

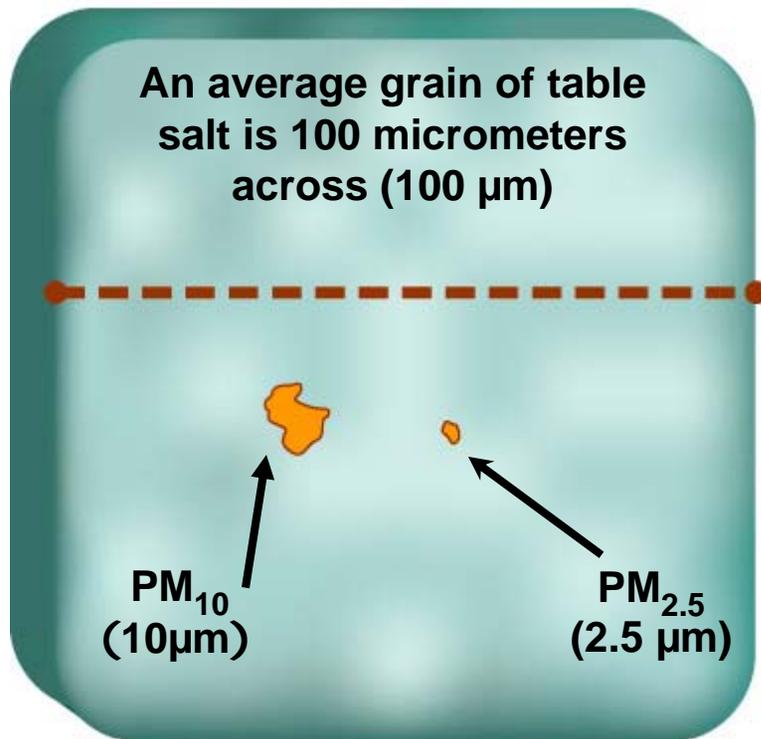
# Particle Pollution: It's a Serious Concern



Template Presentation  
for Regions

# What is particle pollution?

*The particles in particle pollution are so small, you can't see just one of them ...*



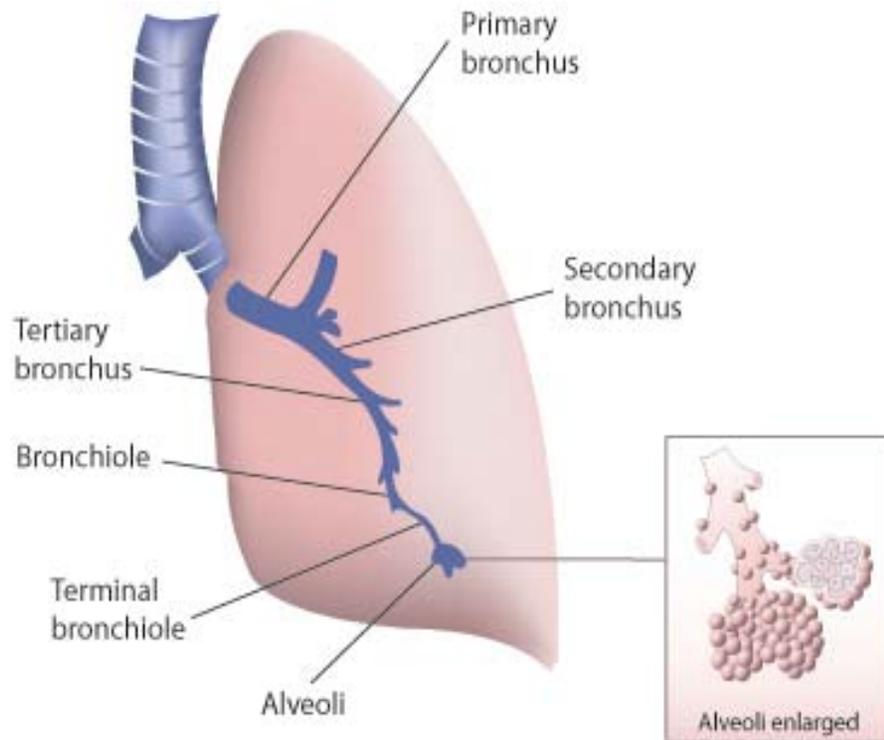
- **Particle pollution** is a complex mixture of extremely small particles and liquid droplets.
- Some of these particles – called **fine particles** – are just **2.5 micrometers in diameter**. That's 40 times *smaller* than the average grain of table salt!
- The size of particles is directly linked to their **potential for causing health problems**.
- Particle pollution also contributes to **reduced visibility, or haze**.

# Many sources; occurs year-round

- **Particle pollution comes from a variety of sources**, including:
  - wind-blown dust (larger particles)
  - combustion sources
    - cars and trucks
    - industry
    - power plants
    - fires
- Fine particles can be **emitted directly** into the air, or they can **form from gases** that react in the atmosphere.
- **Particle pollution can occur year-round** -- and may be worse in the fall and winter, depending on where you live.



# Particle pollution affects your lungs



*Particle pollution can penetrate into the part of your lungs known as the alveoli, which deliver oxygen to the bloodstream.*

**You are exposed to particle pollution simply by breathing polluted air.**

**Exposure increases when you exercise**, because you breathe more vigorously and deeply than usual.

People exposed to particles may experience a number of respiratory symptoms, including:

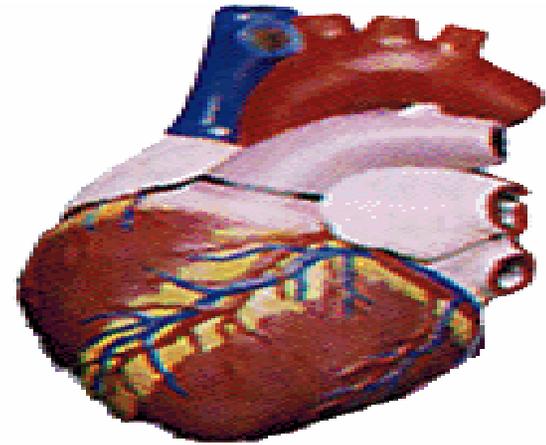
- **airway irritation;**
- **cough;**
- **phlegm;**
- **decreased lung function;**
- **airway inflammation;**
- **asthma attacks; and**
- **chronic bronchitis**

# And particle pollution affects your heart

**Particle pollution has been linked to changes that indicate your heart isn't as healthy as it should be. Those include:**

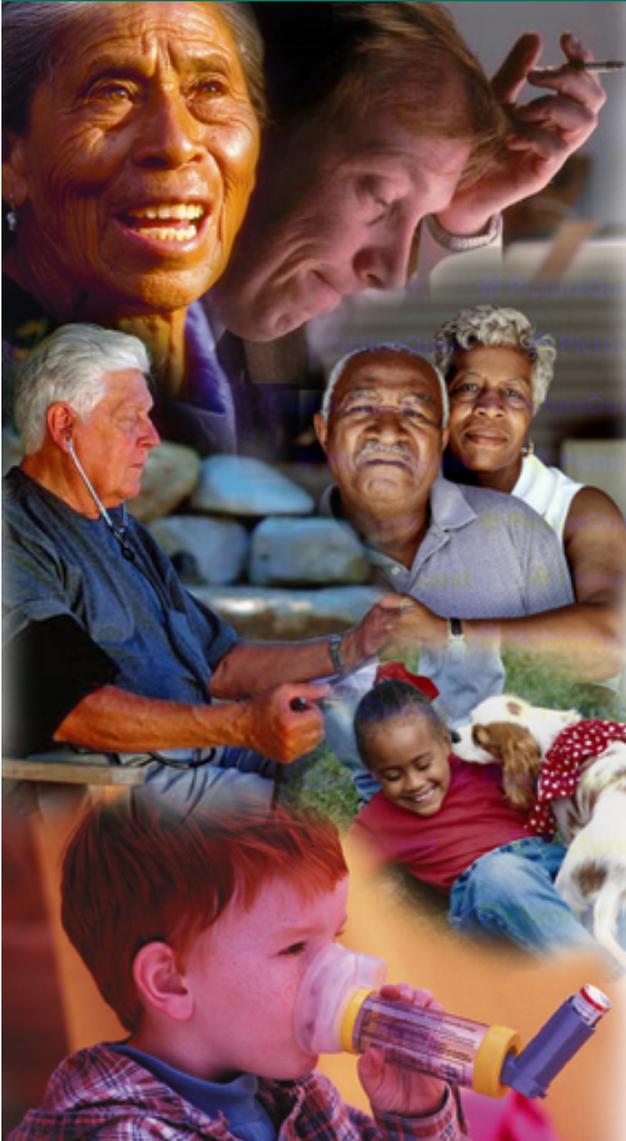
- **Arrhythmias** and **changes in heart rate.**
- **Changes in the variability of your heart rate.** Your heart rate should increase, for example, when you run and return to normal when you sit quietly. Decreased variability is a risk factor for heart attacks.
- **Blood component changes** that signal inflammation, and increased likelihood of potential blood clots, which can lead to heart attacks.

Some studies have shown that particle exposure causes **heart attacks**. And particles are linked with **death from heart disease**.



*Particle exposure has been linked to heart attacks.*

# Some groups are at greater risk



- **People with heart or lung diseases** are more vulnerable to particle pollution because of their conditions (such as congestive heart disease, coronary artery disease, asthma, or chronic obstructive pulmonary disease.)
- **Older adults** also are considered at risk, because they are more likely to have heart and lung disease. (In the case, the term “older adults” means men 45 and older and women 55 and older.)
- **Children** are at risk (primarily from chronic exposure), because they are more likely to be active, they breathe more air per pound of body weight than adults, and their bodies are still developing.

# It's a serious public health concern

- When **particles aggravate heart and lung diseases**, that, in turn, means increases in:
  - **Hospital admissions**
  - **Doctor and emergency room visits**
  - **Medication use; and**
  - **Absences from work or school.**
- **Particle pollution is linked to significant public health risks** – including **premature death** from heart and lung disease.

# And it damages the view

- Although individual fine particles are too small to see, **high concentrations of fine particles are a major contributor to haze.**
- **Haze dramatically reduces visibility.** In the West, a normal “visual range” is about 140 miles when it’s clear. Because of haze, the current range is 33 to 90 miles.
- In the East, a normal range is 90 miles (it’s shorter in the East because of higher humidity). Haze has cut that range to 14 to 24 miles – and in the summer, often less than 10!



*The pictures above show the difference between clear and hazy days in Chicago in the summer of 2000. Both photos were taken from the same location.*

# Reducing particle pollution

- Efforts to protect the public from particle pollution include:
  - **National air quality standards for *fine particles*** to be implemented beginning 2007.
  - **Existing emission reduction programs**, which already reduce some particle-forming pollution;
  - **Rules not yet in effect**, such as EPA's rule to control emissions from non-road vehicles & equipment; and

# Check AQI forecasts to protect your health

- Until the country meets its clean air goals, you can take **simple steps to protect yourself** from particle pollution.
- **Get in the habit** of checking your local **Air Quality Index forecast every day.**
- When particle pollution levels are predicted to be high, **change your plans** to reduce the amount of pollution that gets in your lungs.



AQI forecasts tell you whether particle levels are expected to be high – and suggests steps you can take to protect yourself.

Those steps vary, depending on whether you're in one of the groups more at risk from particle exposure.

# Who needs to protect themselves? How?

AQI color code	Who is affected?	What is the significance?	What action should people take?
Green	–	Air quality is good	Enjoy activities
Yellow	People who are unusually sensitive to air pollution	Air quality is a concern for people who are unusually sensitive to air pollution	<b>People unusually sensitive to air pollution:</b> Plan strenuous activities when air quality is better
Orange	People with heart or lung disease (including asthma), older adults, and children	Air quality is unhealthy for people in sensitive groups	<b>Sensitive groups:</b> Cut back or reschedule strenuous activities
Red	Everyone, especially people with heart or lung disease (including asthma), older adults, and children	Air quality is unhealthy for everyone	<b>Everyone:</b> Cut back or reschedule strenuous activities <b>Sensitive groups:</b> Avoid strenuous activities
Purple	Everyone, especially people with heart or lung disease (including asthma), older adults, and children	Air quality is very unhealthy for everyone	<b>Everyone:</b> Significantly cut back on physical activities <b>Sensitive groups:</b> Avoid <b>all</b> physical activities

*The table at left provides at-a-glance messages that recommend protective actions at different levels of particle pollution. These messages apply to particle pollution only. For information about protecting yourself from ozone or a combination of ozone and particles, go to [www.epa.gov/airnow](http://www.epa.gov/airnow).*



**AIR QUALITY INDEX**

[www.epa.gov/airnow](http://www.epa.gov/airnow)

***Your forecast  
to breathe by***



***EPA's AIRNow Web site includes links to daily particle pollution forecasts – and information on how you can use those forecasts to protect yourself.***

For more information on the AQI, call:

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