

The Pennsylvania Department of Health's Environmental Public Health Tracking program is no longer active as of September 2017. Some activities performed by the former EPHT program are conducted by other members of the Division of Environmental Health Epidemiology.



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## EPHT TRACKING DATA SHEET

# DRINKING WATER QUALITY

The Pennsylvania Environmental Public Health Tracking (EPHT) program tracks a set of Nationally Consistent Data and Measures (NCDMs) in order to compare different states and over time. Drinking water quality indicators, including levels of nine contaminants in public water, and a measure of annual public water use are included in the set of NCDMs available on the [Enterprise Data Dissemination Informatics Exchange](#) website. The nine contaminants are: arsenic, atrazine, di(2-ethylhexyl) phthalate (DEHP), haloacetic acids (HAA5), nitrate, tetrachloroethene (PCE), trihalomethane (THM), trichloroethene (TCE) and uranium.

## DRINKING WATER QUALITY AND YOUR HEALTH

Water is the most important element on which all life depends. The average adult body is approximately 55 to 60 percent water. As our population grows, the amount of water used for industry, farming and recreation also grows. The scarcity of water and its quality are pressing public health and environmental issues. They are especially important given pollution in a single public water system can expose many people at once to contaminated drinking water.

Drinking water can be polluted by natural sources underground like bedrock or from manmade sources like sewage, industrial waste or mining chemicals and farming run-off into surface water sources. The risk of developing a specific disease depends on many factors: the contaminating substance(s); the level and potency of the substance(s); the way it enters the body, for example, drinking it, eating foods prepared with it, breathing water droplets, or showering or bathing in it; and the person's individual susceptibility. Based on these factors, poor water quality is linked with numerous health problems including gastrointestinal illness, reproductive issues, and neurological disorders. Children, pregnant women, the elderly, and people with chronic conditions like kidney disease are considered vulnerable or sensitive groups at high-risk for water pollution-related health problems and exacerbations.

## THE SAFE DRINKING WATER ACT

The Safe Drinking Water Act requires the U.S. Environmental Protection Agency (EPA) to set regulations on water contaminants that may pose a health risk in public water systems. A water system is designated public if it provides water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days per year. The regulations apply to both surface water and groundwater sources of public water. The law does not cover most private water supplies, i.e., household water wells, cisterns, spring water, etc.

EPA establishes drinking water standards for individual substances and groups of substances. Typically, EPA establishes enforceable Maximum Contaminant Levels (MCLs) and associated compliance monitoring requirements. When it is not feasible to measure a contaminant in drinking water, EPA

establishes drinking water Treatment Technique Requirements (TTR), which designate the type of treatment required and measures of how well these processes are working. Compliance with MCLs and TTRs is the basis of determining whether the drinking water meets public health standards.

EPA has set MCLs, also called primary drinking water regulations, for more than 90 substances that pose a health risk if ingested. In addition, EPA has also set secondary drinking water standards, or secondary MCLs (SMCLs), for 15 substances that are not considered to pose a health risk if ingested. These non-mandatory standards are based on aesthetic considerations only, such as water's taste, color, or odor. These regulations and standards are not fixed and unchanging. EPA periodically reviews, and if necessary, revises existing regulations based on new information. EPA also may develop new rules for previously unregulated substances.

### Select Contaminants in Water Regulated by EPA

1. **Arsenic (As)** is a toxic chemical element naturally found in the Earth's crust. It can also be a byproduct of some farming and industrial activities. Long-term exposure to drinking water containing arsenic could cause skin damage or problems with the circulatory system, and may increase people's risk of getting cancer.
2. **Atrazine** is an herbicide used to kill weeds primarily on farms. Long-term exposure to atrazine could cause reproductive problems or issues with the cardiovascular system.
3. **Di(2-ethylhexyl) Phthalate (DEHP)** is a manmade chemical used to make plastics flexible. Long-term exposure to DEHP could cause liver problems or reproductive difficulties, and may increase people's risk of getting cancer.
4. **Nitrates** are nitrogen-oxygen molecules which are very soluble in water. They are often found in areas where nitrogen-based fertilizers are used, or near sewage and septic tanks and decaying natural material such as animal waste. Once in the body, nitrates are converted to nitrites. Serious illness, even death, can occur in infants less than six months who consume nitrate due to the conversion of nitrate to nitrite interfering with the oxygen-carrying capacity of the child's blood. Symptoms include shortness of breath and blue baby syndrome. Long-term health risks are being investigated with possible adverse reproductive effects and some forms of cancer.
5. **Haloacetic Acids (HAA5)** and **Total Trihalomethanes (TTHM)** are byproducts of disinfecting drinking water. They occur when naturally-occurring organic and inorganic materials in water react with the disinfectants, chlorine and chloramine. Long-term exposure to HAA5 and TTHM may increase people's risk of getting cancer. Long-term exposure to TTHM may also cause liver, kidney or central nervous system problems.
6. **Tetrachloroethene (PCE)** is a colorless volatile organic compound (VOC). It is a liquid used in the textile industry, as a component in dry-cleaning products and for degreasing metals. Long-term exposure to PCE could cause liver problems, and may increase people's risk of getting cancer.
7. **Trichloroethene (TCE)** is a colorless or blue VOC. It is a liquid used primarily for degreasing metals, stripping paint and in the production of some textiles. Long-term exposure to TCE could cause liver problems, and may increase people's risk of getting cancer.
8. **Uranium (U)** is a naturally occurring radioactive element, or radionuclide. It is the parent element producing radium and radon in a long decay process. It is used in nuclear power plants, like Three Mile Island in Pennsylvania. Long-term exposure to uranium in drinking water could cause damage to the kidneys, and may increase people's risk of getting cancer.

## DRINKING WATER QUALITY MONITORING IN THE UNITED STATES

### Monitoring Networks

Public water suppliers routinely sample their water and report the results to the state regulatory agency as part of the monitoring requirements set out by EPA as well as other state agencies. In Pennsylvania, the Department of Environmental Protection (DEP) receives drinking water quality data directly from the public water suppliers. The data are not collected specifically to measure the level of exposure or to track changes in quality over time. However, these data are the only set of data on drinking water quality that are currently available for scientific research.

Programs at both the state and national levels play an important role in ensuring high quality drinking water. While MCLs and TTRs apply to all public water systems, the associated monitoring requirements vary across systems and states. Monitoring requirements are contaminant-specific and may vary based on service population size and water treatment used. Regulations and state drinking water agencies specify sample location and acceptable analytical methods. The frequency of monitoring for a substance may vary based on the type of source water and on the results of previous samples.

For example, all public water systems are required to test for arsenic at the distribution system's entry point; however, the frequency of monitoring varies based on source water type and the level of arsenic observed in past samples. Annual monitoring is required for surface water and once every three years for groundwater, with quarterly monitoring once a sample exceeds 10 parts per billion.

### Private Water Quality Monitoring

If you rely on a private water supply, i.e., your water does not come from a municipal or privately-owned water company that meets the definition of a public water system, you are responsible for testing your own water. Pennsylvania does not have state private water regulations. Contact your local health department to find out which contaminants may be of concern in your area. Also, contact DEP for names of laboratories that are certified to test drinking water.

## RELATED LINKS

[Pennsylvania DEP Bureau of Safe Drinking Water](#)

[Pennsylvania DEP Drinking Water Reporting System](#)

[Pennsylvania DEP My Water](#)

[CDC Drinking Water](#)

[EPA Office of Water](#)

[EPA Safe Drinking Water Act](#)

[EPA Drinking Water Contaminants Standards and Regulations](#)

[Penn State Extension Drinking and Residential Water Webpage](#)