

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

October 26, 1994

TO: Hydrotreated light distillates file (CAS # 64742-47-8)

FROM: Gary Butterfield

SUBJECT: Screening level for hydrotreated light distillates

There is no EPA RfC or RfD, or occupational exposure limits by ACGIH, OSHA or NIOSH for hydrotreated light distillates. An April 13, 1994 CAS and NLM on-line literature search found no toxicity data usable for calculation of a screening level for this CAS number (64742-47-8). The NLM search listed several studies under this CAS number, however after obtaining those studies from EPA it was found that the hydrotreated light distillate was only one component of a studied complex mixture. Therefore, it was not possible to attribute the observed effects to the hydrotreated light distillate portion of the mixture.

Several names have been associated with this CAS number. RTECS calls this chemical associated with this CAS number hydrotreated kerosene. Hydro-treatment is the addition of hydrogen to kerosene under specific conditions, and results in the removal sulfur, saturation of olefins and reductions of the amount of aromatics, as cited by King (1988). The EPA ToSCA inventory describes hydrotreated light distillates, CAS # 64742-47-8, as containing hydrocarbons with carbon chain lengths 9 to 16, and boiling point in the range of 150 to 290 C. This description for hydrotreated light distillates is also consistent with the ToSCA description for straight run kerosine (CAS # 8008-20-6), which is also described as having carbon chain lengths 9 to 16, and boiling point in the range of 150 to 290 C.

The AQD has already developed a screening level for the similarly described deodorized kerosine (CAS # 8020-83-5) with an ITSL of 24 ug/m3 with an annual average, based on Carpenter et al (1976). Carpenter described deodorized kerosine as having a boiling range of 406 to 522 F, being composed of 55.2% paraffins, 40.9% naphthenes and 3.9% aromatics. This is very similar to the NIOSH (1977) description for deodorized kerosine, which has the boiling range of 209 to 274 C and being composed of 55.2% paraffins, 40.9% naphthenes and 3.9% aromatics. NIOSH describes the process that results in deodorized kerosene as kerosene washed with fuming sulfuric acid, followed by sodium plumite solution and sulfur. Deodorized kerosene was described as being a highly refined product of low aromatic content. The aromatic content of kerosene that has not received the additional processing to become deodorized is 5 to 20 %.

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Due to similarity in the descriptions of hydrotreated light distillates to deodorized kerosine, for carbon chain length and boiling point. The additional processing to form deodorized kerosine would accomplish the removal of impurities and reduce the aromatic content, as would the hydrotreating process. It would seem reasonable to assume that these issues would lead to the conclusion that deodorized kerosine and hydrotreated light distillate are of similar composition, and that they are therefore likely of similar toxicity. Therefore, the ITSL for hydrotreated light distillates will be based on the ITSL for deodorized kerosine. The ITSL for hydrotreated light distillates is being set at 24 ug/m<sup>3</sup> with annual averaging.

References:

Carpenter et al. 1976. Petroleum hydrocarbon toxicity studies. XI. Animal and human response to vapors of deodorized kerosine. Toxicol Appl Pharmacol 36:443-456.

King. 1988. Petroleum: its composition, analysis and processing. Occupational Medicine 3:409-430.

NIOSH. 1977. Criteria for a recommended standard ... occupational exposure to refined petroleum solvents. NIOSH Pub # 77-192.