

Air Pollution & COVID-19

Air pollutants & the SARS-CoV-2 virus target our respiratory system



Particulate Matter
PM_{2.5}

Pollutants
Ozone
O₃

Nitrogen Dioxide
NO₂



Research has found that overlapping risk factors from pollutants may worsen the severity of COVID-19 infection and its outcomes

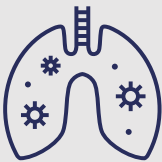
Long-term Exposure Health Impacts

Cardiovascular & Pulmonary Disease

Increased risk of **Acute Respiratory Distress Syndrome (ARDS)** which can occur due to COVID-19 and be fatal.

- This **risk increases** if you live **near polluted areas**
- **High exposure** to **O₃** raises likelihood to develop ARDS

Outdoor Air Pollution



Short-term Exposure Health Impacts

Exposure **worsens** respiratory infections and outcomes such as **pneumonia**

In China, researchers found **higher COVID-19 infection rates** during periods of **higher pollution**

Hypothesis:
Particulate matter from air pollution may help the SARS-CoV-2 virus travel longer distances and spend more time in the air

Wildfires

Longer duration and more frequent due to **climate change**



When cars, buildings, and homes are burnt, **toxic chemicals** and **metals** are released into the air

Wildfire smoke worsens respiratory illnesses like **Asthma** and **Chronic Obstructive Pulmonary Disease (COPD)**

Ongoing studies link **wildfire smoke** to respiratory infections such as **pneumonia from COVID-19**

Household Air Pollution

Affects lower-middle income families



Exposure from combustion (wood kerosene) used for **indoor cooking**

Toxic pollutants contribute to:

- Cardiovascular disease
- COPD
- Lung Cancer

Vaping / Active Smoking

Vaping has led to risk of **E-cigarette or Vaping Acute Lung Injury** and can lead to **inflammation** and **damage to lung tissue**

- This increases **susceptibility** and can **worsen** lung infections such as **pneumonia from COVID-19**



Second hand smoke from tobacco and cannabis can also increase chances of lung infections and be a **risk factor for COVID-19**



Stay-at-home regulations **lowered** air pollution levels

Research found that many pollution-related deaths and COVID-19 deaths were **avoided** during this time

Who is Most Impacted?

Distribution of COVID-19 is higher and with worse outcomes in racialized communities due to:

Household Crowding

from lack of affordable housing

Higher Prevalence

of essential workers in lower income neighbourhoods

Close Proximity

to environmental pollutants

What Can We Do?

THE POLLUTION WE BREATHE CAN INCREASE OUR RISKS FOR RESPIRATORY ILLNESSES AND COVID-19

We can use **existing research better** to **advocate** and **create strong policies** to address:

- Health disparities
- Climate change mitigation
- Air Quality improvement
- Shift away from fossil fuels
- Investments in cleaner power

This information was presented on May 27th, 2020 as a contribution to the series: "Learning and Relearning for Planetary Health" <https://learningforplaneta.wixsite.com/website/webinar-7>