Health-Based Guidance for Water
Health Risk Assessment Unit, Environmental Health Division
651-201-4899

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Toxicological Summary for 2-Methylnaphthalene:

CAS: 91-57-6
Synonyms: 2-methyInaphthalene;2-methyl;2-methyl-naphthalen;Methyl-2 naphthalene;Naphthalene,2-methyl-;naphthalene,beta-methyl

Acute Non-Cancer Risk Assessment Advice ($nRAA_{Acute}$) = Not Derived (Insufficient Data)

Short-term Non-Cancer Risk Assessment Advice ($nRAA_{Short\text{-}term}$) = Not Derived (Insufficient Data)

Subchronic Non-Cancer Risk Assessment Advice ($nRAA_{Subchronic}$) = Not Derived (Insufficient Data)

Chronic Non-Cancer Risk Assessment Advice ($RAA_{Chronic}$) = 8 ug/L

$$\frac{\text{(Reference Dose, mg/kg/d) x (Relative Source Contribution) x (Conversion Factor)}}{\text{(Chronic intake rate, L/kg-d)}}$$

$$= \frac{\text{(0.0018 mg/kg/d) x (0.2) x (1000 ug/mg)}}{\text{(0.043L/kg-d)}}$$

= 8.4 rounded to **8 ug/L**

Reference Dose/Concentration:	0.0018 mg/kg-d (B6C3F1 Mice)
Source of toxicity value:	MDH 2013
Point of Departure (POD):	3.5 mg/kg-d ($BMDL_{05}$, Murata, Denda et al. 1997)
Human Equivalent Dose (MDH, 2011):	3.5 x 0.15 = 0.53 mg/kg-day
Total uncertainty factor:	300
Uncertainty factor allocation:	3 for interspecies differences (for toxicodynamics), 10 for intraspecies variability, and 10 for database uncertainty due to a lack of oral studies in multiple species and a lack of reproductive, developmental, neurotoxicity, and immunotoxicity studies
Critical effect(s):	Pulmonary alveolar proteinosis
Co-critical effect(s):	N/A
Additivity endpoint(s):	Respiratory system

Cancer Risk Assessment Advice (RAA) = Not Derived (Insufficient Data)

1-Methylnaphthalene, a structurally similar compound, has been classified by the U.S. EPA as having "suggestive evidence of carcinogenicity" (U.S. Environmental Protection Agency 2008). The chronic RfD for 2-methylnaphthalene is approximately 6,000 times lower than the LOAEL and 2,000 times lower than the $BMDL_{10}$ for the 1-methylnaphthalene carcinogenicity study. Therefore, the chronic RfD is protective against possible cancer effects.

Cancer Classification: The available data are inadequate for an assessment of human carcinogenic potential based on absence of evidence in humans and limited equivocal evidence in animals. (U.S. Environmental Protection Agency 2003).

Volatile: Yes (moderate)

Summary of Guidance Value History: There is no previous health-based guidance value for 2-methylnaphthalene**.**

Summary of toxicity testing for health effects identified in the Health Standards Statute:

	Endocrine	Immunotoxicity	Development	Reproductive	Neurotoxicity
Tested?	No	Yes	No	No	Yes
Effects?	--	Yes[1]	--	--	Yes[2]

Note: Even if testing for a specific health effect was not conducted for this chemical, information about that effect might be available from studies conducted for other purposes. Most chemicals have been subject to multiple studies in which researchers identify a dose where no effects were observed, and the lowest dose that caused one or more effects. A toxicity value based on the effect observed at the lowest dose across all available studies is considered protective of all other effects that occur at higher doses.

Comments on extent of testing or effects:

[1] At doses approximately 400 times the chronic RfD, immune effects were reported (decreases in neutrophils, increases in lymphocytes, and increased thymus weights due to lymphoma).

[2] In an inhalation study, rats exposed to 2-methylnaphthalene showed decreased pain sensitivity, but balance and coordination were not affected.

References:

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