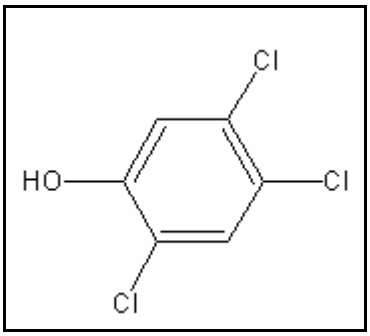
Indiana Department of Environmental Management
Office of Water - Water Quality Standards Section

TIER II HUMAN HEALTH NONCANCER VALUES

2,4,5-TRICHLOROPHENOL

CAS RN:	95-94-3
Water Solubility:	1200 mg/L
Log K_{ow}:	3.70^{P}
Reference Dose:	0.1 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	None



Standard

The human health noncancer 2,4,5-trichlorophenol value for drinking water sources is 1,300 µg/L. The human health noncancer value for nondrinking water sources is 2,500 µg/L.

Calculations

Bioaccumulation Factor:

BAF predicted based on Log K_{ow}
Log K_{ow} = 3.70 (CLOGP), K_{ow} = 5012
Trophic level 3 FCM = 1.128; trophic level 4 FCM = 1.033

$f_{fd} = 1/(1+(0.00000024\ kg/L)(K_{ow})) = 0.999$

Baseline $BAF_{T3} = (FCM)(K_{ow}) = (0.999)(5012) = 5653$

Baseline $BAF_{T4} = (0.999)(5012) = 5117$

Human health $BAF_{T3} = [(5653)(0.0182)+1](0.999) = 103.8$
Human health $BAF_{T4} = [(5117)(0.0310)+1](0.999) = 161.3$

Acceptable Daily Exposure:

From the IRIS database:

Critical Effect: Liver and kidney pathology

$$ADE = \frac{NOAEL}{UF} = \frac{100\ mg/kg\text{-}day}{1000} = 0.1\ mg/kg/d$$

Calculation of Criteria:

Non Drinking Water HNV =[(0.1)(70)(0.8)]/0.01+[(0.0036)(103.8)+(0.0114)(161.3)]

= **2,500 μg/L**

Drinking Water HNV = [(0.1)(70)(0.8)]/2+[(0.0036)(103.8)+(2.698)(161.3)]

= **1,300 μg/L**

References

1. USEPA 1987. Integrated Risk Information System (IRIS database) chemical file 2,4,5-trichlorophenol (95-95-4).

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/Abbreviations

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
UF	Uncertainty factor

Revision History

February 25, 2000 - Criteria first developed

Contact Information

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