

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: Chemical File for Naphtha, heavy thermal cracked (CAS No. 64741-83-9)  
FROM: Mary Lee Hultin, Toxics Unit, AQD  
DATE: July 27, 2007

The ITSL for Naphtha, heavy thermal cracked (CAS No. 64741-83-9) is 5600 ug/m<sup>3</sup> based on an annual averaging time.

The Chemical Abstract Service provides the following TSCA definition for heavy thermal cracked naphtha:

A complex combination of hydrocarbons from distillation of the products from a thermal cracking process. It consists predominantly of unsaturated hydrocarbons having carbon numbers predominantly in the range of C6 through C12 and boiling in the range of approximately 65°C to 220°C (148°F to 428°F)

The following databases or sources were checked for toxicology information on Naphtha, heavy thermal cracked (CAS No. 64741-83-9):

EPA IRIS  
NIOSH  
ACGIH TLV  
PubMed  
CAS Online

Only one reference was located that specifically studied CAS # 64741-83-9. This study used dermal application to study carcinogenic activity of a number of petroleum streams. C3H/HeJ mice were exposed for either 24 months or total lifetime. In the study, heavy thermal cracked naphtha was found to be a dermal carcinogen of low potency. Studies using a dermal route of administration are not typically used in inhalation risk assessment. Therefore, no study using direct exposure to heavy thermal cracked naphtha is available for use in deriving a screening level at this time. However, as described below, a surrogate cracked naphtha compound is deemed appropriate for use in determining a screening level.

As part of the High Production Volume Chemical project, companies have been encouraged to submit toxicity testing data on various petroleum products to the U.S. Environmental Protection Agency. The American Petroleum Institute (API), 12/20/2001, "Gasoline Blending Streams Test Plan" and Robust Summaries is one such submittal. This document lists, in App. 1, the Naphtha (petroleum), heavy thermal cracked CAS # 64741-83-9 as being covered by the plan. However, none of the specific studies mention this CAS number. Dr. Craig Parker, toxicologist from Marathon Petroleum, is one of the authors of this submittal. Per personal communication with Dr. Parker, the most appropriate category of compounds to use from the Robust Summary and Test Plan data is the olefinic naphtha group. In the submittal, data is given for this group on physical/chemical properties, multiple measures of toxicity, carcinogenicity and environmental

fate. The surrogate compound used for the olefinics is light catalytic cracked naphtha, CAS#64741-55-5. Dr. Parker commented that catalytic cracking process is more severe than the thermal cracking process. Therefore, using a catalytic cracked naphtha compound's toxicity data to predict a thermal cracked naphtha compound's risk is likely to provide a conservative estimate. The Air Quality Division previously derived an initial threshold screening level for the light catalytic cracked naphtha compound with CAS #64741-55-5 (see AQD chemical file for more information). That ITSL is 5600 ug/m3 based on an annual averaging time. The ITSL was based on the same data from the (API) as that provided in the HPV Gasoline Blending Streams Test Plan submittal noted above. The NOAEL of 2610 ppm was found in a 13-week rat study where a dose of 4250 ppm resulted in depressed body weights, increased liver weight and nephropathy. The ITSL for CAS# 64741-83-9 will be set to the same value.

ITSL = 5600 ug/m3 based on annual averaging time.

MLH:lh