

# DRINKING WATER

## WATER SUPPLY

The world's supply of water is 326 million cubic miles. If it were poured on the United States, it would submerge the country to a depth of 90 miles. But only a small portion of the world's water supply is usable fresh water. In fact, of the Earth's total water supply, less than one-half of one percent is usable fresh water. Only 0.03 percent is surface water. Of every 10,000 gallons of water on Earth, fewer than 50 are potentially usable fresh water; only 3 gallons are found in surface water bodies such as rivers, lakes, and streams.

The United States is water "rich." We have 39,400,000 acres of lakes and reservoirs, and over 35,000 square miles of estuaries. The Great Lakes cover 98,000 square miles and contain about 1/5th of the world's fresh water supply. About four percent of the U.S. land mass is covered by surface water.

The United States has nearly 60,000 community water supply systems, but only 20 percent of these systems use surface water as their primary source. Groundwater is the primary source of water for 80 percent of U.S. communities—nearly half of the entire U.S. population.

## INTRODUCTION TO DRINKING WATER

Water is vital for life. Our bodies are approximately 75 percent water. Water makes up 83 percent of our blood, transports body wastes, lubricates body joints, keeps our temperature stable, and is a part of every living cell in our bodies. On the average, every American uses about 150 gallons of water a day. With a 1996 U.S. population of approximately 260 million, that makes daily water consumption in the United States over 39 **billion** gallons per day. It's no wonder that in some highly populated areas, water supplies are getting tight. Some areas, such as Southern California, have water conservation laws in effect to manage limited water supplies. One aqueduct in California is over 450 miles long and transports water from its source to Los Angeles where it is needed.

## DRINKING WATER STANDARDS

In 1974, Congress passed the Safe Drinking Water Act (SDWA), setting up a regulatory program among local, state, and federal agencies to help ensure safe drinking water in the United States. The Safe Drinking Water Act states that public water systems must provide water treatment, monitor drinking water to ensure proper quality, and provide public notification of contaminant problems. Regulations implementing the act established drinking water standards (maximum contaminant levels and treatment technique requirements) for a variety of chemicals, metals, and pathogens. Amendments continue to strengthen the act and enhance drinking water quality. Significant penalties are imposed for non-compliance.

The SDWA applies to all public water systems, defined as having at least 15 service connections or "regularly" serving at least 25 individuals. States are required to enact their own drinking water regulations that are at least as stringent as Federal standards. SDWA protects drinking water supplies through required treatment, testing, and reporting. The SDWA established a permitting program for underground injection wells. It also requires protection of aquifers and groundwater and surface water sources for drinking water supplies.

The SDWA requires that **maximum contaminant levels** or **treatment technique requirements** be

established for specific inorganic chemical, organic chemicals, bacteria, and radioactive elements. SDWA also sets **secondary (non-enforceable) standards** for parameters that affect aesthetic qualities relating to public acceptance of drinking water. These include color, corrosivity, foaming agents, odor, and metals. EPA is continually in the process of selecting new contaminants for which to establish **drinking water standards**.

## **RESERVOIRS FOR SUPPLY/DAM CONSTRUCTION ON STREAMS - TVA**

Reservoirs from dams serve a variety of water needs. They provide ways of storing large supplies of water for industrial and residential use. They control floods and other natural disasters that can cause water pollution. They generate power and provide sources for recreation. While creating dams removes certain types of habitats, it also creates new habitats which support thousands of species of wildlife.

Since 1933, the Tennessee Valley Authority has been charged with developing and managing water resources in the Tennessee Valley. This has meant constructing more than 30 dams, including the largest dams east of the Mississippi River. TVA has also assumed management of a number of dams already constructed in the area before the agency came into existence.

TVA's role in protecting and improving water quality differs from that of any other federal, state, or local water quality program. TVA monitors water quality to identify problems and detect changes. TVA research programs study the relationships among water quality and land use, wastewater treatment, stream flow, and other factors. Reservoir water quality management plans identify better ways to protect and use the Valley's water resources. Monitoring for problems and changes, working with others to correct identified problems, demonstrating new solutions, and planning to prevent pollution are cornerstones of TVA's approach to water quality management.