

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: File for Nitrobenzene [CAS# 98-95-3]
FROM: Doreen Lehner, Toxics Unit, Air Quality Division
DATE: January 20, 2017
SUBJECT: Nitrobenzene [CAS# 98-95-2] ITSL change in the averaging time from 24 hours to annual

The current initial threshold screening level (ITSL) for nitrobenzene is 0.9 µg/m³ based on an annual averaging time. The ITSL established on 2/9/2009 based on an EPA reference concentration (RfC) of 0.9 µg/m³ based on a 2-year inhalation study in mice and rats by CIIT, 1993). Male and female B6C3F1 mice (70 animals/group) were exposed to 0, 5, 25, or 50 ppm nitrobenzene and F344 rats of both sexes and male CD rats (70 animals/group) were exposed to 0, 1, 5, or 25 ppm nitrobenzene for 6 hours/day, 5 days/week for 24 months. The observed critical effect of concentration-dependent bronchiolization of the alveoli and olfactory degeneration were seen in mice. EPA used an uncertainty factor (UF) of 30 (UF of 10 to account for human variability and an UF of 3 for extrapolation from animal to human). When the screening level was derived in 2009 the averaging time was set at 24 hours. As the basis for the screening level used a two year inhalation study, the averaging time may appropriately be set at annual. Therefore, the averaging time is being changed from 24 hours to annual at this time.

References:

APCR. 2016. Air Pollution Control Rules, Promulgated pursuant to Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, Michigan Department of Environmental Quality. 1994. Act 451, as amended (NREPA).

CIIT. 1993. Initial submission: a chronic inhalation toxicity study of nitrobenzene in B6C3F1 mice, Fischer 344 rats and Sprague-Dawley (CD) rats. Chemical Industry Institute of Toxicology. Research Triangle Park, NC. EPA Document No. FYI-OTS-0794-0970; NTIS No. OTS0000970.

EPA. 2009. Integrated Risk Information System. Nitrobenzene (CASRN 98-95-3). Available online at: https://cfpub.epa.gov/ncea/iris2/chemicalLanding.cfm?substance_nmbr=79

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TO: Nitrobenzene file (CAS # 98-95-3)
FROM: Gary Butterfield
SUBJECT: Screening level for Nitrobenzene
DATE: February 9, 2009

Nitrobenzene risk assessment was updated by EPA and released Feb 6, 2009. The AQD values for the ITSL and IRSL/SRSL were changed to match those values in IRIS. The inhalation IRIS values are based on the CIIT (1993) two year inhalation study in rats and mice. No new CAS search or literature review was conducted on nitrobenzene by AQD at this time.

ITSL = 0.9 ug/m³ 24 hour average
IRSL = 0.025 ug/m³ annual average
SRSL = 0.25 ug/m³ annual average