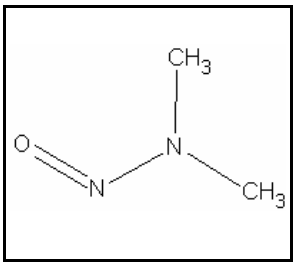
Indiana Department of Environmental Management
Office of Water – Water Quality Standards Section

TIER I HUMAN HEALTH CANCER CRITERIA

N-NITROSODIMETHYLAMINE

CAS RN:	62-75-9
Water Solubility:	≥10 g/100 mL
Log K_{ow}:	-0.64^{P}
Risk Associated Dose:	2.0×10^{-7} mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class B2; Probable human Carcinogen



Standard

The human health cancer n-nitrosodimethylamine criterion for drinking water sources is 0.0068 µg/L. The human health cancer criterion for nondrinking water sources is 0.55 µg/L.

Calculations

Bioaccumulation Factor:

BAF predicted based on Log K_{ow}
Log K_{ow} = -0.618 (CLOGP), K_{ow} = 0.2410
Trophic level 3 FCM = 1.0; trophic level 4 FCM = 1.0

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

Baseline $BAF_{T3} = (FCM)(K_{ow}) = (1.0)(0.2410) = 0.2410$

Baseline $BAF_{T4} = (1.0)(0.2410) = 0.2410$

Human health $BAF_{T3} = [(0.2410)(0.0182)+1](1.0) = 1.004$

Human health BAF_{T4} = [(0.2410)(0.0310)+1](1.0) = 1.007

Risk Associated Dose:

$RAD = 0.00001/q1^{*} = 0.00001/51$
$= 2.0 \times 10^{-7}$

Where:

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

Calculation of Criteria:

Non Drinking Water HCC = $[(2.0 \times 10^{-7})(70)]/0.01+[(0.0036)(1.004)+(0.0114)(1.007)]$

= **0.55 μg/L**

Drinking Water HCC = $[(2.0 \times 10^{-7})(70)]/2+[(0.0036)(1.004)+(0.0114)(1.007)]$

= **0.0068 μg/L**

References

1. USEPA 1993. Integrated Risk Information System (IRIS database) chemical file for n-nitrosodimethylamine (CASRN 62-75-9).

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

July 20, 1999	Criteria first developed
August 23, 2000	Fact sheet updated. No modifications to criteria.

Contact Information

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