



TRAFFIC-RELATED AIR POLLUTION

A fact sheet series for child care facility operators, architects, and designers

What is traffic-related air pollution and why is it a health concern?

Traffic-related air pollution is a mixture of gases and chemicals from fossil fuel combustion and road or vehicular emissions. Benzene, carbon monoxide and Particulate Matter of less than 2.5 micrometers diameter (PM_{2.5}) may damage one's health. Air pollution tends to be worse on major roads and truck routes, major intersections, steep hills where acceleration occurs, loading areas, railyards, ports, airports, etc. Generally, as distance from the local air pollution increases, traffic-related air pollution concentration decreases.

Traffic-related air pollution can also enter into buildings, leading to indoor traffic-related air pollution exposure for children and others inside buildings.

Children breathe faster than adults so are more sensitive to poor air quality. Air pollution can damage health and development, especially in children with asthma or chronic respiratory illnesses.



What facility design factors help to provide clean air for children?

Outdoor space:

- Locate the outdoor play space on the side of the building away from local air pollution sources.
- Use solid and vegetative barriers to buffer and reduce exposure to air pollution in the outdoor play spaces (*more information sources at the end*).

Indoor space:

- Place building centralized heat, ventilation, air conditioning (HVAC) air intakes as far away as possible from sources of air pollution (e.g. roadways).
- Use an air filter with the highest 'MERV' rating possible to reduce indoor exposure to outdoor PM_{2.5} and ultrafine particles.
- Use an adsorbent media air filter (e.g. activated carbon) to reduce indoor exposure to pollutants like benzene.

We do not recommend air quality testing without sufficient cause for concern as it can be complex and requires significant expertise and expense. Portable air sensors available for consumer purchase are not yet reliable devices.

DID YOU KNOW...?

Maximizing the distance from and minimizing exposure to transportation-related air pollution sources for infants and children is a good way to protect them from potential adverse health effects.

What operational strategies and technologies can I use to provide clean air for children?

- Use the outdoor play spaces onsite that are far away as possible from air pollution sources and with buffer in place.
- Use a centralized HVAC system and set up a work plan such as:
 - ◇ Set up the building air intake to bring in outdoor air at times when the outdoor air quality is better (e.g. not during busy traffic congestion periods like rush hour).
 - ◇ Arrange a maintenance plan to replace air filters regularly (as directed by manufacturer).
- If HVAC system is not in place, consider buying portable air cleaners with HEPA air filters.

How to choose & use portable air cleaners

When buying a portable air cleaner, check the product label to ensure the following specifications are met:

- HEPA air filters—ensures you remove PM_{2.5}.
- Room size—must meet the requirements of the facility indoor space.
- Good quality—certified by AHAM (Association of Home Appliance Manufacturers).
- Should not produce ozone.
- Activated carbon air filters (recommended) – can reduce other pollutants such as benzene.

Here are some portable air cleaner user tips:

- Set up a maintenance plan to replace air filters regularly (as directed by manufacturer).
- They work best when the windows/doors are closed, so heat may become an issue on hot days. If windows will be closed, ensure that indoor temperatures are maintained at a comfortable level to prevent heat-related illnesses.

*Note that there are considerations related to noise and heat addressed in two other fact sheets in this series, including: **NOISE POLLUTION** and **EXTREME HEAT**.

For additional information and fact sheets, visit:

- BC Centre for Disease Control – [Portable air cleaners for wildfire smoke](#)
- Brauer, M., Reynolds, C., & Hystad, P. —[Traffic-related air pollution and health: a Canadian perspective on scientific evidence and potential exposure-mitigation strategies](#) (2012)
- EPA – [Best practices for reducing near-road pollution exposure at schools](#) (2015)
- EPA – [Recommendations for constructing roadside vegetation barriers to improve near-road air quality](#) (2016)
- Refer to Metro Vancouver’s Air Map: <https://gis.metrovancouver.org/maps/air/>