

OPA20) Impact of Transportation Related Particulate Matters on the Roadside Air Quality in Fresno, California

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To promote active transportation modes (such as bike ride and walking), and to create safer communities for easier access to transit, it is essential to provide to the public that the consolidated data-driven transportation information. The relevant and timely information from data facilitates the opportunity for improving decision-making processes for the establishment of public policy and urban planning for sustainable growth and promoting public health in the region. For the characterization of the spatial variation of transportation-emitted air pollution in the Fresno/Clovis neighborhood in California, various species of particulate matters emitted from traffic sources were measured using real-time monitors and GPS loggers at over 100 neighborhood walking routes within 58 census tracts from the previous research, Children's Health to Air Pollution Study - San Joaquin Valley (CHAPS-SJV). Roadside air pollution data show that PM_{2.5}, black carbon, and PAHs were significantly elevated in neighborhood walking air samples compared to indoor air or the ambient monitoring station in the Central Fresno area due to the immediate source proximity. The simultaneous parallel measurements in two neighborhoods which are distinctively different areas (High diesel High poverty vs. Low diesel Low poverty) showed that the higher pollution levels were observed when more frequent vehicular activities were around the neighborhoods. The elevated PM_{2.5} concentrations near the roadways was evident with high volume of traffic, and regions with more unpaved areas. Neighborhood walking air samples were influenced by immediate roadway traffic conditions, such as encounters with diesel trucks, approaching in close proximity to freeways and/or busy roadways, passing cigarette smokers, and gardening activity. The elevated black carbon concentrations occur near the highway corridors, and regions with high diesel traffic and high industry.