MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

TO: File

FROM: Kathi Wurzel, Air Emissions Assessment Unit

DATE: January 11, 1983

SUBJECT: Risk Assessment of Tris (2,3-dibromopropyl) phosphate

$$(126-72-7)$$

Tris (2,3-dibromopropyl) phosphate (TBP) was found to be carcinogenic in rats and mice through oral exposure. In the National Cancer Institute bioassay, TBP was administered to rats and mice through the diet. The results showed that treatment with TBP significantly increased the incidence of renal tubular cell adenomas in both male and female rats and renal adenocarcinomas in male rats. In female mice, TBP treatment significantly increased the incidence of lung, liver and stomach tumors while in male mice, TBP increased lung, stomach, and kidney tumors.

TBP has also been shown to be mutagenic in the Ames assay with two different strains of Salmonella typhimurium.

The risk assessment for TBP is based upon the incidence of renal tubular adenomas or adenocarcinomas in male rats from the NCI bioassay. Fitting the dose response data from this study to the multistage model (using the GLOBAL 79 computer program) gives a carcinogenic potency value of 1.86 $(mg/kg/day)^{-1}$. An ambient concentration of 1.9×10^{-3} ug/m^3 is associated with an increased cancer incidence of 1 in one million exposed individuals.

KAW:nm

cc: John Shaffer
     Jerry Avery
     Robert Teoh

Tris   126-72-7

Tris was carcinogenic for male & female rats &
mice when administered in the diet for 103
weeks (NCI, 1978). The risk assessment is
based upon the incidence of renal tubular
cell adenomas or adenocarcinomas in male rats.

.) Data:

dose (ppm)	(mg/kg/day)*	Incidence of Kidney tumors
0	0	0/53
50	2	26/54
100	4	29/54

*TWA dose, based on estimate of achieving 40% of intended
dose.$^{8.8}$ (NCI, 1978)

le = 103 weeks   W = 0.300 kg
Le = 104 weeks

B) Calculation of q_1^*

$$q = \frac{R}{d} = \frac{.124585 \times 10^{-5}}{.415943 \times 10^{-5}} = .29952$$

$$\sqrt[3]{\frac{70}{w}} = 6.2$$

$$q_1^* = q \times 6.2 = \boxed{1.86 \ (mg/kg/day)^{-1}}$$