



## U.S. ENVIRONMENTAL PROTECTION AGENCY

## Ground Water &amp; Drinking Water

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Water Infrastructure Security



## Drinking Water Contaminants

For updated fact sheets, see:

- [Basic Information about Drinking Water Contaminants](#)

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. EPA sets standards for approximately 90 contaminants in drinking water. EPA's standards, along with each contaminant's likely source and health effects, are available at [www.epa.gov/safewater/mcl.html](http://www.epa.gov/safewater/mcl.html). More detailed information on specific contaminants is available below:

[Microbes](#) ~ [Radionuclides](#) ~ [Inorganics](#) ~ [Volatile Organics](#) ~ [Synthetic Organics](#) ~ [Disinfectants](#) ~ [Disinfection Byproducts](#) ~ [MTBE](#) ~ [Health Advisories](#)

## Microbes

### Coliform bacteria

are common in the environment and are generally not harmful. However, the presence of these bacteria in drinking water is usually a result of a problem with the treatment system or the pipes which distribute water, and indicates that the water may be contaminated with germs that can cause disease.

**Fecal Coliform** and [E.coli](#) are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms.

**Turbidity** has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

**Cryptosporidium** is a parasite that enters lakes and rivers through sewage and animal waste. It causes cryptosporidiosis, a mild gastrointestinal disease. However, the disease can be severe or fatal for people with severely weakened immune systems. EPA and CDC have prepared advice for those with severely compromised immune systems who are concerned about *Cryptosporidium*.



Note: This information is provided for reference only. Although the information here was accurate and current when first created, it is now outdated.

- [Guidance for People with Severely Weakened Immune Systems PDF](#) (2 pp, 21 K) | [En Español PDF](#) (2 pp, 36K)

**Giardia lamblia** is a parasite that enters lakes and rivers through sewage and animal waste. It causes gastrointestinal illness (e.g. diarrhea, vomiting, cramps).

## Radionuclides

### Alpha emitters.

Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of EPA's standard over many years may have an increased risk of getting cancer.

**Beta/photon emitters.** Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of EPA's standard over many years may have an increased risk of getting cancer.

**Combined Radium 226/228.** Some people who drink water containing radium 226 or 228 in excess of EPA's standard over many years may have an increased risk of getting cancer.

## Inorganic Contaminants

### Consumer fact sheets

<a href="#">Antimony PDF</a> (3 pp, 173K)	<a href="#">Cadmium PDF</a> (3 pp, 176K)	<a href="#">Cyanide PDF</a> (3 pp, 173K)	<a href="#">Nitrite PDF</a> (4 pp, 184K)
<a href="#">Asbestos PDF</a> (3 pp, 180K)	<a href="#">Copper PDF</a> (3 pp, 177K)	<a href="#">Mercury PDF</a> (3 pp, 175K)	<a href="#">Selenium PDF</a> (3 pp, 176K)
<a href="#">Barium PDF</a> (3 pp, 126K)		<a href="#">Nitrate PDF</a> (4 pp, 184K)	<a href="#">Thallium PDF</a> (3 pp, 174K)
<a href="#">Beryllium PDF</a> (3 pp, 176K)			

**Arsenic.** Some people who drink water containing arsenic in excess of EPA's standard over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.

**Fluoride.** Many communities add fluoride to their drinking water to promote dental health. Each community makes its own decision about whether or not to add fluoride. EPA has set an enforceable drinking water standard for fluoride of 4 mg/L (some people who drink water containing fluoride in excess of this level over many years could get bone disease, including pain and tenderness of the bones). EPA has also set a secondary fluoride standard of 2 mg/L to protect against dental fluorosis. Dental fluorosis, in its moderate or severe forms, may result in a brown staining and/or pitting of the permanent teeth. This problem occurs only in developing teeth, before they erupt from the gums. Children under nine should not drink water that has more than 2 mg/L of fluoride.

**Lead** typically leaches into water from plumbing in older buildings. Lead pipes and plumbing fittings have been banned since August 1998. Children and pregnant women are most susceptible to lead health risks. For advice on avoiding lead, see

EPA's [Is There Lead in My Drinking Water](#) fact sheet.

## Technical fact sheets

[Asbestos PDF](#) (3 pp, 160K)

[Barium PDF](#) (4 pp, 169K)

[Cadmium PDF](#) (4 pp, 164K)

[Chromium PDF](#) (4 pp, 137K)

[Mercury PDF](#) (3 pp, 102K)

[Nitrates/Nitrites PDF](#) (3 pp, 190K)

[Selenium PDF](#) (3 pp, 155K)

[Lead PDF](#) (4 pp, 204K)

[Copper PDF](#) (3 pp, 174K)

[Antimony PDF](#) (3 pp, 168K)

[Beryllium PDF](#) (3 pp, 137K)

[Cyanide PDF](#) (4 pp, 226K)

[Nickel PDF](#) (4 pp, 171K)

[Thallium PDF](#) (3 pp, 150K)

## Synthetic Organic Contaminants, including pesticides & herbicides

### Consumer fact sheets

[2,4-D PDF](#) (4 pp, 143K)

[2,4,5-TP \(Silvex\) PDF](#) (3 pp, 136K)

[Acrylamide PDF](#) (3 pp, 152K)

[Alachlor PDF](#) (3 pp, 137K)

[Atrazine PDF](#) (3 pp, 136K)

[Benzo\(a\)pyrene PDF](#) (3 pp, 139K)

[Carbofuran PDF](#) (3 pp, 137K)

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[Dalapon PDF](#) (3 pp, 135K)

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[Di 2-ethylhexyl phthalate PDF](#) (3 pp, 152K)

[Dibromochloropropane PDF](#) (3 pp, 134K)

[Dinoseb PDF](#) (3 pp, 134K)

[Dioxin \(2,3,7,8-TCDD\) PDF](#) (3 pp, 138K)

[PEndothall DF](#) (3 pp, 136K)

[Endrin PDF](#) (3 pp, 136K)

[Epichlorohydrin PDF](#) (3 pp, 151K)

[Ethylene dibromide PDF](#) (3 pp, 153K)

[Glyphosate PDF](#) (3 pp, 137K)

[Heptachlor PDF](#) (3 pp, 136K)

[Heptachlor epoxide PDF](#) (3 pp, 136K)

[Hexachlorobenzene PDF](#) (3 pp, 148K)

[Hexachlorocyclopentadiene PDF](#) (3 pp, 137K)

[Lindane PDF](#) (3 pp, 135K)

[Methoxychlor PDF](#) (3 pp, 137K)

[Oxamyl \[Vydate\] PDF](#) (3 pp, 138K)

[PCBs \[Polychlorinated biphenyls\] PDF](#) (3 pp, 151K)

[Pentachlorophenol PDF](#) (3 pp, 150K)

[Picloram PDF](#) (3 pp, 136K)

[Simazine PDF](#) (3 pp, 135K)

[Toxaphene PDF](#) (3 pp, 136K)

### Technical fact sheets

[Adipate PDF](#) (3 pp, 157K)

[Alachlor PDF](#) (3 pp, 140K)

[Aldicarb/Aldicarb Metabolites PDF](#) (3 pp, 177K)

[Atrazine PDF](#) (3 pp, 240K)

[Benzo\(a\)pyrene PDF](#) (3 pp, 140K)

[Ethylene Dibromide PDF](#) (3 pp, 145K)

[Glyphosate PDF](#) (3 pp, 137K)

[Heptachlor/Heptachlor Epoxide PDF](#) (3 pp, 140K)

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[Dibromochloropropane PDF](#) (3 pp, 138K)      [Phthalate, di\(2-ethylhexyl\) PDF](#) (3 pp, 144K)  
[Dinoseb PDF](#) (3 pp, 139K)      [Picloram PDF](#) (3 pp, 137K)  
[Dioxin\(2,3,7,8-TCDD\) PDF](#) (3 pp, 142K)      [Polychlorinated Biphenyls PDF](#) (3 pp, 146K)  
[Diquat PDF](#) (3 pp, 136K)      [Simazine PDF](#) (3 pp, 139K)  
[Endothall PDF](#) (3 pp, 136K)      [Toxaphene PDF](#) (3 pp, 142K)  
[Endrin PDF](#) (3 pp, 136K)      [2,4,5 - TP \(Silvex\) PDF](#) (3 pp, 141K)

## Volatile Organic Contaminants

### Consumer fact sheets

[Benzene PDF](#) (3 pp, 155K)      [trans-1,2-Dichloroethylene PDF](#) (3 pp, 137K)      [1,2,4-Trichlorobenzene PDF](#) (3 pp, 155K)  
[Carbon Tetrachloride PDF](#) (3 pp, 167K)      [Dichloromethane PDF](#) (3 pp, 164K)      [1,1,1,-Trichloroethane PDF](#) (3 pp, 15K)  
[o-Dichlorobenzene PDF](#) (3 pp, 153K)      [1,2-Dichloroethane PDF](#) (3 pp, 13K)      [Trichloroethylene PDF](#) (3 pp, 175K)  
[p-Dichlorobenzene PDF](#) (3 pp, 154K)      [1,2-Dichloropropane PDF](#) (2 pp, 154K)      [Toluene PDF](#) (3 pp, 177K)  
[PDF](#) (3 pp, 148K)      [Ethylbenzene PDF](#) (3 pp, 159K)      [Vinyl Chloride PDF](#) (3 pp, 136K)  
[cis-1,2-Dichloroethylene PDF](#) (3 pp, 137K)      [Styrene PDF](#) (3 pp, 166K)      [Xylenes PDF](#) (3 pp, 159K)  
[PDF](#) (3 pp, 167K)

### Technical fact sheets

[Acrylamide PDF](#) (4 pp, 158K)      [Epichlorohydrin PDF](#) (3 pp, 156K)  
[Benzene PDF](#) (4 pp, 159K)      [Ethylbenzene PDF](#) (3 pp, 165K)  
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[Chlorobenzene PDF](#) (3 pp, 156K)      [Tetrachloroethylene PDF](#) (4 pp, 157K)  
[o-Dichlorobenzene PDF](#) (4 pp, 159K)      [Toluene PDF](#) (4 pp, 170K)  
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[cis-and trans- 1,2-Dichloroethylene PDF](#) (4 pp, 139K)  
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[Xylenes \(Total\)PDF](#) (4 pp, 168K)

### Disinfectants

*Many water suppliers add a disinfectant to drinking water to kill germs such as giardia and*

*e coli. Especially after heavy rainstorms, your water system may add more disinfectant to guarantee that these germs are killed.*

**Chlorine.** Some people who use drinking water containing chlorine well in excess of EPA's standard could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of EPA's standard could experience stomach discomfort.

**Chloramine.** Some people who use drinking water containing chloramines well in excess of EPA's standard could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of EPA's standard could experience stomach discomfort or anemia.

**Chlorine Dioxide.** Some infants and young children who drink water containing chlorine dioxide in excess of EPA's standard could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of EPA's standard. Some people may experience anemia.

## Disinfection Byproducts

*Disinfection byproducts form when disinfectants added to drinking water to kill germs react with naturally-occurring organic matter in water.*

**Total Trihalomethanes.** Some people who drink water containing trihalomethanes in excess of EPA's standard over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

**Haloacetic Acids.** Some people who drink water containing haloacetic acids in excess of EPA's standard over many years may have an increased risk of getting cancer.

**Bromate.** Some people who drink water containing bromate in excess of EPA's standard over many years may have an increased risk of getting cancer.

**Chlorite.** Some infants and young children who drink water containing chlorite in excess of EPA's standard could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of EPA's standard. Some people may experience anemia.

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## Unregulated Contaminants

- [MTBE](#)
- [Radon](#)

[Health advisories](#) provide additional information on certain contaminants. Health advisories are guidance values based on health effects other than cancer. These values are set for different durations of exposure (e.g., one-day, ten-day, longer-

term, and lifetime).

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