

**Title:** Factors Affecting the Determination of Radon in Groundwater

**Project I.D.:** DNR Project No. 111

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**Period of Contract:** July 1, 1993 through June 30, 1994.

**Background:** Radon in public water supplies will soon be regulated. Because the new standard for radon is likely to be very stringent, many groundwaters are likely to have concentrations near the standard. Laboratories analyzing for radon in water will have a critical job, since violation of the standard could require water treatment that would be very expensive to water users.

**Objectives:** The purpose of this study is to determine the effects of several factors, especially the effect the chemical composition of the water sample, on the analysis of radon in water by EPA Method 913.0.

**Methods:** Water samples with different chemical compositions were spiked with known concentrations of radon. Variations from expected recoveries were evaluated with respect to the chemical composition of the water. All of the analysis were conducted at the State Lab of Hygiene.

**Results:** Chemical composition of the natural waters tested had no effect on the recovery of radon. However, deionized water showed a dramatic decrease in percent recovery values.

**Conclusions:** The chemical composition of the water had no effect on the outcome of the analysis provided the sample matrix is identical to the calibration matrix. Therefore, pure deionized water is not suitable for use as a calibration standard. The introduction of a small amount (approximately 0.1ml) of 2M HCl eliminates any matrix effects.

**Key Words:** radon, EPA Method 913.0, matrix effect

**Funding:** DNR

**Project Report:** A report on this project is available for loan from Wisconsin's WaterLibrary, University of Wisconsin - Madison, 1975 Willow Drive, Madison, Wisconsin 53706, (608) 262-3069.