



TIER I HUMAN HEALTH NONCANCER CRITERIA

SILVER

CAS RN: 7440-22-4
Water Solubility:
Log K_{ow} :
Reference Dose: 0.004667 mg/kg/day
Carcinogenicity Weight-of-
Evidence Classification: Class D; Not Classifiable

Standard

The human health noncancer silver criterion for drinking water sources is 130 $\mu\text{g/L}$. The human health noncancer criterion for nondrinking water sources is 26,000 $\mu\text{g/L}$.

Calculations

Bioaccumulation Factor:

$\text{BAF} = 0$; $\text{FCM} = 1.0$ (from Stephan 1993)

Human health $\text{BAF}_{T3} = 0.0$

Human health $\text{BAF}_{T4} = 0.0$

Acceptable Daily Exposure:

From the IRIS database:

Critical Effect: Argyria

$$\text{ADE} = \frac{\text{LOAEL}}{\text{UF}} = \frac{0.014 \text{ mg/kg-day}}{3} = 0.004667 \text{ mg/kg/d}$$

Calculation of Criteria:

$$\text{Non Drinking Water HNC} = [(0.004667)(70)(0.8)]/0.01 + [(0.0036)(0) + (0.0114)(0)]$$

$$= 26,000 \text{ } \mu\text{g/L}$$

$$\text{Drinking Water HNC} = [(0.004667)(70)(0.8)]/2 + [(0.0036)(0) + (0.0114)(0)]$$

$$= 130 \text{ } \mu\text{g/L}$$

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 silver (7440-22-4).

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

September 18, 2000 – Fact sheet updated. No modifications to criteria.

Contact Information

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