Particulate Matter Caused by Wildfires & Prescribed Fires: What Is It, Why It Matters, & Actions to Take

This information can be used by the media during poor air quality days resulting from either wildfires or prescribed fires to educate residents about the simple steps they can take to protect their health and improve air quality.

Overview

Broward County is located within the United States Environmental Protection Agency's designated Southeast Florida Airshed, which consists of Miami-Dade, Broward, and Palm Beach counties. Although the main air pollutant of concern within this shared airshed is ozone, particulate matter can also significantly contribute to air pollution in Broward County.

Source: Picryl (Creative Commons)

Sources of Fires: Some Human-Made, Some Natural

Although particulate matter (PM) occurs from human-made sources such as vehicle exhaust—as well as naturally due to sources such as Saharan dust—the most common naturally-occurring source of PM pollution in Broward County is due to smoke from wildfires.

Wildfires

Given how frequently storms take place in south Florida, lightning often strikes vegetation that has been dried out by heat which can then easily start wildfires. Dry season runs roughly between October through May, although wildfires can also take place outside of this timeframe. Wildfires are natural and important components of healthy ecosystems, making them more resilient and able to recover more quickly from invasive plant infestations or hurricanes. However, the smoke caused by wildfires can impact our health. PM 2.5 the main ingredient in smoke and is considered "inhalable fine particles", meaning that we can easily breathe it in.

Information source: Environmental Protection Agency (EPA)

Prescribed Fires

Much like people may go to a doctor's office to get a prescription when they're feeling ill, trained professionals will carefully plan prescribed fires, otherwise known as prescribed burns or agricultural burns, to a wildlife area. This usually occurs due to an excessive buildup of dry vegetation. By planning prescribed burns, the area is prevented from potentially being subject to an unpredictable, larger wildfire later on. Prescribed fires must be closely monitored and done under favorable weather conditions, wind patterns, temperature, and humidity. See USDA.gov, NPS.gov, or Lung.org for more information on prescribed fires.

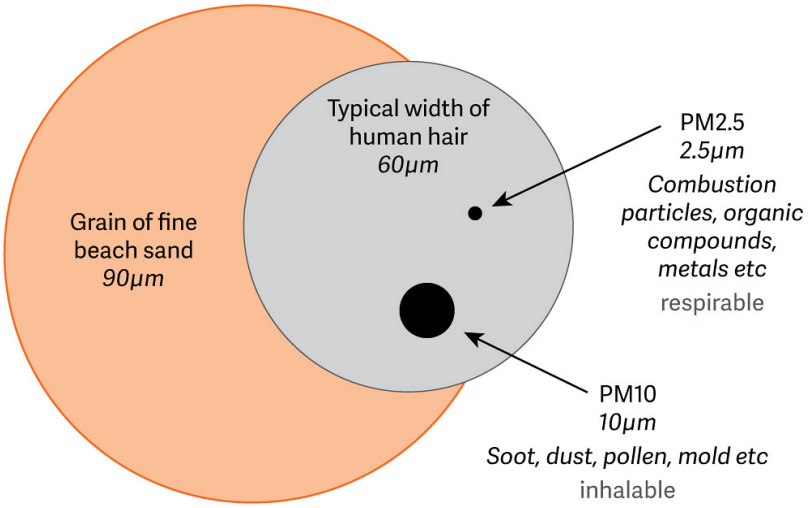

Image source: Wikipedia

Particulate Matter and Your Health

In the short term, PM 2.5 exposure can affect our health by causing eye and airway irritation, increasing the likelihood of asthma attacks, and coughing or difficulty breathing.

In the long term, repeated exposure to PM 2.5 has been linked to decreased lung function, aggravated asthma, irregular heartbeat, nonfatal heart attacks, and even death.
Whether exposure is short-term or long-term, sensitive groups such as children, the elderly, and those with preexisting respiratory and/or cardiac conditions are more susceptible to experiencing these symptoms.

Information source: Environmental Protection Agency (EPA)

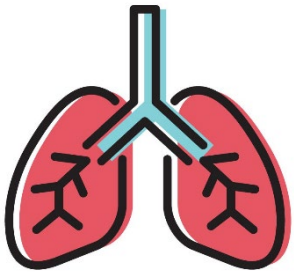

Image source: Vector Portal

Broward County's Air Quality

As it related to ozone, the air quality in Broward County is normally classified in the good range of the Air Quality Index (AQI) during the majority of the year. The AQI is an index for reporting daily air quality. It tells you how clean or polluted your air is, and what associated health effects might be a concern for you. Think of the AQI as a yardstick that runs from 0 to 500; the higher the AQI value, the greater the health concern. When the AQI level reaches above 100, air quality is considered to be unhealthy.

From 2020 to 2023, Broward County has experienced an average of 76% good air quality days per year. Our main source of air pollution is transportation, specifically from motor vehicle emissions. Currently, there are approximately 1.9 million passenger vehicles registered in Broward County. This equates to about one per resident.

Air Quality Index	Who Needs to be Concerned?	What Should I Do?
Good 0-50	It's a great day to be active outside.	
Moderate 51-100	Some people who may be unusually sensitive to particle pollution.	**Unusually sensitive people:** *Consider reducing* prolonged or heavy exertion. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier. **Everyone else:** It's a good day to be active outside.
Unhealthy for Sensitive Groups 101-150	Sensitive groups include **people with heart or lung disease, older adults, children and teenagers.**	**Sensitive groups:** *Reduce* prolonged or heavy exertion. It's OK to be active outside, but take more breaks and do less intense activities. Watch for symptoms such as coughing or shortness of breath. **People with asthma** should follow their asthma action plans and keep quick relief medicine handy. **If you have heart disease:** Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your heath care provider.
Unhealthy 151 to 200	**Everyone**	**Sensitive groups:** *Avoid* prolonged or heavy exertion. Move activities indoors or reschedule to a time when the air quality is better. **Everyone else:** *Reduce* prolonged or heavy exertion. Take more breaks during all outdoor activities.
Very Unhealthy 201-300	**Everyone**	**Sensitive groups:** *Avoid all* physical activity outdoors. Move activities indoors or reschedule to a time when air quality is better. **Everyone else:** *Avoid* prolonged or heavy exertion. Consider moving activities indoors or rescheduling to a time when air quality is better.
Hazardous 301-500	**Everyone**	**Everyone**: *Avoid all* physical activity outdoors. **Sensitive groups:** Remain indoors and keep activity levels low. Follow tips for keeping particle levels low indoors.

Source: Environmental Protection Agency (EPA)

Things You Can Do on Days with Poor Air Quality:
To reduce the potential for smoke exposure from fires, here are a few things individuals, business, and other organizations—especially those who care for sensitive groups, such as schools, nursing homes, and hospitals—can do during air quality days that fall outside of the good (green) range. This resource from the American Lung Association also provides a good overview.

- Only venture outdoors when necessary.
    - This is especially true if air quality goes into the unhealthy, or red, range. Air quality in the unhealthy range means that even individuals who are not part of any sensitive groups (see the term sensitive groups defined in the orange section in the AQI chart above) may experience adverse effects due to degraded air quality.
- If you do go outside, wear personal protective equipment (PPE).
    - Masks protect you from breathing in smoke and other types of pollution, therefore helping protect your respiratory system from prolonged or related exposure.

- Even if you are not part of a sensitive group, you can still consider scaling back or rescheduling your outdoor activities.
    - For example, go on a shorter walk instead of a longer run.
- Stay updated by visiting AirNow.gov, especially their Fire & Smoke Map.
    - This can keep you informed not only about air quality conditions and forecasts for your area, but also on the status of fires around your area.
- Be fire safe.
    - Visit the NPS.gov website for information about wildfire prevention and preparedness.

Source: Raw Pixel