

2004 Denver Annual Meeting (November 7–10, 2004)

Paper No. 99-12

Presentation Time: 4:30 PM-4:45 PM

INVESTIGATIONS OF HIGH URANIUM CONTENTS IN DOMESTIC WATER WELLS, SOUTH CAROLINA PIEDMONT

[PRICE, Van](#)¹, TEMPLES, Tom¹, MCCARY, Laura Taj¹, KELTNER, Susan¹, SARGENT, Kenneth A.², ANDERSEN, Brannon³, STONE, Peter⁴, CRAWFORD, Bruce⁵, WARNER, Richard⁶, and SOJDA, Scott⁶, (1) School of the Environment, Univ of South Carolina, Columbia, SC 29208, vprice@environ.sc.edu, (2) Earth and Environmental Sciences, Furman Univ, Greenville, SC 29613, (3) Earth and Environmental Sciences, Furman Univ, 3300 Poinsett Highway, Greenville, SC 29613, (4) SC DHEC, Columbia, SC 29201, (5) Bureau of Water, South Carolina Department of Health and Environmental Control, Columbia, SC 29201, (6) School of the Environment, Department of Geological Sciences, Clemson Univ, Clemson, SC 29634-0919

High levels of uranium and associated elements were recently discovered in domestic well water near Simpsonville, South Carolina. Immediate follow-up by state agencies revealed over 50 wells exceeding drinking water standards by up to a factor of 300 in an area of about 10 square miles. As was also noted in a few wells with concentrations up to 38 ppb. Public water lines have been run to the known affected area. Data from DOE's NURE program from the 1970s suggest the likelihood that there are at-risk groups among the tens of thousands of households served by local ground water. The objective of the work reported here is to develop an efficient method to locate other areas where rural domestic water wells may be at risk of exceeding safe drinking water standards from natural causes. Sampling has begun to compare geochemical exploration methods, gamma radiation surveys, and door-to-door water sampling. Very preliminary data indicate good correspondence between uranium content of pine and oak bark and that of water from nearby wells. U/Th ratios from scintillometer surveys seem to map geologic units associated with the Simpsonville anomaly area. Data also indicate surprising levels of metals such as silver and tin in some bark samples. Uranium correlates with several major elements in pine bark samples as well as with arsenic ($r=0.4$). The research is a joint effort of Furman University, Clemson University, and The University of South Carolina and is supported by EPA Cooperative Agreement #CR-83143401 and DOE financial Assistance Award #DE-FG02-04ER63840 to the University of South Carolina.

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Session No. 99

[Environmental Geoscience II](#)

Colorado Convention Center: 201

1:30 PM-5:30 PM, Monday, November 8, 2004

Geological Society of America *Abstracts with Programs*, Vol. 36, No. 5, p. 243

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