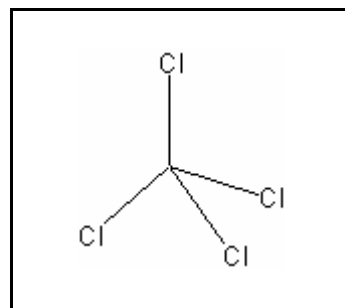




## TIER I HUMAN HEALTH CANCER CRITERIA

### CARBON TETRACHLORIDE

CAS RN:	56-23-5
Water Solubility:	805 mg/L
Log $K_{ow}$ :	2.875 <sup>P</sup>
Risk Associated Dose:	$7.692 \times 10^{-5}$ mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class B2; Probable human Carcinogen



### Standard

The human health cancer carbon tetrachloride criterion for drinking water sources is 2.4 µg/L.  
The human health cancer criterion for nondrinking water sources is 19 µg/L.

### Calculations

#### Bioaccumulation Factor:

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

Log  $K_{ow}$  = 2.875 (CLOGP program),  $K_{ow}$  = 749.89, BCF = 30, Percent lipid = 4.8

Trophic level 3 FCM = 1.028; trophic level 4 FCM = 1.007

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

$$\text{Baseline BAF}_{T3} = (1.028)[(30/1.0)-1](1/0.048) = 621.20$$

$$\text{Baseline BAF}_{T4} = (1.007)[(30/1.0)-1](1/0.048) = 608.5$$

$$\text{Human health BAF}_{T3} = [(0.0182)+1](1.0) = 12.30$$

$$\text{Human health BAF}_{T4} = [(0.0310)+1](1.0) = 19.86$$

### Risk Associated Dose:

From the IRIS database:

$$\begin{aligned} \text{RAD} &= 0.00001/q1^* = 0.00001/0.13 \\ &= 7.692 \times 10^{-5} \end{aligned}$$

Where:

RAD = Risk Associated Dose (mg/kg/day)  
q1\* = Cancer Slope Factor

### Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HCC} &= [(7.692 \times 10^{-5})(70)]/0.01+[(0.0036)(12.30)+(0.0114)(19.86)] \\ &= \mathbf{19 \mu\text{g/L}} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HCC} &= [(7.692 \times 10^{-5})(70)]/2+[(0.0036)(12.30)+(0.0114)(19.86)] \\ &= \mathbf{2.4 \mu\text{g/L}} \end{aligned}$$

## 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 carbon tetrachloride (CAS # 56-23-5).
3. 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<sub>ow</sub>)

## 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
UF	Uncertainty factor

## Revision History

September 24, 1997 - Criteria first developed

April 11, 2000 – Fact sheet updated. No modifications made 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](mailto:dkalland@dem.state.in.us)