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What is Source Water ?

Source water is untreated water from streams, rivers, lakes, or underground aquifers which is used to supply private wells and public drinking water. Most public and some private well drinking water is treated before it enters our homes. While some treatment is usually necessary, the costs of treatment and risks to public health can be reduced by ensuring that source water is protected from contamination.

Where Does Drinking Water Come From?

Most source water is defined as surface or ground water. If you live in a large metropolitan area, the majority of your drinking water probably originates from a surface source such as a lake, stream, river or reservoir. The land area that can have an impact on these water bodies is called a aquifer recharge area, and can be delineated on a map.

If you live in smaller community or have a private well, it is more likely that your water originates from underground and is pumped to the surface through a well. Ground water comes from natural under ground layers, often of sand or gravel, that contain water. These formations are called aquifers. The land area that can have an impact on the quality of this underground water is called the watershed.

Drinking water suppliers now provide reports (sometimes called consumer confidence reports that explain where drinking water comes from, and what contaminants may be in it. You can also view information about your watershed, groundwater supply, and drinking water supplier in EPA's database.

Additional Information:

Where Does Drinking Water Come From?

Reliable Sources - General Information

What are the Threats to Source Water?

There are many contaminants that may be present in source water before it is treated.

These include:

- **Microbial contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- **Inorganic contaminants**, such as salts and metals, which can occure naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- **Pesticides and herbicides**, which may come from a variety of sources such as agriculture, stormwater runoff, and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.

Additional Information:

What contaminants may be found in drinking water?

List of the drinking water contaminants that EPA regulates, including their sources in drinking water and their potential health effects.

Contaminant Source Inventory and Assessment Tools

Assessing the Risks

While many states, water systems, and localities have watershed and wellhead

programs , the 1996 Safe Drinking Water Act Amendments placed a new focus on source water quality. States have been given access to funding and required to develop Source Water Assessment Programs (SWAP) to assess the areas serving as public sources of drinking water in order to identify potential threats and initiate protection efforts.

The source water assessment programs created by states differ since they are tailored to each state's water resources and drinking water priorities. However, each assessment must include four major elements:

- delineating (or mapping) the source water assessment area,
- conducting an inventory of potential sources of contamination in the delineated area,
- determining the susceptibility of the water supply to those contamination sources, and
- releasing the results of the determinations to the public.

These steps are described in more detail in the Source Water Assessment section of this site. Our SWAP Contact List has state specific contacts and links to State web sites.

Why Protect It?

Protection of drinking water at the source can be successful in providing public health protection and reducing the treatment challenge for public water suppliers. Source water quality can be threatened by many everyday activities and land uses, ranging from industrial wastes to the chemicals applied to suburban lawns. Private well owners are urged to test regularly for common contaminants such as microbes and nitrate-nitrogen. Water systems are heavily regulated through the Public Water System Supervision Program, and must respond to this threat to public health with regular water quality monitoring and actions ranging from well closure to expensive treatment. In some cases, source water protection can eliminate or forestall the need to change or modify treatment processes. Treatment is expensive and source water protection can save consumers significant money.

The Source Water Protection section of this site provides more information about protection programs.

EPA's Focus on Source Water Protection

The 1996 Safe Drinking Water Act Amendments placed a new focus on source water protection:

States are to implement Source Water Assessment Programs (SWAPs) to assess areas serving as sources of drinking water in order to identify potential threats and initiate protection efforts.

Annual Water Quality Reports, produced by water system operators, provide consumers with information about their source water.

States can fund source water protection activities through the Safe Drinking Water State Revolving Fund. Source water assessments and protection measures are eligible uses of the Drinking Water State Revolving Fund (DWSRF) set-asides. States may use the funds for a mixture of source water related local assistance activities. For example, funds are available for Land Acquisition and Conservation Easements, and Wellhead Protection Programs.

The UIC Program works with Stateand local goverrnments to oversee underground injection of waste in order to prevent contamination of drinking water resources.

Drinking water protection approaches must be uniquely tailored to each unique local situation. While most of these efforts will be primarily utility, state and/or locally led, there are a variety of Federal tools which can be used such as those available through Clean Water Act and various agricultural programs. In addition, there are a number of national organizations, such as American Water Works Association, the National Rural Water Association, the National Association of Counties and the Trust for Public Lands (to name only a few) that are taking action in the source water protection arena. One of EPA's roles is to encourage partnerships and provide information that can be used by those directly involved in implementing source water protection. Please see our Annotated Bibliography of Source Water Protection Materials.

Source Water Protection and Underground Storage Tanks: Partnership Opportunity

The Offices of Ground Water and Drinking Water and Underground Storage Tanks are working together to reduce the risks of underground storage tanks to drinking water sources. In a July 20, 2004 joint memo to Regional Water Division Directors and UST/LUST Directors, Cynthia Dougherty and Cliff Rothenstein outlined recommended actions to determine whether USTs are one of the risks to drinking water sources in their Region, and to coordinate work to make the best use of resources and increase public health protection.

Additional Information:

- Financial Assistance
- **Tracy Mehan (AA Office of Water) Memo on Source Water Assessment and Protection**

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