Chemical Name: Pentachlorophenol Developed by: Bob Heitzman, John Estenik
CAS # 87-86-5 IRIS Data Retrieval Date: 2-12-98
Internal Code # 108 Fact Sheet Preparation Date: 2-13-98

CRITERIA SUMMARY

Lake Erie Basin			
Tier II HNV (μg/l)		Tier II HCV (μg/l)	
Drinking	Nondrinking	Drinking	Nondrinking
300	450	1.0	1.6

EXPOSURE AND TOXICITY DATA

Human health trophic level 3 bioaccumulation factor ($BAFHH_{TL3}$) = 187 l/kg (MDEQ)
Human health trophic level 4 bioaccumulation factor ($BAFHH_{TL4}$) = 265 l/kg (MDEQ)
Acceptable daily exposure (ADE) = 3E-2 mg/kg/day (IRIS RfD, last revised 02/01/93)
Carcinogen assessment: Class B2; probable human carcinogen (IRIS, last revised 07/01/93)
Cancer slope factor (q_1*) = 0.12 per mg/kg/day (IRIS, last revised 07/01/93)
Body weight of average human (BW) = 70 kg (OAC 3745-1-38)
Relative source contribution factor (RSC) = 0.8 (OAC 3745-1-38)
Per capita water consumption (WC) = 2.0 l/day for drinking water criteria (OAC 3745-1-38)
= 0.01 l/day for nondrinking water criteria (OAC 3745-1-38)
Mean consumption of trophic level three fish (FC_{TL3}) = 0.0036 kg/day (OAC 3745-1-38)
Mean consumption of trophic level four fish (FC_{TL4}) = 0.0114 kg/day (OAC 3745-1-38)

Risk associated dose (RAD) = Risk level ÷ q_1*
= 1E-5 ÷ 0.12 per mg/kg/day
= 8.333E-5 mg/kg/day

REFERENCES

Integrated Risk Information System. USEPA Office of Research and Development, National Center for Environmental Assessment.

Michigan Department of Environmental Quality, Surface Water Quality Division. 1997. Bioaccumulation Factor Worksheet for Pentachlorophenol. Verification Date: 4/25/97.

Ohio Administrative Code rule 3745-1-38: Methodologies for Development of Human Health Criteria and Values for the Lake Erie Drainage Basin. Effective 10/31/97.

CALCULATION OF HUMAN NONCARCINOGENIC VALUE (HNV) [a]

$$HNV = \frac{ADE \times BW \times RSC}{WC + [(FC_{TL3} \times BAFHH_{TL3}) + (FC_{TL4} \times BAFHH_{TL4})]}$$

$$\text{Drinking Water HNV} = \frac{3E\text{-}2 \text{ mg/kg/day} \times 70 \text{ kg} \times 0.8}{2.0 \text{ l/day} + [(0.0036 \text{ kg/day} \times 187 \text{ l/kg}) + (0.0114 \text{ kg/day} \times 265 \text{ l/kg})]}$$

$$= 0.30 \text{ mg/l} = 300 \text{ } \mu\text{g/l}$$

$$\text{Nondrinking Water HNV} = \frac{3E\text{-}2 \text{ mg/kg/day} \times 70 \text{ kg} \times 0.8}{0.01 \text{ l/day} + [(0.0036 \text{ kg/day} \times 187 \text{ l/kg}) + (0.0114 \text{ kg/day} \times 265 \text{ l/kg})]}$$

$$= 0.45 \text{ mg/l} = 450 \text{ } \mu\text{g/l}$$

CALCULATION OF HUMAN CARCINOGENIC VALUE (HCV) [a]

$$HCV = \frac{RAD \times BW}{WC + [(FC_{TL3} \times BAFHH_{TL3}) + (FC_{TL4} \times BAFHH_{TL4})]}$$

$$\text{Drinking Water HCV} = \frac{8.333E\text{-}5 \text{ mg/kg/day} \times 70 \text{ kg}}{2.0 \text{ l/day} + [(0.0036 \text{ kg/day} \times 187 \text{ l/kg}) + (0.0114 \text{ kg/day} \times 265 \text{ l/kg})]}$$

$$= 1.0E\text{-}3 \text{ mg/l} = 1.0 \text{ } \mu\text{g/l}$$

$$\text{Nondrinking Water HCV} = \frac{8.333E\text{-}5 \text{ mg/kg/day} \times 70 \text{ kg}}{0.01 \text{ l/day} + [(0.0036 \text{ kg/day} \times 187 \text{ l/kg}) + (0.0114 \text{ kg/day} \times 265 \text{ l/kg})]}$$

$$= 1.6E\text{-}3 \text{ mg/l} = 1.6 \text{ } \mu\text{g/l}$$

[a] See Ohio Administrative Code 3745-1-38 effective October 31, 1997.