

Using the AQI to Communicate About Particles



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Health Advisories Make a Difference

- Roper 2002 “Green Gauge Poll”
 - Survey of 2000 people across the US
 - 52% have heard of “Code Orange” or “Code Red” air quality days
 - Of those, 46% have reduced exposure to air pollution
- UCLA – Neidell et al.
 - 4 to 7% reduction in pediatric hospital admissions for asthma attributable to advisories

PM_{2.5}: The Time To Act Is Now!

- Health effects of fine particles are serious
- Monitoring network in place
- PM_{2.5} NAAQS are being implemented
- Successes and partnerships of AIRNOW project form excellent foundation for this effort

AQI for Particles

- One set cautionary statements for PM_{2.5} and PM₁₀
- Cautionary statement in Moderate category
 - Broad range of air quality – from 15 to 40 µg/m₃
 - Emphasis on reporting at upper end of range
- Two exposure scenarios – prolonged or heavy exertion
- Guidelines for Daily Reporting of Air Quality to be revised this Spring

Air Quality Index for PM_{2.5}

Descriptors and AQI Values	PM_{2.5} (µg/m³)	Cautionary Statements
Good 0 – 50	0 – 15	None
Moderate 51 – 100	16 – 40	Unusually sensitive people should consider reducing prolonged or heavy exertion.
Unhealthy for Sensitive Groups 101 – 150	41 – 65	People with heart or lung disease, older adults, and children should reduce prolonged or heavy exertion.
Unhealthy 151 – 200	66 – 150	People with heart or lung disease, older adults, and children should avoid prolonged or heavy exertion. Everyone else should reduce prolonged or heavy exertion.
Very Unhealthy 201 – 300	151 – 350	People with heart or lung disease, older adults, and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exertion.

AQI

- Identifies groups at risk
- Describes potential health risks
- Recommends steps to reduce exposure
- Requires supporting information
 - Health
 - Local air quality

Groups At Risk

- **People with heart or lung disease**
 - Conditions make them vulnerable
 - Greater particle deposition with COPD
- **Older adults**
 - Greater prevalence of heart and lung disease
- **Children**
 - More likely to be active
 - May have greater particle deposition than adults
 - Developing bodies make them vulnerable



More Generally.....

- Continuum of risk – high early in life, low during young adulthood, then rises again as risk of heart or lung disease increases
- People at risk of heart disease may also be at risk from particles:
 - Smokers
 - Diabetes
 - High blood pressure
 - High blood cholesterol levels
 - Overweight
 - Family history of heart disease

How to Reduce Risk

Dose = Concentration x Ventilation Rate x Time

- Reduce concentration – schedule activities when pollution levels lower
- Reduce ventilation rate by taking it easier
- Reduce time spent in vigorous outdoor activities
- Pay attention to symptoms
- Follow asthma action plan
- Risk trade-offs

Symptoms of Heart and Lung Disease

- Symptoms of heart disease
 - Chest pain
 - Palpitations
 - Shortness of breath
 - Fatigue
- Symptoms of lung disease
 - Coughing
 - Phlegm
 - Wheezing or shortness of breath
- If you have heart or lung disease – pay attention to your symptoms

Indoor Particle Levels

- When particle levels are high outdoors, they may also be high indoors
- Prevent particles from entering residence or vehicle
 - Close windows
 - Run air conditioning on recycle mode
- Reduce indoor sources of particles
 - Don't smoke inside
 - Reduce use of gas or wood stoves
 - Don't vacuum
- Air cleaner with HEPA filter will reduce particle levels indoors

Adapting the AQI

- Short-term peaks of PM_{2.5}
 - Use health message in moderate as platform
 - Caution sensitive groups to pay attention to symptoms
- Seriousness of health effects in Moderate category
 - Educate the public about health effects and symptoms
 - Get the message out when air quality is in the upper end of Moderate category
- Use “emerging evidence” in supporting information

Support for State and Local Agencies

- Fact sheet - more detailed health effects information
- List of example studies, with short summaries, for different health endpoints
- EPA outreach presentation - NAAQS implementation
- Development of simple media messages
- Partnerships with health organizations

NEW PRODUCTS

Air Quality Guide for PM



United States
Environmental Protection
Agency

Air and Radiation
Washington, DC 20460

EPA DRAFT
January 2002
<http://www.epa.gov/airnow>

Air Quality Guide for Particulate Matter

Air Quality	Air Quality Index	Protect Your Health
Good	0-50	None
Moderate	51-100	Unusually sensitive individuals should consider limiting prolonged or heavy exertion.
Unhealthy for Sensitive Groups	101-150	People with heart or lung disease, the elderly and children should limit prolonged or heavy exertion.
Unhealthy	151-200	People with heart or lung disease, the elderly and children should avoid prolonged exertion; everyone else should limit prolonged or heavy exertion.
Very Unhealthy (Alert)	201-300	People with heart or lung disease, the elderly and children should avoid any outdoor activity; everyone else should avoid prolonged or heavy exertion.



For more information visit EPA's web site at:
www.epa.gov/airnow

NEW PRODUCTS

Particles and Your Health

When Should I be Concerned?

How can you know when PM levels are a concern? In many areas, local media—radio, television, and newspapers—will provide reports telling you when PM levels are unhealthy. Some national media, such as USA Today and The Weather Channel, also provide air quality information. These reports may refer to the Air Quality Index. For example, a typical report might say:

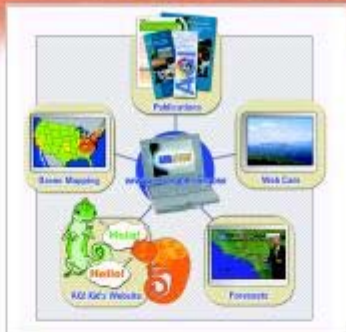
The Air Quality Index today is forecast to be 90 or "moderate" due to fine particles. Unusually sensitive individuals may want to limit prolonged or heavy exercise during the morning inversion when particle levels will be highest.

What is the Air Quality Index (or AQI)?

The AQI is a scale used to report actual levels of particles (and other common pollutants) in air. The higher the AQI value, the greater the health concern. Take a look at the table below. Notice how the AQI scale is divided into six categories, each corresponding to a different level of health concern! And notice how each category has a specific color, from green ("good") to brown ("hazardous"). This color scheme helps you quickly know if air pollutants are reaching unhealthy levels in your area. In the newspaper report below, for example, the black arrow points to orange, indicating that PM levels are "unhealthy for sensitive groups."



AIR QUALITY INDEX FOR PARTICLES		
Air Quality Index	Air Quality	Protect Your Health
0 to 50	Good	None.
51 to 100	Moderate	Unusually sensitive people should consider reducing prolonged or heavy exercise.
101 to 150	Unhealthy for Sensitive Groups	People with heart or lung disease, older adults, and children should reduce prolonged or heavy exercise. Everyone else should reduce prolonged or heavy exercise.
151 to 200	Unhealthy	People with heart or lung disease, older adults, and children should avoid prolonged or heavy exercise. Everyone else should avoid prolonged or heavy exercise.
201 to 300	Very Unhealthy	People with heart or lung disease, older adults, and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exercise.
301 to 500	Hazardous	Everyone should avoid all physical activity outdoors. People with heart or lung disease, older adults, and children should remain indoors and avoid all outdoor activities.



Only air quality and health information are available on the AIRNOW web site.

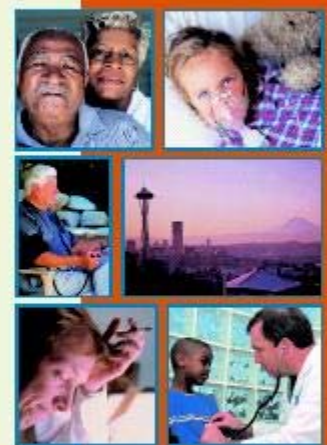
Want to know more about air pollution and how it affects you? Visit EPA's AIRNOW web site at www.epa.gov/airnow for information you can use every day as you make decisions about your activities.

- AIRNOW contains a wealth of information, including:
- Air quality forecasts for more than 200 cities across the country – and recommendations about how to protect your health when air quality is poor
 - Real-time air quality reports
 - Tips about what you can do to help make our air cleaner
 - Links to the air quality program nearest you.

AIRNOW also features an Air Quality Index page for kids – and reference materials for teachers. You can even use AIRNOW to link to local news in select cities across the country!



Particles and Your Health



- What Are Airborne Particles?
- Are You at Risk?
- How Can You Protect Yourself?

NEW - Smoke Effects

- Smoke web site (Spring 2003)
<http://www.epa.gov/airnow/smoke>

Smoke and Your Health

If you have asthma or other lung disease, make sure you follow your doctor's directions taking your medication and measuring your peak flow. Call your doctor if your symptoms worsen.

If you have heart or lung disease, if you are older adult, or if you have children, talk with your doctor about whether and when you should leave the area. When smoke is heavy for a prolonged period of time, fine particles can build up indoors even though you may not be able to see them.

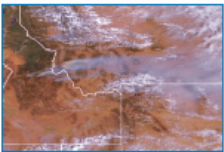
Air cleaners can help indoors—but buy before a fire.

Some room air cleaners can help reduce particle levels indoors, as long as they are the right type and size for your home. If you choose to buy an air cleaner, don't wait until there's a fire — make that decision beforehand, so you don't have to go outside when smoke levels are high. Note: Don't use an air cleaner that generates ozone. That just puts more pollution in your home.

For more information about home air cleaners, go to: www.epa.gov/oaq/pubs/retailer.html

Dust masks aren't enough!

"Paper" "comfort" or "dust" masks — the kinds you commonly can buy at the hardware store — are designed to trap large particles, such as soot. These masks generally will not protect your lungs from the fine particles in smoke.



Smoke has a low smoke travel capacity, affecting air quality in areas hundreds of miles downwind.


AIR QUALITY INDEX FOR PARTICLES		
Air Quality Index	Air Quality	Protect Your Health
0 to 50	Good	None.
51 to 100	Moderate	Generally sensitive people should consider reducing prolonged or heavy exercise.
101 to 150	Unhealthy for Sensitive Groups	People with heart or lung disease, older adults, and children should reduce prolonged or heavy exercise.
151 to 200	Unhealthy	People with heart or lung disease, older adults, and children should avoid all prolonged or heavy exercise. Everyone else should reduce prolonged or heavy exercise.
201 to 300	Very Unhealthy	People with heart or lung disease, older adults, and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exercise.
301 to 500	Hazardous	Everyone should avoid all physical activity outdoors; people with heart or lung disease, older adults, and children should remain indoors and keep activity levels low.

If you have heart or respiratory disease, if you are an older adult, or if you have children, talk with your doctor about steps you should take to protect yourself if smoke affects your community. If you live in a fire-prone area, plan ahead! Talk with your doctor before fire season, so you'll know what to do in a smoky situation.

Only your doctor can advise you about your specific health situation. But EPA's Air Quality Index can help you protect yourself when particle levels are high. Check the table to the left for specific steps you can take.

For more information:

- About smoke and health: <http://www.epa.gov/airnow/smoke>
- About wildfires, including current status: <http://www.epa.gov/wild-fire>
- About indoor air quality: <http://www.epa.gov/oaq/pubs/indoor.html>



EPA United States Environmental Protection Agency

Smoke and Your Health

How Does Smoke Affect You?

Are You at Risk?

How Can You Protect Yourself?

Top right cover photo: (Distorting smoke) courtesy of Today's Public News
 EPA-625-G-02-002