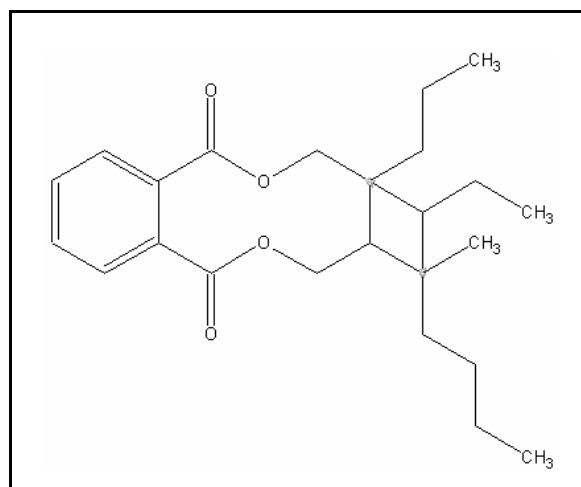




## TIER II HUMAN HEALTH NONCANCER VALUES

### BIS(2-ETHYLHEXYL) PHTHALATE (DEHP)

|  |                                     |
|--|-------------------------------------|
| CAS RN:  | 117-81-7                            |
| Water Solubility:                                  | 0.34 mg/L                           |
| Log $K_{ow}$ :                                     | 7.453                               |
| Reference Dose:                                    | 0.019 mg/kg/day                     |
| Carcinogenicity Weight-of-Evidence Classification: | Class B2; Probable human Carcinogen |



#### Standard

The human health noncancer bis(2-ethylhexyl) phthalate value for drinking water sources is 54  $\mu\text{g/L}$ . The human health noncancer value for nondrinking water sources is 60  $\mu\text{g/L}$ .

#### Calculations

##### Bioaccumulation Factor:

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

Log  $K_{ow}$  = 7.453 (slow-stir method),  $K_{ow}$  = 28,379,190, BCF = 114, Percent lipid = 4.8  
Trophic level 3 FCM = 12.517; trophic level 4 FCM = 18.967

$$f_{fd} = 1/(1+(0.00000024 \text{ kg/L})(K_{ow})) = 0.128$$

$$\text{Baseline BAF}_{T3} = (12.517)[(114/0.128)-1](1/0.048) = 231,988$$

$$\text{Baseline BAF}_{T4} = (18.967)[(114/0.128)-1](1/0.048) = 351,532$$

$$\text{Human health BAF}_{T3} = [(231,988)(0.0182)+1](0.128) = 540.6$$

$$\text{Human health BAF}_{T4} = [(351,532)(0.0310)+1](0.128) = 1,395$$

### Acceptable Daily Exposure:

From the IRIS database:

$$\text{ADE} = \frac{\text{NOAEL}}{\text{UF}} = \frac{19 \text{ mg/kg-day}}{1000} = 0.019 \text{ mg/kg/d}$$

### Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HNV} &= [(0.019)(70)(0.8)]/0.01+[(0.0036)(540.6)+(0.0114)(1,395)] \\ &= \mathbf{60 \mu\text{g/L}} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HNV} &= [(0.019)(70)(0.8)]/2+[(0.0036)(540.6)+(0.0114)(1,395)] \\ &= \mathbf{54 \mu\text{g/L}} \end{aligned}$$

## **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 DEHP (117-81-7).
3. de Bruijn, J., F. Busser, W. Seinen, and J. Hemens 1989. Determination of octanol/water partition coefficients for hydrophobic organic chemicals with the "slow-stirring" method. Environ. Toxicol. Chem. 8: 449-512. (Reference for the Log  $K_{ow}$  value)

## 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 <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

April 3, 2000 - Values first developed

## Contact Information

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