

Paper No. 24-3

Presentation Time: 2:00 PM-2:15 PM

STUDYING URANIUM CONTAMINATION LEVELS IN GROUNDWATER FROM THE PINE RIDGE RESERVATION, SOUTH DAKOTA: A COMMUNITY-UNIVERSITY PARTNERSHIP

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Residents of the Pine Ridge Reservation (Oglala Lakota) of south-central South Dakota rely on the High Plains Aquifer and the Late Eocene Chamberlain Pass Formation for their water supplies. Water from the Chamberlain Pass Formation contains naturally elevated levels of uranium (sometimes over 20 ppb) due to devitrified volcanic glass within the aquifer.

Because of health hazards associated with uranium, it is helpful to determine the spatial distribution of wells and springs showing elevated levels of uranium in groundwater. Sparse population density and lack of access to springs and other natural groundwater sources complicates detailed water sampling. To overcome this challenge, we have established a partnership among stakeholders to facilitate data gathering activities. A consortium from UW Whitewater, Pine Ridge Reservation community members, staff members of the Oglala Sioux Tribe Natural Resources Regulatory Agency, and Oglala Lakota College created a step-by-step sample collecting protocol. The collected samples were analyzed for heavy metals and uranium using the analytical facilities available at the University of Wisconsin, (UW) -Whitewater and UW-Eau Claire. The sample locations and chemical data were plotted on a GIS map at the Department of Geography and Geology at UW- Whitewater.

No obvious spatial patterns of variations in uranium concentration can be detected from our mapped preliminary data. However, with continued involvement of community members in the sampling process, we can develop a detailed database to identify existing uranium hotspots, determine the active mechanisms of uranium enrichment and transport in groundwater within the study area, and promote public awareness for minimizing exposure. The staff members of the Oglala Sioux Tribe Natural Resources Regulatory Agency are working to increase the involvement of the community members, especially K-12 students in the data collection activities.

This type of partnership can potentially benefit all stakeholders in multiple ways. While the spatial distribution data for uranium concentration will directly benefit the Pine Ridge community, UW Whitewater students involved in this project will also benefit from being exposed to the Oglala Lakota culture.

[Rocky Mountain Section - 64th Annual Meeting \(9–11 May 2012\)](#)

[General Information for this Meeting](#)

Session No. 24

[Arsenic, Uranium, and Radionuclides: Geology and Health Impacts in the Southwest and Rocky Mountains II](#)

Hotel Albuquerque: Alvarado H

1:30 PM-4:30 PM, Thursday, 10 May 2012

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