

CHLORAMINES-RELATED RESEARCH

15) Why does EPA believe that sufficient research has been conducted to approve the use of **monochloramine** as a drinking water **disinfectant**?

EPA uses *risk assessment* methods to evaluate the safety of drinking water disinfectants.

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

EPA's regulations account for uncertainties in the *risk assessment* by applying uncertainty factors.³

- Risk assessments of monochloramine contain substantial uncertainties regarding potentially harmful disinfection byproducts.
- Federal laws require EPA to act to protect human health even when there is incomplete information⁴.
- Regulators must weigh the public health benefits of disinfection against the risks of the harmful disinfection byproducts⁵.

Research and experience indicate that *monochloramine* is safe at levels that are typically used to treat drinking water.

- Research indicates that monochloramine produces lower levels of regulated disinfection byproducts that may be harmful.
- Monochloramine use may reduce the potential cancer risk from chlorinated byproducts.
- EPA continues to encourage research⁶ on the safety of monochloramine as a drinking water disinfectant.

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 (also known as safety 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.

6. See question 19 for more information on research.