The Temporal and Spatial Relationship of Outdoor Air Pollutants at a School

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The purpose of this experiment was to determine if there is a temporal and spatial relationship to airborne pollutants around a school relating to the volume and proximity of idling cars and road traffic. Children are among the most susceptible subgroup of the population to suffer pollutant related long term and short term health conditions such as asthma, chronic bronchitis, emphysema, effects on breathing, alterations in pulmonary defense, aggravation of existing cardio vascular disease and cancer. The results may be useful to promote steps to mitigate pollutant exposure. The researcher hypothesized that pollutant exposure for children will be highest during pick-up and drop off hours when cars are idling, and during hours of heavy traffic. Four tests were conducted each day, one at 7:30-8:00 with a moderate amount of traffic and a car drop-off line, the next at 12:30-1:00 with low traffic and no car line, then 2:30-3:00 with a slower pick-up line of idling cars and moderate traffic, and lastly 4:30-5:00, with no car line and high traffic volume. These tests were conducted at a playground close to a major roadway a playground/waiting area near the pick-up and drop-off area. The results showed the most pollutants between 2:30-3:00, followed by 4:30-5:00, then 7:30-8:00 and lastly 12:30-1:00. These trends were due to the relative volume of idling cars and nearby road traffic.

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