**Chapter 20 Section 1 Notes**

Toxicology – study of the harmful effects of substances on organisms

- Scientists use toxicology to study the harmful effects of pollutants on organisms
- Toxicology is used to determine how harmful a substance is
- Toxicity: How Dangerous Is It?
    - The toxic effect of a chemical on a person's health depends on the number of times a person is exposed, the person's size, and how well the person's body breaks down the chemical
    - Only 10 percent of commercial chemicals have been tested for toxicity
- Dose – amount of a particular chemical a person is exposed to
- Dose-Response Curves – shows the relative effect of various doses of a drug or chemical on an organism

Epidemiology – study of the spread of disease

- Scientists use epidemiology to determine how to keep a disease from spreading
- After an outbreak of an illness, scientists use epidemiology to try to find the origin of the disease, how the disease spreads, and how to prevent the disease from spreading
- Risk Assessment – process used to estimate the harm that might be caused by an action or a substance

Pollution from Natural Sources (ex. dust storms, volcanoes, wild fires) – can become hazardous when they are above normal levels

- Particulates – fine particles suspended in the atmosphere and are associated with air pollution
    - particles in the air that are small enough to breathe into the lungs
        - these particles get trapped in the tiny air sacs in the lungs and cause irritation
    - particulates are found in vehicle exhaust, burning waste, fires, and tobacco smoke
    - particulates cause asthma, bronchitis, and cancer
- Radon is a cancer causing pollutant that comes from granite bedrock

Pollution from Human Activities

- air pollution is a major health problem caused by the burning of fuels in vehicles, home furnaces, power plants, and factories
- Pesticides – used in agriculture and landscaping might cause nerve damage, birth defects, and cancer in humans
    - most of the cases of organophosphate poisoning occur in people who are applying the chemical to crops
- Industrial Chemicals
    - lead is found in old paint and gasoline and can cause brain damage and lead to learning problems
- Much of the pollution in the environment is a result of inadequate waste disposal
    - many communities release raw sewage into a river or the ocean after a heavy rain
- bacteria in food caused by poor sanitation can lead to gastrointestinal infections
- coal dust causes black lung disease
- lead poisoning and lung cancer are two diseases that can be caused directly by pollution
- vehicles burning fuel add carbon monoxide and other particulates to the air