

# Air pollution damage starts in the womb with health effects that can last a lifetime

Inhaled air pollutants can be deposited into the lungs, where they alter lung defenses. Some enter directly into the bloodstream and deeper tissues, including the heart, brain and other organs.



**Children are not little adults. They have unique vulnerabilities.**



**Air pollution impacts developing bodies and brains.**



**Health impacts can last a lifetime.**

## Pregnancy

- Pregnant woman inhales increased amount of air per minute
- Some pollutants can cross placenta and reach the fetus; These include air pollution resulting from the use of inefficient, polluting fuels and technologies and or from second-hand smoke
- Maternal changes due to air pollution exposure, such as inflammation and oxidative stress, indirectly affect fetus
- Negative impacts on development of respiratory, cardiovascular, immune, endocrine and nervous systems
- **Maternal health:** Gestational diabetes, pre-eclampsia, gestational hypertension, and postpartum depression
- **Adverse birth outcomes:** Low birth weight, miscarriage, preterm birth, stillbirth
- **Impacts on lifelong child health:** Congenital heart defects, pneumonia in first year of life, neurodevelopmental disorders, stunting, development of asthma, eczema and allergic disease, and high blood pressure



## Infancy and Childhood

- Inhale more air per kilogram of body weight and absorb more pollutants relative to adults
- Ineffectively filter pollutants in nasal passages
- Lack ability to control exposure, both indoors and outdoors
- Live closer to the ground, so may breathe in more ground-level pollution
- Lungs, brain and other organs still developing
- Inflammation in children's smaller airways causes proportionally more blockage and resistance to air flow
- Pneumonia
- Upper respiratory tract infections
- Ear infections
- Asthma, allergies and eczema
- Altered growth (stunting and obesity)
- High blood pressure
- Childhood leukemia
- Impaired cognitive development, including autism spectrum disorders



## Adolescence

- May spend time outside playing sports, walking to school in high pollution areas and other activities
- Lack control over location of organized sport activities, which may be located near areas of high pollution
- Lung-function development continues in girls until late teens and in boys until early 20s
- Upper respiratory tract infections
- Asthma and allergies
- High blood pressure
- Obesity
- Impaired cognitive development

