Best Practices for Reducing Near-Road Pollution Exposure at Schools: Summary

Below is a summary of the recommendations outlined in Best Practices for Reducing Near-Road Pollution Exposure at Schools (EPA-420-R-21-022).

This document is intended for school administrators, facility managers, school staff, school nurses, school-based health centers, parents, students, and others in the school community who are concerned about traffic-related air pollution exposure due to a school’s proximity to a heavily traveled roadway or trucking corridors.

Mechanical Ventilation & Filtration

Use high-efficiency filters to reduce particle pollution exposure inside classrooms

- Upgrade filtration system to the highest MERV-rated filters the HVAC system can handle
- Consider HVAC system upgrades to accommodate high-efficiency filters
- Consider installation of “pre-filters” upstream of the main filter
- Keep windows and doors closed to avoid bringing in polluted outdoor air
- Perform regular inspection and maintenance
- Seal the building envelope (windows and doors)

For classrooms relying on passive/natural ventilation, use quiet, portable, stand-alone filtration systems to reduce indoor concentrations

Minimize indoor sources of air pollution such as
- Combustion sources
- Gas space heaters
- Wood stoves
- Air fresheners
- High pollen-producing plants

Opt for low-VOC interior finished, furniture, and paints

Passive & Natural Ventilation

Train teachers, staff, and students on best ventilation practices

- Keep windows/desks closed in naturally ventilated classrooms during peak commute times
- Ensure minimum outside air ventilation rates are maintained throughout occupancy as required by code!
### Actions for Building Occupants

- **Plan strenuous outdoor activities during times with lower amounts of traffic**
- **Keep windows/doors closed in naturally ventilated classrooms during peak commute times**
- **Understand the importance of indoor pollutant sources and how to reduce emissions from indoor sources**
- **Keep HVAC systems turned on throughout the day, with doors and windows closed**
- **Keep air vents clear of items that may block airflow**
- **Consider how school buildings are used on weekends that may require changes to HVAC operation**
  - Sporting events in athletic facilities
  - Adult extension education
  - Classes taking place on weekends

*Local, school, and health department recommendations regarding outside ventilation due to pandemic conditions should be adhered to*

### Site Location and Design

For new school developments, consider locations farther from major roads and other areas with heavy truck traffic, but still within the community.

Consider unintended consequences of any location, such as increased commute distances and decreased opportunity for walking and biking.

Locate playgrounds, athletic fields, and classrooms as far as possible from the roadway, or other areas with heavy truck traffic.

Locate bus and passenger vehicle loading zones away from classrooms, play areas, and building air intakes.

Carefully consider the placement of portable classrooms.
Limit school bus idling by instituting **anti-idling or idle reduction policies**, and ensure no idling by windows, doors, or air intakes.

Upgrade school bus fleets by:
- **Retrofitting** buses with PM filters or oxidation catalysts
- **Replacing** older buses with newer models

Consider alternative bus fuels, including biodiesel blends, liquified petroleum, compressed or liquid natural gas, or electric.

Discuss funding opportunities for bus fleet upgrades with your local or state environmental or air quality agency.

Provide walking/biking paths to promote active transportation and reduce the number of vehicles near school.

Roadside Barriers

For vegetative barriers, use an **evergreen species with mature, dense greenery**, consider **vegetation height and density**, and locate the barrier **downwind and close to the roadway**.

Choose species appropriate for region and site by consulting with plant nurseries, local cooperative extensions, city governments, and the U.S. Forest Service.

Minimize gaps in solid and vegetative roadside barriers.

Use a **solid roadside barrier and/or vegetation of appropriate height** to block traffic-related pollutants.

Ensure vegetation is **properly maintained** to ensure no gaps form.

For more information on these topics, visit the **Best Practices for Reducing Near-Road Pollution Exposure at Schools** publication: