

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

To: **File for Bromine (CAS# 7726-95-6)**
From: George Eurich
Date: 1-10-2012
Subject: **Screening level for Bromine (CAS# 7726-95-6)**

The screening level for Bromine is $7 \mu\text{g}/\text{m}^3$ based on 8 hour averaging.

The following references or databases were searched to identify data to determine the screening level: U.S. Environmental Protection Agency (EPA) Integrated Risk Information System (IRIS), National Institute for Occupational Safety and Health (NIOSH) Registry for Toxic Effects of Chemical Substances (RTECS), American Conference of Governmental and Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), Michigan Department of Natural Resources and Environment (DNRE) library, International Agency for Research on Cancer (IARC) Monographs, Chemical Abstract Service (CAS) online, National Library of Medicine (NLM) - Toxline, and National Toxicology Program (NTP) Status Report.

Physical Data:

- * Dark reddish-brown liquid with suffocating, irritating fumes
- * MW— 159.8
- * Soluble in common organic solvents, very slightly soluble in water
- * Violently reactive with aqueous ammonia
- * **1 ppm=6.54 mg/m³**

The AQD established an interim Initial Threshold Screening Level of $7 \mu\text{g}/\text{m}^3$ for Bromine in 1993. Subsequent literature reviews, as noted above, were performed in 2006 and again in 2011. These searches determined that there are no EPA RfD or RfC values for bromine, nor are there published toxicity data sufficient to derive a RfC. Occupational safety levels were noted by both NIOSH (REL) and ACGIH (TLV) of 0.1 ppm ($0.7 \text{ mg}/\text{m}^3$). Rationale noted in the NIOSH guideline is protection against the respiratory system, eye, skin, and CNS effects. The ACGIH TLV lists the potential for upper and lower respiratory tract irritation and lung damage. Of note, NIOSH and ACGIH differ on STEL levels (0.3 ppm and 0.2 ppm, respectively) due to ACGIH recognizing upper respiratory irritation associated with an incident of exposure to bromine from an accidental industrial release to the air

ITSL = OEL divided by 100

$$= \frac{0.7 \frac{\text{mg}}{\text{m}^3}}{100}$$

$$= 0.007 \frac{\text{mg}}{\text{m}^3} \times 1000 \frac{\mu\text{g}}{\text{mg}}$$

$$\text{ITSL} = 7 \frac{\mu\text{g}}{\text{m}^3} \text{ based on 8hr avg}$$

ACGIH. 2010. TLVs and BEIs based on the documentation of the threshold limit values for chemical substances and physical agents & biological exposure indices. ACGIH. Cincinnati, OH.