

## Chapter 10: Community and Environmental Health

A Note on  
Environmental  
Pollution

### 10.1 A Note on Environmental Pollution

**Pollution** is the introduction into the environment of harmful substances. **The air, the water, the land and soil** may all be polluted by the massing of people in cities with their need for water, industrial products and disposal of natural and industrial wastes. Automobile exhaust, the burning of fossil fuel in industry, combustion in solid-waste disposal, and agricultural burning release particulates (e.g., dust, smoke...), carbon monoxide, sulfur oxides, nitrogen oxides, and hydrocarbons into the air.

**The sun-traffic interaction aggravates the problem of air pollution. Photochemical smog and ozone** result from the interaction of ultraviolet rays in sunlight with the exhaust of automobiles. Photochemical smog leads to atmospheric stagnation during temperature inversion, a condition in which temperature increases, rather than decreases, from ground level up. The cooler air from below is trapped and, if there is no lateral air movement, the amount of pollutants in it increases leading to irritation of eyes, throat, and respiratory system. A hazy, brownish layer of pollutants may form in the sky. People with respiratory diseases, e.g., chronic bronchitis and emphysema may die during such acute episodes of air pollution.

**Fluorocarbons** in aerosol-sprays destroy the ozone layer in the upper atmosphere allowing more harmful ultraviolet rays in sunlight to reach the ground. An increase in skin cancer is the result. The ozone associated with photochemical smog, unlike the protective ozone in the upper atmosphere, is toxic. The effects of air pollution are not limited to man. Acid rain results from the mixture of sulfur and nitrogen oxides with moisture in the atmosphere. Acid rain destroys plants and fish and corrodes steel and the concrete of buildings.

**Water can be polluted** from many sources: **Industrial waste, pesticides, fertilizers, and even thermal sources when water is used as a coolant**, e.g., in an electric power plant. The land can be polluted by agricultural waste (e.g., manure, waste from crop harvesting), mineral solid waste (e.g., from mining of minerals and fossil fuels), and solid waste from households and industry, e.g., paper, food, glass, plastic. Some wastes are biodegradable, others can be reused and recycled, still others need to be incinerated. Burning in open dumps contributes to air and water source pollution, breeds rats (a major health hazard), and fills land with litter.

**Radiation is another source of environmental pollution** either by leaking from medical or industrial sources or by inappropriate disposal of radioactive wastes or by tragic accidents (e.g., the Chernobyl disaster). Genetic mutations and other harmful effects may result.