

# Air Quality Advisories: Reaching the People Who Need Them Most

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# Air Quality Index

Descriptors	Cautionary Statement
Good      0 – 50	No message
Moderate 51 – 100	Unusually sensitive individuals
Unhealthy for Sensitive Groups 101 - 150	Identifiable groups at risk - different groups for different pollutants
Unhealthy 151 - 200	General public at risk; sensitive groups at greater risk
Very Unhealthy 201 - 300	General public at greater risk; sensitive groups at greatest risk

# Public Awareness...

## Seems to be good

- Roper/ASW “Green Gauge Report”
  - 2,000 people
  - 52% aware
  - Of those, 46% took action to reduce exposure
- Are we reaching at-risk groups?
  - People with heart or lung disease
  - Older adults
  - Children



# Methods

- National “Health and Aging” survey
  - Random sample - from all 10 digit phone numbers across US
  - Demographic survey by Web-enabled panel
    - 8,493 adults
  - Ozone survey by interactive TV
    - 6,106 adults
    - 1,042 counties

# Methods (cont.)

- Demographic survey: age, race, level of education, employment status, household income, current health status
- Ozone survey: familiarity with ozone ranking system, local conditions, made changes in outdoor activities
- County-level demographic and air quality data collected
  - Count of orange, red and purple ozone days

# Results

- 33% respondents had heard of alert system
- 71% respondents lived in counties with at least one day of code orange or worse
- Of those who resided in county with at least one code orange day:
  - 37% were aware of system
  - 54% correctly reported that their counties had a ozone alert day
  - 57% reported spending less time outdoors on ozone alert days

# Results - Model 1

- Estimated awareness of ozone ranking system
  - More education, higher income, older age, being female, African-American or white, and living in areas with red or purple ozone days (p-value = 0.05)
  - Good health, full-time employment, orange ozone days (p-value = 0.07)

# Results – Model 2

- Estimated ability to correctly report occurrence of ozone alert days in their city
  - Being male, having at least one orange ozone day (p-value = 0.05)
  - Less education, being Asian-American, higher income (p-value = 0.07)



# Results – Model 3

- Estimated behavioral change; whether respondent will take averting actions
  - Older age, being female, living area with purple day more likely to take averting actions (p-value = 0.05)
  - Being white, higher income less likely to take averting actions (p-value = 0.05)
  - Fair or poor health status more likely to take averting actions (p-value = 0.07)

# Methods

- Four focus groups - June 2003
  - Los Angeles, CA and Charlotte, NC
  - Adults in sensitive groups
  - Parents of children with lung diseases
  - Demographics: income, education, ethnicity
- Questions
  - Current awareness of AQI
  - Current/preferred information sources
  - Message testing

# Results of Focus Group Tests

- Awareness ranged from none to deep knowledge of air quality
- Information sources
  - Daily basis – TV, radio, newspaper
  - Internet – many said they would “Google” for the information
  - Newspaper reports – can be found on Internet
  - Credible sources are physicians or health care providers

# Results (cont.)

## Participants

- Valued *simple, actionable* health messages
  - **Who** will be affected
  - **When** will they be affected
  - **What** they should do to reduce exposure
- Wanted this information “pushed” out to them
  - TV, radio, newspapers
- Were willing to seek more detailed information
  - Newspaper reports, Internet
- Wanted more detailed information on bad air quality days

# Results (cont.)

- Clarity
  - Meaning is most important factor - “particle pollution” is better than “particles”
  - Be specific if it’s necessary for being accurate

# Conclusions

- Good general coverage, but
- Need to do a better job getting the message to members of sensitive groups
  - Use health care providers to deliver information
  - Provide range of information from simple to complex
  - Take advantage of unusual, or “teachable” events such as fire/smoke events

# Web Page for Health Care Providers [www.airnow.gov/health-prof](http://www.airnow.gov/health-prof)

AIRNow - Health Care Providers - Microsoft Internet Explorer

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[AIRNow-Home](#) > Health Care Providers

## Health Care Providers

Help your patients protect their health by reducing their exposure to air pollution. This page includes:

- information for you about the cardiac and respiratory health effects associated with outdoor air pollution exposure
- educational materials for your patients

[Asthma and Outdoor Air Pollution factsheet](#) (502KB, 2pp., PDF)  
This fact sheet is designed to answer questions about how people with asthma can be affected by air pollution and how they can use the Air Quality Index to reduce their exposure. Print it directly from the Web to give to your patients.



[Ozone and Your Patients' Health On-line Training](#) [EXIT AIRNOW](#)  
This is a short evidence-based training course for health care providers that explains the physiological effects of ozone and ways people can reduce their exposure to ozone. It includes clinical scenarios and FAQs to help you answer your patients' questions. <http://www.epa.gov/O3healthtraining>

[Effects of Common Air Pollutants Medical Poster](#) (4.9MB, 1p., PDF) This colorful poster is designed for use in patient waiting areas or exam rooms. Use this poster to educate your patients about the health effects of outdoor air pollution on the respiratory and cardiovascular systems.  
[18"x24" Printable Version](#) (9MB, 1p., PDF)

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# Ozone Web Course for Health Care Providers

EPA -- Ozone and Your Patients' Health -- Home - Microsoft Internet Explorer

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## U.S. Environmental Protection Agency

### Ozone and Your Patients' Health Training for Health Care Providers

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#### Course Overview

During the summer months millions of people in the United States are exposed to the ambient air pollutant ozone at levels that can cause uncomfortable and damaging respiratory symptoms. *Ozone and Your Patients' Health* is a short, evidence-based training course for family practice doctors, pediatricians, and other primary care providers that:


- Describes the physiological mechanisms responsible for the symptoms and lung function changes associated with exposure to ground-level ozone
- Helps physicians to advise their patients about exposure to ozone
- Provides practical tools to help patients understand what triggers their symptoms and how to alleviate them

Physician's assistants, nurse practitioners, and other medical professionals who counsel patients about asthma and respiratory symptoms may also find this material useful.

#### Course Objectives

Upon completion of this course, you will be able to:

1. Describe how ozone is formed and where it is found
2. Identify the effects that exposure to ozone has on the



**The [Clinical Scenarios](#) section of this course discusses the following scenario and others in detail.**

A 12-year-old girl and her mother arrive at your office for an evaluation of the child's asthma. At soccer practice the girl experienced chest tightness and shortness of breath, and she woke up during the night wheezing. Yesterday was

Done

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# Medical Poster

## Effects of Common Air Pollutants

### RESPIRATORY EFFECTS



#### Symptoms:

- Cough
- Wheezing
- Phlegm
- Shortness of breath
- Chest tightness

#### Increased sickness and premature death from:

- Asthma
- Bronchitis (acute or chronic)
- Emphysema
- Pneumonia

#### Development of new disease

- Chronic bronchitis
- Premature aging of the lungs



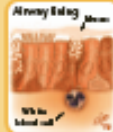
Alveolus filled with trapped air

#### Effects on Lung Function

- Narrowing of alveoli (see schematic below)
- Decreased air flow

#### Airway Inflammation

- Influx of white blood cells
- Abnormal mucus production
- Fluid accumulation and swelling (edema)
- Death and shedding of cells that line airways



White blood cells

#### Increased Susceptibility to Respiratory Infection



Normal



Lung with respiratory infection

### CARDIOVASCULAR EFFECTS



#### Symptoms:

- Chest tightness
- Chest pain (angina)
- Palpitations
- Shortness of breath
- Unusual fatigue

#### Increased sickness and premature death from:

- Coronary artery disease
- Abnormal heart rhythms
- Cognitive heart failure

#### How Pollutants May Cause Symptoms

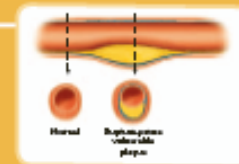


#### Effects on Cardiovascular Function

- Low oxygenation of red blood cells
- Abnormal heart rhythms
- Altered autonomic nervous system control of the heart

#### Vascular Inflammation

- Increased risk of blood clot formation
- Narrowing of vessels (vasoconstriction)
- Increased risk of atherosclerosis, plaque rupture



Normal

High oxygenation, vascular plaque





Reduce your risk by using the Air Quality Index (AQI) to plan outdoor activities – [www.airnow.gov](http://www.airnow.gov)


AQI Levels of Health Concern	AQI Values	What Action Should People Take?
Good	0-50	Enjoy Activities
Moderate	51-100	People unusually sensitive to air pollution: Plan strenuous outdoor activities when air quality is better
Unhealthy for Sensitive Groups	101-150	Sensitive Groups: Cut back on moderate strenuous outdoor activities <small>           Sensitive Groups: People with heart or lung disease (including asthma), older adults, and children            Children with asthma and adults and people with lung disease            Older adults with heart and lung disease and all children with asthma            Children with asthma, heart disease and possibly neurological issues         </small>
Unhealthy	151-200	Everyone: Cut back on moderate strenuous outdoor activities Sensitive groups: Avoid strenuous outdoor activities
Very Unhealthy	201-300	Everyone: Significantly cut back on all outdoor physical activities Sensitive groups: Avoid all outdoor physical activities



# Asthma Factsheet

## ASTHMA AND OUTDOOR AIR POLLUTION



**1 Air pollution can make asthma symptoms worse and trigger attacks.**

If you or your child has asthma, have you ever noticed symptoms get worse when the air is polluted? Air pollution can make it harder to breathe. It can also cause other symptoms, like coughing, wheezing, chest discomfort, and a burning feeling in the lungs.

Two key air pollutants can affect asthma. One is *ozone* (found in smog). The other is *particle pollution* (found in haze, smoke, and dust). When ozone and particle pollution are in the air, adults and children with asthma are more likely to have symptoms.

**2 You can take steps to help protect your health from air pollution.**

► **Get to know how sensitive you are to air pollution.**

- Notice your asthma symptoms when you are physically active. Do they happen more often when the air is more polluted? If so, you may be sensitive to air pollution.
- Also notice any asthma symptoms that begin up to a day *after* you have been outdoors in polluted air. Air pollution can make you more sensitive to asthma triggers, like mold and dust mites. If you are more sensitive than usual to indoor asthma triggers, it could be due to air pollution outdoors.

► **Know when and where air pollution may be bad.**

- *Ozone* is often worst on hot summer days, especially in the afternoons and early evenings.
- *Particle pollution* can be bad any time of year, even in winter. It can be especially bad when the weather is calm, allowing air pollution to build up. Particle levels can also be high:
  - Near busy roads, during rush hour, and around factories.
  - When there is smoke in the air from wood stoves, fireplaces, or burning vegetation.

# Smoke Brochure and Web Page

The screenshot shows a Microsoft Internet Explorer browser window with the address bar displaying [http://www.airnow.gov/airnow/smoke\\_fires/smoke-events.html](http://www.airnow.gov/airnow/smoke_fires/smoke-events.html). The page header includes the AIRNow logo and the slogan "Quality of Air Means Quality of Life". The main content area is titled "Smoke from Agricultural and Forest Fires" and contains the following text:

If you are healthy, you're usually not at a major risk from smoke. Still, it's a good idea to avoid breathing smoke if you can help it. Smoke is made up of a complex mixture of gases and fine particles produced when wood and other organic matter burn. The biggest health threat from smoke comes from fine particles. These microscopic particles can get into your eyes and respiratory system, where they can cause health problems such as burning eyes, runny nose, and illnesses such as bronchitis. Fine particles also can aggravate chronic heart and lung diseases - and even are linked to premature deaths in people with these conditions.

**How to Protect Your Family from the Health Effects of Smoke**

**Pay attention to local air quality reports** and stay alert to any news coverage or health warnings related to smoke.

**Use common sense.** If it looks smoky outside, it's probably not a good time to mow the lawn or go for a run. And it's probably not a good time for your children to play outdoors.

**If you are advised to stay indoors**, take steps to keep...

The page also features a satellite image of Alaska and Northern Canada with red dots indicating fire locations, captioned "Fires and smoke across Alaska / Northern Canada 8/21/04". A sidebar on the left contains a navigation menu with links such as "Overview", "Air Quality", "Health", and "Resources".

The EPA brochure features the logo of the United States Environmental Protection Agency and the title "How Smoke from Fires Can Affect Your Health". It includes several photographs: a doctor examining a child, a large plume of smoke, a car on a road, a house with smoke rising from it, and a tree in a smoky environment.

<http://www.airnow.gov/>

# What's Next?

- PM Web course for health care providers
- “Effects of Common Air Pollutants” – pads of tear sheets
- Downloadable fact sheets for people with heart disease, older adults and children
- National exposure and activity pattern survey