

# Impact of Outdoor Air Pollution on Child Health and Well-Being

## Health and Policy Context

Indoor and outdoor air pollution, including outdoor air pollution, can be important contributors to health. Exposure to poor outdoor air quality (i.e., air pollution) poses a substantial burden to children and families. Outdoor air pollution includes particle pollution (i.e., smoke or particulate matter) and ground-level ozone (i.e., smog).<sup>1</sup>

Children are at a higher risk of negative health effects caused by outdoor air pollution since their organs are still developing, and they have higher breathing rates. Negative health effects caused by exposure to air pollution can include, but are not limited to, adverse respiratory, neurological, and other behavioral and developmental outcomes.

## In Utero Exposure to Outdoor Air Pollution

Studies demonstrate an association between exposure to air pollutants during pregnancy and adverse birth outcomes, including \_\_\_\_\_, \_\_\_\_\_, which can \_\_\_\_\_ rates of \_\_\_\_\_, and cardio-respiratory abnormalities, such as chronic lung disease of prematurity. Preterm birth and low birth weight are also associated with \_\_\_\_\_ and mortality and increased morbidity in adulthood. Moreover, exposure to air pollution during the prenatal period can impair \_\_\_\_\_ and organ development and is associated with childhood \_\_\_\_\_ and other childhood respiratory symptoms. Exposure to air pollution during pregnancy can also increase risk of \_\_\_\_\_.

## Asthma and Allergic Diseases

Studies have demonstrated an association between air pollution and \_\_\_\_\_, including:

- **Asthma.** Exposure to air pollution can increase the risk of \_\_\_\_\_ and worsen \_\_\_\_\_. Specifically, exposure to air pollution can \_\_\_\_\_ the risk of asthma-related hospitalization, length of hospital stays, and rates of medication use, which can result in children missing \_\_\_\_\_ and parents/caretakers missing work.
- **Seasonal Allergies.** Seasonal \_\_\_\_\_, triggered by environmental allergens like pollen, may be worsened by \_\_\_\_\_, as air pollution can make pollen more \_\_\_\_\_ (i.e., higher capacity to trigger allergies).

### Marginalized Communities Are More Likely to Be Exposed to Outdoor Air Pollution and Other Cumulative Environmental Stressors

Various studies conclude that \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_, who are more likely to live \_\_\_\_\_ to traffic or facilities that produce pollutants (e.g., factories), are disproportionately exposed to outdoor air pollution. Moreover, some marginalized \_\_\_\_\_ may be disproportionately exposed to \_\_\_\_\_ and/or \_\_\_\_\_ social and environmental stressors (e.g., substandard housing conditions and extreme heat, limited safe greenspace access; and air pollution) over their lifetime, which compound to negatively impact health and well-being and exacerbate health disparities.<sup>4</sup>

## Other Respiratory Issues

\_\_\_\_\_ and \_\_\_\_\_ exposure to outdoor air pollution is associated with an increased risk for childhood respiratory issues, including:

- **Impaired Lung Growth and Function.** Prenatal exposure to air pollutants can impact \_\_\_\_\_ in children, which can in turn contribute to poor respiratory outcomes into adulthood. Furthermore, another \_\_\_\_\_ shows that exposure to air pollution during pregnancy and early life is associated with reduced lung function in mid-childhood.
- **Respiratory Infections.** Exposure to air pollution during childhood can also increase risk for \_\_\_\_\_, including bronchitis and \_\_\_\_\_, \_\_\_\_\_, and others.

## Behavior and Development

\_\_\_\_\_ suggests exposure to outdoor air pollution in utero or during \_\_\_\_\_ can impact brain development and \_\_\_\_\_. Specifically, one \_\_\_\_\_ demonstrates the relationship between exposure to air pollution and neurological development, including an increased risk of developmental disorders like attention-deficit/hyperactivity disorders or autism spectrum disorders. Another \_\_\_\_\_ shows children ages 2 to 4 who were exposed to air pollution were at a higher risk of worse behavioral function and cognitive performance.

