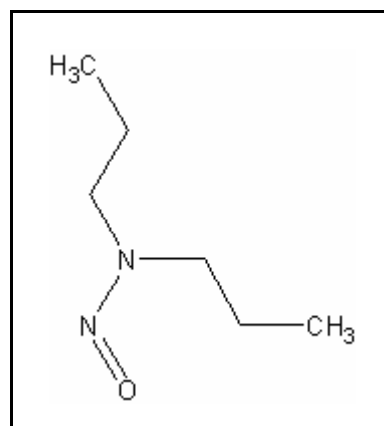




TIER I HUMAN HEALTH CANCER CRITERIA

N-NITROSODIPROPYLAMINE

CAS RN:	621-64-7
Water Solubility:	9,894 mg/L
Log K_{ow} :	3.69 ^P
Risk Associated Dose:	1.4×10^{-6} mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class B2; Probable human Carcinogen



Standard

The human health cancer n-nitrosodipropylamine criterion for drinking water sources is 0.049 $\mu\text{g/L}$. The human health cancer criterion for nondrinking water sources is 2.9 $\mu\text{g/L}$.

Calculations

Bioaccumulation Factor

BAF predicted based on Log K_{ow} (from Stephan 1993)

$$\text{Log } K_{ow} = 1.348 \text{ (CLOGP)}, K_{ow} = 22.28$$

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

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

$$\text{Baseline BAF}_{T3} = (\text{FCM})(K_{ow}) = (1.0)(22.28) = 22.28$$

$$\text{Baseline BAF}_{T4} = (1.0)(22.28) = 22.28$$

$$\text{Human health BAF}_{T3} = [(22.28)(0.0182)+1](1.0) = 1.406$$

$$\text{Human health BAF}_{T4} = [(22.28)(0.0310)+1](1.0) = 1.691$$

Acceptable Daily Exposure:

From the IRIS database:

Critical Effect: Liver and kidney pathology

$$\begin{aligned} \text{RAD} &= 0.00001/q1^* = 0.00001/7.0 \\ &= 1.4 \times 10^{-6} \text{ mg/kg/day} \end{aligned}$$

Where:

RAD = Risk Associated Dose (mg/kg/day)
q1* = Cancer Slope Factor

Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HCC} &= [(1.4 \times 10^{-6})(70)]/0.01 + [(0.0036)(1.406) + (0.0114)(1.691)] \\ &= \mathbf{0.049 \mu\text{g/L}} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HCC} &= [(1.4 \times 10^{-6})(70)]/2 + [(0.0036)(1.406) + (0.0114)(1.691)] \\ &= \mathbf{2.9 \mu\text{g/L}} \end{aligned}$$

References

1. USEPA 1993. Integrated Risk Information System (IRIS database) chemical file n-nitrosodipropylamine (621-64-7).
2. 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})

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
UF	Uncertainty factor

Revision History

March 9, 2000 - Criteria first developed

Contact Information

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