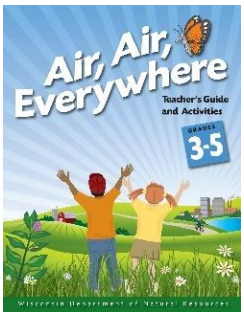
# Wisconsin air quality facts and information

**A teacher's tool for the Air, Air, Everywhere Poetry Contest**

Hello teachers!




This document is intended to provide basic background information to students. Please use this document and the Air, Air, Everywhere Teacher's Guide in the classroom to aid students in creating poems or riddles for the Air, Air, Everywhere Poetry Contest.

Over the past 20 years, concentrations of most pollutants regulated by the U.S. Environmental Protection Agency (U.S. EPA) have been decreasing across all regions of the state. Air quality in Wisconsin has steadily improved over the decades, and while the state's air quality is generally good, there are still challenges ahead in achieving further reductions in emissions needed to meet all federal air quality standards. This progress is an opportunity for students to celebrate by writing poems that highlight the importance of clean air!

## Air Quality Standards

The U.S. EPA determines the levels of pollutants that can be in the air without causing harm to human health; these are called ambient air quality standards. The U.S. EPA sets air pollution standards for six main pollutants, which include ozone, particle pollution, sulfur dioxide, nitrogen dioxide, carbon monoxide, and lead. Everyone can be sensitive to air pollution, but children, older adults, people with asthma, and people with heart or lung problems are typically more sensitive to poor air quality.

## Air Quality Index (AQI)

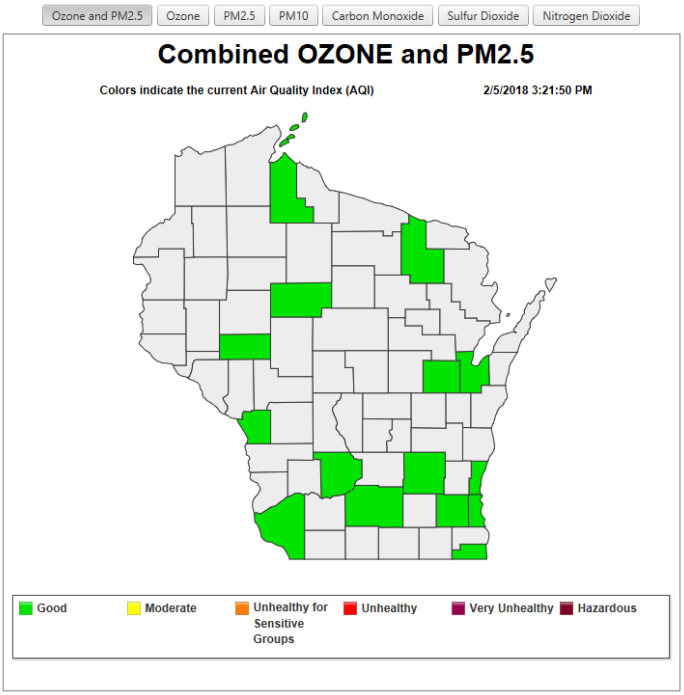

- The Air Quality Index (AQI) is the U.S. EPA's color-coded tool for communicating information about current air quality to the public.
- Air quality is measured by federally-approved monitors placed throughout the state that record concentrations of various pollutants.
- The AQI uses the information from the monitors and categorizes the air quality as:
  - Good
  - Moderate
  - Unhealthy for Sensitive Groups (which includes those people that are more sensitive to air pollution such as children, older adults, people with heart and lung ailments, people who work outdoors, etc.)
  - Unhealthy
  - Very Unhealthy
  - Hazardous
- Refer to the chart below to understand the different categories.

## AQI Basics for Ozone and Particle Pollution

| Daily AQI Color | Levels of Concern | Values of Index | Description of Air Quality |
|---|---|---|---|
| Green | Good | 0 to 50 | Air quality is satisfactory, and air pollution poses little or no risk. |
| Yellow | Moderate | 51 to 100 | Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution. |
| Orange | Unhealthy for Sensitive Groups | 101 to 150 | Members of sensitive groups may experience health effects. The general public is less likely to be affected. |
| Red | Unhealthy | 151 to 200 | Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects. |
| Purple | Very Unhealthy | 201 to 300 | Health alert: The risk of health effects is increased for everyone. |
| Maroon | Hazardous | 301 and higher | Health warning of emergency conditions: everyone is more likely to be affected. |

**Air Quality in Wisconsin**

To find out more about the AQI in Wisconsin, visit DNR's Air Quality mapping tool for current air quality conditions across the state. The image below shows a sample of the mapping tool's capabilities. Users can view the AQI for different pollutants for counties that have monitors. This is a great resource for those trying to understand more about air quality in the state.



Another great resource for understanding air quality trends in Wisconsin is the annual "Trends" report prepared by the Wisconsin Department of Natural Resources. The latest version of the Air Quality Trends Report and Story Map is available on DNR's Air Quality Trends webpage and includes a lot of information on Wisconsin's air quality. The report uses maps and graphs to show how concentrations of most pollutants regulated under the Clean Air Act have been decreasing in all regions of the state since monitoring data has been collected. The Story Map is designed to show the same data in a visual, easy to understand way.

**Success Stories**

- $SO_2$ emissions from sources like power plants, paper mills, and other industrial facilities decreased 88% statewide over the last 20 years.
    - Emissions reductions for $SO_2$ are important because, at high concentrations, $SO_2$ can cause human health impacts, contribute to the formation of other pollutants like fine particles, harm trees and plants, and contribute to acid rain.
- Ozone concentrations have decreased by 21% in the last 20 years.
    - Ozone is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Sources of pollution do not directly emit ozone, but instead can emit these precursors that form ozone, and these precursor pollutants have decreased steadily. Therefore controlling these precursor pollutants is important.
- Fine particle concentrations have decreased by 26% in the last 20 years.
    - Fine particles are tiny solid or liquid droplets that can either be directly emitted by vehicles, smokestacks, or fires, or can be formed when other air pollutants react in the atmosphere.