

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

November 8, 1999

TO: File for solvent naphtha (petroleum) heavy aliphatic  
(64742-96-7)

FROM: Marco Bianchi

SUBJECT: Initial Threshold Screening Level

The initial risk screening level (ITSL) for solvent naphtha (petroleum) heavy aliphatic [distillate] is  $24 \mu\text{g}/\text{m}^3$  based on an annual averaging time.

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

No adequate, toxicological data specific to this chemical was found, which could be used for the independent derivation of a screening level. However, a search of the Toxic Substance Control Act (TSCA) Chemical Substance Inventory (EPA, 1979) yielded a specific chemical substance definition for this chemical abstract service (CAS) number; it refers to this chemical as solvent naphtha (petroleum) heavy aliphatic [distillate]. The definition goes on to characterize the compound as consisting of "hydrocarbons having carbon numbers predominately in the range of  $\text{C}_{11}$  through  $\text{C}_{16}$  and boiling in the range of approximately  $190^\circ\text{C}$  to  $290^\circ\text{C}$  ( $374^\circ\text{F}$  to  $554^\circ\text{F}$ )". With respect to the number of carbons and boiling point range, this compound is similar to compounds such as acid treated petroleum distillates (64742-14-9) and hydrotreated light distillate (64742-47-8). These compounds have been assigned a screening level  $24 \mu\text{g}/\text{m}^3$  annual averaging. This ITSL is based on a toxicity study of deodorized kerosene (8082-83-5), which is also described as having carbon chain lengths 9 to 16, and a boiling point of  $150$  to  $290^\circ\text{C}$  (Butterfield, 1994; Carpenter et al., 1976).

For occupational exposures, NIOSH (1977) considered petroleum hydrocarbons falling within similar carbon chain lengths and boiling point ranges as likely to have sufficiently similar toxicity to justify a health-based standard applicable to all compounds in the group. This characterization of individual petroleum hydrocarbons, having similar toxicity across the group, has also been employed previously by AQD in the setting of screening levels, provided that the criteria mentioned above is met. Because the physical characteristics of solvent naphtha (petroleum) heavy aliphatic [distillate] fall within ranges which characterize kerosene and hydrotreated light distillates, it is considered appropriate to base the ITSL on the previous derived ITSL for these compounds of  $24 \mu\text{g}/\text{m}^3$  with an annual averaging time.

Therefore, the ITSL for solvent naphtha (petroleum) heavy aliphatic [distillate] (64742-96-7) is 24 ug/m<sup>3</sup> with an annual averaging time. This chemical is one of a group of petroleum hydrocarbons where the toxicity is anticipated to act via similar mechanisms. Consequently, the combined ambient impact of all petroleum hydrocarbon materials, listed in the same air permit, must be below 24 ug/m<sup>3</sup> with an annual averaging time.

**References:**

1. Butterfield G (1994). Memo to AQD Toxics Unit chemical file for hydrotreated light distillates (64742-47-8) dated 10/26/94.
2. Carpenter CP et al, (1976). Petroleum hydrocarbon toxicity studies. XI. Animal and human response to vapors of deodorized kerosene. *Toxicol Applied Pharmacol* 36:443-456.
3. EPA 1979. Toxic Substances Control Act (TSCA) Chemical Substance Inventory. Volume I: Initial Inventory. Washington, DC: Office of Toxic Substances, U.S. Environmental Protection Agency. Appendix A: Chemical Substance Definitions, p.9.
4. NIOSH 1977. Criteria for a Recommended Standard...Occupational Exposure to Refined Petroleum Solvents. Cincinnati OH: National Institute for Occupational Safety and Health, Center for Disease Control, Public Health Service, U.S. Department of Health, Education and Welfare. DHEW (NIOSH) Publication #77-192; 245+10 pp. (7/1977).