



HALOACETIC ACIDS

What are HALOACETIC ACIDS?

Haloacetic acids (HAAs) are compounds containing chlorine and/or bromine. HAAs are formed during some industrial processes and when water supplies are chlorinated or disinfected.

Where can HAAs be found and how are they used?

HAAs are formed when drinking water and wastewater are disinfected. HAAs are also formed during production processes in chemical and pharmaceutical plants. Bleaching wood pulp at paper mills can result in HAAs.

How can people be exposed to HAAs?

You could be exposed to HAAs through:

Drinking water containing HAAs. Exposure can also occur by eating food prepared with such water.

Touching water containing HAAs, such as while showering.

Eye Contact by touching the eyes with water containing HAAs.

How do HAAs work and how can they affect my health?

HAAs can destroy tissues of the mucous membranes and upper respiratory tracts. Breathing HAAs could cause a burning feeling, coughing, wheezing, sore throat, and shortness of breath. You could also have a headache or nausea. Breathing HAAs can cause death from severe damage to the throat, lungs and breathing system.

Swallowing HAAs can be fatal because the compounds severely burn the mouth, throat and stomach. Other harmful effects are sore throat, vomiting or diarrhea.

The levels of HAAs in drinking water are well below levels that would be harmful. Some people who drink water containing HAAs at higher than normal levels over many years may have a higher risk of getting cancer.

Skin contact can cause redness, pain and severe burns. Eye contact can cause blurred vision, redness, pain and severe burns.

Long-term exposure to HAAs causes liver and kidney problems. Persons with lung disease may experience more harmful effects.

How is HAA poisoning treated?

There is no treatment just for HAA poisoning. Doctors can treat the symptoms.

What should I do if exposed to HAAs?

If you breathe HAAs, move to fresh air. If breathing is difficult, give oxygen. Get medical help right away.

If you swallow HAAs, DO NOT THROW UP. Take large quantities of water. Get medical help right away.

If you touch HAAs, flush skin with plenty of water for at least 15 minutes. Remove clothing and shoes that contacted HAAs. Get medical help. Wash clothing before wearing again.

If you get HAAs in your eyes, flush eyes right away with water for 15 minutes or more. Lift the lower and upper eyelids from time to time. Get medical help right away.

24/7 Emergency Contact Number: 1-888-295-5156

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What factors limit use or exposure to HAAs?

Using proper safety procedures in workplaces will help limit exposures.

Is there a medical test to show whether I've been exposed to HAAs?

There is no test that can show exposure to HAAs. A doctor will check for symptoms of exposure.

Technical information for HAAs

CAS Number: Monochloroacetic Acid – 79-11-8

Dichloroacetic Acid – 79-43-6

Trichloroacetic Acid – 76-03-9

Bromoacetic Acid – 79-08-3

Dibromoacetic Acid – 631-64-1

Chemical Formula: Monochloroacetic Acid – CH_2ClCOOH

Dichloroacetic Acid – $\text{C}_2\text{H}_2\text{Cl}_2\text{O}_2$

Trichloroacetic Acid – CCl_3COOH

Bromoacetic Acid – $\text{C}_2\text{H}_3\text{BrO}_2$

Dibromoacetic Acid – $\text{C}_2\text{H}_2\text{Br}_2\text{O}_2$

Carcinogenicity (EPA): Possible carcinogens.

MCL (Drinking Water): The MCL for HAAs is 0.06 mg/L

OSHA Standards: There are no OSHA standards for any of the HAAs.

NIOSH Standards: 1 ppm (7 mg/m^3) time weighted average for a 10 hour day, 40 hour week.

References and Sources

American Conference of Governmental Industrial Hygienists (ACGIH). 2003. *Guide to Occupational Exposure Values*. Cincinnati, OH.

NIOSH Pocket Guide to Chemical Hazards. 2003. Atlanta, GA: U.S. Department of Health and Human Services.

Chemindustry.com, <http://www.chemindustry.com/chemicals/248227.html> - Accessed 12/2/09

Environment Canada, Science and the Environment Bulletin, "Haloacetic Acids in the Environment". http://www.collectionscanada.gc.ca/eppp-archive/100/202/301/science_environ-e/html/2001/03-04/article4_e.html - Accessed 12/2/09