



TIER II HUMAN HEALTH NONCANCER VALUES
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ALUMINUM

CAS RN: 7429-90-5
Water Solubility:
Log K_{ow} :
Reference Dose: 0.1 mg/kg/day
Carcinogenicity Weight-of-
Evidence Classification: None

Standard

The human health noncancer aluminum value for drinking water sources is 970 $\mu\text{g/L}$. The human health noncancer value for nondrinking water sources is 4500 $\mu\text{g/L}$.

Calculations

Bioaccumulation Factor:

BAF for inorganics is equal to the BCF (BCF from Cleveland, et al. 1991)

$$\text{BAF} = 36; \text{FCM} = 1.0$$

$$\text{Human health BAF}_{T3} = 36$$

$$\text{Human health BAF}_{T4} = 36$$

Acceptable Daily Exposure:

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

$$\text{ADE} = \frac{\text{LOAEL}}{\text{UF}} = \frac{44 \text{ mg/kg-day}}{1000} = 0.044 \text{ mg/kg/d}$$

Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HNV} &= [(0.044)(70)(0.8)]/0.01 + [(0.0036)(36) + (0.0114)(36)] \\ &= 4500 \text{ } \mu\text{g/L} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HNV} &= [(0.044)(70)(0.8)]/2 + [(0.0036)(36) + (0.0114)(36)] \\ &= 970 \text{ } \mu\text{g/L} \end{aligned}$$

References

1. Domingo, J.L., J.M. Llobet, M. Gomez et al. 1987. Nutritional and toxicological effects of short-term ingestion of aluminum by the rat. Res. Commun. Chem. Pathol. Pharmacol. 56(3): 409-419.
2. Katz, A.C., D.W. Frank, G.M. Zwicker et al. 1984. A 6-month dietary toxicity study of acidic sodium aluminum phosphate in beagle dogs. Food Chem. Toxicol. 22(1): 7-9.

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

February 4, 1997 - Values first developed

March 23, 2000 – Values rechecked (no modifications). Fact sheet updated.

Contact Information

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