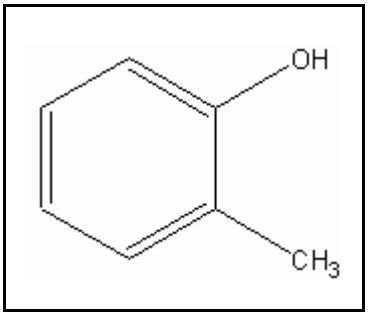
Indiana Department of Environmental Management
Office of Water - Water Quality Standards Section

TIER I HUMAN HEALTH NONCANCER CRITERIA

2-METHYLPHENOL

CAS RN:	95-48-7
Water Solubility:	<1000 mg/L
Log K_{ow}:	1.97^{P}
Reference Dose:	0.05 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class D; Not Classifiable



Standard

The human health noncancer 2-methylphenol criterion for drinking water sources is 1,400 µg/L.
The human health noncancer criterion for nondrinking water sources is 44,000 µg/L.

Calculations

Bioaccumulation Factor:

BAF predicted based on Log K_{ow}
Log K_{ow} = 1.97 (CLOGP), K_{ow} = 93.33
Trophic level 3 FCM = 1.0; trophic level 4 FCM = 1.0

f_{fd} = 1/(1+(0.00000024 kg/L)(K_{ow})) = 1.00

Baseline BAF_{T3} = (FCM)(K_{ow}) = (1.0)(93.33) = 93.33

Baseline BAF_{T4} = (1.0)(93.33) = 93.33

Human health BAF_{T3} = [(93.33)(0.0182)+1](1.00) = 2.698

Human health BAF_{T4} = [(93.33)(0.0310)+1](1.00) = 3.893

Acceptable Daily Exposure:

From the IRIS database:

Critical Effect: Decreased body weights and neurotoxicity

$$ADE = \frac{NOAEL}{UF} = \frac{50\ mg/kg\text{-}day}{1000} = 0.05\ mg/kg/d$$

Calculation of Criteria:

Non Drinking Water HNC =[(0.05)(70)(0.8)]/0.01+[(0.0036)(2.698)+(0.0114)(3.893)]

= **44,000 μg/L**

Drinking Water HNC = [(0.05)(70)(0.8)]/2+[(0.0036)(4.12)+(2.698)(3.893)]

= **1,400 μg/L**

References

1. USEPA 1990. Integrated Risk Information System (IRIS database) chemical file for 2-methylphenol (95-48-7).

2. Leo,A. and D.Weininger 1997. Daylight Software CLogP Version 3.15+ for Unix Pomona Medical Chemistry Project, Pomona College, Claremont, CA. Distributed by Daylight Chemical Information Systems, Inc., 3952 Claremont St., Irving, CA 92714 (Reference for the Log K_{ow}).

Acronyms

ADE	Acceptable Daily Exposure
BAF	Bioaccumulation Factor
CAS RN	Chemical Abstract Service Registry Number
FCM	Food Chain Multiplier
IRIS	Integrated Risk Information System
K_{ow}	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

August 26, 1999 - Criteria first developed
April 28, 2000 – Fact sheet updated. No modifications to criteria.

Contact Information

David B. Kallander
Water Quality Standards Section
Indiana Department of Environmental Management
100 North Senate Ave., P.O. Box 6015
Indianapolis, IN 46206-6015
(317) 233-2472
Email: dkalland@dem.state.in.us