

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: File for ethyl chloride (CAS # 75-00-3)

FROM: Robert Sills, AQD Toxics Unit Supervisor

SUBJECT: Ethyl chloride ITSL justification

DATE: December 5, 2016

The current ITSL for ethyl chloride (10,000 ug/m³, 24 hr averaging time (AT)) was established on December 20, 1990, consistent with the EPA Reference Concentration (RfC) which was last revised by EPA (1991) on 4/1/1991. The basis for the RfC and the ITSL was a developmental study in mice exposed by inhalation to ethyl chloride for 6 hours/day on days 6 through 15 of gestation. EPA (1991) reported that 4946 ppm was a LOAEL for fetotoxicity, based on a statistically significant increased incidence of foramina of the skull (a small area of delayed ossification), and, an increasing incidence (not statistically significant) of supernumary ribs. The exposure level of 1504 ppm was a NOAEL in the key study (equal to 4000 mg/m³ as the NOAEL (human equivalent concentration, or, HEC)). In deriving the RfC, EPA (1991) applied a total UF = 300, consisting of UF_A = 10, UF_H = 3 combined with dosimetric adjustment, and a UF = 10 was applied by EPA for database deficiencies. A subchronic-to-chronic UF was not applied. The current file review concludes that the AT for the ITSL is appropriately set at 24 hours, based on the critical effect and duration of the key study.

$$\text{ITSL} = \text{RfC} = 4000 \text{ mg/m}^3 \div 300 = 13.3 \text{ mg/m}^3 \text{ (rounded to } 10 \text{ mg/m}^3 \text{ , } = 10,000 \text{ ug/m}^3\text{)}$$

Reference:

EPA. 1991. Integrated Risk Information System (IRIS database). Chemical file for ethyl chloride. RfC last revised on 4/1/91. Still current as of 12/5/16.