

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

January 27, 2004

TO: 4-fluorobenzonitrile file (CAS # 1194-02-1)

FROM: Gary Butterfield, Toxics Unit, Air Quality Evaluation Section
Air Quality Division

SUBJECT: Screening level for 4-fluorobenzonitrile

4-Fluorobenzonitrile is a white solid.

The following references or databases were searched to identify data to determine the screening level: U.S. Environmental Protection Agency (EPA) Integrated Risk Information System (IRIS), National Institute for Occupational Safety and Health (NIOSH) Registry for Toxic Effects of Chemical Substances (RTECS), American Conference of Governmental and Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), Michigan Department of Environmental Quality (DEQ) library, International Agency for Research on Cancer (IARC) Monographs, Chemical Abstract Service (CAS) Online (1968 - May 2003), National Library of Medicine (NLM) - Toxline, and National Toxicology Program (NTP) Status Report.

The CAS and NLM on-line literature searches were conducted on May 5, 2003.

No toxicity information was located during the literature searches, except a mouse LD50 from RTECS see Heilman et al (1978). This article briefly describes the LD50 methodology - as being a standard multidimensional observational assay and calculated according to method of Litchfield and Wilcoxon. The LD50 was reported to be greater than 300 mg/kg.

The screening level is calculated assuming the mouse LD50 was 300 mg/kg and use of the equation from R232(1)(h), as follows.

$$\text{ITSL} = \frac{300 \text{ mg/kg}}{500 \times 40 \times 100 \times 0.167} \times \frac{1 \text{ kg}}{1.7 \text{ m}^3} = 0.5 \text{ ug/m}^3 \text{ annual average}$$

The default mouse inhalation rate of 1.7 m³/kg was used in the above calculation.

4-Fluorobenzonitrile is a solid at ambient temperatures, and would therefore be expected to be emitted to ambient air as a particulate. Consideration of this amount of 4-fluorobenzonitrile contributing to the total amount of particulate matter present, needs to be compared to the NAAQS for particulate matter.

References:

Heilman et al. 1978. Synthesis and antiinflammatory evaluation of substituted isophthalonitriles, tisonitriles, benzonitriles, and terephthalonitriles. J Med Chem 21:906-913.