

Is Oregon Well: A Deeper Look at Groundwater Quality from Oregon's Domestic Wells

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PRESENTATION FORMAT: 15 minute oral presentation

TOPIC/TARGET AUDIENCE: Health Professionals: Environmental Health, Epidemiologists, Acute and Communicable Disease

ABSTRACT: Private wells in Oregon are unregulated, but the Domestic Well Testing Act (DWTA) requires testing for arsenic, total coliform bacteria and nitrates during a real estate transaction. Drinking water that has high levels of these contaminants can cause many negative health effects. The Oregon Public Health Division's Domestic Well Safety Program (DWSP) used the real estate transaction database to calculate descriptive statistics for each contaminant. The arsenic and nitrate data were then analyzed for statistically significant clusters using a global measure of spatial association (Getis-Ord General G statistic) and a local measure of spatial association (Getis-Ord G_i^* statistic). Visual assessment of mapped arsenic and nitrate test results suggested clustering of high values in areas known to be at higher risk because of the underlying geology or human activity. Local and global measures of spatial association indicated statistically significant clusters for both contaminants. Analysis of the real estate transaction data will be used to guide future DWSP and domestic well stewardship outreach efforts to areas of the state with higher frequency of elevated test results.

OBJECTIVE(S): Name the three main contaminants of concern in Oregon's domestic wells.

Assess which areas of the state are at higher risk of contamination from high arsenic and nitrate levels.

Explain the use of ArcGIS spatial statistics tools in applied epidemiology.

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