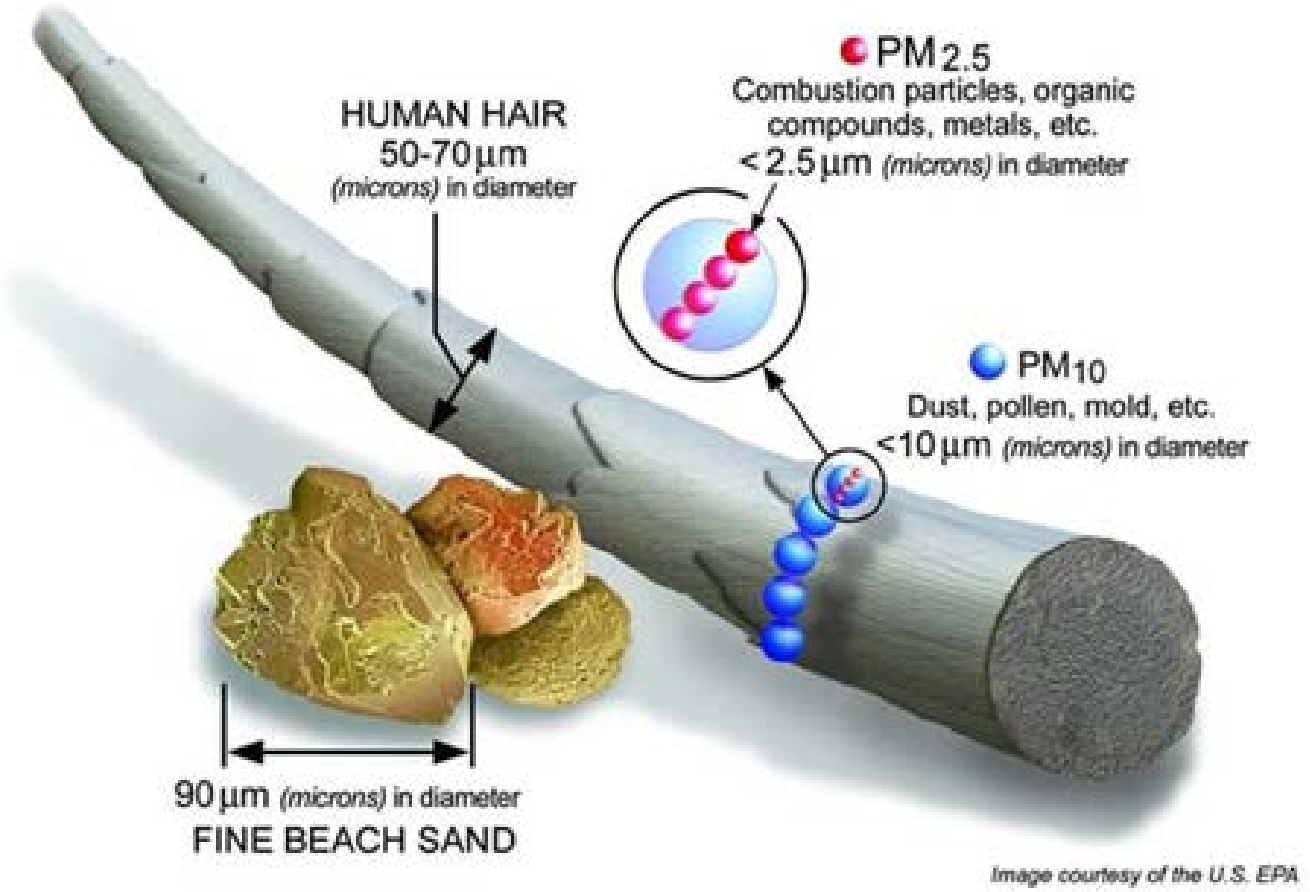
Air Quality Intro

Urban Ecology

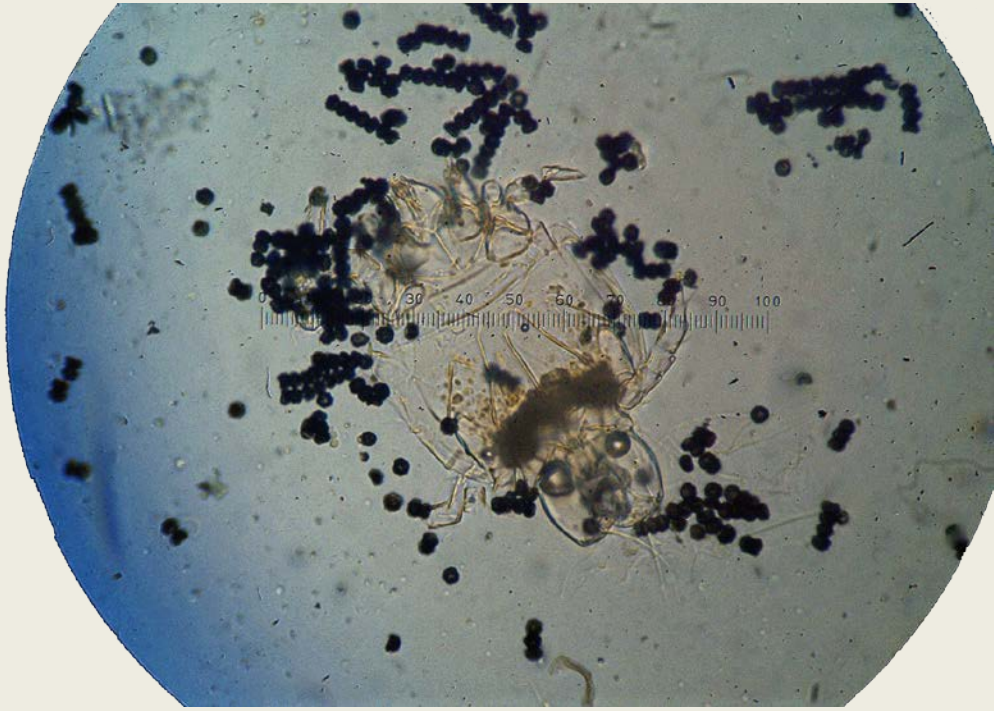
AUP

Particulate Matter Size

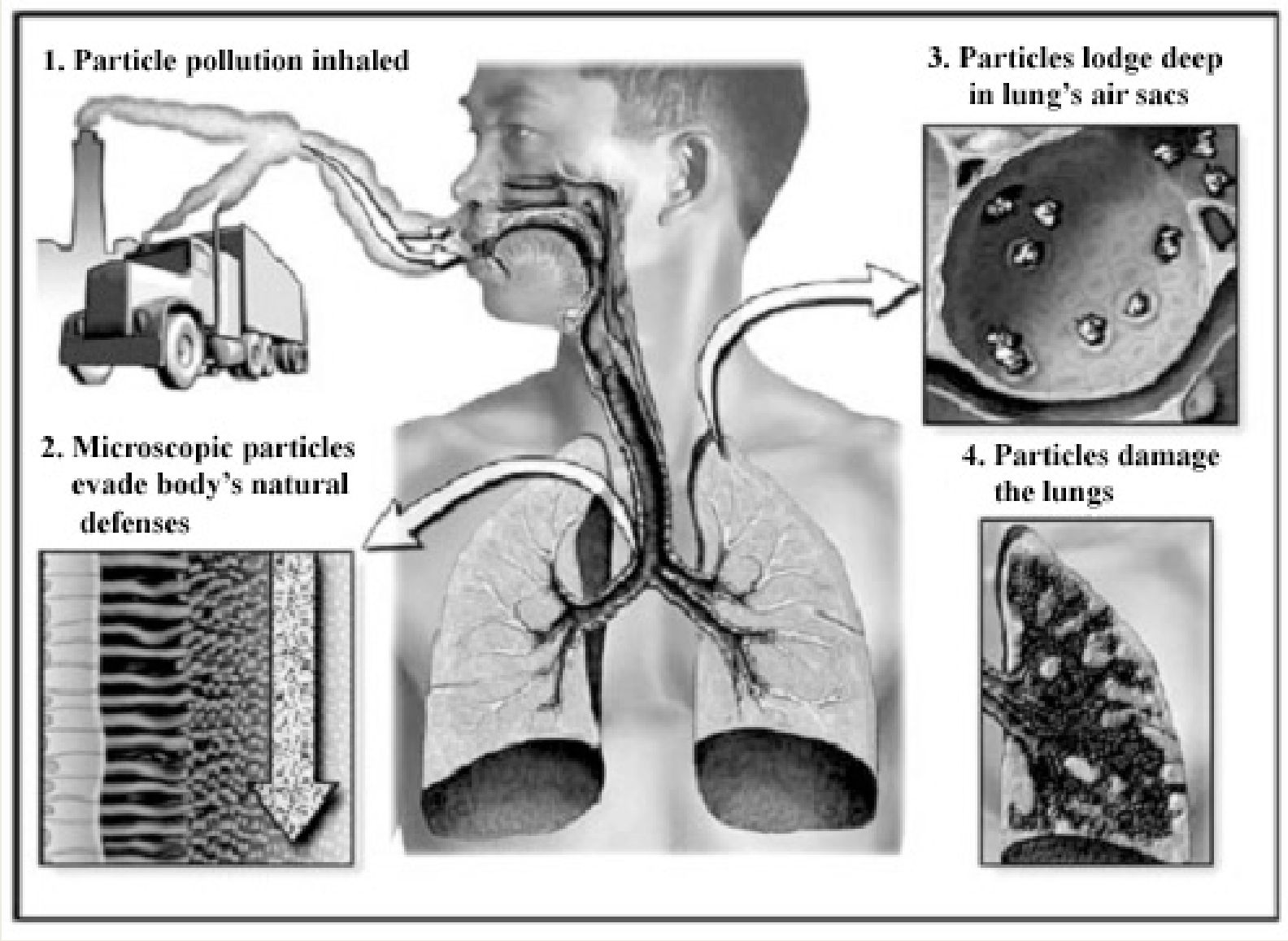


Sources of Particulate Pollution

- factory and utility smokestacks
- vehicle emissions
- construction activity
- cigarette smoke
- cockroach droppings
- mold
- dust mites
- pollen



Health Effects - Asthma



Air Quality Index (AQI)

Smoke Visibility, PM 2.5 Particulate Concentrations, & Air Quality Index

Smoke Visibility in Miles	24-Hour PM 2.5 (µg/m3)	Air Quality Index Cautionary Statements	Air Quality Index Health Effects Statements	Air Quality Index Categories	Air Quality Index Levels
10 miles & up	0 – 15.4	None	None	Good	0 - 50
6 to 9	15.5 – 35.4	Unusually sensitive people should consider reducing prolonged or heavy exertion.	None	Moderate	51 - 100
3 to 5	35.5 – 55.4	People with respiratory or heart disease, the elderly, and children should limit prolonged exertion.	Increasing likelihood of respiratory symptoms in sensitive individuals, aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease, and the elderly.	Unhealthy for Sensitive Groups	101 - 150
1 1/2 to 2 1/2	55.5 – 150.4	People with respiratory or heart disease, the elderly, and children should avoid prolonged exertion; everyone else should limit prolonged exertion.	Increased aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly; increased respiratory effects in general population.	Unhealthy	151 - 200
3/4 to 1 1/2	150.5 – 250.4	People with respiratory or heart disease, the elderly, and children should avoid any outdoor activity; everyone else should avoid prolonged exertion.	Significant aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly; significant increase in respiratory effects in general population.	Very Unhealthy	201 - 300
3/4 mile or less	Greater than 250.5	Everyone should avoid any outdoor exertion; people with respiratory or heart disease, the elderly, and children should remain indoors.	Serious aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly; serious risk of respiratory effects in general population.	Hazardous	Over 300

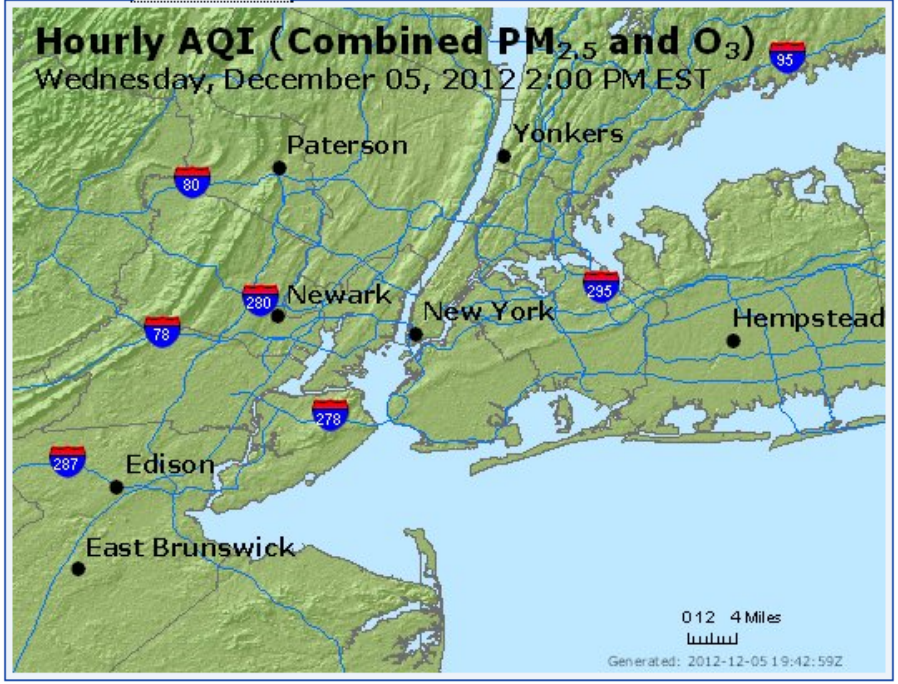
Sources:
Fairbanks Air Quality Program http://co.fairbanks.ak.us/airquality/ and AirNow http://www.airnow.gov/index.cfm?action=aqibasics.aqi

Air Quality Index for NYC
Dec. 5th 2012

AIRNow Home >> New York >> **New York City**

Data courtesy of: New York Department of Environmental Conservation

Forecast | Current AQI | AQI Animation



Good | Moderate | USG | Unhealthy | Very Unhealthy | Hazardous | ! Action Day

Local Air Quality Resources

Real-time AQI Data | Today's AQI Forecast

Air Quality Forecast

Today's High	Tomorrow's High
Air Quality Index (AQI)	Air Quality Index (AQI)
22 Good	27 Good
Health Message: None	Health Message: None

AQI - Pollutant Details

Particles (PM2.5) 22 Good	Particles (PM2.5) 27 Good

Current Conditions

Air Quality Index (AQI)
observed at 14:00 EST

13 Good

Health Message: None

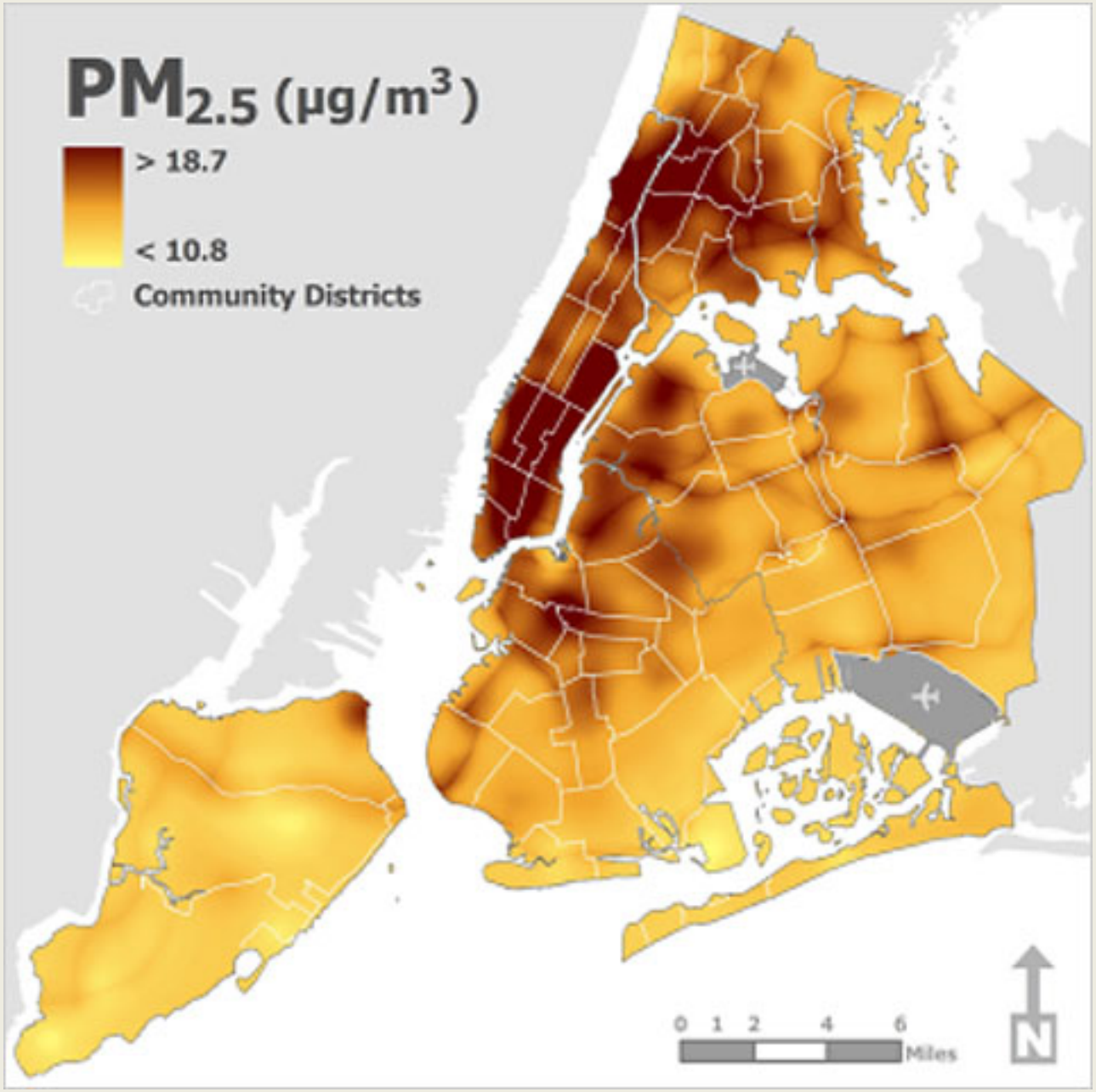
AQI - Pollutant Details

Particles (PM2.5) 13 Good

Past Air Quality Maps and Data

Yesterday's Maps and Data

Air Quality Maps Archives (by region)


PM2.5 (µg/m3)
> 18.7
< 10.8
Community Districts
0 1 2 4 6
Miles
N

What can we do to Improve Air Quality?

- **Take Public transportation**
- **If you have a vehicle, make sure it is up to inspection standards.**
- **Choose a Hybrid! New York also has the largest hybrid bus fleet in the country, and some of the first hybrid taxis.**
- **Plant a tree: NYC has the Million Tree Initiative**

Indoor/Outdoor Urban Air Quality

- **5 stations (Explanation) – 10 minutes each**
- **Rotate!**
- **Wrap Up – Discuss Particulate Matter Predictions (Station 5)**
- **Next Week we will analyze slides for particulate matter and discuss**


What's in the AIR gets Around!
Air pollution comes from many sources, both natural & manmade.
forest fires, volcanic emissions
vehicle exhaust, smokestack emissions
OZONE (GOOD) is a gas that occurs naturally in the upper atmosphere. It filters the sun's ultraviolet rays and protects life on the planet from the burning rays.
AIR AWARENESS:
Our air contains a combination of different gasses:
78% nitrogen, 21% oxygen,
plus 1% from carbon dioxide,
Forest Fires
Nitrogen
Oxygen
Carbon Dioxide
Grow
Live
Air moves around when the wind blows.
Air pollution from one place can cause problems many miles from where it started.
ACID RAIN forms when sulfur oxides and nitrogen oxides mix with water vapor in the air. Because wind moves the air, acid rain can fall hundreds of miles from its source. Acid rain can make lakes so acidic that plants and animals can't live in the water.
Forests can be harmed when nutrients are drained from the soil by acid rain, so trees don't grow properly.
AIR MONITORING:
Scientists check the quality of our air and report it using the Air Quality Index (AQI). We can find the daily AQI on the Internet or from local news sources.
Air Quality Index
Water falls from clouds that form in the air. Pollutants and tiny bits of soil are carried with it to the ground below.
1 The air is in constant motion around the earth (wind). As it moves, it absorbs water from lakes, rivers and oceans, picks up soil from the land, and moves pollutants in the air.
2
Earth's Air Cycle
4
Plants use carbon dioxide from the air during photosynthesis, and release oxygen. They absorb water and pollutants carried in the air.
3
People and animals breathe in oxygen and exhale carbon dioxide.
Oxygen and exhale Carbon Dioxide
Greenhouse gases, sulfur oxides and nitrogen oxides are added to the air when coal, oil and natural gas are burned to provide energy.
Energy
Smoke from FACTORIES and POWER PLANTS adds particulate matter (tiny particles) to the air.
& BUSES add carbon dioxide, sulfur oxides, nitrogen oxides and particulate matter to the air. Carbon dioxide is a greenhouse gas and contributes to climate change. The other pollutants contribute to acid rain, ground-level ozone and smog.
Greenhouse
FIRES particulate (ashes) and gasses to
OZONE (BAD) sometimes forms at ground level when the weather is hot and sunny and the air makes breathing uncomfortable especially for people
TREES and other
Choosing to get without
You
Uncomfortable
for you too.
pollutants within their cells.
How many manmade sources of air pollution can you find here?
Can you find people doing things to limit air pollution?