

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

August 27, 2003

TO: File for Yarmor Pine Oil (8002-09-3)
FROM: Marco Bianchi
SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for yarmor pine oil is $10 \mu\text{g}/\text{m}^3$ based on an annual averaging time.

The following references or databases were searched to identify data to determine the ITSL: IRIS, 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 yarmor pine oil, but only minimal acute toxicity data was available for review. A contract toxicity laboratory, MB Research Laboratories, Inc., conducted an oral rat LD_{50} study for the Research Institute for Fragrance Materials. In this study, 10 rats/dose group (sex not mentioned) were given a single oral dose of yarmor pine oil at approximately 1, 2, 3, and 5 g/kg. The animals were observed for 14 days. Toxic signs included ataxia, lethargy, dyspnea and coma; while necropsy observations included dark mottled areas of the liver, kidney, and lung. The LD_{50} for yarmor pine oil was determined to be 3.2 g/kg (95% confidence limits were 2.6 to 4.0 g/kg).

The ITSL was derived as follows:

$$\text{LD}_{50} = 3.2 \text{ g/kg or } 3200 \text{ mg/kg}$$

$$\text{ITSL} = \frac{1}{500} \times \frac{1}{40} \times \frac{1}{100} \times \frac{3200 \text{ mg/kg}}{0.167 \times 0.945 \text{ m}^3/\text{kg}} = 0.0101 \text{ mg/m}^3$$

$$0.0101 \text{ mg/m}^3 \times 1000 = 10 \text{ ug/m}^3 \text{ based on annual averaging.}$$

The ITSL for yarmor pine oil = 10 ug/m^3 based on annual averaging.

References:

1. MB Research Laboratories, Inc. 1977. Data sheet: Acute oral toxicity in rats and dermal toxicity in rabbits for yarmor pine (77-452). Toxicity testing conducted for Research Institute for Fragrance Materials, Inc.(RIFM).