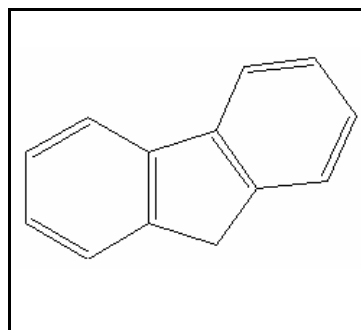




## TIER II HUMAN HEALTH NONCANCER VALUES

### FLUORENE

CAS RN:	95-94-3
Water Solubility:	0.000019 g/100 mL
Log $K_{ow}$ :	4.18
Reference Dose:	0.042 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class D; Not classifiable



### Standard

The human health noncancer fluorene value for drinking water sources is 250  $\mu\text{g/L}$ . The human health noncancer value for nondrinking water sources is 320  $\mu\text{g/L}$ .

### Calculations

#### Bioaccumulation Factor:

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

Log  $K_{ow}$  = 4.18 (generator-column method),  $K_{ow}$  = 15,136  
trophic level 3 FCM = 1.380; Trophic level 4 FCM = 1.13

$$f_{fd} = 1/(1+(0.00000024 \text{ kg/L})(K_{ow})) = 0.996$$

$$\text{Baseline BAF}_{T3} = (\text{FCM})(K_{ow}) = (1.380)(15,136) = 20,888$$

$$\text{Baseline BAF}_{T4} = (1.13)(15,136) = 17,104$$

$$\text{Human health BAF}_{T3} = [(20,888)(0.0182)+1](0.996) = 379.6$$

$$\text{Human health BAF}_{T4} = [(17,104)(0.0310)+1](0.996) = 529.1$$

### Acceptable Daily Exposure:

From the IRIS database:

$$\text{ADE} = \frac{\text{NOAEL}}{\text{UF}} = \frac{125 \text{ mg/kg-day}}{3000} = 0.04167 \text{ mg/kg/d}$$

### Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HN}V &= [(0.04167)(70)(0.8)]/0.01+[(0.0036)(379.6)+(0.0114)(529.1)] \\ &= \mathbf{320 \mu\text{g/L}} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HN}V &= [(0.04167)(70)(0.8)]/2+[(0.0036)(379.6)+(0.0114)(529.1)] \\ &= \mathbf{250 \mu\text{g/L}} \end{aligned}$$

## **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 1996. Integrated Risk Information System (IRIS database) chemical file for fluorene (86-73-7).
3. Miller, M.M., S.P. Wasik, G.-L. Huang, W.-Y. Shiu, and D. Mackay 1985. Relationships between octanol-water coefficient and aqueous solubility. Environ. Sci. Technol. 19: 522-529. (Reference for the Log  $K_{ow}$ )

## **Acronyms/Abbreviations**

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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

August 19, 1997 - Values first developed

April 19, 2000 – Fact sheet updated. No modifications to values.

## Contact Information

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