

Air Quality Tools and Observation Log

Focus: Teach your students about air quality and pollution. This project gives them a chance to use real-time air quality monitoring tools. They can record data, explore sources of air pollution and how those sources change air quality! Connect to any standard!

Steps:

1. **Make a plan.** Pick a place where you want to track real-time air quality.
2. **Explore air quality tools.** Select which ones make the most sense for your data collection.

Real-time air quality data monitoring tool options:

Handheld sensor option:

Personal air sensor – Air Beams
<p>Contact Sarah Kroening, LMA WI program manager, skroening@childrenswi.org and request to borrow.</p> <p>After using sensor:</p> <ol style="list-style-type: none"> 1. Go to www.aircasting.org 2. Fill out filters: Particulate Matter, AirBeam PM 2.5, Profile name: Love My Air Wisconsin, select correct year 3. Find the area where you used the sensors 4. Click on the session to see your data 5. See teaching sheet (LINK HERE)

Online options:

Low-cost air sensor – Love My Air Wisconsin Dashboard
<ol style="list-style-type: none"> 1. Go to: https://www.lovemylair.com/wisconsin/Home/Map 2. Select site, view data 3. See teaching sheet (LINK HERE)
Reference monitors- Department of Natural Resources
<ol style="list-style-type: none"> 1. Go to: Airnow.gov 2. Type in location 3. Select the pollutant you are observing 4. Record data

Satellite observations – TEMPO Lite (NASA)
<ol style="list-style-type: none"> 1. Go to: https://projects.cosmicds.cfa.harvard.edu/tempo-lite/ 2. Important – this is delayed information. Select the correct date! 3. Enter location 4. Move the ‘sun’ on the time bar 5. If the color stays grey, that shows cloud coverage affected the satellite data.

3. Print observation log sheets (pages 3-4) for students to fill out. You may need many copies of page 4. Staple together.
4. Have students record information in the data log.
5. Optional: Print page 5 and have students use recorded data to answers the questions.

Here is an example:

Date	Time	Data: <u>PM_{2.5}</u> (Name tool used, data and observations)	Data: <u>PM_{2.5}</u> (Name tool used, data and observations)	Data: <u>NO₂</u> (Name tool used, data and observations)	Notes/Images (Ex. Take notes on green space, such as the number and size of trees, streets or spaces with cement, traffic, idling vehicles, etc. Take notes on weather, wind direction at time of observation, temperature, etc.)
9/3/25	1:20 p.m.	AirBeam 0B89 15 /yellow Corner of Dotson Ave and 1 st Street. 1 idling truck	Low-Cost Sensor - LMA WI AQI: 42, Green	TEMPO Satellite shows mostly orange/pink/ around location. There seems to be a line of these colors between Milwaukee and Chicago. Chicago NO2 might have affected Milwaukee NO2. Chicago was red.	2 trees located near corner. 1 auto shop located halfway down street, otherwise it is houses and cement roads. Not much traffic. 2 cars and 1 bus drove by. Winds from south, 10 mph. Mostly clear skies, sunny. Humidity 75%, 65 degrees

Outcome: Use real-world data collection and analysis to address any standard!

Air Quality Monitoring Data and Observation Log

Observer or student name(s): _____

Location of observation: _____

What do the colors mean?

Green - Safe
Yellow - Moderate
Orange - Unhealthy for sensitive groups
Red - Very Unhealthy for all
Purple/Maroon - VERY unhealthy for all

Date	Time	Data: ____ (Name tool used, data and observations)	Data: ____ (Name tool used, data and observations)	Data: ____ (Name tool used, data and observations)	Notes/Images (Ex. Take notes on green space, such as the number and size of trees, streets or spaces with cement, traffic, idling vehicles, etc. Take notes on weather, wind direction at time of observation, temperature, etc.)

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Optional Questions:

Do you notice patterns in your observations?

What might be influencing the air quality at your location?

In what ways is air quality affecting people's health in this area?

Using the data you recorded, what new questions do you have?

What is your next step to understand air quality? (Do you need more data?)

How can you turn something you learned about air quality into action?
