

Fact Sheet Date: March 12, 1998

**NEW YORK STATE
- HUMAN HEALTH FACT SHEET -**

**Ambient Water Quality Value for
Protection of Sources of Potable Water**

SUBSTANCE: 1,2-Dibromobenzene

CAS REGISTRY NUMBER: 583-53-9

AMBIENT WATER QUALITY VALUE: 5 ug/L

BASIS: Surface Water: Principal Organic Contaminant Classes
Groundwater: Former Reference to 10 NYCRR Subpart 5-1 Principal Organic Contaminant (POC) General Maximum Contaminant Level (MCL)

I INTRODUCTION

This value applies to the water column and is designed to protect humans from the effects of contaminants in sources of drinking water; it is referred to as a Health (Water Source) or H(WS) value.

Regulations (6 NYCRR 702.2) require that the water quality value be based on the procedures in sections 702.3 through 702.7. Available information on 1,2-dibromobenzene was examined as described in "Scope of Review," below. Potential water quality values are derived below, and the value of 5 ug/L selected as described under "Selection of Value."

II PRINCIPAL ORGANIC CONTAMINANT CLASSES AND SPECIFIC MCL (702.3)

A. Discussion

1,2-Dibromobenzene does not have a Specific MCL as defined in 700.1. However, this substance is in principal organic contaminant class iii as defined in 700.1.

The U. S. Environmental Protection Agency has not established a maximum contaminant level goal (MCLG) or MCL for drinking water for 1,2-dibromobenzene.

Under the State Sanitary Code (10 NYCRR Part 5, Public Water Supplies), the New York State Department of Health has established a general maximum contaminant level of 5 ug/L for principal organic contaminants such as 1,2-dibromobenzene in drinking water.

B. Derivation of Water Quality Value

Because 1,2-dibromobenzene is in a principal organic contaminant class and has no Specific MCL, regulations require that the water quality value not exceed 5 ug/L.

III ONCOGENIC EFFECTS (702.4)

A. Data

No information was found on the oncogenicity of 1,2-dibromobenzene. In addition, U.S. EPA (1984) found no information on the carcinogenicity or mutagenicity of this substance.

Covalent binding to proteins can be an indication of oncogenic potential. Weller et al. (1988) studied the covalent binding of 1,2-dibromobenzene and other aryl bromides in vitro. When incubated with microsomes from untreated rats, about 14% of the metabolized 1,2-dibromobenzene became covalently bound to proteins, which was less than bromobenzene but more than bromotoluene.

The pharmacokinetics of 1,2-dibromobenzene was studied in rodents by Ogino (1984). Following a single oral dose, the concentration of 1,2-dibromobenzene in several organs and tissues peaked within 10 hours, then declined rapidly. Its accumulation was reported to be in the descending order of adipose tissue, liver (= pectoral muscle), kidney, brain and blood. U.S. EPA (1984) lists 2,3- and 3,4-dibromophenol as urinary and/or fecal metabolites of 1,2-dibromobenzene.

B. Derivation of Water Quality Value

No information was found upon which to derive a water quality value for 1,2-dibromobenzene based on oncogenic effects.

IV NON-ONCOGENIC EFFECTS (702.5)

A. Data

No information on the non-oncogenic effects of 1,2-dibromobenzene suitable for the derivation of a water quality value was found. In addition, U.S. EPA (1984) did not report any information on the teratogenicity or other reproductive effects or chronic toxicity of this substance. Pharmacokinetic information is described under "oncogenic effects," above.

B. Derivation of Water Quality Value

No information was found upon which to derive a water quality value for 1,2-dibromobenzene based on non-oncogenic effects.

V CHEMICAL CORRELATION (702.7)

Although available data were not sufficient to evaluate 1,2-dibromobenzene based on 702.4 or 702.5, a water quality value based on chemical correlation was not derived because we were not aware of a similar substance for which a water quality value would be more stringent than the principal organic contaminant class value of 5 ug/L.

VI SELECTION OF VALUE

The H(W)S value is designed to protect humans from oncogenic and non-oncogenic effects from contaminants in sources of drinking water. To protect for these effects, regulations (6 NYCRR 702.2(b)) require that the value be the most stringent of the values derived using the procedures found in sections 702.3 through 702.7. The principal organic contaminant class value of 5 ug/L (702.3(b)) is the most stringent value derived by these procedures and is the ambient water quality value for 1,2-dibromobenzene.

It should be noted that the principal organic contaminant (POC) value of 5 ug/L became a standard for groundwater (6 NYCRR 703.5) effective on January 9, 1989 by inclusion by reference to 10 NYCRR Subpart 5-1 standards. The basis and derivation of this POC standard are described in a separate fact sheet.

VII REFERENCES

6 NYCRR (New York State Codes, Rules and Regulations). Water Quality Regulations, Surface Water and Groundwater Classifications and Standards: Title 6 NYCRR, Chapter X, Parts 700-705. Albany, NY: New York State Department of Environmental Conservation.

10 NYCRR (New York State Codes, Rules and Regulations). Public Water Systems: Title 10 NYCRR, Chapter 1, State Sanitary Code, Subpart 5-1. Albany, NY: New York State Department of Health, Bureau of Public Water Supply Protection.

Ogino, Y. 1984. The biological toxicity of several brominated benzene pollutants of the environment: 4. Biological fate of brominated benzenes in animals. *Okayama Igakkai Zasshi* 96(5-6):569-578 (as cited by Toxline, 1994).

Toxline. 1994. On-line database. Searched by New York State Library, August 26, 1994.

U.S. EPA (Environmental Protection Agency). 1984. Health and Environmental Effects Profile for Bromobenzenes. Cincinnati, OH: Environmental Criteria and Assessment Office. EPA/600/X-84/128. PB88-137757.

Weller, P.E., N. Narasimhan, J.A. Buben and R.P. Hanzlik. 1988. In vitro metabolism and covalent binding among ortho-substituted bromobenzenes of varying hepatotoxicity. *Drug Metabolism and Disposition* 16(2):232-237.

VIII SCOPE OF REVIEW

Several of the widely-recognized sources listed below can provide a comprehensive review and often a quantitative assessment of the toxicity of a substance. These sources were searched for information on 1,2-dibromo-benzene; if none was found it is so noted.

- IRIS (U.S. EPA's Integrated Risk Information System). On-line database. (not on IRIS).
- RTECS (Registry of Toxic Effects of Chemical Substances). On-line database. (not on RTECS).
- CCRIS (Chemical Carcinogenesis Research Information System). On-line database. (not on CCRIS).
- ATSDR (Agency for Toxic Substances and Disease Registry) toxicological profile (not found).

- U.S. EPA ambient water quality criteria document (not found).
- U.S. EPA health advisory (not found).
- U.S. EPA drinking water criteria document (not found).
- U.S. EPA Drinking Water Regulations and Health Advisories, Office of Water, May 1994.
- IARC (International Agency for Research on Cancer) Monographs Supplement 7.

No comprehensive review document was found for 1,2-dibromobenzene. Therefore, an on-line search of the literature was conducted by the New York State Library from 1992 back to the 1960's on the databases listed below.

- NTIS (National Technical Information Service)
- TOXLINE
- BIOSIS

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Division of Water
SJS
November 21, 1995