

April 2018

The Cost of Premature Birth from Preventable Air Pollution in California

Air pollution can have many serious effects on health, starting from the very first stages of life. Research has shown that air pollution can increase a mother's risk of premature birth—medically known as 'preterm birth' for infants born before 37 weeks of gestation.

The California Environmental Health Tracking Program analyzed data to better understand the cost of premature birth due to preventable particulate matter pollution. By successfully reducing harmful air pollution, we estimate that nearly 1 in 10 premature births in California could be prevented, saving more than \$1 billion each year.

By eliminating preventable particulate matter air pollution, each year California could avoid an estimated:

- 3,000 premature births
- \$170 million in medical costs
- \$980 million in lost lifetime earnings

Premature Birth Impacts a Child's Health

A child's chance of surviving premature birth has dramatically increased due to advances in medical care. Yet in developed countries, premature birth remains the leading cause of death and illness around the time of birth. Children born prematurely may face serious health problems throughout infancy, such as respiratory illness, cardiovascular issues, and immune stress. As they grow up, they may experience substantial delays in their physical, emotional, cognitive, and behavioral development, impacting their ability to learn, socialize, and work.

Over their lifetime, children born prematurely have a higher risk for visual impairment, hearing loss, intestinal disease, and infections. In addition, the families of children born prematurely often endure an emotional and financial toll.

Nearly 1 in 10 premature births could be prevented by reducing harmful air pollution.

Premature Birth is Still a Problem

The premature birth rate in the United States is over 50% higher than in many other developed countries. The premature birth rate in California (8.6%) is lower than the U.S. average (9.8%), but still falls short of the March of Dimes goal of 8.1% by 2020.

The burden of premature birth is unfairly distributed. In California, the premature birth rate among black women is 46% higher than the rate among all other women. Research suggests that unequal exposure to air pollution is responsible for a portion of this racial disparity. Low-income communities and communities of color often live nearest to sources of harmful air pollution and face the greatest risk of exposure.

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Air Pollution is Linked to Premature Birth

Multiple complex factors are associated with premature birth, including outdoor air pollution. Reducing exposure to air pollution is an important strategy for preventing premature birth. When state and local agencies craft policies and programs to reduce air pollution, the health and economic benefits of preventing premature birth should be considered.

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Particulate Matter is Common and Harmful

Particulate matter (PM) is a mix of chemical particles found in the air that can be inhaled and harm health. Particulates that are 2.5 micrometers and smaller in size (PM2.5) are of concern because they can be inhaled deep into the lungs. Some PM2.5 is small enough to enter the bloodstream. PM2.5 pollution is largely generated by the combustion of gasoline, oil, diesel, and wood. Common sources of PM2.5 include cars and trucks, residential heating, power plants, and industrial activities.

According to the American Lung Association, 8 of the 10 cities with the highest PM pollution in the U.S. are in California. Many areas in California fail to meet existing air quality standards for PM2.5 pollution.

Mothers living nearest high levels of air pollution have a greater risk of giving birth prematurely.

Research has shown that mothers living nearest high levels of PM2.5 pollution have a greater risk of premature delivery. Like smoking, breathing PM2.5 may increase inflammation in pregnant women. In addition, PM2.5 is suspected to negatively impact immune system stress, placental development, and endocrine function. These harmful health effects can occur below existing air standards for PM2.5.

High Costs of Premature Birth due to Particulate Matter

Reducing man-made PM2.5 pollution in California could prevent an estimated 3,062 premature births each year and would save \$1.1 billion dollars annually in direct and lifetime costs.



Taking Steps to Prevent Particulate Matter Pollution

Reducing PM pollution will yield health, social, and economic benefits by preventing premature birth. Reducing PM pollution will also improve lung and heart health outcomes, prevent premature death, and protect vulnerable populations, such as children and the elderly.

Policies to reduce PM pollution can include regulations to lower industrial and agricultural emissions, incentives for transitioning to low and zero-emission energy sources, and strategies to reduce motor vehicle emissions. Policies that target communities most burdened by air pollution may be particularly beneficial in reducing racial inequities and overall rates of premature birth.

Individuals can take steps now to reduce the harmful effects of PM pollution by quitting smoking; limiting the use of fireplaces and wood stoves; traveling by foot, bicycle, or public transit whenever possible; and limiting time spent outdoors when air pollution reaches hazardous levels, such as during wildfires.

Learn more at www.cehtp.org/pretermbirthcosts