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ARSENIC CONTAMINATION CAUSED BY GROUNDWATER REMEDIATION

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Almost 20% of U.S. groundwater supplies have detectable levels of arsenic (As) and volatile organic compounds (VOCs). We show that the increasingly common practice of remediating groundwater supplies contaminated with organics by monitored natural attenuation may cause or exacerbate arsenic (As) contamination, even in the absence of anthropogenic inputs of As. X-ray spectroscopy and batch experiments confirm that naturally occurring As is present and strongly retained on ferrihydrite in a glaciomarine clay layer underlying a mixed waste Superfund site. Over the five year study period, decreases in dissolved benzene concentrations in the groundwater are correlated with increases in arsenic concentrations, consistent with the microbial decomposition of both benzene and iron oxides and the subsequent release of As. The correlation of elevated arsenic levels to VOC contamination in groundwater systems throughout the U.S. indicates that the enhancement of As contamination by natural attenuation may be widespread phenomenon.