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EVALUATING THE EFFECTS OF NEAR-ROAD SOLID AND VEGETATION BARRIERS ON MSAT EXPOSURES

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Public health concerns for populations living, working and going to school near high-traffic roadways has increased substantially in recent years. Air quality measurement studies indicate high pollutant concentrations can occur near these large roads, impacting population exposures and health effects. Roadside features have been shown to alter pollutant transport and dispersion from the road, affecting near-road concentrations and exposures for nearby populations. Air quality, wind tunnel and tracer gas measurement studies have identified the potential for noise barriers and roadside vegetation to reduce near-road air pollution concentrations, under some conditions by over 50 percent. However, some roadside conditions have been shown to result in increased downwind pollutant concentrations. The data from these studies have been used to develop and evaluate air dispersion model algorithms to simulate pollutant transport and dispersion around and over these features. This presentation will provide an overview of field and wind tunnel studies which have investigated how roadside features alter near-road air quality, how these studies have led to the development of dispersion model algorithms, and recommendations on the design and location of these features to maximize opportunities for pollution reduction and minimize potential increases in near-road pollutant concentrations.