Coal Emissions Damage the Health of Maryland Residents

Maryland's coal-fired power plants produce toxic pollution, nitrogen oxide compounds, sulfur dioxides, fine particulate matter, and carbon dioxide, all of which cause significant health problems in Maryland, particularly in the most vulnerable populations.

**Toxic Pollution:** Burning coal for electricity releases 84 of the 187 hazardous compounds that the U.S. Environmental Protection Agency (EPA) has identified as toxic for humans and the environment. These hazardous compounds include neurotoxins such as mercury and lead, corrosive substances such as hydrochloric acid, carcinogens such as arsenic and benzene, radioactive elements such as radium, and potent organic carbon-based toxins such as dioxins and formaldehyde.\(^{(1)}\)

**Nitrogen Oxide Compounds and Sulfur Dioxides:** Burning coal releases large quantities of nitrogen oxide compounds (NO\(_x\)) and sulfur dioxides (SO\(_2\)).

- Exposures ranging from 30 minutes to 24 hours to NO\(_2\) (nitrogen dioxide, a NO\(_x\) compound) reduce pulmonary function, increase respiratory infections and increase sensitivity to compounds that constrict air passages, worsening asthma.\(^{(2)}\)
- NO\(_x\) is a primary cause of ground-level ozone. Long-term ozone exposure is associated with significant increases in respiratory disease, hospital admissions and premature death.\(^{(2)}\)
- SO\(_2\) emissions particularly impact adults with asthma, adults who exercise, and those exposed to peak levels of the pollutant for 5-10 minutes. Short-term exposures can result in the narrowing of airways and enhanced asthma symptoms. Children and older persons are also particularly susceptible to SO\(_2\) emissions.\(^{(3)}\)

**Fine Particulate Matter:** Burning coal is also a major source of fine particulate matter (PM 2.5), the leading cause of death from air pollution. NO\(_x\)s and SO\(_2\) react with other pollutants in the atmosphere to create fine particulate matter. Hazardous air pollutants, such as arsenic, beryllium, cadmium, chromium lead, manganese, nickel and other metals are emitted as fine particulate matter directly from coal-fired power plants. PM 2.5 increases the risk of heart attacks, strokes and lung cancer. Smaller than 1/20th the width of a human hair, fine particulate matter are carried deep into the lungs, where they can cross into the blood stream and eventually settle in the body and cause harm.\(^{(4)}\)

**Carbon Dioxide:** Coal-fired power plants are also one of the largest sources of carbon dioxide (CO\(_2\)) and other greenhouse gases (ghg). Electricity produced from coal accounts for about 60% of all ghg emissions from energy consumption in Maryland.\(^{(5)}\)
The Hidden Costs of Coal Pollution in Maryland

Coal Kills: According to one study, particulates and oxides of nitrogen and sulfur from coal-fired power plants kill more than 24,000 annually, including 2,800 from lung cancer, and result in 28,300 non-fatal heart attacks annually. This study further estimates that the economic impacts of air pollution from coal are between $65.1 and 187.5B annually.(6)

Real, Negative Outcomes for Maryland: While no data is available on the number of deaths caused by coal-fired power plants in Maryland, a study published in 2013, using data from 2005, found that Baltimore has the highest mortality rate from air pollution of all cities in the country. The study found that 130 of every 100,000 residents were likely to die prematurely each year of causes related to air pollution, more than in New York City, Los Angeles and Washington, D.C.(7)

Failing Grades on Ozone: In its 2015 State of the Air report, the American Lung Association graded 15 of Maryland’s 24 counties on their level of ozone pollution relative to EPA standards. No county received an A or B. One received a C and three counties received Ds. Eleven counties received an F.(8)

Who Suffers the Most? Pollutants such as mercury, SO₂ and NO₂ come to ground level very quickly. Because of this, people living near power plants have been found to suffer 2 to 5 times the health impacts of people living farther away.(9)

Among Marylanders, residents of Baltimore City, which has three coal-fired power plants nearby, are at the highest risk for air pollution-related disease and premature mortality. Maryland asthma data from 2010 show that the black population suffers disproportionally, with five times as many visits to emergency rooms, three times more hospitalizations and two and a half times more premature deaths than seen in the white population.(10)

Maryland: A Long Way to Go

In 2013, coal accounted for 44% of the state’s energy production, while solar and wind together accounted for only 1%.

What is the Solution?

Impose the true costs of coal on plant operators: The state should require that all coal plants install and use the most advanced pollution-cutting technology available.

Keep energy efficiency efforts on track: Maryland’s Public Service Commission is ordering electric utilities to achieve annual energy savings of 2% of retail sales per year, and that natural gas companies also adopt reduction goals. Less energy used mean less pollution from coal plants.

Support policy to increase the use of wind, solar, and geothermal: These energy sources are clean and renewable. Avoid dirty and dangerous energy sources such as incineration and nuclear.

Make a personal effort: Policies alone won’t solve this problem. Work to reduce your own energy consumption and switch to renewable energy for your home and business.