Where Does Air Pollution Come From?
+
What Kinds of Health Effects Does It Cause?
What is Air Pollution?

- Particles or gases in the air that are not part of the normal composition of air.
- “Smog” is visible air pollution.
- Many pollutants, including some of the most dangerous, are invisible.
Where Does Air Pollution Come From?

- Human-made pollution
  - Burning fuel
    - Such as coal, oil, wood, and other fuels to power vehicles (ships, trains, trucks, cars)
  - Industrial activity
    - Power plants, factories
Two Major Sources of Air Pollution

- Stationary sources

- Mobile sources
Important Air Pollutants

- Ozone ($O_3$)
- Particulate Matter (PM)
- Carbon Monoxide (CO)
- Nitrogen Oxides (NO)
- Sulfur Dioxide ($SO_2$)
- Lead (Pb)
Ozone (O$_3$) (Smog)

Emissions + Sunlight = Ozone (smog)

(Photochemical reaction)

Ozone - good up high, bad nearby
LUNGS & OZONE

It's like getting a sunburn in your lungs.
Particulate matter
Particulate Matter

- Particles that float in the air
- Created by burning fuel
- Also dust and pollen
Particulate Matter

10 to 100 times smaller than the width of a human hair!

This stuff is the most dangerous!
Particles in the Body

- Particles travel with the air people breathe into the respiratory system

- The larger a particle is, the more likely it is to get stuck in the body’s first defenses

- The smaller a particle is, the more likely it is to travel on to the lungs

- Ultrafine particles (the tiniest) can get into the bloodstream and move to other organs
Lungs & Particulate Matter
Routes of entry into the body

- Breathing in, eating, absorb through the skin
- In the lungs, pollution can directly damage the lung tissue causing illness or disease
- From the lungs, they can get into the bloodstream and be transported to organs throughout the body
Air Pollution Health Effects

- Acute and chronic effects
  - Acute effects like itchy eyes
  - Premature babies (born earlier than they should be)
  - Heart disease
  - Cancer
USC Children’s Health Study

- Children are more vulnerable to air pollution
- In the more polluted communities, children have:
  - More doctors’ visits
  - More missed school days
  - Reduced lung growth and function
  - Makes asthma worse
  - More new cases of asthma near freeways
What can we do about it? It’s as easy as 1, 2, 3…

1. Protect ourselves
2. Try to pollute less
3. Take action to stop air pollution
Air Quality Index

- Lets you know when it is a high pollution day
- Stay inside to reduce risk when AQI is at 100 or higher
- AQI can be found in newspapers, TV, radio, internet

- [www.AirNow.gov](http://www.AirNow.gov)
<table>
<thead>
<tr>
<th>Air Quality Index (AQI) Values</th>
<th>Levels of Health Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the AQI is in this range:</td>
<td>...air quality conditions are:</td>
</tr>
<tr>
<td>0 to 50</td>
<td>Good</td>
</tr>
<tr>
<td>51 to 100</td>
<td>Moderate</td>
</tr>
<tr>
<td>101 to 150</td>
<td>Unhealthy for Sensitive Groups</td>
</tr>
<tr>
<td>151 to 200</td>
<td>Unhealthy</td>
</tr>
<tr>
<td>201 to 300</td>
<td>Very Unhealthy</td>
</tr>
<tr>
<td>301 to 500</td>
<td>Hazardous</td>
</tr>
</tbody>
</table>
Polluting less

- Carpool
- Ride your bike or walk
- Take the bus
- Use vehicles and equipment that is well maintained or electric
Take Action

- Teach others about what you have learned
- Tell government agencies that you want clean air
Credits

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