

GROUND WATER QUALITY OF THE QUATERNARY DEPOSITS, CENTRAL HIGH PLAINS, KANSAS, 1999

Larry M. Pope
U.S. Geological Survey
Lawrence, KS
Voice: 785-832-3548 Fax: 785-832-3500
Email: mpope@usgs.gov

ABSTRACT

As part of the U.S. Geological Survey's National Water Quality Assessment (NAWQA) program, High Plains Regional Ground Water Study, 20 domestic supply wells were sampled to assess the broad-scale water-quality conditions in the Quaternary deposits of south-central Kansas. To provide an areally representative assessment of ground-water quality in the Quaternary deposits, the domestic water-supply wells were randomly selected with an average well spacing of 500 square miles. In 1999, ground-water samples were collected and analyzed for nutrients, major ionic constituents, trace elements, radon, pesticides, and volatile organic compounds. Concentrations of several constituents had substantial variability among the 20 wells and occasionally exceeded national drinking-water (regulatory) limits. For example, nitrite plus nitrate nitrogen ranged from less than 0.05 to 14.8 milligrams per liter, chloride from 5.2 to 351 milligrams per liter, and dissolved solids from 143 to 1,060 milligrams per liter. Of the trace elements analyzed for this study, only arsenic in water from one well exceeded drinking-water limits. Radon concentrations in water from seven wells exceeded the 1991 proposed National Primary Drinking Water Rule for radionuclides of 300 picocuries per liter. The largest concentration of radon was 586 picocuries per liter. Of the 47 pesticides analyzed, only five compounds were detected in samples from the 20 wells: atrazine (8 detections), deethylatrazine (9 detections), carbofuran (1 detection), diazinon (1 detection), and metolachlor (2 detections). No pesticides exceeded any national drinking-water standard. The largest concentration of any pesticide was atrazine (0.18 microgram per liter). No volatile organic compounds were detected in water from any of the 20 wells.