

## ***The Lung Health Effects of Climate Change***



### **HIGH HEAT**

As carbon pollution has built up in the earth's atmosphere we are experiencing an increase in the frequency and severity of heat waves, which can be deadly for people with heart or lung disease.



### **OZONE POLLUTION**

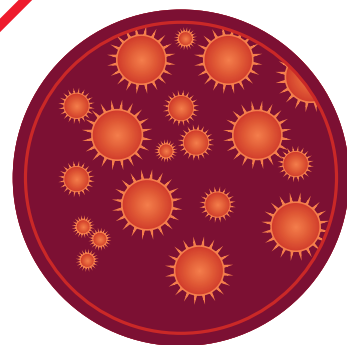
Warmer air combines with gasses from smokestacks and tailpipes to create more ozone pollution, the effects of which are like a "sunburn on the lungs".

**Health effects can include wheezing, coughing, asthma attacks, respiratory infections, heart attacks, and even premature death.**



### **FOREST FIRES**

The heat and droughts associated with climate change are creating conditions more favorable to forest fires, which can generate immense volumes of toxic smoke.



### **POLLEN**

Warming temperatures are extending the pollen season while higher concentrations of carbon dioxide are triggering greater allergenic pollen production in plants.

## ***The Lung Health Effects of Climate Change***

### **As the earth's climate changes, the effects are both disruptive and dangerous**

As carbon pollution and other greenhouse gases have built up in the earth's atmosphere - primarily from the burning of fossil fuels - the planet's average temperature has risen. We are experiencing an increase in the frequency and severity of heat waves; a worsening of air quality - even in the face of stronger pollution reduction efforts; and a shift in the natural water cycle, which is causing more floods and droughts. All these trends are expected to continue in the decades to come as greenhouse gas concentrations continue to rise.<sup>1</sup>

**“Climate change is a health threat no less consequential than cigarette smoking.”**

*Dr. Mary Rice, critical care physician & senior research fellow at Harvard University*

### **Climate change amplifies the amount of air pollution and natural allergens we are forced to breathe**

As the buildup of carbon pollution creates an overall warming of air temperatures worldwide, this warmer air combines with gasses from smokestacks and tailpipes to create more ozone pollution. At the same time, the heat and droughts associated with climate change are creating conditions more favorable to forest fires, which can generate immense volumes of toxic smoke. And warming temperatures are extending the pollen season while higher concentrations of carbon dioxide are triggering greater allergenic pollen production in plants.<sup>2</sup>

### **Poorer air quality means more health consequences, emergency room visits, and costly hospitalizations**

Air pollution is particularly harmful for children (whose lungs are still growing), older adults, and those who have heart disease, asthma, or chronic obstructive pulmonary disease (COPD). The increased heat, ozone, and pollen levels brought about by climate change can cause asthma attacks, reduced lung function, and even premature death.<sup>3</sup> Research shows that even healthy adults who work or exercise outdoors can be harmed by breathing ozone.<sup>4</sup>

### **Northeast states are at the end of the nation's tailpipe so we are at particular risk**

Air pollution doesn't respect state borders and natural air currents put the Northeast states on the receiving end of pollution from other states, including several of the nation's most polluted cities.<sup>5</sup> We have some of the nation's highest asthma rates, a disease that puts people at special risk from air pollution. Due to our heavy reliance on motor vehicles we also have serious ozone pollution in much of the region.

### **Cleaning up sources of carbon and other harmful pollution is our best action against climate change**

Coal-fired power plants are a major source of hazardous pollutants and the single largest source of carbon pollution. Cars and light trucks are also a significant source of toxic emissions. Reducing pollution from smokestacks and tailpipes will slow the rate of climate change, improve lung health, and lower the health care costs related to poor air quality.

### **Our families and businesses need healthy air to grow and succeed**

When people are healthy, children do better in school, workers are more productive, and businesses can add jobs because their health costs are lower. Our health, our economic opportunities, and our quality of life all depend on clean and healthy air.

<sup>1</sup> Bernstein AS, Rice MB. Lungs in a Warming World: Climate Change and Respiratory Health. *Chest*, May 2013;143(5):1455-1459

<sup>2</sup> Ibid

<sup>3</sup> Ibid

<sup>4</sup> Thaller EI, Petronell SA, Hochman D, Howard S, Chhikara RS, Brooks EG. Moderate Increases in Ambient PM<sub>2.5</sub> and Ozone Are Associated With Lung Function Decreases in Beach Lifeguards. *J Occup Environ Med*. 2008; 50: 202-211

<sup>5</sup> American Lung Association. State of the Air 2013. Available at: <http://www.stateoftheair.org/2013/assets/ala-sota-2013.pdf>