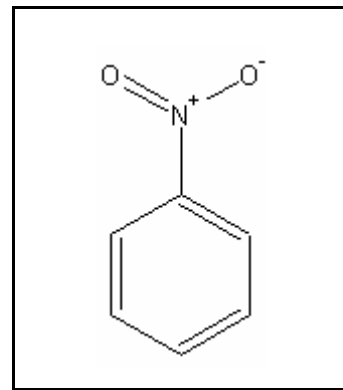




## TIER I HUMAN HEALTH NONCANCER CRITERIA

### NITROBENZENE

CAS RN:	98-95-3
Water Solubility:	0.19 g/100 mL
Log $K_{ow}$ :	1.828 <sup>P</sup>
Reference Dose:	0.00046 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class D; Not Classifiable



#### Standard

The human health noncancer nitrobenzene criterion for drinking water sources is 13  $\mu\text{g/L}$ . The human health noncancer criterion for nondrinking water sources is 28,000  $\mu\text{g/L}$ .

#### Calculations

BAF predicted based on Log  $K_{ow}$  and measured BCF (from Stephan 1993)

Log  $K_{ow}$  = 1.828 (slow stir method),  $K_{ow}$  = 67.30, BCF = 0.425, Percent lipid = 1

Trophic level 4 FCM = 1.0; trophic level 3 FCM = 1.0

$$f_{fd} = 1/(1+(0.00000024 \text{ kg/L})(K_{ow})) = 1.0$$

$$\text{Baseline BAF}_{T3} = (1.0)[(0.425/1.0)-1](1/0.001) = -57.50$$

$$\text{Baseline BAF}_{T4} = (1.0)[(0.425/1.0)-1](1/0.001) = -57.50$$

$$\text{Human health BAF}_{T3} = [(-57.50)(0.0182)+1](1.0) = -0.04649$$

$$\text{Human health BAF}_{T4} = [(-57.50)(0.0310)+1](1.0) = -0.7825$$

### Acceptable Daily Exposure:

From the IRIS database:

Critical Effect: Hematologic, adrenal, renal and hepatic lesions

$$\text{ADE} = \frac{\text{NOAEL}}{\text{UF}} = \frac{4.6 \text{ mg/kg-day}}{10,000} = 0.00046 \text{ mg/kg/d}$$

### Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HNC} &= [(0.00046)(70)(0.8)]/0.01+[(0.0036)(-0.04649)+(0.0114)(-0.7825)] \\ &= \mathbf{28,000 \mu\text{g/L}} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HNC} &= [(0.00046)(70)(0.8)]/2+[(0.0036)(-0.04649)+(0.0114)(-0.7825)] \\ &= \mathbf{13 \mu\text{g/L}} \end{aligned}$$

## References

1. Stephen, C.E. 1993. Derivation of Proposed Human Health and Wildlife Bioaccumulation Factors for the Great Lakes Initiative. Environmental Research Laboratory, Office of Research and Development, U.S. EPA, Duluth, MN.
2. USEPA 1991. Integrated Risk Information System (IRIS database) chemical file for nitrobenzene (98-95-3).

## Acronyms

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ADE	Acceptable Daily Exposure
BAF	Bioaccumulation Factor
CAS RN	Chemical Abstract Service Registry Number
FCM	Food Chain Multiplier
IRIS	Integrated Risk Information System
K <sub>ow</sub>	Octanol-Water Partition Coefficient
LOAEL	Lowest observed adverse effect level
NOAEL	No observed adverse effect level
P (superscript)	Predicted value
RPLC	Reverse-phase Liquid Chromatography
UF	Uncertainty factor

## Revision History

July 15, 1999 - Criteria first developed

July 26, 2000 – Fact sheet updated. No modifications to criteria.

## Contact Information

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