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RECOMMENDATIONS FOR CONSTRUCTING ROADSIDE VEGETATION BARRIERS TO IMPROVE NEAR-ROAD AIR QUALITY

The EPA report, *Recommendations for Constructing Roadside Vegetation Barriers to Improve Near-Road Air Quality*, summarizes the research findings on the best practices for building roadside vegetative barriers to improve air quality. The recommendations can be used by states, communities and individuals interested in reducing roadside pollution.

The report includes:

- Barrier design recommendations
- Characteristics for best vegetative barriers
- Benefits of combining vegetation with solid noise barriers
- Additional resources

Why study roadside barriers?

EPA is studying the role of roadside barriers in reducing air pollution near homes, schools and other buildings close to a major roadway. More than 45 million people in the U.S. are estimated to live, work or attend school within 300 feet of roadways where high concentrations of air pollution have been observed due to motor vehicle emissions. Emissions from brake and tire wear and suspended road dust can also affect roadways.

Studies show an increase in the incidence and severity of health problems related to exposures to air pollution near roadway traffic, including higher rates of asthma onset and aggravation; cardiovascular disease; impaired lung development in children and other health effects.

What research is EPA doing to examine the role of roadside barriers?

EPA has contributed extensively to research on near-road air pollution that has examined health effects, sources, concentration levels and mitigation strategies, including the use of roadside barriers to reduce air pollution near roads. These barriers include walls built along roads by transportation departments to reduce traffic noise and vegetation barriers of trees and bushes near roadways.

Studies have shown that noise and vegetative barriers can reduce downwind pollutant concentrations near roads. Reduction in pollution is greater when vegetation barriers are thick, with full coverage from the ground to the top of the canopy. Pollutants can escape through gaps in foliage or travel around edges. The combination of solid noise and vegetative barriers may

provide the greatest benefit.

Research has involved:

- Field studies to measure air pollution near existing barriers along busy roadways using stationary and mobile measurement technology.
- Wind tunnel assessments to investigate how trees and bushes can remove some pollutants such as airborne particles.
- Modeling to design and evaluate vegetation barriers and determine best practices for their design and use.

In 2016, two community studies, supported by EPA, will investigate vegetation barriers for air pollution control. Past studies have used existing vegetation to determine their ability to reduce near-road concentrations. The studies will be conducted at a park in Detroit, Mich., and at an elementary school in Oakland, Calif. They will involve communities in designing, planting the vegetative barriers and measuring air quality before and after the planting. EPA is providing scientific expertise to community members to implement the projects.

Key Links:

Recommendations for Constructing Roadside Vegetation Barriers to Improve Near-Road Air Quality

Near roadway, railyard, and port research: https://www.epa.gov/air-research/research-near-roadway-and-other-near-source-air-pollution

Near Roadway Air Pollution and Health: Frequently Asked Questions: https://www3.epa.gov/otaq/nearroadway.htm#content1

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