

Arsenic and Heavy Metals in Backyard Wells in Utah Valley, Utah

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Abstract. Ferreira (2013) documented elevated concentrations of As and heavy metals in the rivers that flow westward across the Wasatch Range and heavily-populated Utah Valley, Utah, to drain into Utah Lake. In Utah Valley it is not uncommon for urban residents to dig and maintain shallow wells in their backyards, which is unusual in urban areas outside of developing countries. Since the rivers in Utah Valley are losing streams, the question arose as to the levels of As and heavy metals in these shallow wells. The question was addressed by collecting water samples from 41 backyard wells throughout Utah Valley. Water temperature, pH, electrical conductivity and dissolved oxygen were measured on-site. Stable isotopes of hydrogen and oxygen were measured using the Picarro Cavity Ringdown Spectrometer. Water samples were analyzed for nitrate, phosphate and sulfate using the Hach DR-2700 Spectrophotometer and for As and 11 heavy metals (Ag, Cd, Co, Cr, Cu, Fe, Mn, Ni, Pb, Ti, Zn) using the PerkinElmer Optima 8000 ICP-OES (Inductively-Coupled Plasma – Optical Emission Spectrometer). Analysis of 20 wells has shown that EPA drinking water regulations were exceeded in two wells for As, three wells for Cd, two wells for Fe, and seven wells for Mn. Maximum concentrations were As = 0.018 mg/L, Cd = 0.020 mg/L, Fe = 0.480 mg/L, and Mn = 0.572 mg/L, compared with EPA regulations of As = 0.01 mg/L, Cd = 0.005 mg/L, Fe = 0.3 mg/L and Mn = 0.05 mg/L. Further results and interpretation will be reported at the meeting.