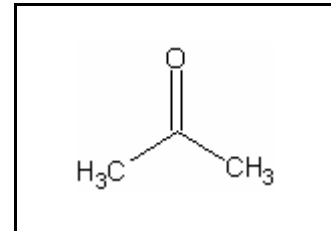




TIER I HUMAN HEALTH NONCANCER CRITERIA

ACETONE

CAS RN:	67-64-1
Water Solubility:	
Log K_{ow} :	-0.24 ^P
Reference Dose:	0.1 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class D; Not classifiable



Standard

The human health noncancer acetone criterion for drinking water sources is 2,800 $\mu\text{g/L}$. The human health noncancer criterion for nondrinking water sources is 220,000 $\mu\text{g/L}$.

Calculations

Bioaccumulation Factor:

BAF predicted based on Log K_{ow}

$$\text{Log } K_{ow} = -0.24 \text{ (CLOGP program), } K_{ow} = 0.5754$$

$$\text{Trophic level 3 FCM} = 1.0; \text{ trophic level 4 FCM} = 1.0$$

$$f_{fd} = 1/(1+(0.00000024 \text{ kg/L})(K_{ow})) = 1.0$$

$$\text{Baseline BAF}_{T3} = (\text{FCM})(K_{ow}) = (0.5754)(1.0) = 0.5754$$

$$\text{Baseline BAF}_{T4} = (0.5754)(1.0) = 0.5754$$

$$\text{Human health BAF}_{T3} = [(0.5754)(0.0182)+1](1.0) = 1.0105$$

$$\text{Human health BAF}_{T4} = [(0.5754)(0.0310)+1](1.0) = 1.0178$$

Acceptable Daily Exposure:

From the IRIS database:

Critical Effect: Increased liver and kidney weights and nephrotoxicity

$$\text{ADE} = \frac{\text{NOAEL}}{\text{UF}} = \frac{100 \text{ mg/kg-day}}{1000} = 0.1 \text{ mg/kg/d}$$

Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HNC} &= [(0.1)(70)(0.8)]/0.01+[(0.0036)(1.0105)+(0.0114)(1.0178)] \\ &= \mathbf{220,000 \mu\text{g/L}} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HNC} &= [(0.1)(70)(0.8)]/2+[(0.0036)(1.0105)+(0.0114)(1.0178)] \\ &= \mathbf{2,800 \mu\text{g/L}} \end{aligned}$$

References

1. Leo,A. and D.Weininger 1997. Daylight Software CLogP Version 3.15+ for Unix Pomona Medical Chemistry Project, Pomona College, Claremont, CA. Distributed by Daylight Chemical Information Systems, Inc., 3952 Claremont St., Irving, CA 92714 (Reference for the Log K_{ow}).
2. USEPA 1986. Integrated Risk Information System (IRIS database) chemical file for acetone (67-64-1).

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

May 4, 1998 - Criteria first developed

March 20, 2000 – Criteria rechecked. ADE from IRIS used instead of one from Michigan DEQ. Fact sheet updated.

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