

# Air Pollution

Air pollution results when the atmosphere absorbs gases, solids or liquids. The sources of pollution can be either natural or manmade. When these contaminants enter the atmosphere, they can endanger the health of humans, animals, fish and plants. They can damage materials, create visibility problems and cause unpleasant odors.

The major cause of air pollution is burning gasoline, oil or coal in automobiles, factories, power plants and residences, without proper controls to remove the offending pollutants. Once the pollutants have entered the atmosphere, they can travel great distances and can cause problems such as acid rain in areas far from the original emissions site. Many nations of the world are burning coal and oil at record rates, which has increased atmospheric levels of carbon dioxide. Some scientists feel that this has contributed to a "greenhouse" effect in which the release of infrared radiation from the earth is inhibited, and which in theory could contribute to a possible global warming trend (which has yet to be confirmed). Some evidence seems to suggest that certain airborne pollutants are damaging the ozone layer, although this is still a scientific controversy.

While acid rain has long been recognized as a problem in the industrial countries, there is now evidence of the increasing danger of acid rain in South-East Asian nations. According to the United Nations System-Wide Earthwatch 2005 Report, the emissions of sulfur dioxide have declined significantly in Europe and North America with reduced coal use, and with the application of new emission clean-up techniques, further progress is expected. This has reduced the sulfur contribution to acid rain. However, the same level of improvement has not been achieved in nitrogen oxides and other pollutants from vehicles, where the reduction in emissions due to catalytic converters has been offset by the growing number of motor vehicles. Therefore, urban air quality in many areas has continued to deteriorate.

Some of the worst pollution problems actually appear in unexpected places, such as the Arctic, where high levels of toxins such as PCBs, DDT, mercury, and dioxin have been found. There appears to be a global process of distillation where pollutants evaporate in warmer areas, are transported by winds to the Arctic, and then condense to become concentrated in Arctic food chains.

The 2007 Energy Information Administration report "Greenhouse Gases, Climate Change, and the Economy", reports that world carbon dioxide emissions are expected to increase by 1.8% per year from 2004 levels through 2030. As indicated in Figure 6.2, total world carbon emissions are expected to reach 30 billion metric tons in 2010, 37 billion by 2020, and 43 billion by 2030. A significant portion of this increase is expected to occur in the developing countries where emerging economies, such as China and India, spur their economic development using fossil energies. Emissions from developing world countries are expected to increase greater than the world average by 2.6% per year from 2004 levels through 2030.

In the United States, several recent laws have been enacted which call for monitoring air quality and the ozone layer. The Clean Air Act, enforced by the Environmental Protection Agency, is designed to provide legally required monitoring of air quality levels. Additionally, many member countries of the United Nations have joined forces to monitor and phase out