

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: File for Toxaphene (CAS No. 8001-35-2)
FROM: Keisha Williams, Air Quality Division
DATE: June 5, 2015
SUBJECT: Updates for Initial Risk Screening Level File

The initial risk screening level (IRSL) for toxaphene is $0.003 \mu\text{g}/\text{m}^3$ (annual averaging time) based on the Environmental Protection Agency's (EPA's) inhalation unit risk, 0.00032 per $\mu\text{g}/\text{m}^3$ (EPA 1991). The unit risk value was originally derived by the Air Quality Division on March 5, 1987. EPA last updated the unit risk value in 1991.

EPA used two key studies that showed toxaphene-induced increased hepatocellular carcinomas (Litton Bionetics 1978) and thyroid tumors (NCI 1979) in male mice and both male and female rats, respectively, as compared to control groups (EPA 1991). The IRSL and secondary risk screening level (SRSL) are calculated as shown in Equations 1 and 2.

Equation 1.

$$IRSL = \frac{1 \times 10^{-6}}{\text{unit risk estimate}} = \frac{1 \times 10^{-6}}{\frac{0.00032}{\frac{\mu\text{g}}{\text{m}^3}}} = 0.003125 \frac{\mu\text{g}}{\text{m}^3} \approx 0.003 \frac{\mu\text{g}}{\text{m}^3}$$

Equation 2.

$$SRSL = \frac{1 \times 10^{-5}}{\text{unit risk estimate}} = \frac{1 \times 10^{-5}}{\frac{0.00032}{\frac{\mu\text{g}}{\text{m}^3}}} = 0.03125 \frac{\mu\text{g}}{\text{m}^3} \approx 0.03 \frac{\mu\text{g}}{\text{m}^3}$$

References

EPA. 1991. IRIS Summary for Toxaphene (CASRN 8001-35-2). Integrated Risk Information System, US Environmental Protection Agency, Accessed on June 5, 2015.

<http://www.epa.gov/iris/subst/0346.htm>

(References: Litton Bionetics. 1978. Carcinogenic evaluation in mice: Toxaphene. Final report. Prepared by Litton Bionetics, Inc., Kensington, MD for Hercules, Inc., Wilmington, DE. LBI Project No. 20602.

NCI (National Cancer Institute). 1979. Bioassay of Toxaphene for Possible Carcinogenicity. Carcinogenesis Testing Program. Division of Cancer Cause and

Prevention. NCI, National Institute of Health, Bethesda, Maryland, 20014. U.S.
Department of Health, Education and Welfare. DHEW Publication No. (NIH) 79-837.)

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

TO: File
FROM: Kathi Wurzel
DATE: March 30, 1982
SUBJECT: Toxaphene Risk Assessment

Toxaphene, a mixture of polychlorinated camphenes, is a pesticide with demonstrated carcinogenic potential. A review of the Water Quality Criteria Document for toxaphene indicated that orally administered toxaphene induced carcinogenic responses in mice and rats in two experimental animal studies.

The risk assessment for toxaphene is based upon the incidence of hepatocellular carcinomas and neoplastic nodules in male mice from the Litton Bionetics bioassay. Using the "linearized" multistage model with this data, the carcinogenic potency factor for humans is $1.131 \text{ (mg/kg/day)}^{-1}$. For inhalation exposures, the q_1^* of $3 \times 10^{-4} \text{ (}\mu\text{g/m}^3\text{)}^{-1}$ will be utilized to calculate the risk from expected exposure levels.

KW: nm

cc: Shaffer
Schleusener
Avery