Water Quality

Water quality refers to whether water is suitable for a certain purpose, like drinking or irrigation. Both natural and man-made factors can affect water quality. Contaminants can include bacteria, metals, and man-made chemicals like pesticides or pharmaceutical drugs.

Basics

Water quality is a measurement of how suitable water is for a particular use, like drinking or irrigation. Drinking water quality standards are based on the health effects that are likely to occur if a person is exposed to poor water. Industrial or agricultural water supplies will require different water standards. Water contaminants can be natural or man-made. Contaminants can include bacteria, metals, and man-made chemicals like pesticides or pharmaceutical drugs. Other natural properties of water can affect its quality, such as pH and dissolved minerals (such as salts or calcium).[1] Contamination can also alter these natural properties.

Frequently Asked Questions

What are tar sands?
American Geosciences Institute
What is produced water?
American Geosciences Institute
How do changes in land use impact water resources?
American Geosciences Institute
What are the effects of contaminants on water quality?
Drought
Since 1980 the United States has experienced more than 24 major droughts, resulting in almost 3,000 deaths and economic impacts exceeding $225 billion. All areas of the U.S. have some drought risk.

Groundwater
Groundwater is the water found underground in the cracks and spaces in soil, sand, and rock. Groundwater has been used by humans for thousands of years; today it provides 25% of the fresh water used in the United States, mostly for irrigation and public water supplies.

Waste Management
Although our industrial society produces a variety of solid wastes and waste waters, over the past 50 years we have made progress in disposing of them safely in landfills, by incineration, and in underground injection wells. Many wastes are also increasingly recycled or reused.

Water
Water is essential for society and, as demand steadily rises, our most precious commodity. Geoscientists study how to provide a clean and secure water source to meet society's needs.

Water Availability
Water is constantly moving on the Earth between the atmosphere, ocean, rivers and streams, snowpacks and ice sheets, and underground. Water availability, both as surface water and groundwater, is essential for agriculture, human consumption, industry,
and energy generation.

Wildfires
Wildfires are causing more frequent and wider-ranging societal impacts, especially as residential communities continue to expand into wildland areas. Since 2000, there have been twelve wildfires in the United States that have each caused damages exceeding $1 billion; cumulatively, these twelve wildfires have caused a total of $44 billion in damages.

Maps & Visualizations

Interactive map of New England current water conditions
U.S. Geological Survey

The U.S. Geological Survey's New England Water Science Center hosts an interactive map that displays current water conditions for each state in New England. The map has real-time, geolocated water data for New England, including: Surface water levels, including streamflow conditions Ground...

Search all Maps & Visualizations

Case Studies & Factsheets

Petroleum and the Environment: an Introduction
Introduction When oil and gas were first extracted and used on an industrial scale in the 19th century, they provided significant advantages over existing fuels: they were cleaner, easier to transport, and more versatile than coal and biomass (wood, waste, and whale oil). Diesel and gasoline...

Search all Case Studies & Factsheets

Webinars & Forums
Geologic Mapping to Empower Communities: Examples from the Great Lakes

This webinar will introduce geologic mapping in the Great Lakes region, showcase projects from the Great Lakes Geologic Mapping Coalition, and review planning decisions made based on their work. Speakers from the Illinois, Minnesota, and Michigan State Geological Surveys will discuss case...