OHIO EPA SURFACE WATER HUMAN HEALTH CRITERION FACT SHEET
Chemical Name: Boron Developed by: Bob Heitzman, John Estenik
CAS # 7440-42-8 IRIS Data Retrieval Date: 2-10-98
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CRITERIA SUMMARY

Lake Erie Basin			
Tier I HNC (μg/l)		Tier I HCC (μg/l)	
Drinking	Nondrinking	Drinking	Nondrinking
2,400	200,000	ID	ID

EXPOSURE AND TOXICITY DATA

Human health trophic level 3 bioaccumulation factor ($BAFHH_{TL3}$) = 1.0 l/kg (MDEQ)
Human health trophic level 4 bioaccumulation factor ($BAFHH_{TL4}$) = 1.0 l/kg (MDEQ)
Acceptable daily exposure (ADE) = 8.8E-2 mg/kg/day (IRIS RfD, last revised 06/01/95)
Carcinogen assessment: Not available (IRIS, last revised 05/01/93)
Cancer slope factor (q_1*) = Not available (IRIS, last revised 05/01/93)
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)

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 Boron. Verification Date: 11/13/97.

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 CRITERION (HNC) [a]

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

$$\text{Drinking Water HNC} = \frac{8.8E\text{-}2 \text{ mg/kg/day} \times 70 \text{ kg} \times 0.8}{2.0 \text{ l/day} + [(0.0036 \text{ kg/day} \times 1.0 \text{ l/kg}) + (0.0114 \text{ kg/day} \times 1.0 \text{ l/kg})]}$$

$$= 2.4 \text{ mg/l} = 2{,}400 \text{ } \mu\text{g/l}$$

$$\text{Nondrinking Water HNC} = \frac{8.8E\text{-}2 \text{ mg/kg/day} \times 70 \text{ kg} \times 0.8}{0.01 \text{ l/day} + [(0.0036 \text{ kg/day} \times 1.0 \text{ l/kg}) + (0.0114 \text{ kg/day} \times 1.0 \text{ l/kg})]}$$

$$= 200 \text{ mg/l} = 200{,}000 \text{ } \mu\text{g/l}$$

CALCULATION OF HUMAN CARCINOGENIC CRITERION (HCC) [a]

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

Insufficient data (no q_1*).

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