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: Toluene **CAS REGISTRY NUMBER:** 108-88-3

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)

SUMMARY OF INFORMATION

New York State developed a guidance value for toluene in water of 50 ug/L based on a review of literature up to 1984 (NYS, 1985). This was based on section 701.15(e) of 6 NYCRR that describes a general value of 50 ug/L when the database is inadequate to derive a specific value. Recent assessments (1983-1989) of health effects have been reviewed (Becker, 1987; Reed, N. et al., 1989; USEPA, 1988).

The toxic effects of toluene due to inhalation exposure have been extensively documented. These include diverse central nervous system (CNS) effects and cardiac arrythmias after acute exposure and central and peripheral nervous system, hematological and hepatic changes after longer-term exposure in humans (Reed et al., 1989). In animals, chronic inhalation exposure in rats resulted in renal, hepatic, hematological and neurological effects. Weight retardation and skeletal abnormalities were observed in fetuses of exposed pregnant rats and mice (Reed et al., 1989; USEPA, 1988). There are limited animal data on effects of chronic oral exposure. Renal and CNS changes have been documented (Reed et al., 1989).

In a well-conducted bioassay, the National Toxicology Program found no evidence of carcinogenicity in rats and mice after toluene exposure. The weight of evidence indicates it is not genotoxic (Huff, 1989).

Based on an inhalation study in F344 rats, the Office of Drinking Water (USEPA, 1988) identified a NOAEL of 300 ppm and a reference dose of 346 ug/kg/day for hematological changes in females. A specific ambient water quality value calculated using procedures established in NYS regulations greatly exceeds 5 ug/L.

DERIVATION OF VALUE

Surface Water

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)) represents the most stringent value that can be derived for toluene. Therefore, the ambient surface water quality value for toluene is 5 ug/L.

Groundwater

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

REFERENCES

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Huff, J., 1989. National Toxicology Program. Toxicology and Carcinogenesis Studies of Toluene in F344/N Rats and B6C3F$_1$ Mice. NTP Technical Report 371. U.S. Department of Health and Human Services, Research Triangle Park, NC.

6 NYCRR. Chapter X. Parts 700-705. Water Quality Regulations. Surface Waters and Groundwater Classifications and Standards.

10 NYCRR. Chapter I. Part 5, Subpart 5-1. Public Water Supplies.

NYS, New York State. 1985. Ambient Surface Water Quality Standards Documentation. Toluene. September 6, 1985 (Fact Sheet Revised). Albany, NY.

Reed, N. et al., 1989. Health Assessment of Toluene in California Drinking Water. Department of Environmental Toxicology. University of California, Davis, CA. PB89-190383.

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