

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: n-Butyl benzene file (CAS # 104-51-8)
FROM: Gary Butterfield
SUBJECT: Screening level for n-Butyl benzene
DATE: January 6, 2009

n-Butyl benzene is also known as 1-butyl benzene. It is a liquid with a melting point of -78C, and a boiling point of 183C. The density is 0.86 g/cm³. The vapor pressure is 1.06 mmHg at 25C. The molecular weight is 134.2 g/mol. The molecular formula is C₁₀H₁₄.

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 - Nov 2008), National Library of Medicine (NLM) - Toxline, and National Toxicology Program (NTP) Status Report.

The CAS and NLM on-line literature searches were conducted on November 6, 2008. There was not much toxicity data located for this chemical. There was one acute oral LD50 study located, reported by Gerarde (1959). In this study, groups of 10 rats, weighing approximately 250 g, were given a single oral dose of 2.5 ml (i.e., 10 ml/kg) of various compounds, one of which was n-butyl benzene. There were two deaths reported in the group of rats given n-butyl benzene during the three-week observation period. Therefore, as there was only 2/10 deaths observed, this study indicates that the LD50 would be greater than 10 ml/kg or 8.6 g/kg.

The screening level can be calculated using this LD50 value using R232(1)(h) as follows.

$$\text{ITSL} = \frac{8600 \text{ mg/kg}}{500 \times 40 \times 100 \times .167} \times \frac{1 \text{ kg}}{0.9 \text{ m}^3} = 30 \text{ ug/m}^3 \text{ annual average}$$

References:

Gerarde. 1959. Toxicological studies on hydrocarbons III. The Biochemorphology of the phenylalkanes and phenylalkenes. AMA Archives of Industrial Health 19:403-418.

GB:lh