

CHLORAMINES-RELATED RESEARCH

16) Why does EPA believe **monochloramine** is safe and appropriate to use?

Research and experience indicate that **monochloramine use at regulated levels is a safe means for disinfecting drinking water.**

- Research indicates that monochloramine produces lower levels of regulated disinfection byproducts compared to chlorine.
- Decades of use in the U.S., Canada, and Great Britain shows monochloramine is a safe and effective secondary drinking water disinfectant.
- EPA continues researching the safety of monochloramine and other drinking water disinfectants.

EPA used accepted **risk assessment methods to evaluate the safety of monochloramine.**

- EPA's risk assessment process included a review of available research and historical data.
- EPA's *Drinking Water Criteria Document for Chloramines*¹ provides the detailed risk assessment process that the Agency followed in setting the standard for monochloramine.²
- EPA's risk assessment process focused on health outcomes that scientists considered most critical.

EPA's regulatory standard for chloramines provides a wide margin of safety³ to offset uncertainties in risk assessments.

- Risk assessments of monochloramine contain uncertainties, including information regarding potentially harmful disinfection byproducts.
- Federal laws require EPA to take action to protect human health even when there is incomplete information⁴.
- EPA regulatory officials must weigh the public health benefits of disinfection against the uncertain risks of the harmful disinfection byproducts⁵.

Additional Supporting Information:

1. The *Drinking Water Criteria Document for Chloramines* can be found at <http://www.epa.gov/ncea/pdfs/water/chloramine/dwchloramine.pdf>, ECAO-CIN-D002, March, 1994.
2. The chloramine limit was set in the Stage 1 DBP Rule. This rule is available at <http://www.epa.gov/safewater/disinfection/index.html>. In addition, EPA has enforceable regulations to limit occurrence of disinfection byproducts in drinking water for a group of four total trihalomethanes (TTHMs) (chloroform, bromodichloromethane (BDCM), dibromochloromethane (DBCM), and bromoform), a group of five haloacetic acids (HAA5) (monochloroacetic acid (MCA), dichloroacetic acid (DCA), trichloroacetic acid (TCA), monobromoacetic acid (MBA), and dibromoacetic acid (DBA)), and the individual byproducts chlorite and bromate. The maximum contaminant levels for these disinfection byproducts are: TTHMs (0.080 mg/L), HAA5 (0.060 mg/L), chlorite (1.0 mg/L), bromate (0.010 mg/L). See Stage 2 Disinfection Byproducts Rule (71 FR 388, January 4, 2006) for more information on disinfection byproducts and discussion of uncertainties, <http://www.epa.gov/fedrgstr/EPA-WATER/2006/January/Day-04/w03.pdf>.
3. For additional information regarding how uncertainty factors are applied to risk assessments to provide a wide margin of safety see: <http://epa.gov/risk/dose-response.htm>.
4. For example, See the Safe Drinking Water Act section 1412(b).
5. See the Safe Drinking Water Act section 1412(b)(6) for more information.