

DEQ in the Classroom:

Smoke Detectives



IDAHO
DEPARTMENT OF
ENVIRONMENTAL
QUALITY

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Grade Level:

4 - 7

Time Required:

10 minutes per class period for one month, plus 45 minutes on the first day and 1 hour on the last day (or spread over two days at end). (Time spent on the last day(s) will vary depending if graphing is done individually or in groups, in class or as homework.)

Note: While the observation and graphing employed in this activity may be used with any type of pollution, the focus of this activity is air pollution caused by wood smoke. Since wood smoke in communities is most common in the winter (from wood-burning stoves and fireplaces), this activity is best done in the winter.

Objective:

To investigate the link between air quality and smoke from open outdoor burning and wood-burning stoves and fireplaces.

Meets Idaho State Standards:

Grade 4: 4.M.5.1.1, 4.M.5.2.1, 4.S.1.2.1, 4.H.1.1.10

Grade 5: 5.M.5.1.1, 5.M.5.2.1, 5.S.1.2.1, 5.S.5.1.1, 5.H.1.1.8

Grade 6: 6.M.5.1.1, 6.M.5.2.1, 6-9.GWH.2.5.2, 6-9.GEH.2.5.2, 6.S.1.2.2, 6.S.1.6.4, 6.S.5.1.1, 6.H.1.1.10

Grade 7: 7.M.5.1.1, 7.M.5.2.1, 6-9.GWH.2.5.2, 6-9.GEH.2.5.2, 7.S.1.6.3, 7-8.H.1.1.9

Meets standards in math, social studies, science, and health.

Focus:

Air quality, burning/wood smoke, particulates. Students will make daily observations of air quality and the presence or absence of wood smoke outside their school and compare these to a daily record of the Air Quality Index to investigate a link between their observations and air quality as recorded by air quality monitors.

Materials:

Air Quality Index fact sheet (attached)

Camera (digital or film)

Data sheets (attached to copy)

Flashlight

Chalk board erasers (2) or a dusty cloth

Computer with Internet access

Graph paper or computer spreadsheet application with graphing capabilities

Background:

Particulate matter (also called “PM” or “particulates”) is small particles of dust, dirt, soot, smoke, and liquid droplets suspended in the air. Particulates in the air come from fires, vehicle exhaust, factories, construction sites, agricultural fields, roads, and more. Particulate matter can adversely impact public health and visibility and is regulated under the Clean Air Act. This activity focuses on particulates in wood smoke from fireplaces and wood-burning stoves and open outdoor burning.

The types of particulates that are of concern for air pollution and human health are very small—much smaller than the diameter of a human hair (human hair = 70 micrometers in diameter): particulates called “PM₁₀” are less than or equal to 10 micrometers in diameter and cannot be seen with the naked eye; particulates called “PM_{2.5}” are even smaller—less than 2.5 micrometers in diameter—and can only be seen with an electron microscope. Small particulates are a health concern because they can enter a person’s respiratory system and cause health problems. The smaller the particulate, the deeper into the respiratory system it can travel. Particulate pollution can impair the development of children’s lungs; can exacerbate allergies; can aggravate asthma, emphysema, and bronchitis; and can even cause premature death.

Particulates, especially very small particulates, in the air are often what people see when the air looks “dirty.” In Idaho, many areas have a combination of pollution sources, weather conditions, and terrain that leads to high levels of particulate pollution. Areas of special concern in Idaho are the Silver Valley (Pinehurst), the Cache Valley (Franklin County/Preston area), the Portneuf Valley (Pocatello area), the Treasure Valley (Boise area), and the Sandpoint area (Bonner County).

One weather condition that can lead to high levels of particulate pollution is an “inversion.” Typically, warm air rises and cold air sinks, causing the air around us to mix and move. In addition, winds continually move the air and disperse pollutants released into the air. However, sometimes the air does not mix and move, and a temperature (or “thermal”) inversion may occur. This most commonly happens in the winter. In this situation, pollution from fires, cars, industry, and other sources becomes trapped in the colder layer of air close to the earth’s surface. The air becomes increasingly dirty as more and more pollutants, such as particulates from wood-burning stoves and fireplaces, are released into it. When an inversion occurs in a valley (such as the areas in Idaho described above), it can make pollution problems even worse because the pollution cannot escape, and is trapped until the inversion clears.

When we burn wood in fireplaces and wood-burning stoves, chimneys carry the smoke (and other chemicals released during the combustion of wood) out of our homes and release it into the atmosphere. This is critical, as it keeps the air inside our homes safe to breathe.

Chimney smoke that is released into the atmosphere contains particulate matter. The make-up of the smoke, which is affected by what is burned and how it is burned, affects the type and concentration of particulate matter. Dense, thick smoke contains more particulates than clear smoke. Dry, well-seasoned wood burned in a fire with an adequate air supply should produce little smoke. Burning garbage or treated or painted wood is illegal and produces a lot of dark, unhealthy smoke, and burning wood that is wet or green, or depriving a fire of air (e.g., turning the damper down), will create a lot of dark smoke.

There are several ways to decrease the amount of smoke (and the particulates that come with it) emitted (given off) from your wood-burning stove or fireplace:

1. **Burn less.** The most straightforward way to reduce the amount of smoke/particulates in the air is to simply not burn in the first place or to burn less often. However, it is recognized that this may not be an option for those who rely on wood stoves or fireplaces for some or all of their heat.
Don't burn at all if a burn ban is in effect unless wood is your sole source of heat.
2. **Burn better.** Burn dry, well-seasoned firewood with plenty of air circulation. Build small, hot fires instead of large, smoldering ones. Inspect and maintain your wood stove, fireplace, and chimney. Do not burn garbage, painted or treated wood, or wet wood.
3. **Convert old wood stoves or fireplaces** to new, cleaner-burning U.S. Environmental Protection Agency (EPA)-certified wood stoves or fireplace inserts or to gas fireplaces or stoves. These newer models burn more efficiently and create less pollution. Compared to older models, they:
 - Emit 50% to 60% less pollution
 - Circulate heat more efficiently
 - Use two-thirds less wood
 - Generate less soot (cleaner chimneys)

The state of Idaho offers taxpayers who buy new wood stoves, pellet stoves, or natural gas or propane heating units a tax deduction to replace old, uncertified wood stoves. Residents of some communities may also qualify for rebates and other incentives. Contact your local DEQ regional office (see page 10) or see “Additional Resources” (page 9) for more information.

Vocabulary:

Alternative Fuel	A fuel that takes the place of traditional petroleum gasoline or diesel fuels.
Air Quality Index (AQI)	A guide for reporting or forecasting daily air quality that indicates how clean or polluted the air is in a particular area and identifies potential health impacts. The AQI works as a measuring stick that runs from 0 to 500. The higher the AQI value, the greater the level of air pollution and the greater the health risk. <i>See attached fact sheet (pages 17 and 18) for a more detailed explanation of the AQI.</i>
Biodiesel (B100, B20, B5)	A mixture of diesel fuel with soybean or vegetable oil-based products. B20 (20% biodiesel and 80% petrodiesel) is a common blend.
Burn Ban	A voluntary or mandatory order that restricts outdoor burning and the use of wood stoves when an area’s air quality is degraded and human health may be impacted. DEQ can issue burn bans under the Air Pollution Emergency Rule, while local agencies, such as cities and counties, can issue burn bans based on the AQI.
Certified Wood Stove	A wood stove that meets U.S. Environmental Protection Agency (EPA) requirements for clean-burning wood stoves. Certified wood stoves have been built after July 1, 1988, and cannot produce smoke-related pollutants beyond certain limits. These wood stoves have labels attached stating they are certified.
Combustion	The process of burning.
Compressed Natural Gas (CNG)	Natural gas used to fuel vehicles. CNG vehicles may run exclusively on natural gas or on both natural gas and gasoline.
Emission	The act of discharging (emitting) something into the air, such as by burning wood.
Ethanol (E10 and E85)	Alcohol, commonly derived from corn and other crops, that can be blended with traditional petroleum fuel. Common blends include E10 (10% ethanol and 90% petroleum) and E85 (85% ethanol and 15% petroleum).
Exhaust	The fumes or gases released from an engine.

Inversion (temperature or thermal inversion)	An atmospheric condition in which the air temperature rises with increasing altitude, trapping cold surface air and air pollutants in lower elevation areas.
Particulate Matter (PM)	Small particles of dust, dirt, soot, smoke, and liquid droplets suspended in the air.
PM_{2.5}	Particulate matter (“PM” or particulates) in the air less than 2.5 micrometers in diameter. Often referred to as “fine” particulate matter. Individual particulates are not visible to the naked eye; they can only be seen with an electron microscope.
PM₁₀	Particulate matter (“PM” or particulates) in the air less than or equal to 10 micrometers in diameter. PM ₁₀ between 2.5 and 10 micrometers in diameter is referred to as “coarse” particulate matter. Individual particulates are not visible to the naked eye.
Pollutant	Any substance introduced into the environment that adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems.
Pollution	The result of polluting or the state of being polluted, especially the contamination of soil, water, or air by the discharge of harmful substances.
Prescribed Burn	A fire that is intentionally set in forest lands to accomplish specific management objectives.
Slash Pile	A pile of debris left behind after logging; it may be burned to eliminate the debris.
Visibility	The relative ability to be seen. For example, “low visibility” may be caused by smoke or fog and would mean that it is difficult to see something (e.g., a mountain in the distance) that normally can be easily seen.

Procedure:

Step 1. Pick two volunteers from the class. With little or no explanation beforehand, turn off the classroom lights and have one of the volunteers shine a flashlight where the students can see through the beam (that is, shine the light perpendicular to the class). Have the other volunteer clap two used chalkboard erasers together so that the class can see the chalk dust in the beam of the flashlight. (If chalkboard erasers aren’t available, use a dusty cloth and have the student shake the cloth in the beam of the light.)

Step 2. Ask the students what they saw and smelled in the demonstration.

Step 3. Discuss pollution. Ask students what the word “pollution” means. Discuss until the class reaches a consensus on a definition (something similar to “pollution is something that makes the environment dirty.”) Discuss how they can tell if something is polluted (e.g., looks dirty, smells bad).

Step 4. Discuss particulate matter (see background). Explain that it is a type of air pollution and that the chalk dust (or just dust) they saw in the demonstration is particulate matter. Discuss health effects of breathing particulate matter. Vary the level of discussion according to age of students.

Step 5. Ask students where they think particulate matter comes from. *Potential answers include: burning/smoke, cars/trucks, dirt roads, factories, fields, etc. Students may not answer “burning/smoke” on their own. Bring this up yourself if they don’t.*

Step 6. Ask if they have ever noticed a smoky day in their town. How could they tell it was smoky (e.g., could they smell the smoke? See it? Did it appear “hazy” outside?)? Discuss where smoke comes from in your town (winter, mainly wood stoves and fireplaces; summer or fall may be forest fires; other times of the year may be prescribed burns, burning slash piles from logging, or burning agricultural fields).

Step 7. Explain to your students that they are going to be “smoke detectives.” They will observe the air/sky around their school for one month and watch for smoky conditions. (While the focus of this activity is smoke, students should record any observations they make about visibility/odor/air quality, even if not smoke-related).

Step 8. Divide students into four groups and walk everyone through the duties of each group (see below). As a class, pick a landmark several miles away (e.g., a mountain) that students will observe and photograph (same landmark for observations and photographs).¹ Also pick a location where students will stand to smell, observe, and photograph (same location for all three). On the first day, have all students do all tasks together, then do in smaller groups the rest of the month.

Group A. Students observe the sky/air and record observations. Have them rate the visibility on a scale of 0 to 100 (0 = completely clear and the landmark is clear and easy to see; 50 = somewhat hazy and the landmark is visible, but somewhat difficult to see; 100 = extremely smoky/hazy and the landmark is completely hidden).² Note that students are NOT rating the cloudiness of the day, but the amount (or lack of) haze or smoke in the air. Also have students record their general observations. For example, is it clear, cloudy, hazy, smoky? Can they see layers of air pollution? (This can sometimes be seen during an inversion.) Record on visual observation sheet (copy from page 11).

Group B. Students smell the outside air and record observations. Have them rate the smell on a scale of 0 to 100 (0 = no odor at all; 100 = strong odor).² Also have students record the types of odors they smell. For example, does it smell clean, smoky, like flowers, like rotten eggs? Record on odor observation sheet (copy from page 12).

Group C. Students photograph the sky/horizon (remember to photograph the same landmark and from the same point as Group A observes). Take one photo each day and take photos from the same spot and of the same spot. Record on photo record sheet (copy from page 13).

Group D. Students look up air quality and weather information. Record on air quality/weather/burn condition data sheet (copy from page 14).

- Check the Air Quality Index (AQI) for your community (or the nearest community where the AQI is reported) on DEQ’s Web site at www.deq.idaho.gov/air/aqindex.cfm. See vocabulary, above, and attached flier (pages 17 and 18) for more background on the AQI. See sample AQI air quality report on page 16.
- Check for any DEQ-issued burn bans in your area at the same Web site (www.deq.idaho.gov/air/aqindex.cfm) (see sample, page 16). Look for the term “burn condition.” “Unrestricted” means there are no burn bans in effect.
- Check current weather conditions at www.nws.noaa.gov or another weather site on the Internet.

¹ Students should be facing away from the sun as they observe/photograph the landmark. Keep this in mind as you pick a landmark.

² A scale of 1 – 100 is recommended as it can be graphed at the same scale as the temperature and AQI. However, a simpler scale (such as 1 – 5) can be used. If another scale is used, students may need to graph items separately or teacher can multiply the scale to make it comparable to the temperature and AQI scales.

Step 9. Have groups perform their duties once³ daily for one month, at the same time each day (e.g., at the beginning of each school day). Have the groups rotate through their duties so that each group holds each “job” for one week.

Step 10. (Last day.) Have students create a photo timeline of the month. (If using regular film, this activity may have to be delayed a few days to allow time for film developing.)

Step 11. (Last day or as homework) Have students graph the results of their observations with the air quality and weather information. Do individually or in groups. Potential graphs to create: visual observations vs. AQI, odor observations vs. AQI, AQI vs. temperature, AQI vs. burn bans (if any occurred), visual observations vs. odor observations. See page 14 for sample graphs.

Step 12. Discuss the results of Steps 10 and 11. What trends did they see?

Step 13. Optional. Have students look at the pollutants they recorded for the AQI. Particulate matter (PM) will likely be the most common pollutant recorded (may be the only pollutant recorded). It is the most common pollutant in Idaho in general, and is the main pollutant associated with wood smoke. Ask students if any pollutants other than PM were recorded. Check the observations for those days: were there any specific odor or visual observations or weather conditions associated with those other pollutants? Discuss. (Note: Other than in the Treasure Valley, it would be unusual for there to be any pollutant recorded in the winter other than PM. In the Treasure Valley, carbon monoxide [CO] from automobile emissions can become trapped in inversions and rise to levels where they are the pollutant for which the AQI is recorded.) Teacher may want to look at record sheets first to see if any other pollutants were observed; if none, skip this step.)

Step 14. Conclude with questions for discussion, next page.

³ Can also expand to twice daily (e.g., beginning and end of each school day) to note how/if conditions change throughout the day.

Questions for Discussion:

1. Why should we care about air pollution?

Is unhealthy (can make us sick), hurts the environment, blocks views, stinks. Point out that many of these issues exist even in places with relatively clean air.

2. What causes air pollution?

Fires (fireplaces/wood stoves, wildfires, agricultural burning), vehicle exhaust, industry, blowing dust, volcanoes, chemical fumes (e.g., from paint or cleaning supplies), gas-powered lawn tools (e.g., lawn mowers), etc.

3. Why is what and how we burn important?

Chimney smoke contains particulate matter. Particulate matter can hurt our health. Dense, thick smoke contains more particulates than clear smoke. Dry, well-seasoned firewood burned in a fire with an adequate air supply should produce little, and clear, smoke. Burning garbage or treated or painted wood will produce a lot of dark, unhealthy smoke, and burning wood that is wet or green, or depriving a fire of air (e.g., turning the damper down), will create a lot of dark smoke.

4. Do you know anyone who is affected by air pollution?

5. How can we reduce (limit) air pollution?

→ *Take care with fires*

- *Comply with burn bans*
- *Don't burn garbage or treated or painted wood*
- *Only burn dry, well-seasoned wood*
- *Give your fire plenty of air*
- *Inspect and maintain your wood stove*
- *Build small, hot fires instead of large, smoldering ones*
- *If you have an old wood stove or fireplace, buy a new, EPA-certified wood stove or insert or a gas stove or fireplace*

→ *Limit vehicle emissions*

- *Limit driving: carpool, walk, combine errands, take the bus*
- *Turn off engines while waiting (e.g., don't idle in drive though or while waiting to pick up kids)*
- *Retrofit existing diesel engines (e.g., school buses) with emissions reduction technology*
- *Keep vehicles well-maintained (get better gas mileage, so produce fewer emissions pre mile driven)*
- *Purchase and use low emission vehicles (e.g., hybrids)*
- *Use alternative fuels (e.g., biodiesel [B20], ethanol [E85], and compressed natural gas [CNG]).*

→ *Cover dirt if carrying in a truck (to keep it from blowing out)*

→ *Follow directions when using chemicals (paint, cleaning supplies, etc.)*

→ *Use an electric or hand-powered lawn mower and trimmer*

→ *Plant a tree*

Expansion and Follow-Up Ideas:

- ✓ Conduct the same study at a different time of the year. Does this make a difference? Why or why not?
- ✓ Visit a store that sells wood stoves to learn about different types of stoves available and how they can burn cleaner than older models.
- ✓ Have your students create posters to educate others about newer wood stoves, how to burn better in the stoves/fireplaces they have, or about wood stove tax incentives and other programs. (Contact your local DEQ regional office [see page 10] to learn about tax/incentive programs in your region.)
- ✓ Invite a guest speaker from your local DEQ regional office (see page 10) to visit with your class about wood smoke, particulate pollution, or other air quality topics.
- ✓ Using a map, determine the distance between your school and the landmark that students observed/photographed. Using that information, your class's observation and AQI data, and the table below, determine if your class's observations generally match what research has shown to be the relationship between AQI (when PM_{2.5} due to smoke is the pollutant) and visibility.

Visibility vs. Air Quality Index (for PM_{2.5} from smoke) (based on Montana Department of Environmental Quality study)

Air Quality Index (AQI)	Visibility (miles)
Good (green)	10+
Moderate (yellow)	5 – 10
Unhealthy for Sensitive Groups (orange)	3 – 5
Unhealthy (red)	1.5 – 3
Very Unhealthy (purple)	1 – 1.5
Hazardous (maroon)	< 1

Additional Resources on DEQ's Web Site:

Air Quality Educational Tools (includes information for students and teachers, activities, and more!)
www.deq.idaho.gov/air/educ_tools.cfm

Air Quality: How it is Measured www.deq.idaho.gov/air/data_reports/monitoring/overview.cfm

Air Quality Index (background information) www.deq.idaho.gov/air/data_reports/monitoring/aqi.cfm

Air Quality Index (check local air quality) www.deq.idaho.gov/air/aqindex.cfm

Air Quality and Your Health www.deq.idaho.gov/air/prog_issues/pollutants/health.cfm

Burn Bans www.deq.idaho.gov/air/prog_issues/burning/bans.cfm

Cache Valley Residents: \$500 Rebate and 10% Discount on a New Wood Stove (brochure, in PDF)
www.deq.idaho.gov/air/prog_issues/burning/wood_stove_cache_valley_brochure.pdf

Particulate Matter www.deq.idaho.gov/air/prog_issues/pollutants/health.cfm#pm

Wood Stove Replacements and the Idaho Tax Deduction (brochure, in PDF)
www.deq.idaho.gov/air/prog_issues/burning/wood_stove_tax_deduction_brochure.pdf

Wood Stoves www.deq.idaho.gov/air/prog_issues/burning/woodstoves.cfm

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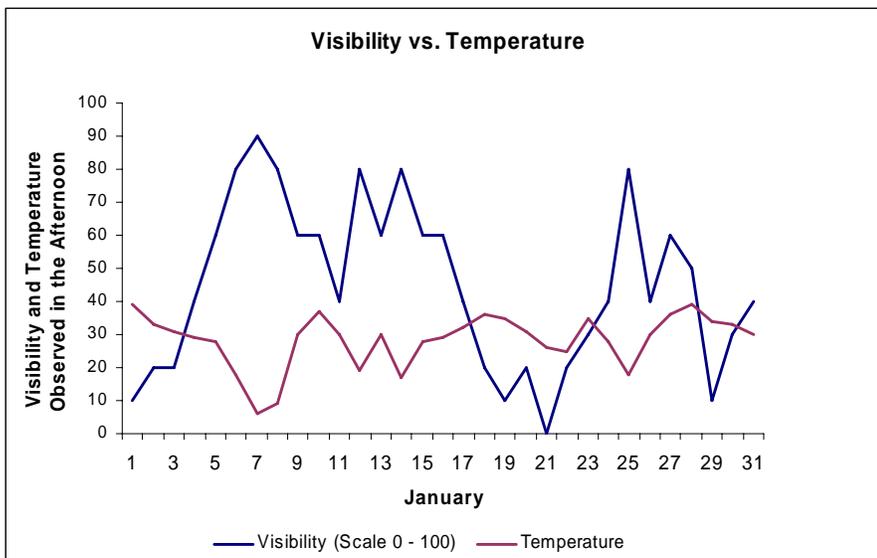
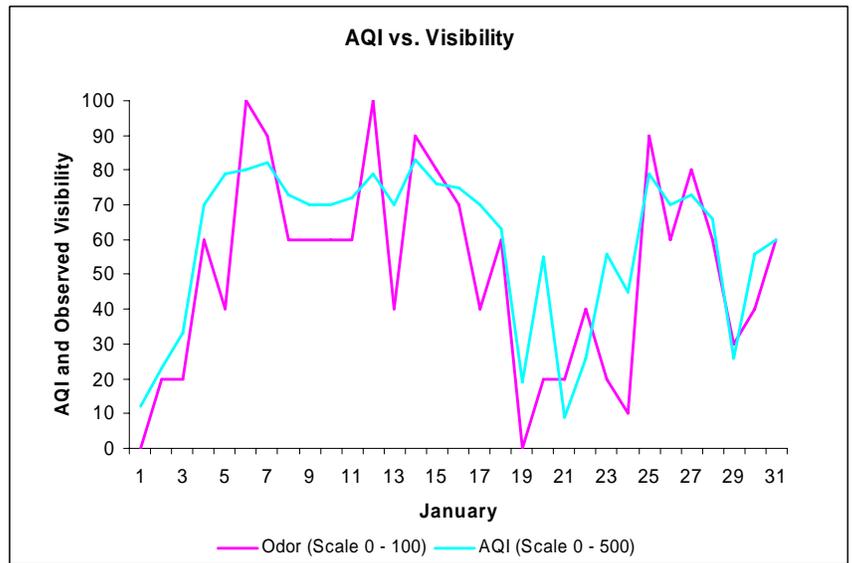
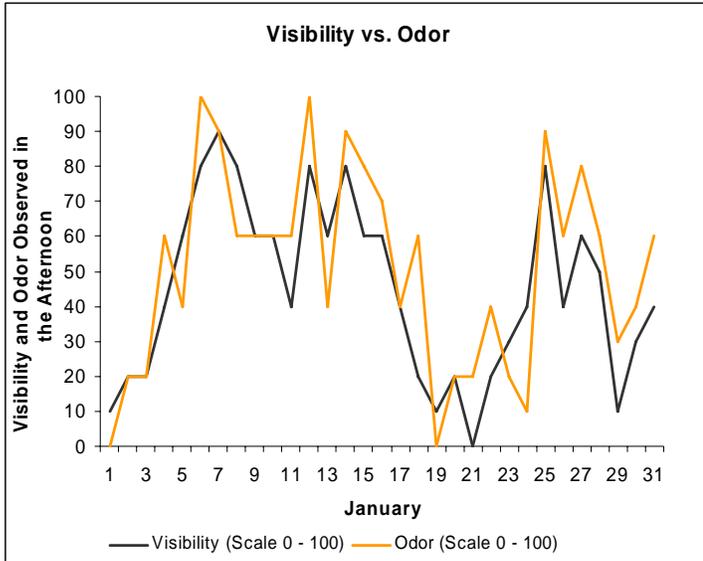
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Idaho Falls Regional Office
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Twin Falls Regional Office
Airshed Coordinator
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Sample Graphs



Sample AQI Air Quality Report from DEQ's Web Site

Air Data - Idaho Department of Environmental Quality - Mozilla Firefox

http://www.deq.idaho.gov/air/airindex.cfm?sitenum=14#

Idaho Department of Environmental Quality

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 - Rules & Regs

See Also

- [You Are What You Breathe: The Air Quality Index and You](#) (pdf)
- [Residential "Backyard" Burning](#)
Learn before you burn!
- [Air Quality Information for Schools](#)
Recommended actions for poor air quality days
- [Air Quality Monitoring](#)
How DEQ measures and evaluates outdoor air quality
- [Air Quality Index \(AQI\)](#)
DEQ's guide for reporting daily air quality
- [Air Pollution Emergencies](#)
What procedures do we follow?

Contact Us

For more information on

Done

Air Quality: Daily Air Quality Reports for Monitored Idaho Locations

Choose Location: Pinehurst

Last Updated: 12/21/06 11:45AM

Pinehurst

Air Quality Rating	MODERATE	
Today's Pollutant(s) of Concern	PM2.5	AQI: 63
	PM10	AQI: 29
Outdoor Burning Allowed?	UNRESTRICTED	

Health Advisory: Sensitive people should plan strenuous outside activities when air quality is better.

Comment: Air quality in the Pinehurst area is expected to remain MODERATE through Friday. Atmospheric mixing today and tomorrow is expected to be poor as the region waits for the next weather system to move through on Saturday. Elevated particulate concentrations are likely through tomorrow in most areas.

For More Information: mark.boyle@deq.idaho.gov 208.769.1422

Learn More

- [NWS Link for Pinehurst](#)
- [Real-Time Air Quality Data](#)
- [Air Quality Forecasts](#)



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www.deq.idaho.gov

You Are What You Breathe: The Air Quality Index and YOU (Fact Sheet)

"A red air quality alert has been issued..."

"DEQ is reporting that the AQI is 120..."

"Air quality is considered unhealthy for sensitive populations..."

Headlines such as these pepper Idaho's news media from time to time, but alone may not have much meaning to individuals. This fact sheet will help explain the Air Quality Index (AQI) and what it means to you, your family, your health, and air quality in Idaho.

Each day, concentrations of air pollutants are measured in areas across Idaho. A federal standard, or limit, has been established for each air pollutant. These limits are based on the health effects of the pollution and vary by type of pollutant.

After the amount of pollution is measured, it is compared to the federal standard. To help us compare the various pollutants and determine the air quality, the U.S. Environmental Protection Agency (EPA) developed the AQI.

What is the Air Quality Index?

The AQI is a guide for reporting daily air quality. Its purpose is to help individuals understand what local air quality conditions can mean to their health. The AQI indicates how clean or polluted the air is in a particular area and identifies potential health impacts. The AQI focuses on health effects that can happen within a few hours or days after breathing polluted air. DEQ uses the AQI for five major air pollutants regulated by the Clean Air Act: ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. For each of these pollutants, EPA has established National Ambient Air Quality Standards to protect against harmful health effects.

How Does the AQI Work?

The AQI works as a measuring stick that runs from 0 to 500. The higher the AQI value, the greater the air pollution and the greater the health risk. For example, an AQI value of 50 represents good air quality and little potential to affect public health, while an AQI value over 300 represents hazardous air quality with potentially serious health impacts.

An AQI value of 100 generally corresponds to the national air quality standard for the pollutant, which is the level EPA has set to protect public health. So, AQI values below 100 are considered healthful. When AQI values are above 100, air quality is considered to be unhealthy—at first for certain sensitive groups of people, then for everyone as AQI values get higher.

How is the AQI calculated?

Air quality in Idaho is measured by monitors that record the concentrations of several air pollutants throughout the state each day. The raw measurements are then converted into AQI values using standard formulas developed by EPA.

An AQI value is calculated for each of the pollutants in an area. Finally, the highest AQI value for an individual pollutant becomes the AQI value for that day. For example, if on one day an area had AQI values of 90 for ozone and 88 for sulfur dioxide, the AQI value would be 90, because the highest AQI value of all pollutants for that day (in this case, ozone) was 90.

What Do the Color-Coded Alerts Mean? How Do They Correspond to the AQI?

The AQI scale is divided into six categories, each of which indicates a level of “healthy-ness” of the air and is represented by a particular color. These are the colors you may see listed as indicators of air quality in the news media or on DEQ’s Web site.

Good: The AQI value is between 0 and 50. Air quality is considered satisfactory and air pollution poses little or no risk. **Color: Green.**

How does this affect me? The air quality is good. No precautions necessary. Breathe deeply and enjoy!

Moderate: The AQI is between 51 and 100. Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of individuals. For example, people who are unusually sensitive to ozone may experience respiratory symptoms if ozone levels fall into this range. **Color: Yellow.**

How does this affect me? Sensitive people* should plan strenuous outside activities when air quality is better.

Unhealthy for Sensitive Groups: The AQI is between 101 and 150. Members of sensitive groups may experience health effects. **Color: Orange.**

How does this affect me? Sensitive people* should cut back or reschedule strenuous outside activities. Everyone else should consider limiting strenuous outdoor activities.

Unhealthy: The AQI is between 151 and 200. Everyone may begin to experience health effects. Members of sensitive groups may experience more serious health effects. **Color: Red.**

How does this affect me? Sensitive people* should avoid strenuous outside activities. Everyone else should cut back or reschedule strenuous outside activities.

Very Unhealthy: The AQI is between 201 and 300. This will trigger a health alert, meaning everyone may experience serious health effects. **Color: Purple.**

How does this affect me? Sensitive people* should avoid all outside physical activities. Everyone else should significantly cut back on outside physical activities.

Hazardous: The AQI is over 300. This triggers health warnings of emergency conditions. The entire population is likely to be affected. **Color: Maroon.**

How does this affect me? Everyone should avoid all outside physical activities.

** Sensitive people/groups include children, the elderly, those with existing health conditions, and people who have high exposure (those who work, exercise, or spend extensive time outdoors).*

How Can I Find Information on the AQI Where I Live?

- DEQ reports the AQI for 18 communities around Idaho where air quality is measured. You can find the AQI for your (or a nearby) community at www.deq.idaho.gov/air/aqindex.cfm.
- Subscribe to EPA’s EnviroFlash at www.airnow.gov/index.cfm?action=airnow.enviroflash to receive air quality alerts.
- Subscribe to DEQ’s email subscription service for email bulletins at www.deq.idaho.gov (look for the box that says “Sign up for E-mail Updates”).
- Check your local newspaper, TV and radio stations, and state and local telephone hotlines.

For More Information...

DEQ’s AQI Web site: www.deq.idaho.gov/air/data_reports/monitoring/aqi.cf

EPA’s AIRNow AQI Web site www.airnow.gov/