MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

October 6, 2003

TO: File for residues (petroleum), vacuum (64741-56-6)

FROM: Marco Bianchi

SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for *residues (petroleum), vacuum* is 16 $\mu g/m^3$ based on an annual averaging time.

The following references or databases were searched to identify data to determine the ITSL: IRIS, HEAST, NTP Management Status Report on-line, RTECS, EPBCCD, EPB library, CAS-online, NLM-online, IARC on-line, NIOSH Pocket Guide, and ACGIH Guide.

A definition of this petroleum hydrocarbon distillate is provided by the Toxic Substance Control Act Chemical Substance Inventory (Initial Inventory; Volume 1; 1979):

"*Residues (petroleum), vacuum* is a complex residuum from the vacuum distillation of the residuum from atmospheric distillation of crude oil. It consists of hydrocarbons having carbon numbers predominately greater than C_{34} and boiling above approximately 495°C (923°F)."

A complete reference check was conducted for *residues (petroleum) vacuum,* but only an LD_{50} value supported with the minimum data reporting requirements for acute toxicity testing was available to derive an ITSL. The LD_{50} data was obtained from an abstract presented in the Journal of the American College of Toxicology. According to the abstract, 5 male and 5 female Sprague-Dawley rats were orally dosed by gavage at 5 g/kg body weight and observed for 14 days post dosing. Adverse effects included hypoactivity and diarrhea. An LD_{50} could not be determined since there were no deaths observed at the 5 g/kg. However, this dose could be considered as a surrogate LD_{50} for the purposes of calculating an ITSL according to Rule 232(1)(h).

The ITSL was determined as follows:

LD_{50} = 5 g/kg or 5000 mg/kg

$$ITSL = \frac{1}{500} \times \frac{1}{40} \times \frac{1}{100} \times \frac{5000}{0.167 \times 0.931} = 0.0161 \text{ mg/m}^3$$

$0.0161 \text{ mg/m}^3 \times 1000 = 16 \text{ ug/m}^3$ based on annual averaging.

The ITSL for *residues (petroleum) vacuum* = 16 ug/m^3 based on annual averaging.

References:

1. Abstract: 1990. Acute toxicological evaluation of vacuum residuum. Journal of the American College of Toxicology, Part B. Vol. 1, No. 2; pg 135. Mary Ann Liebert, Publisher.

2. TSCA. 1979. Toxic Substance Control Act Chemical Substance Inventory (Initial Inventory; Volume 1. U.S. EPA, Office of Toxic Substances, Washington, DC 20460, May 1979.