



Indiana Department of Environmental Management
Office of Water - Water Quality Standards Section

TIER I HUMAN HEALTH NONCANCER CRITERIA

Thallium

CAS RN: 7440-28-0
Water Solubility:
Log K_{ow} :
Reference Dose: 8.7×10^{-5} mg/kg/day
Carcinogenicity Weight-of-
Evidence Classification: Class D; Not classifiable

Standard

The human health noncancer thallium criterion for drinking water sources is 2 µg/L. The human health noncancer criterion for nondrinking water sources is 5 µg/L.

Calculations

Bioaccumulation Factor:

BAF for inorganics is equal to the BCF (from Stephan 1993)
 $BCF = 67$

Human health $BAF_{T3} = 67$

Human health $BAF_{T4} = 67$

Acceptable Daily Exposure:

From the IRIS database:

Critical Effect: Increased levels of SGOT and LDH

$$\text{ADE} = \frac{\text{NOAEL}}{\text{UF}} = \frac{0.26 \text{ mg/kg-day}}{3000} = 8.7 \times 10^{-5} \text{ mg/kg/d}$$

Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HNC} &= [(8.7 \times 10^{-5})(70)(0.8)]/0.01 + [(0.0036)(67) + (0.0114)(67)] \\ &= 2 \text{ } \mu\text{g/L} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HNC} &= [(8.7 \times 10^{-5})(70)(0.8)]/2 + [(0.0036)(67) + (0.0114)(67)] \\ &= 5 \text{ } \mu\text{g/L} \end{aligned}$$

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 1990. Integrated Risk Information System (IRIS database) chemical file for thallium (7440-28-0).

Acronyms/Abbreviations

ADE	Acceptable Daily Exposure
BAF	Bioaccumulation Factor
CAS RN	Chemical Abstract Service Registry Number
FCM	Food Chain Multiplier
IRIS	Integrated Risk

	Information System
K _{ow}	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

March 17, 1999 - Criteria first developed

September 20, 2000 – Fact sheet updated. No modifications to criteria.

Contact Information

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