Mining in the Coeur d’Alene River Valley in northern Idaho contaminated the valley with metals including arsenic which is a particular health concern. UW-Eau Claire students and faculty have been able to identify the nano-particulate arsenic bearing phases that are most capable of impacting human health. The results of this study indicate that the primary indicator of arsenic bioavailability is the stability of the water levels in lakes and swamps adjacent to the river. Fluctuating water levels produced during manipulation of the downstream dam increase arsenic bioavailability, while lakes and swamps with static water levels contain more robust and less bioavailable arsenic minerals.