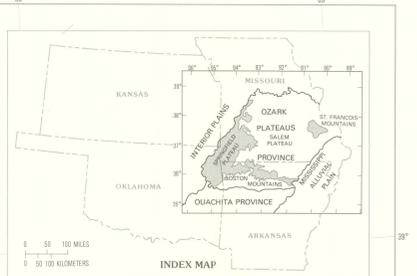


- EXPLANATION**
- Outcrop area of Ozark aquifer
  - Subcrop area of Ozark aquifer
  - Outcrop area of rocks comprising geohydrologic units older than Ozark aquifer
- 
- Geologic contact
  - Approximate boundary of Ozark Plateau aquifer system
  - Line of equal chloride concentration<sup>1</sup>—Dashed where approximately located. Question mark indicates limit of interpretation based on existing data. Interval, in milligrams per liter, is variable
  - Control point<sup>2</sup>



**CHLORIDE**

The chloride concentration in the Ozark aquifer generally is less than 10 mg/L in the Salem Plateau (index map) where the Ozark aquifer crops out and in the Springfield Plateau (index map) where the aquifer is confined by the thin Ozark confining unit (see text in press (d)). One area at the southeastern edge of the Salem Plateau in northeastern Arkansas contains 23 wells having water with chloride concentrations that exceed 100 mg/L. The source of the increased chloride concentrations in water samples from these wells is not known.

Chloride concentration does not appreciably increase in the northern part of the Salem Plateau where Pennsylvanian clay, shale, and sandstone cover the Ozark aquifer between the Gasconade and Meramec River valleys and fill ancient sinkholes on the surface of the Ozark aquifer.

The chloride concentration significantly increases near most of the boundary of the Ozark aquifer. In the extreme northeastern and southeastern part of the Ozark Plateau province and along the western boundary of the province where the Ozark aquifer is in contact with regional saline-water flow systems, the chloride concentrations can exceed 1,000 mg/L. Concentrations probably are at least this large in the Arkansas River valley because of the small hydraulic conductivity of the aquifer and long residence time of ground water in the aquifer and because ground water that leaks into the aquifer must pass through thick shale confining units that overlie the aquifer. Analysis of water from one well completed in the aquifer beneath the Mississippi Alluvial Plain in Jackson County, Arkansas, had a chloride concentration of 17,000 mg/L.

The U.S. Environmental Protection Agency (1986) recommends 250 mg/L as the maximum concentration of chloride in domestic water supplies. Chloride ions can impart an unpleasant taste to water in smaller concentrations than other constituents. Hem (1985, p. 212) reported that a chloride concentration of as little as 400 mg/L causes a noticeable salty taste for most people.

Based on U.S. Geological Survey  
State base maps, 1:500,000, Arkansas, 1981;  
Kansas, 1982; Missouri, 1975; Oklahoma, 1972

SCALE 1:750,000

0 25 50 75 100 MILES

0 25 50 75 100 KILOMETERS

Chloride concentration

**WATER TYPE AND CONCENTRATION OF DISSOLVED SOLIDS, CHLORIDE, AND SULFATE IN WATER FROM THE OZARK AQUIFER IN MISSOURI, ARKANSAS, KANSAS, AND OKLAHOMA**

By  
J.L. Imes and J.V. Davis  
1991