

## **URANIUM SPECIATION AND REMOVAL FROM WELL WATER**

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High amounts of uranium (30 to 9900 µg/L) were found in 31 drinking water wells near Simpsonville-Greenville, South Carolina. The contamination of uranium in the well water was most likely the result of vein(s) of pegmatite, running east of Greenville to southwest of Simpsonville. In addition to the elevated uranium concentration, elevated radon have also being discovered. All the wells that have been tested (currently 111) are above 300 pCi/L in radon. The SC Department of Health and Environmental Control (SC DEHC) requested homeowners to discontinue the use of the well water since chronic ingestion of this water may result in an increased risk of cancer. In addition, SC DEHC is beginning a program to test the levels of radon in air in this community.

The purpose of this work was to determine the form of uranium present in the well water and to test the effectiveness of common household treatment devices to remove uranium and radium. Batch tests with activated carbon, iron powder, anion exchange resin and cation exchange resin were used to characterize the form of uranium in the drinking water. In the tests, water and the separation materials were first equilibrated, filtered and then analyzed by alpha spectrometry. The results of the batch tests showed that it is possible to remove greater than 90% of the uranium and radium in the drinking water by using any of the sorbants listed above. Simple filtration with 0.1 µm had little to no impact on uranium removal. Results of tests using household treatment devices will also be presented.



SK01K0198