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TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES FOR
BIS(2-ETHYHEXYL) PHTHALATE

Standard:

The procedures described in the Tier II methodology indicate that, except possibly where a locally important species is very sensitive, aquatic organisms should not be affected unacceptably if the four (4) day average concentration of bis(2-ethylhexyl) phthalate (DEHP) does not exceed 88 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 384 µg/L more than once every three (3) years on the average.

Calculations:

Acute Aquatic Life:

$$SAV = \text{lowest GMAV}/SAF$$

$$\begin{aligned}\text{Lowest GMAV} &= 4,690 \text{ µg/L} \\ SAF &= 6.1\end{aligned}$$

$$SAV = 4,690/6.1 = 768.9 \text{ µg/L}$$

$$SMC = SAV/2 = 768.9/2 = 384 \text{ µg/L}$$

Chronic Aquatic Life:

$$SCV = SAV/SACR$$

$$SACR = 8.7 \text{ (geometric mean of 18, 18, and 2)}$$

$$SCV = 768.9/8.7 = 88 \text{ µg/L}$$

Calculation of ACR's

Fathead Minnows

$$MATC = 1.0 \text{ mg/L (geometric mean of LOEC and NOEC)}$$

$$ACR = LC_{50}/MATC = 2/1 = 2.0$$

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Notes:

NONE

Table 1. GMAVs and SMAVs for DEHP

<u>Genus Mean Acute Value (µg/L)</u>	<u>Species</u>	<u>Species Mean Acute Value (µg/L)</u>	<u>Reference Number</u>
4,690	Cladoceran <u>Daphnia magna</u>	4,690	1,4
>91,657	Bluegill <u>Lepomis macrochirus</u>	>91,657	2,5,6
>10,000	Fathead Minnow <u>Pimephales promelas</u>	>10,000	5
44,159	Rainbow Trout <u>Oncorhynchus mykiss</u>	44,159	4
	Coho Salmon <u>Oncorhynchus kisutch</u>	>100,000	6
>31,622	Channel Catfish <u>Ictalurus punctatus</u>	>31,622	5
>21,715	Scud <u>Gammarus pseudolimnaeus</u>	>21,715	5,6,7
>10,000	Crayfish <u>Orconectes nais</u>	>10,000	5

References:

1. Adams, W.J. and B.B. Heidolph 1985. Shortcut chronic toxicity estimates using Daphnia magna. In: Aquatic Toxicology and Hazard Assessment: Seventh Symposium. R.D. Cardwell, R.Purdy and R. Bahner (Eds.). ASTM Spec. Tech. Publ. 854. Philadelphia, PA.

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2. Buccafusco, R.J., S.J. Ells, G.A. LeBlanc 1981. Acute toxicity of priority pollutants to bluegill (Lepomis macrochirus). Bull. Environ. Contam. Toxicol. 26(4): 446-452.
3. DeFoe, D.L., G.W. Holcombe, D.E. Hammermeister, et al. 1990. Solubility and toxicity of eight phthalate esters to four aquatic organisms. Environ. Toxicol. Chem. 9: 623-636.
4. LeBlanc, G.A. 1980. Acute toxicity of priority pollutants to water flea (Daphnia magna). Bull. Environ. Contam. Toxicol. 24: 684-691.
5. Mayer, F.L. and H.O. Sanders 1973. Toxicology of phthalic acid esters in aquatic organisms. Environ. Health Perspect. 3: 153-157.
6. Mayer, F.L., Jr. and M.R. Ellersieck 1986. Manual of Acute Toxicity: Interpretation and Data Base for 410 Chemicals and 66 Species of Freshwater Animals. Fish and Wildlife Service, Resource Publication 160, Washington, D.C.
7. Sanders, H.O., F.L. Mayer, and D.F. Walsh 1973. Toxicity, residue dynamics and reproductive effects of phthalate esters in aquatic invertebrates. Environ. Res. 6: 84-90.

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