Infectious Lung Disease and Air Pollution
Flu, COVID-19

Air pollution, visible or invisible, can leave a big imprint on human health. Long-term exposure to air pollution contributes to the development of chronic cardiac and respiratory illnesses, like coronary heart disease, lung cancer, chronic obstructive pulmonary disease (COPD), and asthma. These illnesses increase the severity and the risk of dying from respiratory infections.

AIR POLLUTION IMPACTS SEVERITY OF INFECTIONOUS LUNG DISEASES SUCH AS FLU OR COVID-19

Exposure to air pollution may or may not increase the chances of catching an infectious lung disease, but prolonged (or persistent) exposure will make it more difficult for the body to ward off infectious disease.

- Tissue and animal studies indicate that exposure to air pollution may directly increase susceptibility to infectious lung diseases by interfering with the lungs’ ability to fight disease (SWPA Environmental Health Project, 2020).

- Human population studies indicate that when air pollution spikes, more people go to the hospital with respiratory infections, like pneumonia or bronchitis, the following week.

  - Nhung et al. (2017) reviewed the relationship between daily levels of ambient air pollution and hospital visits (ER visits and hospital admissions) for pneumonia in children under 18. They found positive associations between short-term exposure to all pollutants considered (PM$_{2.5}$, PM$_{10}$, SO$_2$, NO$_2$, and O$_3$) and pediatric hospital visits due to pneumonia. That is, a few days after an area experienced poor air quality, more children went to the hospital with pneumonia.

  - Croft et al. (2018) found that increased ER visits and hospitalizations for pneumonia and influenza were associated with increased PM$_{2.5}$ concentrations during the previous week. Li et al. (2017) found that PM$_{2.5}$, PM$_{10}$, NO$_2$, SO$_2$, and CO exposures were associated with increased outpatient visits for acute bronchitis and pneumonia.

- Research studies have shown a connection between air pollution and respiratory epidemic deaths.

  - Epidemiologists from Harvard looked at long-term PM$_{2.5}$ averages and mortality rates from COVID-19 for 3,000 U.S. counties (98% of U.S. population) up to April 22, 2020. In a not-yet peer-reviewed paper (Wu et al., 2020), the researchers calculate that each 1 µg/m$^3$ increase in the 17-year average PM$_{2.5}$ level for a given county is associated with an 8% increase in the COVID-19 death rate.
WHAT CAN YOU DO?
Recognize when you or your family are at higher risk of exposure to air pollution and take action.
• Close windows when air is still and temperatures are dropping.
• Avoid tracking pollution into the house and stirring up dust by removing shoes and coat before entering the house. Clean often, and use an indoor air filter/purifier.
• Talk to your health care provider; keep a health symptom diary.
• Monitor AirNow.gov, hosted by the Environmental Protection Agency (EPA), which shows current regional air quality. Be aware that EPA air monitors are sparsely placed and may not pick up localized pollution.
• Contact your local and/or state health and environmental agencies. Let them know what you are experiencing and advocate for stricter pollution controls.

RECOMMENDED INDOOR AIR FILTER
There are many types of air filters for use in the home. EHP recommends the Austin Air HealthMate. It removes PM and chemicals as well as odors and dust from inside air. This filter is designed to clean rooms rather than an entire house and is portable.

Reducing Outdoor Contaminants in Indoor Spaces (ROCIS) offers a do-it-yourself, lowcost fan/filter to remove particles in the air.
If people with a respiratory infection enter your home, avoid using fans as doing so may contribute to pathogen spread.