

## **Arsenic in Drinking Water: Using Sound Science for Risk Management and Assisting Community Decision-Makers—A Multi-Agency, Community-Based Research Project**

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Studies have indicated that arsenic concentrations greater than the new U.S. Environmental Protection Agency (U.S. EPA) maximum contaminant level (MCL) concentration of 10 micrograms per liter (ug/L) occur in numerous aquifers around the United States. One such aquifer is the Central Oklahoma aquifer, which supplies drinking water to numerous communities in central Oklahoma. Concentrations as high as 230 ug/L have been reported in some drinking water supply wells from this aquifer. The City of Norman, like most other affected cities, is actively seeking a cost-effective solution to the arsenic problem. Only six of the city's 32 wells exceeded the old MCL of 50 micrograms per liter. When the new MCL becomes effective (2006), 18 of the 32 wells will exceed the allowable concentration of arsenic. Arsenic-bearing shaly sandstones appear to be the source of the arsenic. It may be possible to isolate these arsenic-bearing zones from water supply wells, enabling production of water that complies with drinking water standards. It is hypothesized that geologic mapping together with detailed hydrogeochemical investigations will yield correlations that predict high arsenic occurrence for the siting of new drinking water production wells. More data and methods to assess the specific distribution of arsenic in aquifers are needed to improve our predictions for arsenic occurrence in water supply aquifers.

Research is also needed to assess whether we can retrofit existing water supply wells to isolate arsenic-bearing strata in these aquifers. If successful, this approach would eliminate the need for expensive well head treatment of arsenic for drinking water supplies. This would significantly reduce the costs of bringing public water supplies into compliance with the proposed lower drinking water standards for arsenic. Additionally, an understanding of arsenic distribution in the area would improve chances of installing new wells that do not yield water that exceeds the new drinking water standard. Research to date has produced geologic maps that predict elevated arsenic occurrence and identified at least one well where sealing a localized layer of high arsenic may reduce overall arsenic concentrations below the new MCL. This is a collaborative effort between the U.S. EPA/ORD, the city of Norman, OSU, and the USGS.