

A NATIONAL PRODUCED-WATER GEOCHEMISTRY DATABASE

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Biographical sketch of authors

All authors are researchers with the U.S. Geological Survey. James Otton is a geologist with the Energy Program in Lakewood, Colorado, studying the impact of produced waters on U.S. surface and ground waters. George Breit and Cynthia Rice are geochemists in the Minerals and Energy Programs of the USGS, respectively, also located in Lakewood. Both are involved in studies of waters associated with mine drainage, coalbed methane, and oil production. Yousif Kharaka is a geochemist in the National Research Program of the Water Resources Discipline in Menlo Park, CA. He has conducted studies of produced water geochemistry for many years.

Abstract

The U.S. Geological Survey has released a national produced water geochemistry database on the internet at <http://energy.cr.usgs.gov/prov/prodwat/intro.htm>. Over 58,700 records are presented in the database and nearly all petroleum-producing areas, except the Appalachian Basin, are well represented. The produced water database is a revision of a database originally compiled at the DOE Fossil Energy Research Center that was located in Bartlesville, Oklahoma. The USGS modified the original database by removing redundancies, verifying internal consistency and adding information to the fields that describe the location, geologic setting, sample type, and major ion chemical composition.

Compositional data provides information for understanding petroleum reservoirs, determining the need for anti-scaling additives, designing water handling and treatment systems, and selecting disposal and beneficial use options. High TDS values occur throughout most of the state of Michigan in the Michigan Basin; in eastern Ohio; in the few wells in southwest Florida; in the Williston Basin of northwest North Dakota and northeasternmost Montana; in the salt dome basin of south central Mississippi; in southwestern Arkansas; in a broad belt through central Oklahoma that extends from the Kansas border south almost to the Texas border; in southeast New Mexico and adjacent parts of Texas; and in southeastern Utah in the Paradox Basin area. Other high TDS wells are scattered through other producing areas of Texas, Oklahoma, Kansas, Louisiana, and the northern Appalachian Basin. Low TDS values occur mainly throughout the producing basins of the Rocky Mountain west extending from northwest Montana, southeast into Wyoming, westernmost Nebraska, Colorado, Utah, and northwest New Mexico. Scattered low TDS wells occur in south Texas and central California. The database is dynamic and we welcome proposed additions to it.