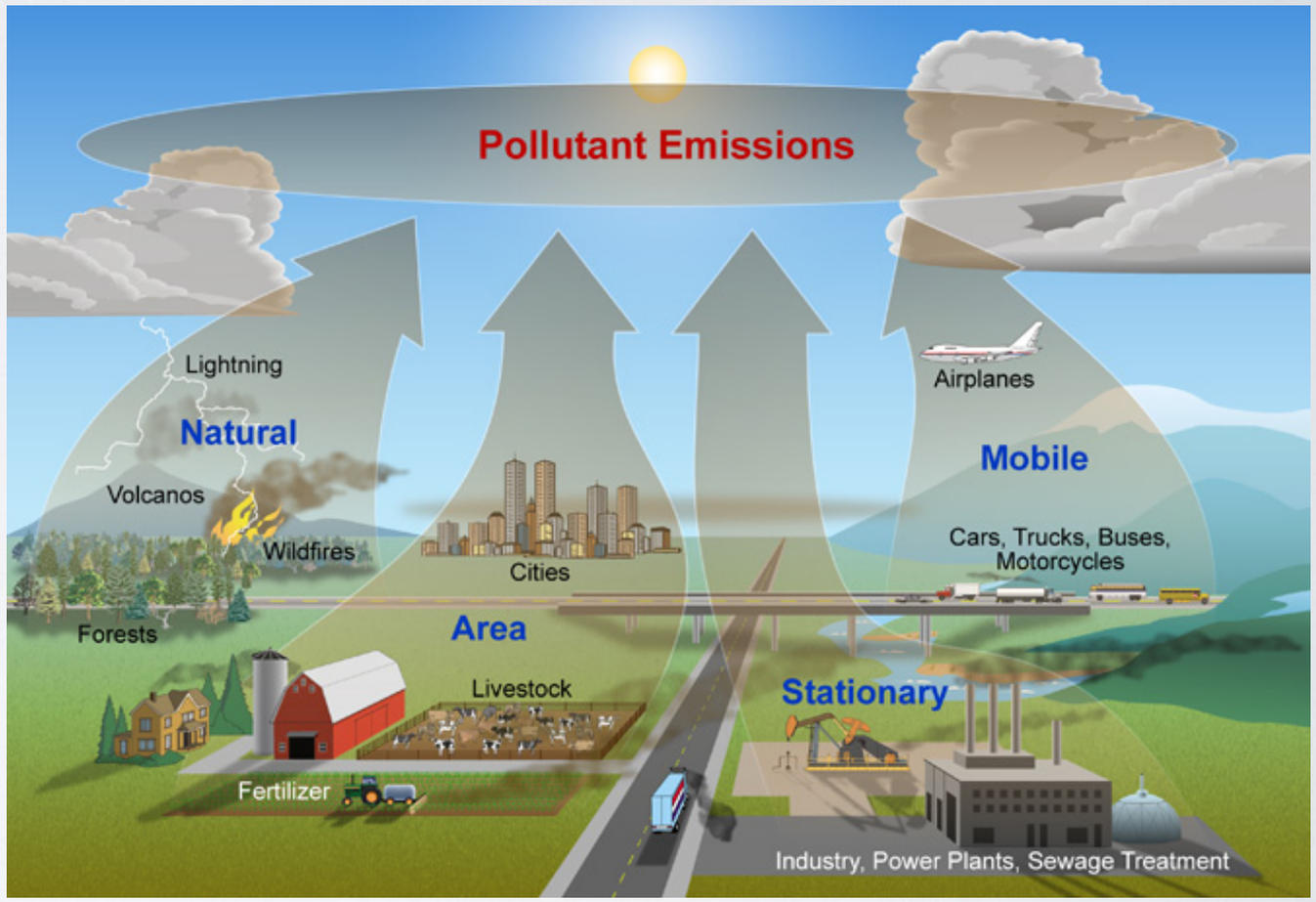
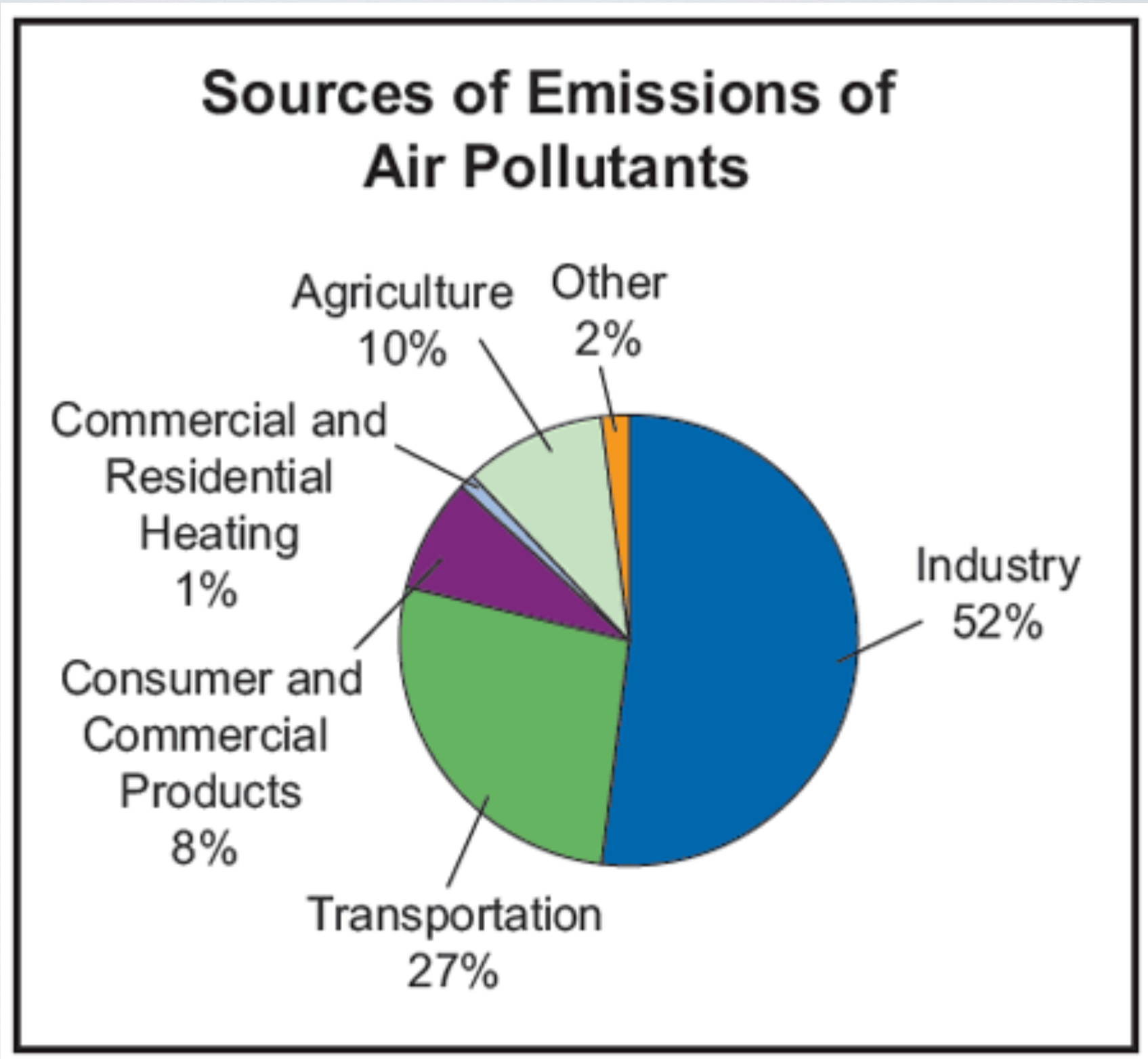
SECTION 4 : AIR QUALITY

WHAT IS AIR POLLUTION?

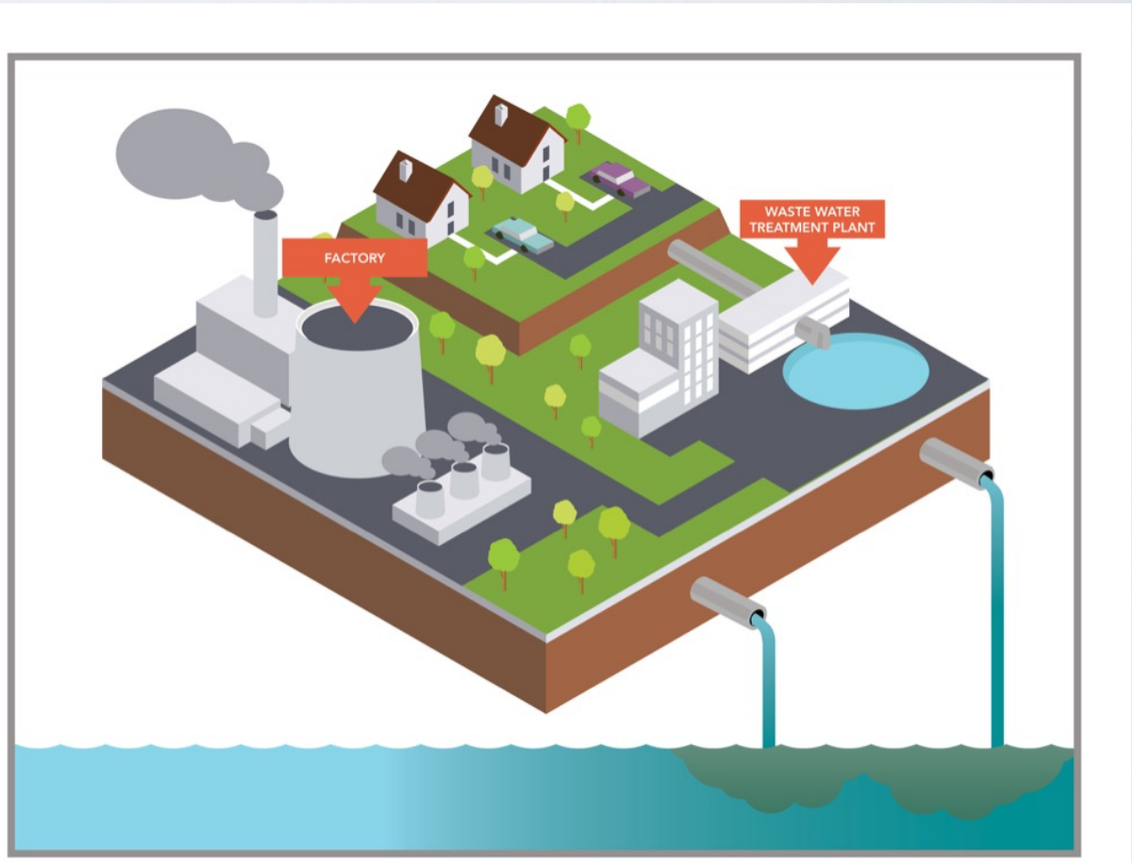
- **The contamination of air by harmful substances including gases and smoke.**




Sources of Emissions of Air Pollutants
Agriculture 10%
Other 2%
Commercial and Residential Heating 1%
Industry 52%
Consumer and Commercial Products 8%
Transportation 27%

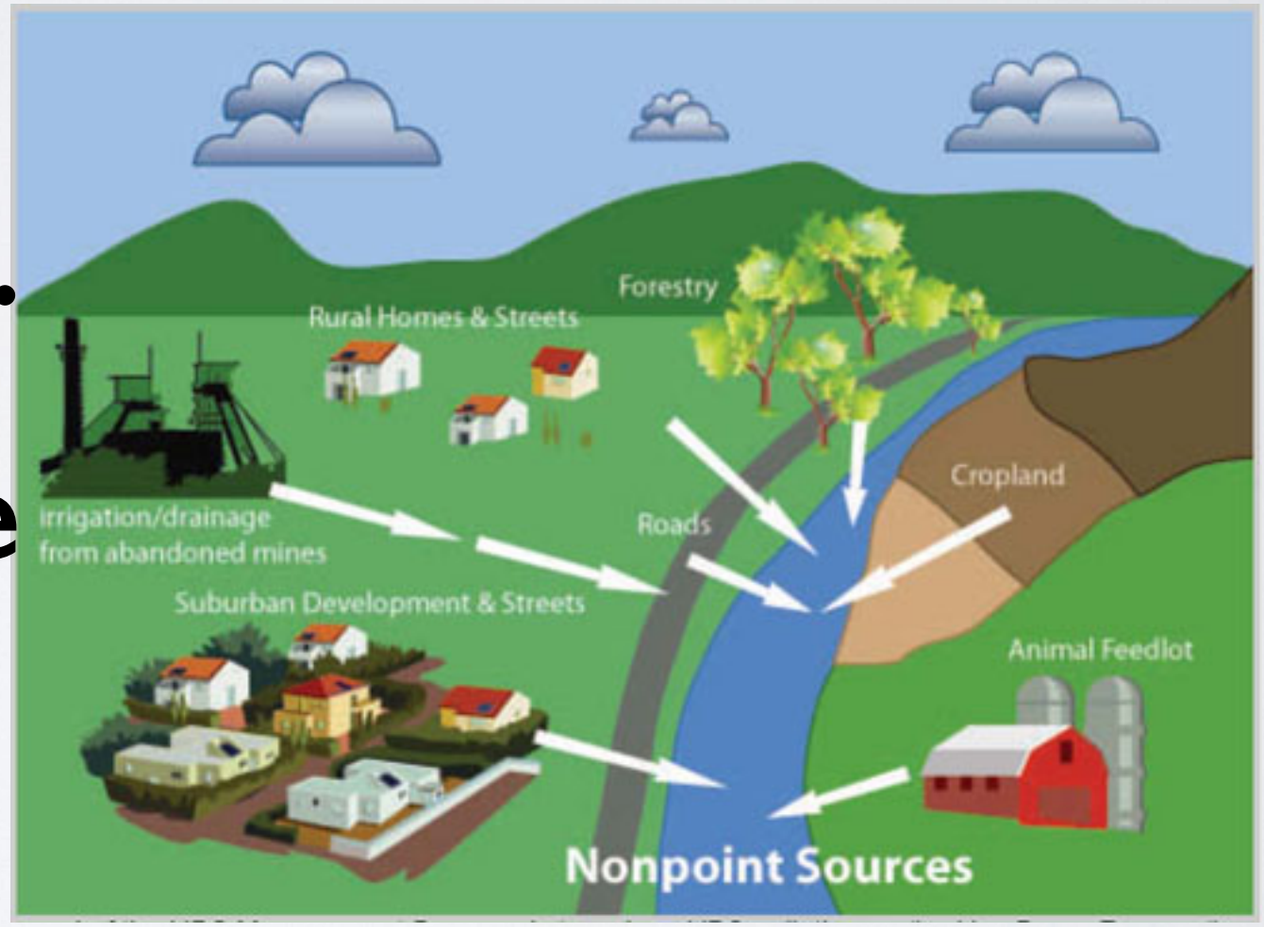
WHAT IS POINT-SOURCE POLLUTION?

- **Pollution that comes from an identifiable source.**
- **Example: Smokestacks of factory or erupting volcano.**

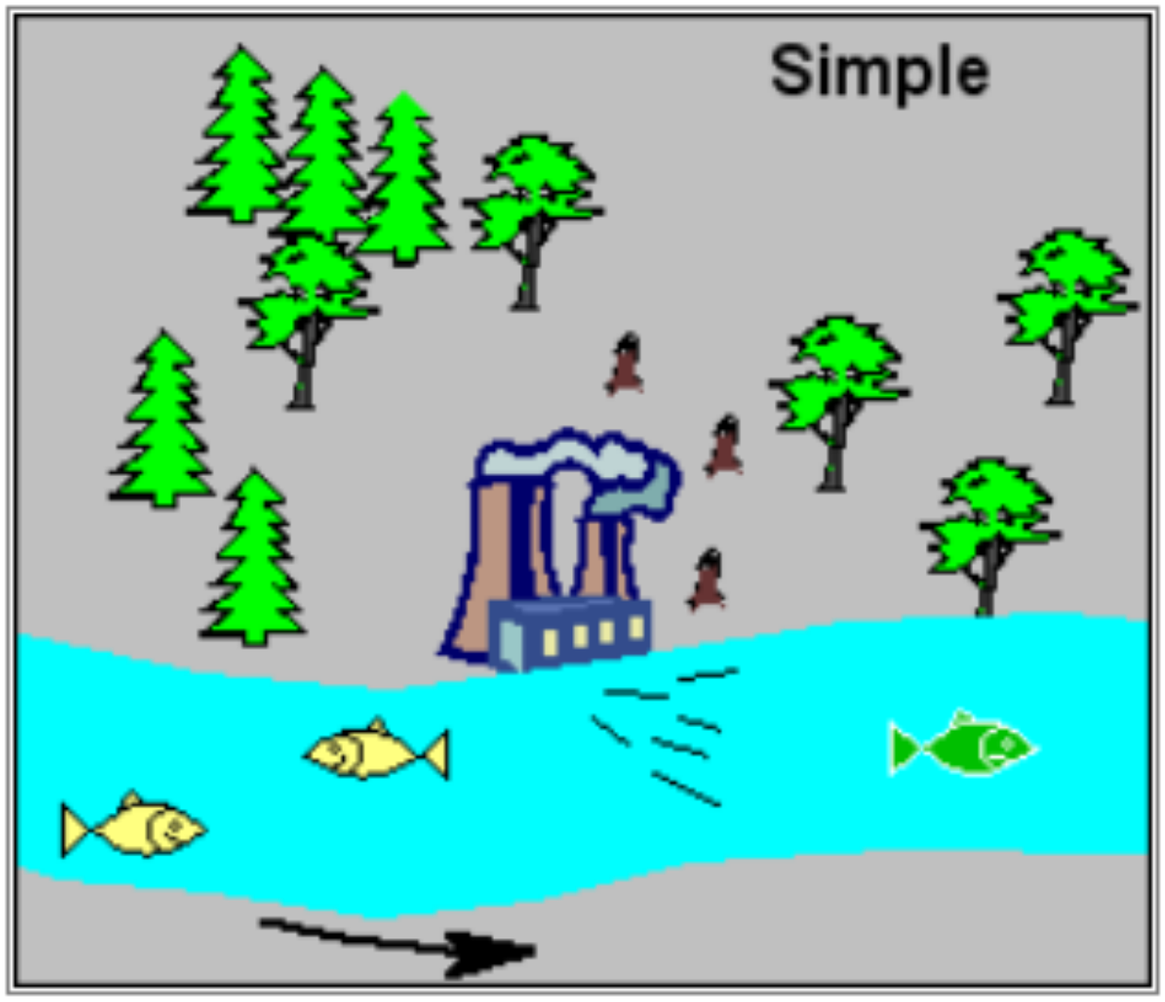


WHAT IS NONPOINT-SOURCE POLLUTION?

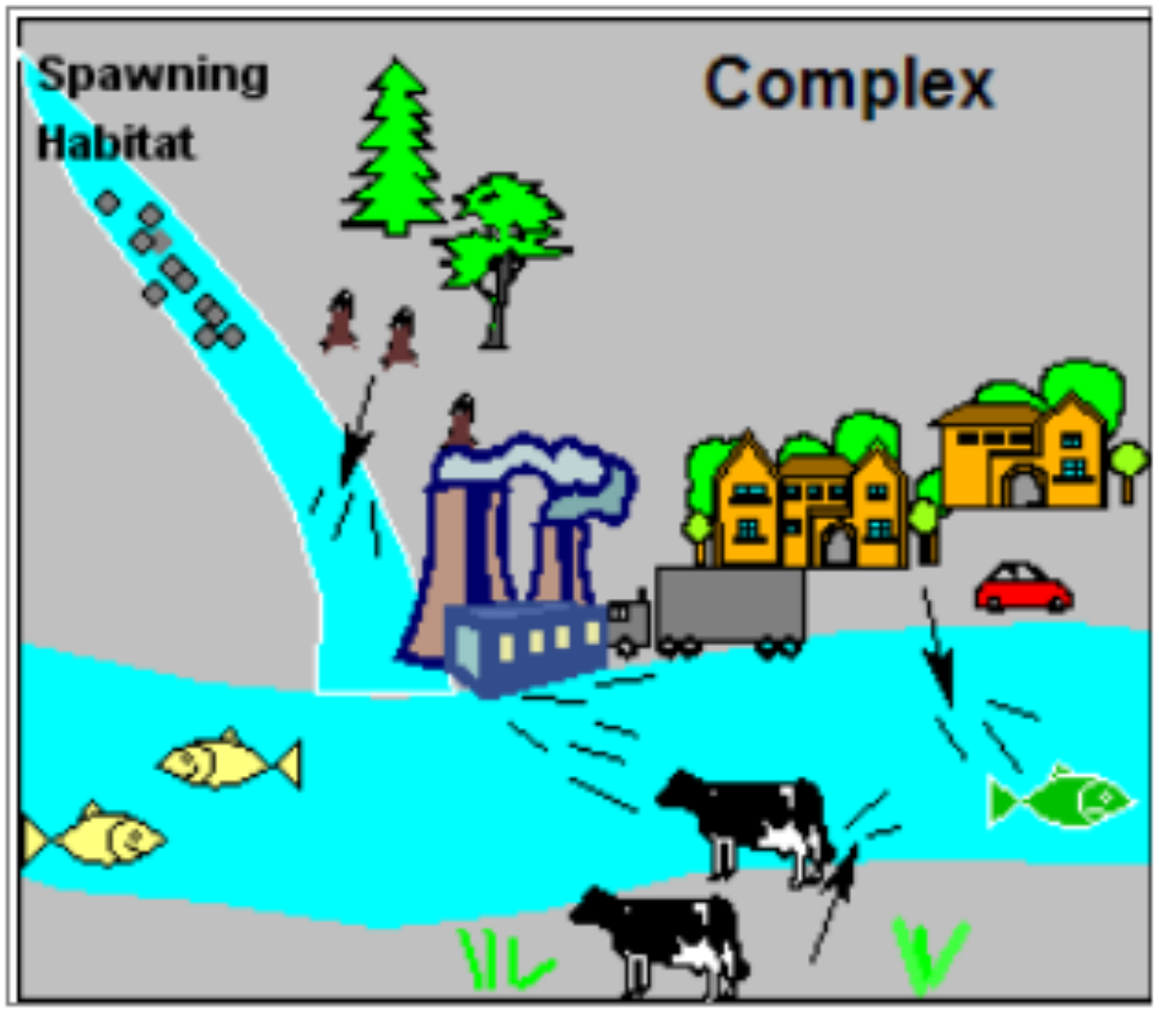
- **Pollution that comes from a widespread area.**
- **Example: A large city, bacteria in swamps and marshes.**



WHICH POLLUTION SOURCE WOULD BE EASIER TO MANAGE?



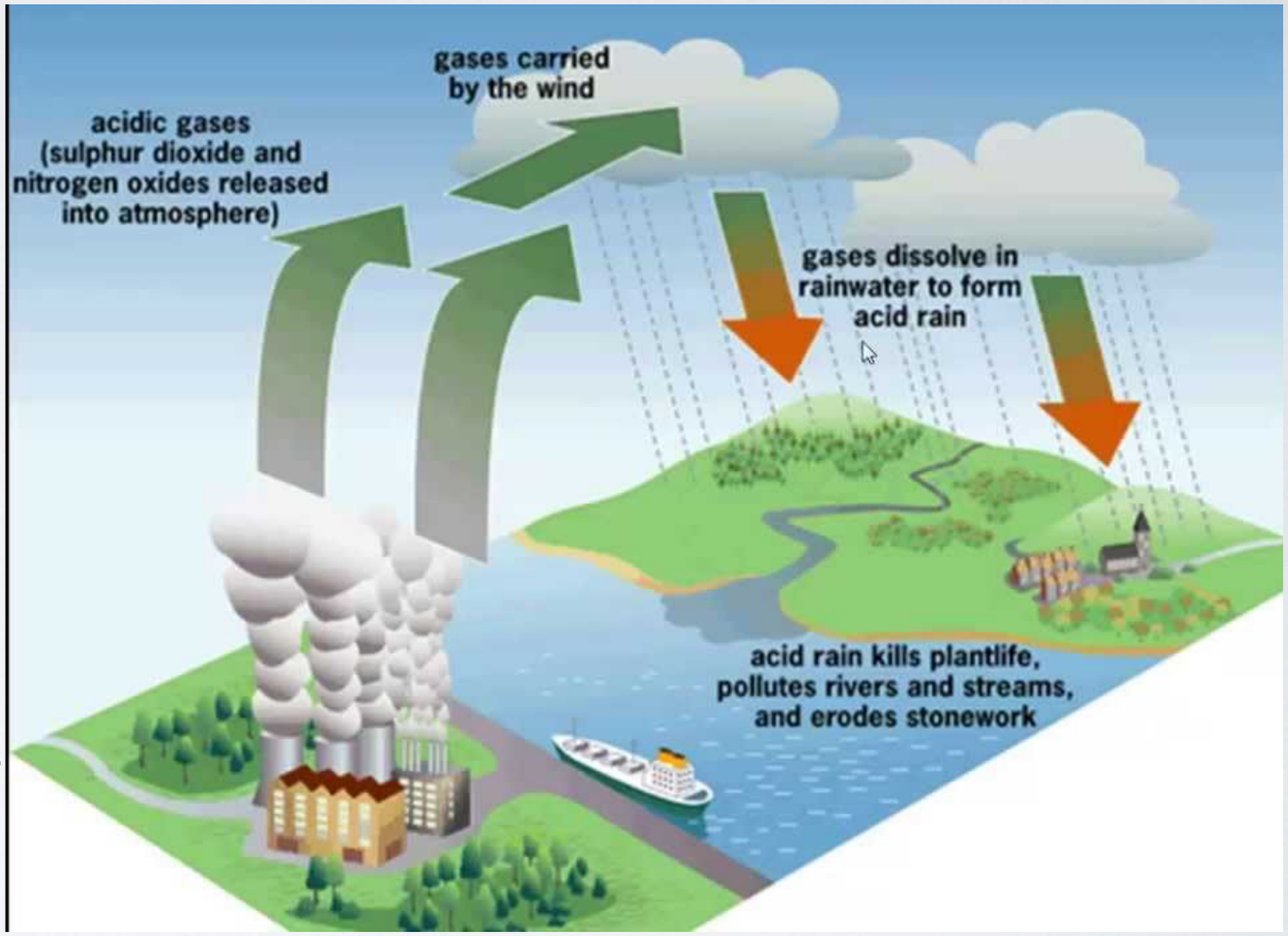
Discharge from Single Point Source



Discharge from Multiple Point and Non-point Sources

WHAT IS ACID PRECIPITATION?

- **Sulfur Dioxide and nitrogen oxide combine with moisture in the atmosphere and forms precipitation that has a lower pH than normal rainwater. It affects bodies of water, organisms, and architecture .**
- **Example: Automobile exhaust, factories, burning coal, and power plant smoke are human made sources. Natural sources include volcanoes and marshes.**



Critical pH Levels for Aquatic Organisms

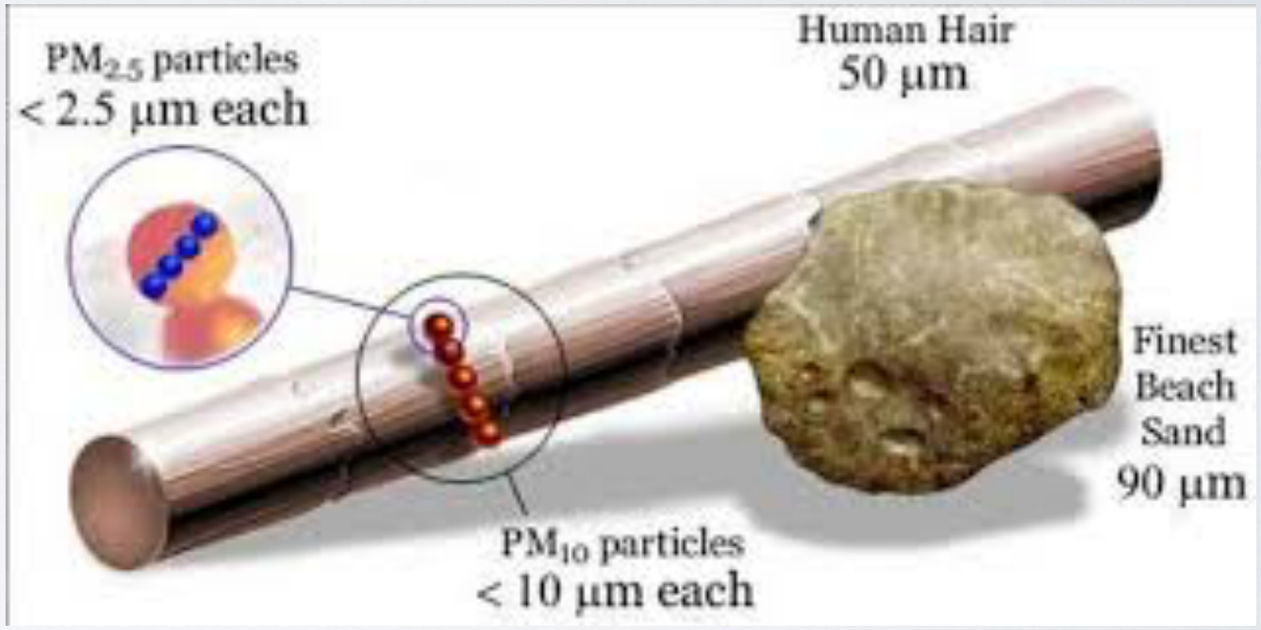
Animal	Critical pH Level
Snails	6
Clams	6
Bass	5.5
Crayfish	5.5
Mayfly	5.5
Trout	5
Salamanders	5
Perch	4.5
Frogs	4

WHAT IS SMOG?

- **Air Pollution that forms from the interaction between chemical in the air and sunlight.**
- **One type of of smog is ground level ozone, which is damaging to the tissues of plants and animals.**

WHAT IS PARTICULATE POLLUTION?

- **Definition: A mixture of dust, acids, and other chemicals that can be hazardous to human health and creates haze. The smallest particles are the most harmful because they can enter human lungs.**



WHAT ARE THE HEALTH RISKS OF PARTICULATE MATTER?

Particulate matter poses a serious health risk because it can travel into the respiratory tract. PM2.5 is especially dangerous because it can penetrate deep into the lungs and sometimes even into the bloodstream.

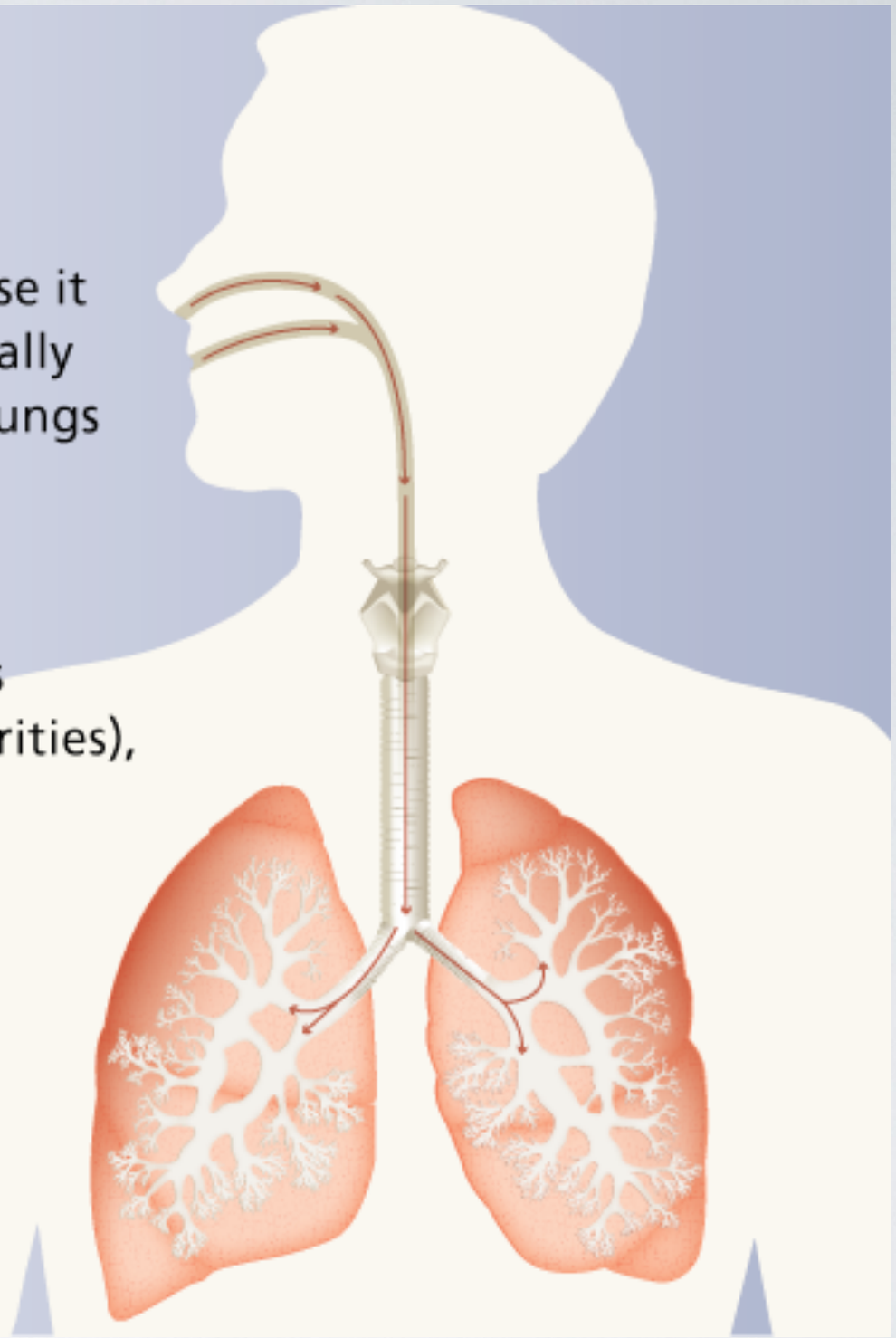
HEALTH EFFECTS

» Decreased lung function
» Chronic bronchitis
» Increased respiratory symptoms
» Cardiac arrhythmias (heartbeat irregularities),
» Heart attacks
» Premature death

GROUPS SENSITIVE TO PM2.5

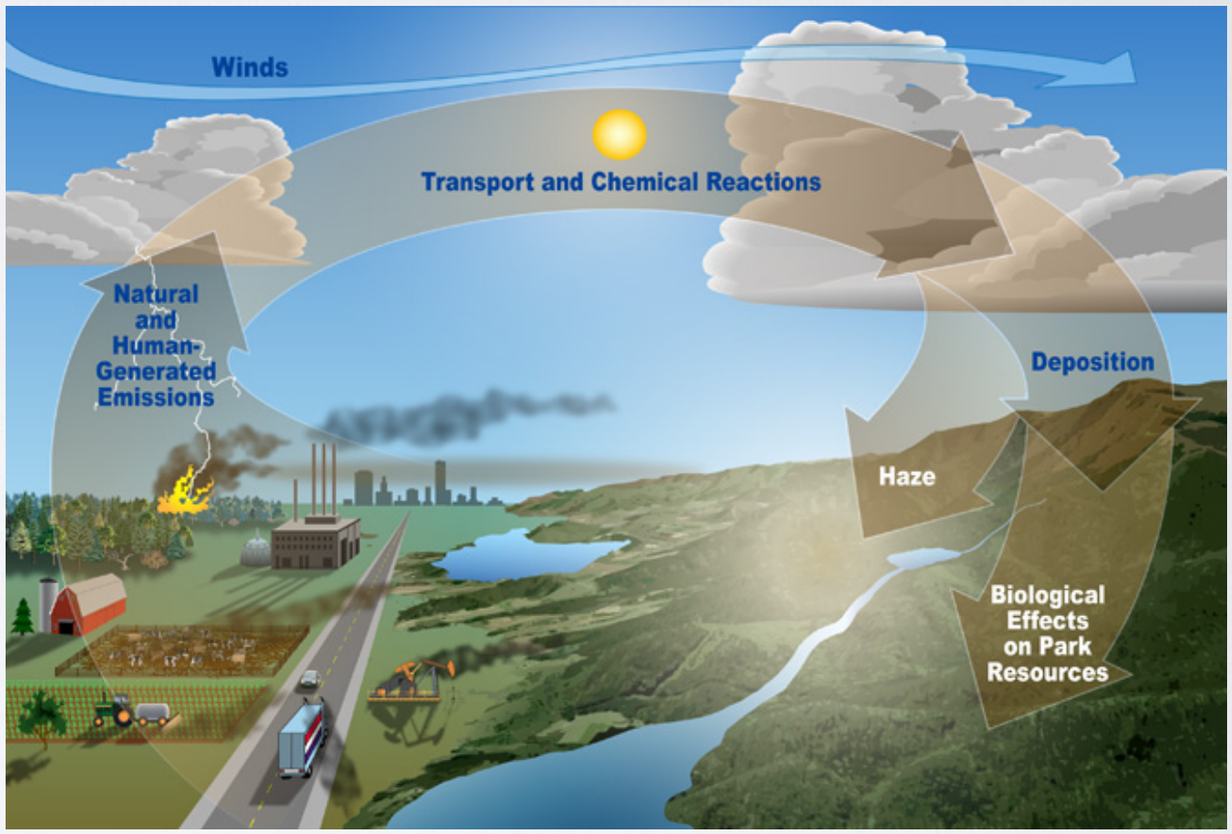
» People with heart or lung disease
» Older adults
» Children
» Pregnant women

Source: www.epa.gov



HOW DOES WIND AFFECT AIR POLLUTION?

- **Wind can move pollution to larger areas. Weak or no wind can cause pollution to be trapped in areas.**



WHAT ARE AIR QUALITY STANDARDS?

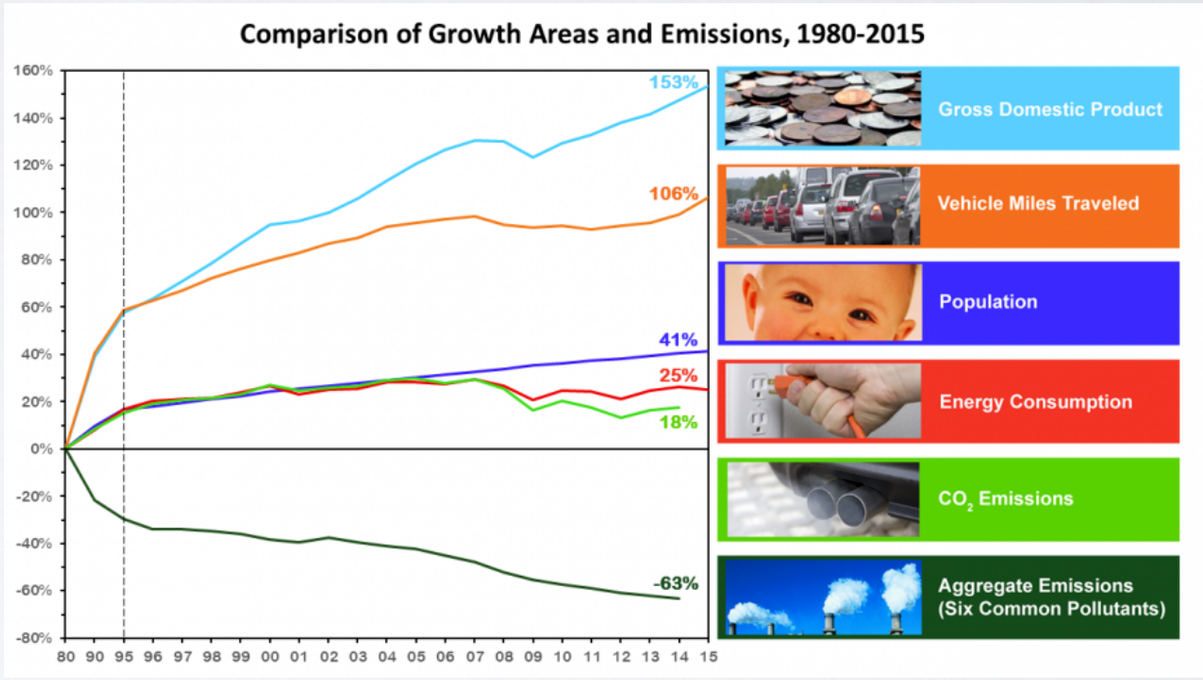
- **The Clean Air Act gives the U.S. government the power to set air quality standards that protect humans, animals, plants, and buildings from harmful levels and effects of air pollution.**

Air Quality Index for Ozone

Index Values (Conc. Range)	Air Quality Descriptors	Cautionary Statements for Ozone
0 – 50 (0-60 ppb)	Good	**No health impacts are expected when air quality is in this range.**
51 – 100 (61-75 ppb)	Moderate	**Unusually sensitive people should consider limiting prolonged outdoor exertion**
101 – 150 (76-104 ppb)	Unhealthy for Sensitive Groups	**Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion**
151 – 200 (105-115 ppb)	Unhealthy	**Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children should limit prolonged outdoor exertion.**
201 – 300 (116-374 ppb)	Very Unhealthy	**Active children and adults, and people with respiratory disease, such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion.**

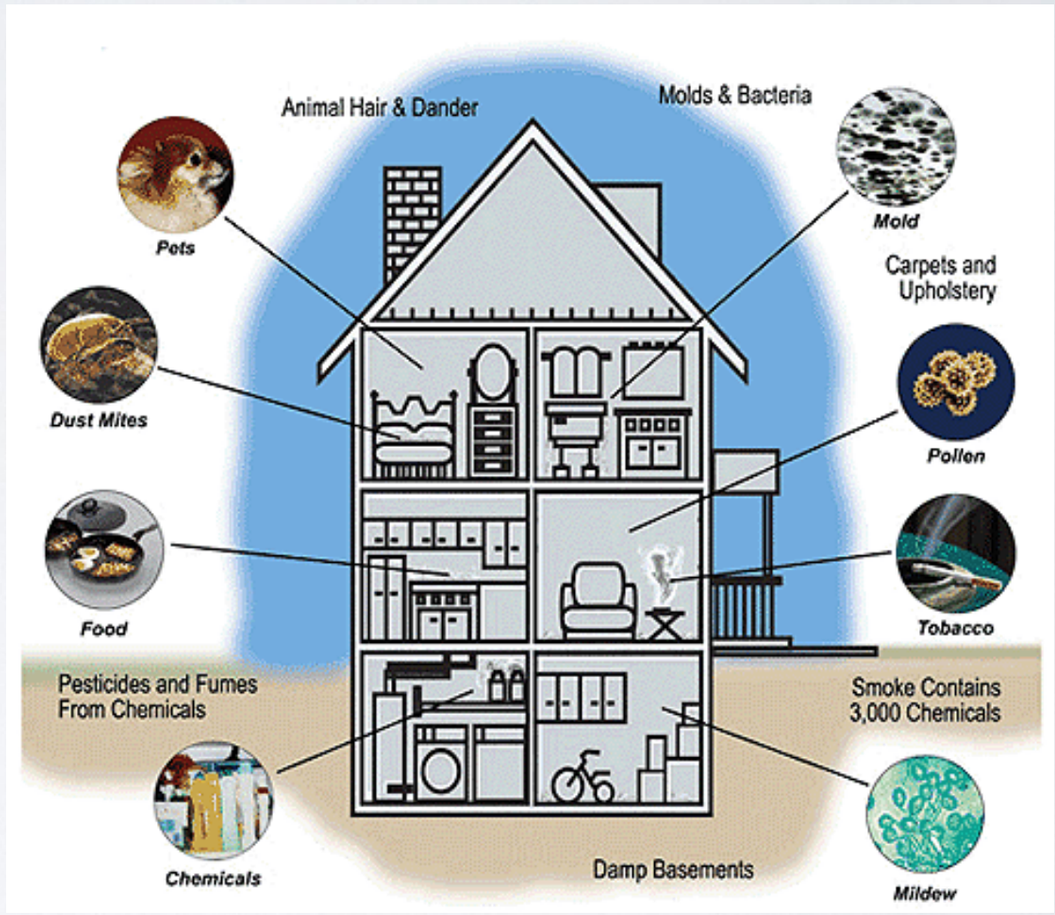
WHAT ARE AIR QUALITY TRENDS?

- **Over the last several decades, air quality in U.S. cities has improved.**
- **Lead, carbon monoxide, sulfur dioxide, nitrogen oxide, and particulate matter has decreased.**
- **Ground level ozone and the burning of fossil fuels has increased.**



WHAT IS INDOOR AIR POLLUTION?

- **The air inside home and other buildings can be as much as 50 times more polluted that outdoor air.**
- **Sources: Tobacco smoke, cleaning products, pesticides, and fireplaces.**



Reducing Air Pollution		
In Your Home	**When Driving**	**To Purchase**
Plant more trees	Use public transportation when possible	EPA-Certified models
Wash clothes in warm water instead of hot	Avoid waiting in line	Green electricity
Grocery shop with a canvas bag to avoid paper/plastic bags	Join a carpool	ENERGY STAR appliances and energy efficient lighting
Test for radon	In the summer, fill gas tank during the evening	Low-VOC or water-based paints, stains, etc.
Lower the thermostat	Get maintenance checks often	Rechargeable batteries

GREAT SMOG OF 1952