

beta-Chloronaphthalene; CASRN 91-58-7

Human health assessment information on a chemical substance is included in the IRIS database only after a comprehensive review of toxicity data, as outlined in the [IRIS assessment development process](#). Sections I (Health Hazard Assessments for Noncarcinogenic Effects) and II (Carcinogenicity Assessment for Lifetime Exposure) present the conclusions that were reached during the assessment development process. Supporting information and explanations of the methods used to derive the values given in IRIS are provided in the [guidance documents located on the IRIS website](#).

STATUS OF DATA FOR beta-Chloronaphthalene

File First On-Line 11/01/1990

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	yes	11/01/1990*
Inhalation RfC (I.B.)	not evaluated	
Carcinogenicity Assessment (II.)	not evaluated	

*A comprehensive review of toxicological studies was completed 01/06/05 - please see section I.A.6 for more information.

I. Chronic Health Hazard Assessments for Noncarcinogenic Effects

I.A. Reference Dose for Chronic Oral Exposure (RfD)

Substance Name — beta-Chloronaphthalene

CASRN — 91-58-7

Last Revised — 11/01/1990

The oral Reference Dose (RfD) is based on the assumption that thresholds exist for certain toxic effects such as cellular necrosis. It is expressed in units of mg/kg-day. In general, the RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk

of deleterious effects during a lifetime. Please refer to the Background Document for an elaboration of these concepts. RfDs can also be derived for the noncarcinogenic health effects of substances that are also carcinogens. Therefore, it is essential to refer to other sources of information concerning the carcinogenicity of this substance. If the U.S. EPA has evaluated this substance for potential human carcinogenicity, a summary of that evaluation will be contained in Section II of this file.

I.A.1. Oral RfD Summary

Critical Effect	Experimental Doses*	UF	MF	RfD
Dyspnea, abnormal appearance, liver enlargement	NOAEL: 250 mg/kg/day LOAEL: 600 mg/kg/day	3000	1	8E-2 mg/kg/day
Mouse Subchronic Oral Gavage Study				
U.S. EPA, 1989				

*Conversion Factors: None

I.A.2. Principal and Supporting Studies (Oral RfD)

U.S. EPA. 1989. Subchronic study in mice with beta-Chloronaphthalene. HLA Study No. 2399-124. Prepared by Hazleton Laboratories America, Inc. for the U.S. EPA, Office of Solid Waste, Washington DC.

CD-1 mice (20/sex/group) were administered oral gavage dosages of 0, 100, 250, or 600 mg/kg/day beta-chloronaphthalene in corn oil for 13 weeks. Parameters examined included mortality, body and organ weight changes, food consumption, clinical signs, ophthalmologic changes, hematology, clinical chemistry, and gross histopathology. Mortality was reported in one male and one female low- dose mice and in three male and two female high-dose mice, although no statistical significance was found when compared with controls. Daily observations revealed dyspnea, rough hair coat, and languid, thin, hunched appearance of high-dose animals; these signs were more prevalent among females than males. Similar symptoms were also observed in other treatment groups, but the incidence was not statistically significant. Although total food consumption was significantly increased in high-dose males throughout the study, this did not

result in a significant increase in body weight gain, compared with controls. Absolute and relative liver and gall bladder weights were significantly increased in both sexes at the high-dose level and were accompanied by centrilobular hepatocellular enlargement. Both absolute and relative adrenal weights were significantly increased in low-dose females, but no dose-response relationship could be established, nor was there any corresponding histopathologic changes. No other effects were observed. The LOAEL was identified as 600 mg/kg/day and the NOAEL was 250 mg/kg/day.

I.A.3. Uncertainty and Modifying Factors (Oral RfD)

UF — An uncertainty factor of 3000 reflects 10 each for inter- and intraspecies conversion, 10 for the use of a subchronic study for chronic RfD derivation, and 3 to account for the lack of reproductive/developmental and chronic toxicity data.

MF — None

I.A.4. Additional Studies/Comments (Oral RfD)

Brodie et al. (1971) injected male Sprague-Dawley rats i.p. with 80 mg phenobarbital/kg bw for three successive days, followed by a similar injection of beta-chloronaphthalene the next day. Livers were removed 24 hours after the injection and examined; extensive necrosis was found. In this study, which was designed to investigate the hepatotoxicity of halogenated aromatic hydrocarbons using a variety of compounds, the authors concluded that the liver can convert stable organic compounds to alkylating agents that form covalent bonds with tissue macromolecules. The study is inadequate for oral RfD derivation due to the inappropriate route of administration, duration of exposure, and dependence on phenobarbital for the obtained result.

I.A.5. Confidence in the Oral RfD

Study — Medium

Database — Low

RfD — Low

Confidence in the principal study is medium: it is a well-designed study that examined and identified both a LOAEL and NOAEL for multiple endpoints using an adequate number of animals. Clinical signs reported at the LOAEL provide additional strength; the liver effects seen at the LOAEL are also supported by the liver toxicity observed by Brodie et al. (1971). Confidence in the data base is low; developmental, reproductive and chronic toxicity following oral exposure to beta-chloronaphthalene have not been tested. Confidence in the RfD is accordingly low.

I.A.6. EPA Documentation and Review of the Oral RfD

Source Document — This assessment is not presented in any existing U.S. EPA document.

Other EPA Documentation — None

Agency Work Group Review — 02/21/1990

Verification Date — 02/21/1990

A comprehensive review of toxicological studies published through 2004 was conducted. No new health effects data were identified that would be directly useful in the revision of the existing RfD for beta-Chloronaphthalene and a change in the RfD is not warranted at this time. For more information, IRIS users may contact the IRIS Hotline at hotline.iris@epa.gov or (202)566-1676.

I.A.7. EPA Contacts (Oral RfD)

Please contact the IRIS Hotline for all questions concerning this assessment or IRIS, in general, at (202)566-1676 (phone), (202)566-1749 (FAX) or hotline.iris@epa.gov (internet address).

I.B. Reference Concentration for Chronic Inhalation Exposure (RfC)

Substance Name — beta-Chloronaphthalene

CASRN — 91-58-7

Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — beta-Chloronaphthalene

CASRN — 91-58-7

This substance/agent has not undergone a complete evaluation and determination under US EPA's IRIS program for evidence of human carcinogenic potential.

III. [reserved]

IV. [reserved]

V. [reserved]

VI. Bibliography

Substance Name — beta-Chloronaphthalene

CASRN — 91-58-7

VI.A. Oral RfD References

Brodie, B.B., W.D. Reid, A.K. Cho, G. Sipes, G. Krishna and J.R. Gillette. 1971. Possible mechanisms of liver necrosis caused by aromatic organic compounds. Proc. Natl. Acad. Sci. 68: 160-164.

U.S. EPA. 1989. Subchronic study in mice with beta-Chloronaphthalene. HLA Study No. 2399-124. Prepared by Hazleton Laboratories America, Inc. for U.S. EPA, Office of Solid Waste, Washington, DC.

VI.B. Inhalation RfC References

None

VI.C. Carcinogenicity Assessment References

None

VII. Revision History

Substance Name — beta-Chloronaphthalene
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Date	Section	Description
11/01/1990	I.A.	Oral RfD summary on-line
12/03/2002	I.A.6.	Screening-Level Literature Review Findings message has been added.
03/03/2005	I.A.6.	Screening-Level Literature Review Findings message has been removed and replaced by comprehensive literature review conclusions.

VIII. Synonyms

Substance Name — beta-Chloronaphthalene
CASRN — 91-58-7
Last Revised — 11/01/1990

- 91-58-7
- Naphthalene, 2-chloro-
- beta-CHLORONAPHTHALENE
- HSDB 4014
- RCRA WASTE NUMBER U047
- 2-CHLORNAFTALEN [Czech]
- 2-CHLORONAPHTHALENE