MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

March 7, 1994

TO: File for 2,4-D Isooctylester (IOE) (25168-26-7)

FROM: Marco Bianchi

SUBJECT: Interim Initial Threshold Screening Level

The interim initial threshold screening level (ITSL) for 2,4-D IOE is 3 $\mu g/m^3$ 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, RTECS, EPB-CCD, EPB library, CAS-online, NLM-online, IARC, NIOSH Pocket Guide, and ACGIH Guide.

A complete reference check was conducted for 2,4-D IOE, but only limited information was available. This pesticide along with over 100 other related compounds were tested for carcinogenicity, teratogenicity, and mutagenicity by the National Cancer Institute (NCI) back in the late 1960s. Cancer data from this study, however, could not be used to derive a screening level because of deficiencies in the study design.

A Dow Chemical Company oral rat LD_{50} study was obtained that could be used to derive an interim ITSL for this compound. This study involved oral dosing 5 rats of each sex with 2,4-D IOE suspended in corn oil on a weight per volume basis. Animals were observed for overt signs of toxicity and mortality during the day of dosing and thereafter for 2 weeks. A LD_{50} value could not be calculated for females, but a male LD_{50} value was calculated at 982 mg/kg as determined by the method of Litchfield and Wilcoxon.

An interim ITSL was derived as follows:

LD_{50} = 982 mg/kg

$$ITSL = \frac{1}{500} \times \frac{1}{40} \times \frac{1}{100} \times \frac{982}{0.167 \times 0.925} = 0.0032 \text{ mg/m}^3$$

$0.0027 \text{ mg/m}^3 \times 1000 = 3.2$ or 3 $\mu g/m^3$

The interim ITSL for 2,4-D IOE = 3 $\mu g/m^3$ based on annual averaging.

MB:ma