

Bromochloromethane; CASRN 74-97-5

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 Bromochloromethane

File First On-Line 03/01/1991

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	not evaluated	
Inhalation RfC (I.B.)	not evaluated	
Carcinogenicity Assessment (II.)	yes	03/01/1991*

*A comprehensive review of toxicological studies was completed (07/28/05) - please see section II.D.2. for more information.

I. Chronic Health Hazard Assessments for Noncarcinogenic Effects

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

Substance Name — Bromochloromethane
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Not available at this time.

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

Substance Name — Bromochloromethane
CASRN — 74-97-5

Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Bromochloromethane
CASRN — 74-97-5
Last Revised — 03/01/1991

Section II provides information on three aspects of the carcinogenic assessment for the substance in question; the weight-of-evidence judgment of the likelihood that the substance is a human carcinogen, and quantitative estimates of risk from oral exposure and from inhalation exposure. The quantitative risk estimates are presented in three ways. The slope factor is the result of application of a low-dose extrapolation procedure and is presented as the risk per (mg/kg)/day. The unit risk is the quantitative estimate in terms of either risk per ug/L drinking water or risk per ug/cu.m air breathed. The third form in which risk is presented is a drinking water or air concentration providing cancer risks of 1 in 10,000, 1 in 100,000 or 1 in 1,000,000. The rationale and methods used to develop the carcinogenicity information in IRIS are described in The Risk Assessment Guidelines of 1986 (EPA/600/8-87/045) and in the IRIS Background Document. IRIS summaries developed since the publication of EPA's more recent Proposed Guidelines for Carcinogen Risk Assessment also utilize those Guidelines where indicated (Federal Register 61(79):17960-18011, April 23, 1996). Users are referred to Section I of this IRIS file for information on long-term toxic effects other than carcinogenicity.

II.A. Evidence for Human Carcinogenicity

II.A.1. Weight-of-Evidence Characterization

Classification — D; not classifiable as to human carcinogenicity.

Basis — Based on the lack of data regarding the carcinogenicity of bromochloromethane in humans or animals; however, there are data indicative of genotoxic effects and structural relationships to halogenated methanes classified as B2 probable human carcinogens.

II.A.2. Human Carcinogenicity Data

None.

II.A.3. Animal Carcinogenicity Data

None.

II.A.4. Supporting Data for Carcinogenicity

Mutagenicity tests with bromochloromethane in microorganisms yielded consistently positive results. Osterman-Golkar et al. (1983) reported positive responses in reverse mutation assays with *Salmonella typhimurium* TA100 and TA1535 exposed to bromochloromethane in the absence of activation at 20-60 mM and with or without activation in the vapor phase at 10 uL/plate. Similarly, Simmon (1978), Simmon et al. (1977), and Simmon and Tardiff (1978) reported positive results in *S. typhimurium* exposed without activation at 10- 50 uL/dessicator. Reverse mutations were observed at the tyr locus in *Escherichia coli* WU361089 exposed at 10 uL/plate without activation (Osterman- Golkar et al., 1983). Prophage induction was also observed in *E. coli* K394 exposed without activation at 10 uL/plate (Osterman-Golkar et al., 1983).

Bromochloromethane is structurally similar to dichloromethane (methylene chloride), which is classified B2, probable human carcinogen.

II.B. Quantitative Estimate of Carcinogenic Risk from Oral Exposure

None.

II.C. Quantitative Estimate of Carcinogenic Risk from Inhalation Exposure

None.

II.D. EPA Documentation, Review, and Contacts (Carcinogenicity Assessment)

II.D.1. EPA Documentation

Source Document — U.S. EPA, 1990

The Health and Environmental Effects Document for Bromochloromethane will be subjected to external peer review and Agency Review.

II.D.2. EPA Review (Carcinogenicity Assessment)

Agency Work Group Review — 01/10/1991

Verification Date — 01/10/1991

A comprehensive review of toxicological studies published through July 2005 was conducted. No new health effects data were identified that would be directly useful in the revision of the existing carcinogenicity assessment for Bromochloromethane and a change in the assessment 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.

II.D.3. EPA Contacts (Carcinogenicity Assessment)

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).

III. [reserved]

IV. [reserved]

V. [reserved]

VI. Bibliography

Substance Name — Bromochloromethane

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VI.A. Oral RfD References

None.

VI.B. Inhalation RfC References

None.

VI.C. Carcinogenicity Assessment References

Osterman-Golkar, S., S. Hussain, S. Walles, B. Anderstam and K. Sigvardsson. 1983. Chemical reactivity and mutagenicity of some dihalomethanes. *Chem.- Biol. Interact.* 46(1): 121-130.

Simmon, V.F. 1978. Structural correlations of carcinogenic and mutagenic alkyl halides. U.S. DHEW Publ. FDA 78-1045. *Struct. Correl. Carcinog. Mutagen.* p. 163-171.

Simmon, V.F. and R.G. Tardiff. 1978. Mutagenic activity of halogenated compounds found in chlorinated drinking water. *Water Chlorination: Environ. Health Eff. Proc. Conf.* 2: 417-431.

Simmon, V.F., K. Kauhanen and R.G. Tardiff. 1977. Mutagenic activity of chemicals identified in drinking water. *Dev. Toxicol. Environ. Sci.* 2(Prog. Genet. Toxicol.): 249-258.

U.S. EPA. 1990. Health and Environmental Effects Document for Bromochloromethane. Prepared by the Environmental Criteria and Assessment Office, Cincinnati, OH for the Office of Solid Waste and Emergency Response, Washington, DC.

VII. Revision History

Substance Name — Bromochloromethane
CASRN — 74-97-5

Date	Section	Description
03/01/1991	II.	Carcinogenicity assessment on-line
10/28/2003	II.D.2.	Screening-Level Literature Review Findings message has been added.
08/15/2005	II.D.2.	Screening-Level Literature Review Findings message has been removed and replaced by comprehensive literature review conclusions.

VIII. Synonyms

Substance Name — Bromochloromethane

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Last Revised — 03/01/1991

- 74-97-5
- Methane, bromochloro-
- Bromochloromethane
- Bromoclorometano [Spanish]
- Chlorobromomethane
- Fluorocarbon 1011
- Halon 1011
- HSDB 2520
- METHANE, BROMOCHLORO-
- Methylene chlorobromide
- MIL-B-4394-B
- MONO-CHLORO-MONO-BROMO-METHANE
- Monochloromonobromomethane
- NSC 7294
- UN 1887