Pittsburgh Air Quality

Pittsburgh, Pennsylvania: home to the second-best NFL team in Pennsylvania, home to the best public university in the Northeast, and home to some of the worst air in the country. Before the COVID-19 shutdown, it was impossible to get a five-minute increment in any given class at the University of Pittsburgh without someone coughing. This is somewhat normal given the nature of college; everyone is stressed and there are a plethora of germs circulating the student body at any given time. However, the consequences of a respiratory infection have potentially more consequences for a Pitt student than a Penn student for example. Pittsburgh has been in the top twenty cites with the worst air pollution and has been given a grade of an F by the American Lung Institute for air quality, for the past twenty years. The Pittsburgh region also has higher than average rates of COPD, cancer, and asthma due to the air pollution. In disease ecology, we must recognize that disease is caused by more than infectious pathogens. Pollution is just as if not more harmful. When polluted air is inhaled, soot enters the lungs. Most is naturally evacuated by the body, but some particles can become embedded deep within the lung tissue. The buildup of this over time is what causes pulmonary diseases and can potentially be lethal.

The issue of climate change and pollutions is probably one of the biggest threats to human health in the next decade. There has been a steady increase in carbon dioxide in the atmosphere due to the burning of fossils fuels. Carbon dioxide both warms the Earth, and thus the air we breathe, and re-emits radiation. The duration that pollutants remain in the air depends on their half-life. Half-life analyzes the time required for a substance to reduce its concentration by half of the original concentration. Carbon dioxide has a half-life of thirty to fifty years. Soot is the result of the incomplete combustion of fossil fuels, resulting in a “black carbon”. Soot is the biggest contributor to the increased global temperatures due to the decreased albedo effect. Soot is dark in color and absorbs a large percent of solar radiation it is exposed to. Inhalation of soot is very dangerous as is the exposure to the radiation that soot absorbs. Radiation can cause mutations in DNA that have the potential to be deleterious. There are simple steps that can be taken to prevent further accumulation of soot in the air, but government officials must accept that climate change is real and poses a very real threat to human health.