

Biomedical Research Seminar Series

Speaker Announcement

Friday, August 31, 2018 @ 3:30 pm

Domenici Hall, Room 109

(Refreshments served at 3:00)



Matthew J. Campen, PhD

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University of New Mexico*

Respiratory and Cardiovascular Toxicity Related to Windblown Dusts from Abandoned Uranium Mines on Tribal Lands in the Southwest

Hundreds of abandoned uranium mine sites exist on Navajo Nation, and thousands more are present throughout the Western US. These sites contain not only uranium as a contaminant, but often other metals such as vanadium, cadmium, and arsenic. While much research has explored solubility of contaminants entering the soil and water systems, little is known about how metals may be a health hazard if they are resuspended as particulates in the air. Much research on general ambient particulates has shown that dusts smaller than 10 micrometers can be inhaled and cause respiratory and cardiovascular health effects. Our studies began with the question of whether mine site-derived particulates would be more toxic than particulates derived from background sediments. Using particulates from the Claim 28 site in Blue Gap Tachee, AZ, we identified significant contamination of uranium and vanadium compared to background. After isolating the particulates small enough to be inhaled from mine site and background regions, we conducted in vivo and in vitro studies and ascertained that the mine site-derived PM was substantially more toxic in terms of acute inflammation and injury to the lung, as well as oxidative and inflammatory responses from macrophages exposed in vitro. These results provided the impetus to begin a more extensive campaign to examine the ambient air particles in potentially contaminated regions using a mobile exposure laboratory. Results from these ongoing studies will help ascertain the likelihood that nearby residents may be affected or not by inhaled particulates.

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For more information or to meet with the speaker please contact Ryan Ashley at ryashley@nmsu.edu