AIR QUALITY

CLIMATE & HEALTH

Clean air is essential for human health, thriving ecosystems, and a sustainable economy. On most days in Minnesota, our air is clean and healthy for us to breathe. However, on some days, things like weather and wildfire smoke can create unhealthy air.

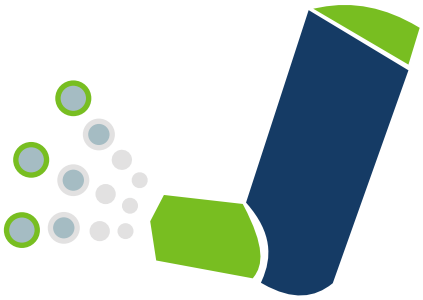
CLIMATE CHANGE & AIR QUALITY

Climate change may affect exposures to air pollutants in three main ways:

Creating more air stagnation events, creating smog

Higher temperatures, increasing ozone formation

Lengthening the allergy season and creating more potent allergens



CLIMATE CHANGE IN MINNESOTA

The rise in greenhouse gases is leading to increases in temperature and changes in precipitation. These changes are causing changes in air quality, weather patterns, water quality and quantity, and ecosystems.

AIR CHANGES: Specific air pollutants that are likely to be increased by climate change and result in negative health impacts include particulate matter, ozone, pollen, and mold.

WEATHER CHANGES: Extreme heat events in Minnesota are already occurring and expected to become more common, more severe, and longer-lasting.

WATER CHANGES: Climate change may impact Minnesota's water quality and quantity by increasing precipitation, decreasing precipitation, and increasing temperatures of lakes and streams.

ECOSYSTEM CHANGES: Warmer, wetter climate trends may support the spread of tick-borne diseases.

Developed by the Minnesota Climate and Health Program in November 2017.
For more information, contact: health.climatechange@state.mn.us.

POLLUTANT: PARTICULATE MATTER

Particulate matter comes in different sizes, from a number of sources:

- Dust from construction, mining and agriculture
- Fossil fuel combustion by factories, power plants and motor vehicles
- Wildfires and residential wood burning

POTENTIAL HEALTH EFFECTS OF PARTICULATE MATTER EXPOSURE:

- Impaired respiratory function
- Chronic cough
- Cardiovascular disease
- Allergies and asthma
- Cardiopulmonary disease
- Chronic obstructive pulmonary disease (COPD)
- Pneumonia
- Bronchitis
- Chest illness
- Cancer

POLLUTANT: GROUND-LEVEL OZONE

Ground-level ozone is formed by the reaction of volatile organic compounds and nitrogen oxides in the presence of sunlight and heat. Having too much ground-level ozone can be harmful to our health.

GROUND-LEVEL OZONE AND HUMAN HEALTH:

- Ground-level ozone exposure is linked to harmful respiratory and cardiopulmonary impacts
- Climate change is likely to increase ground-level ozone, especially during the summer and downwind of urban areas

POLLUTANT: ALLERGENS

More than 50 million Americans suffer from allergens each year. Allergic diseases have dramatically increased worldwide. Common allergies affected by climate change include pollen and mold.

ALLERGENS AND HUMAN HEALTH:

- Allergens can worsen asthma and other respiratory problems by interacting with other air pollutants
- When ozone levels are high, it takes less ragweed pollen to trigger an asthma or allergic response
- Particulate matter can increase allergic response by extending how long the allergens stay in the body

ACTION STEPS TO PROTECT OUR HEALTH & ENVIRONMENT

1. **Use less energy** —install energy efficient appliances and support renewable energy (e.g., solar, wind).
2. **Burn less gas** — walk, bike, take transit, carpool, or telecommute at least twice a week.
3. **Lower your "food print"**— eat less meat per week, buy locally-grown food, and consider growing some of your own food.

PUBLIC HEALTH STRATEGIES

MITIGATION

- Work with municipal planning departments to improve **multi-modal transportation**
- Promote **telecommuting** policies
- Encourage the use of **renewable energy sources**
- **Educate** about best practices for burning wood

ADAPTATION

- **Monitor the Air Quality Index (AQI)** and be prepared to protect health
- Coordinate outreach and interventions to **at-risk populations**
- Support **data collection and monitoring** of air contaminants, as well as tracking of diseases such as asthma and allergic disease
- Collaborate on policies that prioritize native, **low-allergenic plants**

For more information about air and health, visit www.health.state.mn.us/divs/climatechange/air.html