

WATER-QUALITY RESEARCH IN THE WATER RESOURCES DIVISION
OF THE UNITED STATES GEOLOGICAL SURVEY

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Abstract

The Water Resources Division (WRD) of the U.S. Geological Survey has maintained a nationwide research program since the late 1950s. Presently, research personnel are located in Reston, Virginia; Bay St. Louis, Mississippi; Denver, Colorado; Menlo Park, California; and Seattle, Washington. About 500 scientists and support personnel conduct water-related research in the six broad disciplines of ground water, surface water, geomorphology and sediment transport, ecology, geochemistry and water chemistry. The last four of these disciplines are concerned with water quality and a discussion of their major activities follows.

Geomorphology and sediment transport presently are concerned with bedload transport, river-meandering phenomena and river-channel change due to the alteration of the watershed and those fluvial processes that maintain the aquatic habitat.

Ecological research primarily is concerned with determining bacterial mediation of chemical processes in ground water, toxicity of heavy metals, and nutrient budgets in lakes. The WRD research program also has research underway at six lakes located throughout the United States. The goal of this research is to understand hydrologic process associated with lakes and nutrient sources in several climatic and geologic areas in the United States.

Geochemical study sites are located throughout the nation with emphasis on brines, redox potential, changes in the chemical quality of ground water after strip mining, and modeling chemical-quality changes.

Emphasis in water chemistry principally is directed toward natural organic material in water and acid rain. This is a shift from past years when emphasis was placed on man-made organic compounds, particularly pesticides. In recent years, significant progress has been made in the determination of specific organic compounds that constitute the dissolved and particular organic carbon in water. It is expected that during the decade of the 1980s, a greater understanding of organic constituents in water will be one of the major breakthroughs in chemical hydrology. With this understanding will come greater insight into ecological systems and ecological modeling.