

PM_{2.5} Airborne Particulates near Frac Sand Operations

Crispin Pierce, Kristin Walters, Jeron Jacobson and Zachary Kroening
University of Wisconsin–Eau Claire

Abstract: The rapid growth of hydraulic fracturing for oil and gas extraction in the U.S. has led to more than 140 permitted “frac” sand mines and processing plants in Wisconsin. Potential environmental health risks include increased truck traffic, ecosystem loss, and groundwater and air pollution. Emitted air contaminants include fine particulate matter (PM_{2.5}) and respirable crystalline silica. Inhalation of fine dust particles causes increased mortality, cardiovascular disease, lung disease, and lung cancer. In this pilot study, use of a filter-based ambient particulate monitor found PM_{2.5} levels of 5.82–50.8 µg/m³ in six 24-hour samples around frac sand mines and processing sites. Enforcement of the existing U.S. EPA annual PM_{2.5} standard of 12 µg/m³ is likely to protect the public from silica exposure risks as well. PM_{2.5} monitoring around frac sand sites is needed to ensure regulatory compliance, inform nearby communities, and protect public health.

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Correspondence concerning this article should be addressed to Crispin Pierce, Watershed Institute for Collaborative Environmental Studies, University of Wisconsin-Eau Claire, Eau Claire, WI 54702. E-mail: piercech@uwec.edu