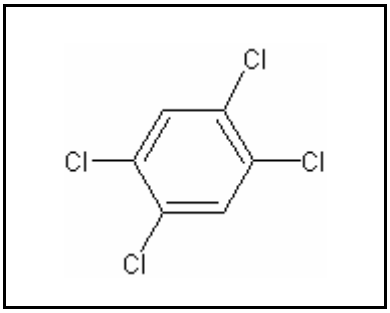
Indiana Department of Environmental Management
Office of Water - Wetlands, Water Quality and Sediments Section

TIER II HUMAN HEALTH NONCANCER VALUES

1,2,4,5-TETRACHLOROBENZENE

CAS RN:	95-94-3
Water Solubility:	1200 mg/L
Log K_{ow}:	4.51
Reference Dose:	0.00034 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	None



Standard

The human health noncancer 1,2,4,5-tetrachlorobenzene value for drinking water sources is 0.35 µg/L. The human health noncancer value for nondrinking water sources is 0.36 µg/L.

Calculations

Bioaccumulation Factor:

BAF - field measured (from EPA 1995)
Log K_{ow} = 4.51, K_{ow} = 32,359
Trophic level 3 FCM = 1.766
Trophic level 4 FCM = 1.334;
Field Measured BAF_{T4} = 978.6
Field Measured BAF_{T3} = 1295.5

$f_{fd} = 1/(1+(0.00000024\ kg/L)(K_{ow})) = 0.991$

Baseline BAF_{T3} = 98,520

Baseline BAF_{T4} = 130,456

Human health BAF_{T3} = 1,780

Human health BAF_{T4} = 4,014

Acceptable Daily Exposure:

From the IRIS database:

Critical Effect: Liver and kidney pathology

$$ADE = \frac{NOAEL}{UF} = \frac{0.34 \text{ mg/kg-day}}{1000} = 0.00034 \text{ mg/kg/d}$$

Calculation of Criteria:

Non Drinking Water HNV =[(0.00034)(70)(0.8)]/0.01+[(0.0036)(1,780)+(0.0114)(4,014)]

= **0.35 µg/L**

Drinking Water HNV = [(0.00034)(70)(0.8)]/2+[(0.0036)(1,780)+(0.0114)(4,014)]

= **0.36 µg/L**

References

1. USEPA 1991. Integrated Risk Information System (IRIS database) chemical file 1,2,4,5-tetrachlorobenzene (95-94-3).

2. USEPA 1995. Great Lakes Water Quality Initiative Technical Support Document for the Procedure to Determine Bioaccumulation Factors. EPA-820-B-95-005.

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 24, 2000 - Criteria first developed

Contact Information

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