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Presents

When Smoke Causes Fire: Understanding the Cascade from Wildfire Smoke Inhalation to Neuroinflammation

By

Matthew Campen

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Matthew Campen, PhD, MSPH is a Regents' Professor in the Department of Pharmaceutical Sciences in the College of Pharmacy at UNM. He has authored over 100 peer reviewed publications in the area of air pollution health effects. Dr. Campen directs the new NIGMS-funded New Mexico Center for Metals in Biology and Medicine, as well as the KL2 Mentored Career Development Program within the UNM Clinical and Translational Sciences Center. He is also the Deputy Director and Training Core director for the NIEHS P42 UNM Metal Exposure and Toxicity Assessment on Tribal Lands in the Southwest (UNM METALS) Superfund Research Program Center**.**

Abstract Wildland fire disasters raged throughout the western US over the past several years, continuing a trend for increasing frequency and severity of such events driven by climate change. Wildfire smoke (WFS) arising from these events covered much of the continent, meaningfully exposing over 100 million people. The smoke is principally derived from biomass burning, but anthropogenic materials are now more frequently consumed, emitting a diverse chemical profile with unknown toxicity. Importantly, with a growing and aging population in the US, increasing exposures raise significant concerns for neurodegenerative outcomes. Our recent studies with naturally-occurring WFS exposures – at our site ~1000 km from the principal fire source – demonstrate clear neuroinflammatory outcomes in otherwise healthy mice. Flow cytometry of brains from exposed mice demonstrated activated microglia and neurovascular involvement, with elevated endothelial adhesion molecules essential for peripheral inflammatory cell recruitment. This talk will review recent work in our laboratory characterizing the pathological mechanisms leading from inhalation of WFS to neurological outcomes.