



BROMATE

What is bromate?

Bromate is a byproduct formed when drinking water is disinfected using a process called ozonation. Bromate has no taste or color and is not found in nature.

Where can bromate be found and how is it used?

Bromate is not normally found in water. It is found in some public water supply systems that disinfect using the ozonation process.

How can people be exposed to bromate?

Most people are only exposed to bromate if it is in their drinking water. Only water treated by ozonation will contain bromate.

You could be exposed to bromate through:

- **Drinking** water containing bromate.
- **Eye contact** by touching the eyes with water containing bromate. This could happen from washing or showering.

How does bromate work and how can it affect my health?

Bromate is harmful in high doses. Studies of very low doses in animals showed bromate to cause cancer and to be mutagenic (causing a change in a gene or chromosome). In humans, the effects of low levels of bromate in drinking water are not well understood.

When people accidentally or purposefully swallowed permanent hair wave neutralizing solution containing bromate, they experienced vomiting, stomach pain, and diarrhea. Bromate poisoning causes tiredness, loss of reflexes, and other problems with the central nervous system. Exposure could cause anemia, which is a lack of red blood cells. These effects can usually be reversed. Later symptoms that could occur within several days of exposure are kidney injury and hearing loss. Death from kidney failure may occur if medical treatment is not successful. If treatment is successful, kidney function usually returns after five to 10 days.

How is bromate poisoning treated?

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

What should I do if exposed to bromate?

No action is needed if you were exposed to bromate in drinking water.

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What factors limit use or exposure to bromate?

If bromate is in the water supply, you can reduce exposure by using another source for water. It is not clear if commercial home water treatment systems effectively remove bromate. The Environmental Protection Agency (EPA) requires that water be tested for bromate.

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

There is no medical test to show if you were exposed to bromate. You can ask your drinking water supplier if the water was treated with ozonation, and if it contains bromate.

Technical information for bromate

CAS Number: 15541-45-4

Chemical Formula: BrO₃

Carcinogenicity (EPA): EPA has classified bromate as probable human carcinogen.

MCL (Drinking Water): The MCL for bromate is 0.01 mg/L.

OSHA Standards: There is no OSHA standard for bromate.

NIOSH Standards: There is no NIOSH standard for bromate.

Resources

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

Developing Individual Human Exposure Estimates for Individual DBPs, Wilkes, CR, Mason AD, Niang, LL, Rector, H.E., Power, FW, Tsang, AM, Stephen, PM, Harrison, LS, Blancato, JN, and Hern, SC. March 2002.

Wilkes, C.R., Mason, A.D., Niang, L.L., Rector, H.E., Power, F.W., Tsang, A.M., Stephen, P.M., Harrison, L.S., Blancato, J.N., and Hern, S.C. 2002. *Developing Individual Human Exposure Estimates for Individual DBPs*. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment. Cincinnati OH. NCEA-C-1257.

Environmental Protection Agency, *Toxicological Review of Bromate*. 2006. [Document Display | NEPIS | US EPA](#)

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