

A Glossary of Common Terms and Abbreviations

Acid Mine Drainage

Drainage of water from areas that have been mined for coal or other mineral ores; the water has low pH, sometimes less than 2.0 because of its contact with sulfur-bearing minerals, and often contains metals in concentrations toxic to aquatic life.

Acidic

The condition of water or soil containing a sufficient amount of acid substances to lower the pH below 7.0.

Action Level

The level of lead or copper which, if exceeded, triggers treatment or other requirements that a public water system must follow.

Acute Health Effect

An immediate effect that may result from exposure to certain drinking water contaminants.

Alkaline

The condition of water or soil containing a sufficient amount of alkali substances to raise the pH above 7.0.

Background Level

The average presence of a substance in the environment or occurring naturally.

Bacteria

Microscopic living organisms usually consisting of a single cell. Some bacteria in soil, water, or air may cause human, animal, and plant health problems.

Calcium Carbonate (CaCO₃) Equivalent

An expression of the concentration of specified constituents in water, in terms of their equivalent value to calcium carbonate. For example, the hardness in water caused by calcium, magnesium, and other ions is usually described as calcium carbonate equivalent.

Carcinogen

Any substance that produces cancer in an organism.

Central Nervous System (CNS)

Portion of the nervous system consisting of the brain and spinal cord.

Chronic Health Effect

The possible result of exposure over many years to a drinking water contaminant at levels above its MCL.

Cistern

A storage facility used to store water for a home or farm. Often used to store rain water.

Coliform

A group of bacteria found in the intestines of warm-blooded animals (including humans) and in plants, soil, air, and water. Fecal coliforms are a specific class of bacteria that inhabit only the intestines of warm-blooded animals. The presence of coliform is an indication that the water is polluted and may contain disease-causing organisms.

Conductivity

A measure of the ability of water to carry an electric current. Related to the total dissolved solids (TDS) in the water.

Contaminant

Any physical, chemical, biological, or radiological substance or matter that has an adverse effect on air, water, or soil.

Corrosivity

An indication of the corrosiveness of a water sample, as described by the water pH, alkalinity, hardness, temperature, total dissolved solids, and dissolved oxygen concentration. The Langelier Index combines several of these features and is the commonly accepted measure of corrosivity.

Cryptosporidium Parvum

Flagellate protozoan that is shed during its oocyst stage with the feces of man and animals. When water containing these oocysts is ingested, the protozoan causes a severe gastrointestinal disease.

Exposure

Contact with a chemical or physical agent.

Fecal Coliform Bacteria

Bacteria found in the intestinal tracts of animals. Their presence in water is an indicator of pollution and possible contamination by pathogens.

Filtration

A process for removing particulate matter from water by passage through porous media.

First Draw

The water that immediately comes out when a faucet is first opened. This water is likely to have the highest levels of lead and copper contamination from plumbing materials.

Gallons Per Minute (gpm)

A common unit used to express the flow of water over time.

Gastroenteritis

An inflammation of the stomach and intestine resulting in diarrhea, with vomiting and cramps when irritation is excessive. When caused by an infectious agent, it is often associated with fever.

Giardia Lamblia

Flagellate protozoan that is shed during its oocyst stage with the feces of man and animals. When water containing these oocysts is ingested, the protozoan causes a severe gastrointestinal disease called giardiasis.

Grain Per Gallon (gpg)

A unit of measure for hardness, equal to 17.1 mg/L.

Gram (g)

A unit of mass (weight) equivalent to one milliliter of water at 4 degrees Celsius. 1/454 of a pound.

Granular Activated Carbon (GAC)

Material used in water treatment devices to remove organic chemicals, radon, and other pollutants.

Gross Alpha Particle Activity

The total radioactivity due to alpha particle emission, as inferred from measurements on a dry sample. Alpha particles do not penetrate solid materials.

Gross Beta Particle Activity

The total radioactivity due to beta particle emission, as inferred from measurements on a dry sample. Beta particles penetrate solid materials and are more hazardous.

Groundwater

The supply of fresh water found beneath the Earth's surface. Usually in aquifers, which are often used for supplying wells and springs. Because groundwater is a major source of drinking water, there is growing concern over areas where leaching agricultural or industrial pollutants or substances from leaking underground storage tanks are contaminating groundwater.

Hard Water

Alkaline water containing dissolved salts that interfere with some industrial processes and prevent soap from lathering. Some textbooks define hard water as water with a hardness of more than 100 mg/L (as calcium carbonate).

Hardness

A characteristic of water caused mainly by the salts of calcium and magnesium such as bicarbonate, calcium sulfate, chloride, and nitrate. Excessive hardness in water is undesirable because it causes the formation of soap curds, increased use of soap, deposition of scale in boilers, damage in some industrial processes, and sometimes objectionable tastes in drinking water.

Heavy Metals

Metallic elements with high atomic weights; e.g., mercury, chromium, cadmium, arsenic, and lead. They can damage living things at low concentrations and tend to accumulate in the food chain.

Heterotrophic Plate Count (HPC)

A measure of the total number of bacteria in a sample. Also known as the Standard Plate Count (SPC).

Inorganic Chemicals (IOCs)

Chemicals of mineral origin.

Maximum Contaminant Level (MCL)

The maximum level of a health-related contaminant permitted in a public water system. Also known as a primary drinking water standard.

Maximum Contaminant Level Goal (MCLG)

The maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. Maximum contaminant level goals are nonenforceable health goals.

Microgram (μg)

One-millionth of a gram.

Micrograms Per Liter ($\mu\text{g/L}$)

One microgram of a substance dissolved in each liter of water. This unit is equal to parts per billion (ppb).

Microorganisms

Living organisms that can be seen individually only with the aid of a microscope.

Milligram (mg)

One-thousandth of a gram.

Milligrams Per Liter (mg/L)

A measure of concentration of a dissolved substance. A concentration of one mg/L means that one milligram of a substance is dissolved in each liter of water. For practical purposes, this unit is equal to parts per million (ppm).

Most Probable Number (MPN)

MPN is the Most Probable Number of coliform group organisms per unit volume of sample water as determined by a statistical relationship. Expressed as the number of organisms per 100 ml of sample water.

ND

Abbreviation for "Not Detected." Laboratory expression for a concentration of a substance in water too small to be detected by the instrumentation used.

Nonpotable

Water that may contain objectionable pollution, contamination, minerals, or infective agents and is considered unsafe and/or unpalatable for drinking.

National Sanitation Foundation (NSF)

Independent testing organization for water treatment equipment.

Nephelometric Turbidity Unit (NTU)

Unit of measure for turbidity in water.

Nonvolatile Organic Chemicals

Organic chemicals that do not escape readily into air from water. Also known as Synthetic Organic Chemicals (SOCs).

Organics

A term used to refer to chemical compounds made from carbon molecules.

Parts Per Million (ppm)

Parts per million parts, a measurement of concentration on a weight or volume basis. This term is equivalent to milligrams per liter (mg/L).

Parts Per Billion (ppb)

Parts per billion parts, a measurement of concentration on a weight or volume basis. This term is equivalent to micrograms per liter (µg/L).

Pathogens

Microorganisms that can cause disease in other organisms or in humans, animals, and plants. They may be bacteria, viruses, or parasites, and are found in sewage in runoff from animal farms or rural areas populated with domestic and/or wild animals, and in water used for swimming.

Pesticide

Any substance or chemical designed or formulated to kill or control weeds or animal pests.

pH

An expression of the intensity of the basic or acid condition of a liquid. Mathematically related to the hydrogen ion concentration, the pH may range from 0 to 14, where 0 is most acid, 14 most basic, and 7 neutral. Natural waters usually have a pH between 6.5 and 8.5.

Picocurie per liter (pCi/L)

A measure of radioactivity in water, commonly used for radon. One picocurie of radioactivity is equivalent to 0.037 nuclear disintegrations per second as measured by a Geiger counter.

Potable Water

Water that is safe and satisfactory for drinking and cooking.

Primary Drinking Water Standard

See Maximum Contaminant Level (MCL).

Public Water System

A system for providing piped water for human consumption to the public, having at least 15 service connections or regularly providing water at least 60 days out of the year to 25 or more people per day. A public water system is either a "community water system" (town) or a "noncommunity water system" (gas station, camp, etc).

Recommended Maximum Contaminant Level (RMCL)

See "Secondary Maximum Contaminant Level," below.

Septic System

An onsite system designed to treat and dispose of domestic sewage.

Secondary Maximum Contaminant Level (SMCL)

Limits or standards given to pollutants that have only aesthetic effects in water. Also called Recommended Maximum Contaminant Levels or RMCLs.

Secondary Drinking Water Standard

See Secondary Maximum Contaminant Level (SMCL).

Soft Water

Water having a low concentration of calcium and magnesium ions. According to U.S. Geological Survey guidelines, soft water is water having a hardness of 60 milligrams per liter or less.

Standard Plate Count (SPC)

See Heterotrophic Plate Count (HPC) above.

Surface Water

All water naturally open to the atmosphere, and all springs, wells, or other collectors that are directly influenced by surface water.

Synthetic Organic Chemicals (SOC)

Term used to describe nonvolatile organic chemicals such as most pesticides.

Total Dissolved Solids (TDS)

A measure of all of the dissolved ions in water.

TNTC

Abbreviation for "Too Numerous to Count." A measure of bacteria concentration.

Turbidity

The cloudy appearance of water caused by the presence of suspended and colloidal matter. Used to indicate the clarity of water.

Virus

The smallest form of microorganism capable of causing disease.

Volatile Organic Chemicals (VOCs)

Organic chemicals that escape readily into the air from water.

Quick Reference Table to Common Pollutants in Pennsylvania

Contaminant	Source	Standard	Effects
Microbial			
Coliform Bacteria	Surface water, human and animal waste	0 per 100 ml	Gastrointestinal problems, waterborne diseases
Fecal Coliform Bacteria	Human and animal waste	0 per 100 ml	Gastrointestinal problems, waterborne diseases
Fecal Streptococcus Bacteria	Human and animal waste	0 per 100 ml	Gastrointestinal problems, waterborne diseases
E. Coli	Human and animal waste	0 per 100 ml	Gastrointestinal problems, waterborne diseases
Standard Plate Count or Heterotrophic Plate Count	Common bacteria including coliform and other groups	No standard	> 500 per milliliter may indicate coliform bacteria contamination (see above)
Iron Bacteria	Naturally occurring	No standard	Unightly growth, clogged pipes, reduced well yield
Giardia	Human and animal waste, surface water	0 cysts	Giardiasis (nausea, fever, diarrhea, etc.)
Cryptosporidium	Human and animal waste, surface water	0 cysts	Cryptosporidiosis (nausea, fever, etc.)
Inorganic Chemicals			
Arsenic	Natural deposits, gas well brines	0.010 mg/L	Skin lesions, nervous system disorders, cancer
Alkalinity	Natural sources	No standard	Influences hardness
Barium	Natural deposits, gas well brines	2.0 mg/L	High blood pressure, nervous system damage
Chloride	Natural sources, road salt, sewage	250 mg/L (recommended)	Salty taste, corrosion of metal
Copper	Corrosion of plumbing	1.3 mg/L 1.0 mg/L (recommended)	Gastrointestinal illness Metallic taste, bluish stains
Corrosivity	Natural sources	Noncorrosive (recommended)	Dissolves plumbing components
Hardness	Natural sources	No standard	Scaly deposits, decreased soap cleansing
Hydrogen Sulfide	Naturally occurring	No standard	Rotten egg odor
Iron	Coal mining or natural sources	0.30 mg/L (recommended)	Metallic taste, stains
Lead	Plumbing corrosion, industrial wastes, gas well brines	0.015 mg/L	Numerous health effects, especially in children
Manganese	Coal mining or natural sources	0.05 mg/L (recommended)	Blackish stains, metallic taste
Nitrate (as Nitrogen)	Animal and human wastes, fertilizers	10 mg/L	Blue-baby disease in infants

Quick Reference Table to Common Pollutants in Pennsylvania

Contaminant	Source	Standard	Effects
pH	Natural sources, mining, acid rain	6.5 to 8.5 (recommended)	Corrosion (low pH), taste (high pH)
Sulfate	Coal mining or natural sources	500 mg/L (proposed MCL) 250 mg/L (recommended)	Laxative effects Bitter taste
Total Dissolved Solids	Sum of all dissolved ions in water	500 mg/L (recommended)	Objectionable taste, odor, color
Turbidity	Surface water, runoff	1.0 NTU	Objectionable appearance, promotes bacteria
Volatile Organic Chemicals (VOCs)			
Benzene	Industrial solvent, gasoline additive	0.005 mg/L	Carcinogen
Carbon Tetrachloride	Production of chlorofluorocarbons	0.005 mg/L	Gastrointestinal and nervous system effects
Chloroform	Industrial processes	No standard	Possible carcinogen, part of trihalomethanes (THMs), which have a MCL of 0.08 mg/L
Methyl Tert-Butyl Ether (MTBE)	Gasoline additive	No standard	Possible carcinogen
Tetrachloroethylene (PCE)	Dry-cleaning industry, industrial solvent	0.005 mg/L	Possible carcinogen; liver, kidney, nerve damage
Trichloroethylene (TCE)	Industrial solvent, metal degreaser	0.005 mg/L	Probable carcinogen; liver, kidney, nerve damage
Xylenes	Gasoline, industrial processes	10 mg/L	Liver, kidney, nervous system damage
Nonvolatile (Synthetic) Organic Chemicals (SOCs)			
Atrazine	Common herbicide	0.003 mg/L	Possible carcinogen; liver, kidney, heart damage
2,4-D	Common herbicide on farms and lawns	0.07 mg/L	Liver, circulatory and nervous system damage
Chlorpyrifos (Dursban)	Common insecticide	No standard	Possible carcinogen
Dioxin	Production of chlorinated chemicals	0.0000003 mg/L	Carcinogen, birth defects, liver and reproductive effects
Glyphosate	Common herbicide	0.7 mg/L	Kidney and reproductive damage
Metolachlor	Common herbicide	No standard	Possible carcinogen
Polychlorinated Biphenyls (PCBs)	Insulating material, coolant, lubricant	0.0005 mg/L	Probable carcinogens; liver, kidney, nervous system damage
Simazine	Common herbicide	0.004 mg/L	Carcinogen; damage to testes, kidneys, liver, and thyroid
Radiological			
Radon	Naturally occurring gas	300 pCi/L (proposed)	Carcinogen if inhaled, possible carcinogen if ingested