



TIER II HUMAN HEALTH NONCANCER VALUES
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NICKEL

CAS RN: 7440-02-0
Water Solubility:
Log K_{ow} :
Reference Dose: 0.02 mg/kg/day
Carcinogenicity Weight-of-
Evidence Classification: None

Standard

The human health noncancer nickel criterion for drinking water sources is 460 $\mu\text{g/L}$. The human health noncancer criterion for nondrinking water sources is 42,000 $\mu\text{g/L}$.

Calculations

Bioaccumulation Factor:

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

$$\text{BAF} = 0.80; \text{FCM} = 1.0$$

$$\text{Human health BAF}_{T3} = 0.80$$

$$\text{Human health BAF}_{T4} = 0.80$$

Acceptable Daily Exposure:

From Domingo et al. 1987, and Katz et al. 1984:

$$\text{ADE} = \frac{\text{NOAEL}}{\text{UF}} = \frac{5 \text{ mg/kg-day}}{300} = 0.01667 \text{ mg/kg/d}$$

Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HCV} &= [(0.01667)(70)(0.8)]/0.01+[(0.0036)(0.80)+(0.0114)(0.80)] \\ &= \mathbf{42,000 \mu\text{g/L}} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HCV} &= [(0.01667)(70)(0.8)]/2+[(0.0036)(0.80)+(0.0114)(0.80)] \\ &= \mathbf{460 \mu\text{g/L}} \end{aligned}$$

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 1996. Integrated Risk Information System (IRIS database) chemical file for nickel (7440-02-0).

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

January 23, 1997 - Values first developed

July 26, 2000 – Values rechecked (no modifications). Fact sheet updated.

Contact Information

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