

CRITERIA SUMMARY

| Lake Erie Basin | | | |
|--------------------------------|-------------|--------------------------------|-------------|
| Tier I HNC ($\mu\text{g/l}$) | | Tier I HCC ($\mu\text{g/l}$) | |
| Drinking | Nondrinking | Drinking | Nondrinking |
| ID | ID | 0.53 | 3.0 |

EXPOSURE AND TOXICITY DATA

Human health trophic level 3 bioaccumulation factor (BAFH_{TL3}) = 18.8 l/kg (MDEQ)
Human health trophic level 4 bioaccumulation factor (BAFH_{TL4}) = 31.4 l/kg (MDEQ)
Acceptable daily exposure (ADE) = Not available (IRIS, last revised 07/01/93)
Carcinogen assessment: Class B1; probable human carcinogen (IRIS, last revised 01/01/91)
Cancer slope factor (q_1^*) = 0.54 per mg/kg/day (IRIS, last revised 01/01/91)
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 \div q_1^*
= $1\text{E-}5 \div 0.54$ per mg/kg/day
= $1.852\text{E-}5$ 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 Acrylonitrile. Verification Date: 6/6/97.
- 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

$$\text{HNC} = \frac{\text{ADE} \times \text{BW} \times \text{RSC}}{\text{WC} + [(\text{FC}_{\text{TL3}} \times \text{BAFH}_{\text{TL3}}) + (\text{FC}_{\text{TL4}} \times \text{BAFH}_{\text{TL4}})]}$$

Insufficient data (no ADE).

CALCULATION OF HUMAN CARCINOGENIC CRITERION (HCC) ^a

$$\text{HCC} = \frac{\text{RAD} \times \text{BW}}{\text{WC} + [(\text{FC}_{\text{TL3}} \times \text{BAFH}_{\text{TL3}}) + (\text{FC}_{\text{TL4}} \times \text{BAFH}_{\text{TL4}})]}$$

$$\begin{aligned} \text{Drinking Water HCC} &= \frac{1.852\text{E-}5 \text{ mg/kg/day} \times 70 \text{ kg}}{2.0 \text{ l/day} + [(0.0036 \text{ kg/day} \times 18.8 \text{ l/kg}) + (0.0114 \text{ kg/day} \times 31.4 \text{ l/kg})]} \\ &= 5.3\text{E-}4 \text{ mg/l} = 0.53 \text{ }\mu\text{g/l} \end{aligned}$$

$$\begin{aligned} \text{Nondrinking Water HCC} &= \frac{1.852\text{E-}5 \text{ mg/kg/day} \times 70 \text{ kg}}{0.01 \text{ l/day} + [(0.0036 \text{ kg/day} \times 18.8 \text{ l/kg}) + (0.0114 \text{ kg/day} \times 31.4 \text{ l/kg})]} \\ &= 3.0\text{E-}3 \text{ mg/l} = 3.0 \text{ }\mu\text{g/l} \end{aligned}$$

OHIO EPA SURFACE WATER HUMAN HEALTH CRITERION FACT SHEET

Page 3 of 2

Chemical Name: Acrylonitrile Developed by: Bob Heitzman, John Estenik

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^aSee Ohio Administrative Code 3745-1-38 effective October 31, 1997.