

AMBIENT SURFACE WATER QUALITY  
STANDARDS DOCUMENTATION

CHEMICAL: Bromide

VALUE(S) ADDED 7-24-85

CAS NO.(s): NA

FACT SHEET REVISED -----

BASIS (Human/Aquatic): Human

VALUE(S) REMOVED -----

WATER CLASSIFICATION: AA; AA-s; A; A-s

STANDARD: 2,000 ug/l

Note B

REMARKS:

SUMMARY INFORMATION:

Available toxicity information on bromide has been reviewed.<sup>1,2</sup> The bromide ion can be formed from naturally occurring elemental bromine (Br<sub>2</sub>) which is used as a disinfectant in swimming pools but which is not recommended for use in drinking water disinfection because of its cumulative neurotoxicity. The characteristics of bromides are well known because inorganic bromides were once extensively used in prescription sedatives.<sup>1</sup> The effective plasma concentration for sedation in humans is approximately 960 mg/l which corresponds to a maintenance dose of about 12 mg/kg/day. No significant adverse effects were reported in humans who were maintained on daily doses of inorganic bromide (about 6.4 mg/kg/day) resulting in plasma concentrations of up to 500 mg/l for 4 months. Normal blood levels of inorganic bromide in humans range from 1.5 to 50 mg/l. The midrange normal bromide concentration of 26 mg/l corresponds to a daily dose of 0.3 mg/kg, assuming a daily bromide elimination of six percent, 15 liters of serum, and an adult body weight of 70 kg.

STANDARD DERIVATION:

In view of the limited data base on the chronic toxicity of inorganic bromide, the most appropriate data for chronic exposure to inorganic bromide appear to be the concentration found in the serum of normal individuals. A concentration of 2.1 mg/l in drinking water would provide 20% of the daily dose (0.3 mg/kg or 21 mg/day for a 70 kg adult) calculated to yield a blood serum concentration equivalent to the midrange normal value of 26 mg/l. The recommended standard for inorganic bromide is 2,000 ug/l. This level, however, if found in a drinking water supply would probably result from contamination.

REFERENCES:

- (1) Drinking Water and Health, 1980, Vol. 3, National Academy Press, Washington, D.C.
- (2) Rook, et al., 1978, Bromide oxidation and organic substitution in water treatment, J. Env. Sci. Health, A13(2), 91-116.

TG/pb DEC 18 1984