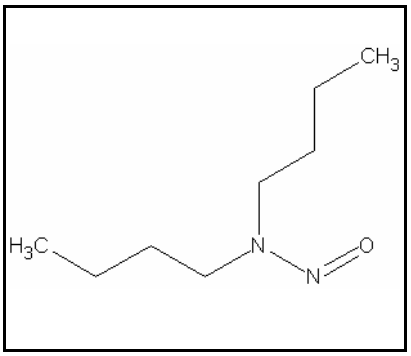
Indiana Department of Environmental Management
Office of Water – Water Quality Standards Section

TIER I HUMAN HEALTH CANCER CRITERIA

N-NITROSODI-N-BUTYLAMINE

CAS RN:	924-16-3
Water Solubility:	
Log K_{ow}:	2.56^{P}
Risk Associated Dose:	1.9×10^{-6} mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class B2; Probable human Carcinogen



Standard

The human health cancer n-nitrosodi-n-butylamine criterion for drinking water sources is 0.06 µg/L. The human health cancer criterion for nondrinking water sources is 0.73 µg/L.

Calculations

Bioaccumulation Factor:

BAF predicted based on Log K_{ow}
Log K_{ow} = 2.56 (CLOGP), K_{ow} = 363.07
Trophic level 3 FCM = 1.01; trophic level 4 FCM = 1.002

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

Baseline $BAF_{T3} = (FCM)(K_{ow}) = (1.01)(363.07) = 366.7$

Baseline $BAF_{T4} = (1.002)(363.07) = 363.8$

Human health $BAF_{T3} = [(366.7)(0.0182)+1](1.0) = 7.673$

Human health BAF_{T4} = [(363.8)(0.0310)+1](1.0) = 12.28

Risk Associated Dose:

$RAD = 0.00001/q1^{*} = 0.00001/5.4$
$= 1.9 \times 10^{-6}$

Where:

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

Calculation of Criteria:

Non Drinking Water HCC =$[(1.9 \times 10^{-6})(70)]/0.01+[(0.0036)(7.673)+(0.0114)(12.28)]$

= **0.73 μg/L**

Drinking Water HCC = $[(1.9 \times 10^{-6})(70)]/2+[(0.0036)(7.673)+(0.0114)(12.28)]$

= **0.06 μg/L**

References

1. USEPA 1993. Integrated Risk Information System (IRIS database) chemical file for n-nitrosodi-n-butylamine (CASRN 924-16-3).

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 21, 1999	Criteria first developed
August 24, 2000	Fact sheet updated. No modifications to criteria.

Contact Information

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