



TIER I HUMAN HEALTH NONCANCER CRITERIA

CADMIUM

CAS RN: 7440-43-9
Water Solubility:
Log K_{ow} :
Reference Dose: 0.0005 mg/kg/day
Carcinogenicity Weight-of-
Evidence Classification: Class B1; Probable Human Carcinogen

Standard

The human health noncancer cadmium criterion for drinking water sources is 14 $\mu\text{g/L}$. The human health noncancer criterion for nondrinking water sources is 1400 $\mu\text{g/L}$.

Calculations

Bioaccumulation Factor:

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

$$\text{BAF} = 0.69; \text{FCM} = 1.0$$

$$\text{Human health BAF}_{T3} = 0.69$$

$$\text{Human health BAF}_{T4} = 0.69$$

Acceptable Daily Exposure:

From the IRIS database:

$$\text{ADE} = \frac{\text{NOAEL}}{\text{UF}} = \frac{0.005 \text{ mg/kg-day}}{10} = 0.0005 \text{ mg/kg/d}$$

Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HNC} &= [(0.0005)(70)(0.8)]/0.01 + [(0.0036)(0.69) + (0.0114)(0.69)] \\ &= 1400 \text{ } \mu\text{g/L} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HNC} &= [(0.0005)(70)(0.8)]/2 + [(0.0036)(0.69) + (0.0114)(0.69)] \\ &= 14 \text{ } \mu\text{g/L} \end{aligned}$$

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 1994. Integrated Risk Information System (IRIS database) chemical file for cadmium (7440-43-9).

Acronyms

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
RPLC	Reverse-phase Liquid Chromatography
UF	Uncertainty factor

Revision History

August 19, 1997 - Criteria first developed

April 7, 2000 – Criteria fact sheet updated. No modifications to criteria.

Contact Information

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