220 degree C (-4 F to 428 degree F).

On the MSDS sheet provided by Marathon Oil Company, the composition of this distillate was described as:

Paraffins	40-60%
Cycloparaffins	10-30%
Olefins	0.01-0.2%
Aromatic Hydrocarbons	10-25%
Benzene	0.1-0.5%

An acute LC50 study was found for the petroleum distillate known as full range straight run naphtha with CAS No. 64741-42-0 (Bio/Dynamics Inc., 1980). Groups of 5 male and 5 female Swiss albino mice, Sprague-Dawley rats, and Hartley guinea pigs were dose for 3 hours to 35.9 mg/L (35,900 mg/m^3) of full range straight run naphtha. The rats were observed for 14 days after exposure. Clinical observations, body weight, necropsy examinations and mortality were recorded. There were no deaths during the exposure or during the 14-day observation period. The mice and rats were observed to be walking on their toes during the exposure and in addition,

July 20, 1999

the mice exhibited labored breathing, loss of equilibrium, and decreased activity during the exposure. During the 14-day observation period, an increase in the incidence of red nasal discharge and dried red or red-brown material around the nose was noted in the rats. Since none of the animals died an LC50 could not be established from this study. However, 35,900 mg/m³ was used as a surrogate LC50. Furthermore, the study did not meet the duration requirements for a 4-hour inhalation study; therefore, the 1-hour inhalation equation, as specified in Rule 232(1)(g), was used to calculate the ITSL.

$$\text{ITSL} = \text{LC50} / (500 \times 100 \times 40)$$

$$\text{ITSL} = (35,900 \text{ mg/m}^3) / (2,000,000)$$

$$\text{ITSL} = 0.0179 \text{ mg/m}^3$$

$$\text{ITSL} = 18 \text{ } \mu\text{g/m}^3 \text{ (based on an annual averaging time)}$$

The initial threshold screening level (ITSL) for full range straight run naphtha is 18 $\mu\text{g/m}^3$ with an annual averaging time.

REFERENCE

Bio/Dynamics Inc. 1980. An acute inhalation toxicity study of MRD-ECH-79-14 in the mouse, the rat, and the guinea pig. Submitted to Exxon Corporation, Lisdén, New Jersey; January 7, 1980. Project No. 79-7295. Obtained from the US Environmental Protection Agency Office of Toxic Substances, EPA/OTS Doc# 8EHQ-0292-2396 Initial Submission (88920001038)

MD:MAH

G:\DEPA\64741420.doc