Environmental Science Graduate Program Seminar Series

CO_2 Emissions from House Dust: Influence of Particle Size Fractions and Species Composition

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October 5th, 2021 | 2:00-3:00 PM

Smith Laboratory, Room 3150

Abstract

CO_2 is a well-known pollutant in both the indoor and outdoor environment. In the outdoor environment it is well known as a greenhouse gas, while in the indoor environment it is linked to sick building syndrome. Indoors, CO_2 can cause adverse health effects at high concentrations. This contaminant has many sources in homes including cooking, human respiration, building materials, and dust. Recently, CO_2 emissions from dust have been found to differ with relative humidity level. However, it remains unknown how other factors contribute to CO_2 emissions from dust and how much impact this emission may have on indoor levels. The goal of this study is to measure the CO_2 emissions of 4 common fungi found in house dust and the emissions of 9 different particle size fractions of dust. These measurements will be taken at 7 different relative humidity levels for the fungal samples and 3 different relative humidity levels for the dust particle size fractions. We will record CO_2 emissions with the Picarro GasScouter G4301 with additional readings taken on a LI-850 used in conjunction with a Proton Transfer Reaction -Time of Flight - Mass Spectrometer (PTR-TOF-MS). Readings taken using the PTR-TOF-MS will also provide volatile organic compound (VOC) emissions data. This analysis will improve understanding of dust as a source of indoor CO_2 as well as the overall role of dust emissions as an indoor contaminant affecting human health.