Effects of Common Air Pollutants

Ozone (ground-level ozone is the principal component of smog)
- Source - chemical reaction of pollutants; VOCs and NO_X
- Health Effects - breathing problems, reduced lung function, asthma, irritates eyes, stuffy nose, reduced resistance to colds and other infections, may speed up aging of lung tissue
- Environmental Effects - ozone can damage plants and trees; smog can cause reduced visibility
- Property Damage - Damages rubber, fabrics, etc.

VOCs* (volatile organic compounds); smog-formers
- Source - VOCs are released from burning fuel (gasoline, oil, wood coal, natural gas, etc.), solvents, paints, glues, and other products used at work or at home. Cars are an important source of VOCs. VOCs include chemicals such as benzene, toluene, methylene chloride and methyl chloroform
- Health Effects - In addition to ozone (smog) effects, many VOCs can cause serious health problems such as cancer and other effects
- Environmental Effects - In addition to ozone (smog) effects, some VOCs such as formaldehyde and ethylene may harm plants

* All VOCs contain carbon (C), the basic chemical element found in living beings. Carbon-containing chemicals are called organic. Volatile chemicals escape into the air easily. Many VOCs, such as the chemicals listed in the table, are also hazardous air pollutants, which can cause very serious illnesses. EPA does not list VOCs as criteria air pollutants, but they are included in this list of pollutants because efforts to control smog target VOCs for reduction.

Nitrogen Oxides (NO_x); smog-forming chemicals
- Source - burning of gasoline, natural gas, coal, oil, etc. Cars are an important source of NO_X.
- Health Effects - lung damage, illnesses of breathing passages and lungs (respiratory system)
- Environmental Effects - nitrogen dioxide is an ingredient of acid rain (acid aerosols), which can damage trees and lakes. Acid aerosols can reduce visibility.
- Property Damage - acid aerosols can eat away stone used on buildings, statues, monuments, etc.

Carbon Monoxide (CO)
- Source - burning of gasoline, natural gas, coal, oil, etc.
- Health Effects - reduces ability of blood to bring oxygen to body cells and tissues; cells and tissues need oxygen to work. Carbon monoxide may be particularly hazardous to people who have heart or circulatory (blood vessel) problems and people who have damaged lungs or breathing passages

Particulate Matter (PM2.5 and PM-10); (dust, smoke, soot)
- Source - burning of wood, diesel and other fuels; industrial plants; agriculture (plowing, burning of fields); unpaved roads
- Health Effects - nose and throat irritation, lung damage, bronchitis, early death
- Environmental Effects – particle pollution is the main source of haze that reduces visibility
- Property Damage - ashes, soots, smoke and dust can dirty and discolor structures and other property, including clothes and furniture

Sulfur Dioxide
- Source - burning of coal and oil, especially high-sulfur coal from the Eastern United States; industrial processes (paper, metals)
- Health Effects - breathing problems, may cause permanent damage to lungs
- Environmental Effects - SO_2 is an ingredient in acid rain (acid aerosols), which can damage trees and lakes. Acid aerosols can also reduce visibility.
- Property Damage - acid aerosols can eat away stone used in buildings, statues, monuments, etc.

Lead
- Source - paint (houses, cars), smelters (metal refineries); manufacture of lead storage batteries. Leaded gasoline is a historical source that has been phased out.
- Health Effects - brain and other nervous system damage; children are at special risk. Some lead-containing chemicals cause cancer in animals. Lead causes digestive and other health problems.
- Environmental Effects - Lead can harm wildlife.

Source: U.S. Environmental Protection Agency. *The Plain English Guide to the Clean Air Act*. Retrieved June 20, 2005, from http://www.epa.gov/oar/oaqps/peg_caa/pegcaa11.html.