

Investigation of Indoor and Outdoor Fine Particulate Matter Concentrations in Schools in Salt Lake City, Utah

Although there is mounting evidence that suggests that air pollution is impactful to human health and educational outcomes, this is especially problematic in schools with higher air pollution levels. To understand whether all schools in an urban area are exposed to similar outdoor air quality and whether school infrastructure protects children equally indoors, we installed research-grade sensors to observe PM_{2.5} concentrations in indoor and outdoor settings to understand how unequal exposure to indoor and outdoor air pollution impacts indoor air quality among high- and low-income schools in Salt Lake City, Utah. These data and resulting analysis show that poor air quality may impact school settings and the potential implications with respect to environmental inequality. Based on this approach, we found that during atmospheric inversions and dust events, there was a lag ranging between 35 and 73 min for the outdoor PM_{2.5} concentrations to follow a similar temporal pattern as the indoor PM_{2.5}. This lag has policy and health implications and may help to explain rising concerns regarding reduced educational outcomes related to air pollution in urban areas. [View Full-Text](#)

Keywords: air quality; fine particulate matter; high schools; building ventilation; environmental inequality; research-grade sensors; indoor air quality; atmospheric inversions; dust events; urban