MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

May 11, 1993

TO: Trifluoroacetic Acid File (CAS # 76-05-1)

FROM: Gary Butterfield

SUBJECT: ITSL for Trifluoroacetic Acid

There are no occupational exposure limits (ACGIH, NIOSH, or OSHA) for trifluoroacetic acid. This material is not listed in EPA's IRIS database. RTECS identifies a couple of Russian LC50s. A Feb 2, 1993 CAS-on-line found few short term exposure rodent bioassay investigating adverse effects on the liver and testis. Just et al (1989) fed a diet containing 0.5% trifluoroacetic acid (converts to a 380 mg/kg dose) to rats for 10 days. Trifluoroacetic acid caused hepatomegaly and peroxisome proliferation. Less of a liver effects was observed by Permadi et al (1992) in mice fed diets containing 0.02 or 0.1 %, which can be converted to doses of 34 and 170 mg/kg. These dose levels caused changes in hepatic mitochondria, microsomal and cytosolic subfractions. Lloyd et al (1988) administered 10 or 25 mg/kg to male Wistar rats and found no changes to the body weight, testis weight, or histopathological changes to the testis. A NOAEL of 25 mg/kg is found by this study, and supported in part by effects on the liver with higher doses (Permadi et al (1992) and Just et al (1989)).

The ITSL can be calculated from the 7 day, oral NOAEL equation in Rule 232 (1)(e) as follows.

ITSL = (25 mg/kg)/[100 x 35 x 0.916] = 8 ug/m3 annual average

where: 0.916 m3/kg is the inhalation rate for rats EPA (1988)
no adjustment to uncertainty factors was made because of the short duration of these studies.

References:

ACGIH. 1992. TLV's for chemical substances and physical agents and BEI's.

EPA. 1993. IRIS2 database.

EPA. 1988. Recommendations for and documentation of biological values for use in risk assessment. PB 88-179874.

Just et al. 1989. Biochemical effects of zonal heterogeneity of peroxisome proliferation induced by perfluorocarboxylic acids in rat liver. Hepatology 9:570-581.

Lloyd et al. 1988. Trifluoroethanol and its oxidative metabolites: comparison of in vivo and in vitro effects in rat testis. Toxicol Appl Pharm 92:390-401.

Permadi et al. 1992. Effects of perfluoro fatty acids on xenobiotic metabolizing enzymes, enzymes which detoxify reactive forms of oxygen and lipid peroxidation in mouse liver. Biochem Pharmacol 44:1183-1191.

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