Environmental and Water Resources Engineering, and Center for Water and the Environment Seminar Series Presents:

Thursday, December 4th 2025, 3:30-4:30 pm, ECJ 1.324

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Metal Mixtures in Uranium Mine Wastes in Tribal Land: Challenges and Opportunities in Understanding Reactivity and Remediation

José M. Cerrato, PhD

The reactivity and potential remediation approaches for metal mixtures in uranium(U) mine wastes located in tribal land in the Southwestern US were investigated by integrating laboratory experiments, microscopy, and spectroscopy. Metal release from these mine wastes could pose potential health risks for neighboring communities. Spectroscopy analyses suggest that U-vanadium (V) and U-organic-rich phases are present in abandoned mine wastes; the dissolution of these phases is relevant to U, arsenic (As), and V transport. Remediation approaches for mixtures of U and As using naturally occurring calcium (Ca)-bearing minerals are currently being researched for the immobilization of these metal mixtures. Additionally, Ca in carbonate water at circumneutral pH facilitates the transport of U in plant roots which could be useful for metal uptake. These results are relevant for U transport and remediation in the proximity of mine wastes and mineralized deposits.

José M. Cerrato is Professor and Regents' Lecturer in the Gerald May Department of Civil, Construction & Environmental Engineering at the University of New Mexico. He obtained a B.S. in Civil Engineering from the National Autonomous University of Honduras, and M.S. and Ph.D. in Environmental Engineering from Virginia Tech. He was also a Postdoctoral Researcher in Washington University in St. Louis. He serves as Director of the UNM METALS Superfund Research Center and the UNM Community Health Allied Network for Geospatial and Environmental Science (CHANGES) Center. His research interest is related to biogeochemical processes occurring at molecular and macro scales at the interface of water, energy, and environmental health. He has been a recipient of the National Science Foundation (NSF) CAREER Award, and Fulbright U.S. Scholar Senior Research Award to Spain. He currently serves as President-Elect of the Association of Environmental Engineering and Science Professors (AEESP).