DENVER CHILDREN'S ENVIRONMENTAL HEALTH CENTER

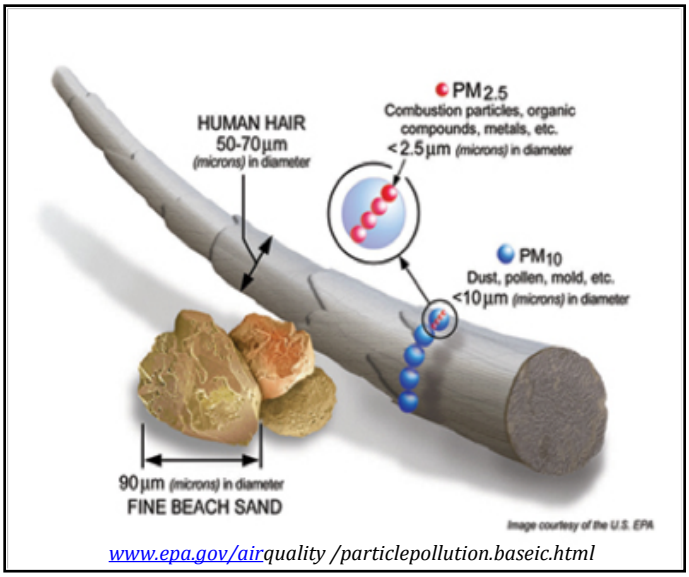
What is Particulate Matter?

Particulate matter (PM) or particle pollution is a mixture of very small particles and liquid droplets. Particulate matter is made up:

- dust or soil particles
- metals
- acids (such as nitrates and sulfates)
- organic chemicals

The size of particles is related to their potential for causing health problems.

- **PM10** refers to the size of the particles' that are less than or equal to 10 microns.
- **PM 2.5** also called "fine particles" (such as those in smoke) are less than or equal to 2.5 microns in size. PM 2.5 particles are a more serious health concern than PM 10. Smaller particles travel more deeply into our lungs and cause more harmful health effects.
- **Diesel PM** is released into the air from diesel engines, such as trucks, trains, buses, generators, agricultural pumps and other sources. Diesel PM is a complex mixture of more than 40 chemical gases and fine particles.



www.epa.gov/airquality /particlepollution.baseic.html

What are sources of particulate matter?

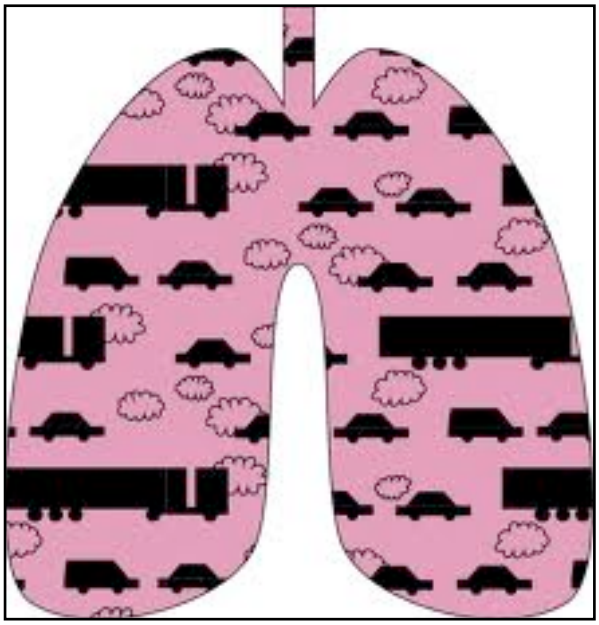
- Dust storms
- Forest fires
- Livestock
- Cars, buses, trucks, airplanes
- Construction and equipment
- Lawn mowers
- Factories
- Mining
- Power plants
- Incinerators
- Smoke (tobacco, cooking)

http://nation.time.com/2013/06/12/major-wildfires-scorch-colorados-black-forest/

Why be concerned about particulate matter?

Particulate matter can affect our health. Studies show that inhaling particulate matter can cause or worsen health problems, including:

- irritate eyes, ears, nose and throat
- decrease in lung function
- cause coughing, trouble breathing, and irritation of lungs/airways
- trigger asthma attacks or flare-ups
- trigger or worsen COPD or other chronic lung conditions
- cause irregular heartbeats
- premature deaths in people with heart or lung disease
- development of lung disease in infants and young children



http://www.airclim.org

Who is most at risk from exposure to particulate matter?

Children are at greater risk for health problems because they take more breaths per minute than adults. This means that they breathe in a lot more air and are more exposed to things in our air. Because children's breathing system is still developing, they are more susceptible to environmental threats than healthy adults.

Older Adults are at greater risk for health problem because they often have heart and/or lung conditions that place them at higher risk.

People with heart or lung disease are more likely to have flare-ups and worsening of their disease from breathing PM, alone or with other pollutants (ozone).

Active people who exercise or work outdoors may breathe faster allowing more particles to enter your lungs (thus increasing your exposure), which can irritation and inflammation of your breathing system.

Take action to reduce your exposure to particulate matter:

- **Check the daily air quality forecast using the Air Quality Index (AQI) http://airnow.gov/**
- **Avoid outside activity on poor air quality days.**
- **If outdoor air quality is good, open windows to increase ventilation in the home**
- **Reduce indoor sources of particulate matter by limiting or avoiding wood burning stoves.**
- **Avoid smoking cigarettes or burning candles in the home.**
- **Wipe floors and hard surfaces with a damp mop or cloth to retain the dust rather than a dry cloth that spreads the dust back into the air.**

Resources:

1. EPA. *Particulate Matter: Basic Information*. http://www.epa.gov/airquality/particlepollution/basic.html
2. EPA. *Health Effects of Fine Particles and Smoke*. http://yosemite.epa.gov/R10/airpage.nsf/webpage/Health+Effects+of+Fine+Particles+and+Smoke
3. EPA. *Health and Environmental Effects of Particulate* Matter. http://www.epa.gov/ttn/oarpg/naaqsfin/pmhealth.html

AMERICAN LUNG ASSOCIATION. IN COLORADO

REGIONAL AIR QUALITY COUNCIL

National Jewish Health®

The Denver Children's Environmental Health Center promotes collaboration among researchers and communities. Together they advance our understanding of the environment and how it affects our health.

Support provided by grant 1 P01 ES018181 from the National Institute of Environmental Health Sciences and the Environmental Protection Agency.

Created: July 2013