

Michigan Department of Natural Resources

Interoffice Communication

May 14, 1992

To : 1,3-Dioxolane (CAS# 646-06-0)
From : Gary Butterfield
Subject : ITSL for 1,3-Dioxolane

A CAS-on-line search, from 1967 to 1992, found no articles on toxicity following long term exposure to 1,3-dioxolane. A search of RTECS did find references to an LD50 in rats of 3000 mg/kg from a study conducted by Smyth et al (1949). Although this study is relatively old, it does appear to have been well conducted with 5 rats per dose group, dosages in a geometric series, and the LD50 was calculated by the method of Thompson. Several other LD50's or LC50's were reported in RTECS as having appeared in a MSDS (apparently they were unpublished) and foreign articles. RTECS also listed a few short term mutagenicity assays that identify dioxolane as genotoxic. However this information is not useful in calculation of the ITSL. From the Smyth et al (1949) LD50 of 3000 mg/kg, the ITSL can be calculated as follows:

$$\text{ITSL} = (3000 \text{ mg/kg}) / (500 \times 40 \times 100 \times 0.167 \times 0.9) = 10 \text{ ug/m}^3$$

with annual averaging.

where the rat inhalation rate was assumed to be 0.9 m³/kg.

References:

Smyth et al. 1949. J md Hyg Toxicol 31:60-62.