

Contaminants in water

Contaminants are generally defined as anything other than water molecules, that is two atoms of hydrogen and one atom of oxygen (H₂O), and can apply to a whole universe of substances.

For the purposes of the federal Safe Drinking Act, utilities and local regulators like the state Department of Environmental Protection look for a relatively small number of contaminants. These are broken down into four categories:

Physical contaminants: typically encompass the stuff you can see with the naked eye: sediment and other organic material suspended in the water.

Chemical contaminants: are elements or compounds like bleach, heavy metals, nitrogen and pesticides. These include both natural and man-made materials.

Biological contaminants: are organisms, such as bacteria and parasites.

Radiological contaminants: are unstable atoms that emit radiation, such as plutonium and uranium. The EPA also maintains a candidate list of contaminants that are under review but aren't formally regulated yet.

These are some of the most common or most toxic contaminants found in drinking water supplies:

Cryptosporidium

Public health goal: zero

Health impacts: Gastrointestinal illness (such as diarrhea, vomiting, and cramps)

Source: Human and animal fecal waste

Giardia Lamblia

Public health goal: zero

Health impacts: Gastrointestinal illness (such as diarrhea, vomiting, and cramps)

Source: Human and animal fecal waste

Legionella

Public health goal: zero

Health impacts: Legionnaire's Disease

Source: Found naturally in water; multiplies in HVAC and plumbing systems

Total Coliforms

Public health goal: zero

Health impacts: Not a threat itself; it is used to indicate if other potentially harmful bacteria may be present

Source: Coliforms are naturally present in the environment. Fecal coliforms and E. coli only come from human and animal fecal waste.

Turbidity

Source: Soil runoff

Impacts: Like the test for total coliforms, turbidity isn't a health threat in and of itself. Instead, it's a measure of the cloudiness of water. It is used to indicate water quality and filtration effectiveness (such as whether disease-causing organisms are present). Higher turbidity levels are often associated with higher levels of disease-causing microorganisms.

Viruses

Public health goal: zero

Health impacts: Gastrointestinal illness (such as diarrhea, vomiting, and cramps)

Source: Human and animal fecal waste. Some of the viruses you can contract via the air can also live in drinking water.

Beryllium

Public health goal: 0.004 mg/L

Health impacts: Instestinal lesions

Source: Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries

Chlorite

Public health goal: 0.8 mg/L

Health impacts: Anemia; infants and young children; nervous system effects

Source: Byproduct of drinking water disinfection

Chromium

Public health goal: 0.1 mg/L

Health impacts: Allergic dermatitis; cancer risk; liver damage; reproductive problems

Source: Discharge from steel and pulp mills; erosion of natural deposits

Bromate

Public health goal: zero

Health impacts: Increased risk of cancer

Source: Byproduct of drinking water disinfection. These are generally avoided by slowing down the treatment process.

Chlorine

Public health goal: varies from 0.8 to 4 mg/L

Health impacts: Eye/nose irritation; stomach discomfort, anemia; possible nervous system effects in children

Source: Water additive used to control microbes

Antimony

Public health goal: 0.006 mg/L

Health impacts: Increase in blood cholesterol; decrease in blood sugar

Source: Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder

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