Environmental Science Chapter 11 Section 3 Notes

1. Define water pollution.

The introduction of chemical, physical, or biological agents into water that degrade water quality and adversely affect the organisms that depend on the water.

2. Why is water pollution such a big problem in developing countries?

Frequently the only water available for drinking is polluted with sewage and agricultural runoff, which spread waterborne diseases.

3. How can you distinguish between point source and non-point source pollution? Give an example of each type of pollution. Which type is responsible for the majority of the water pollution in the United States?

*Point-source – is discharged from a **single source** (factory, wastewater treatment plant, leaking oil tanker)
*Nonpoint-source – comes from many different sources that are often difficult to identify (runoff from any of the land in its watershed – from farms or roads that are polluted)
*Nonpoint-source – 96%

4. List the 6 different types of water pollutants and give examples of the agents for each type.

1. pathogens – bacteria, viruses, protozoa, parasitic worms
2. organic matter – animal and plant matter remains, feces, food waste, and debris from food-processing plants
3. organic chemicals – pesticides, fertilizers, plastics, detergents, gasoline and oil, other materials made from petroleum
4. inorganic chemicals – acids, bases, salts, and industrial chemicals
5. heavy metals – lead, mercury, cadmium, and arsenic
6. physical agents – heat and suspended solids

5. Define wastewater and briefly describe how it is treated.

Water that contains waste from homes or industry – it is filtered at a wastewater treatment plant – filtered, settles, aeration, settles, chlorination

6. Define artificial eutrophication. Name some of the main causes of this and explain why it is bad for a water source.

A process that increases the amount of nutrients in a body of water through human activities, such as waste disposal and land drainage

*fertilizer from farms, lawns, and gardens, phosphates in laundry and dishwashing detergents
*cause the excessive growth of algae – as the algae die and decompose most of the dissolved oxygen is used and leaves no oxygen for fish and other organisms

7. Define thermal pollution. What can cause thermal pollution? What is reduced as a result of thermal pollution?

A temperature increase in a body of water that is caused by human activity and that has a harmful effect on water quality and on the ability of that body of water to support life
* power plants and other industries discharging warm water into a lake or river
* amount of oxygen

8. List some sources of groundwater pollution and explain why it is so difficult to clean up.

*pesticides, herbicides, chemical fertilizers, and petroleum products, leaking underground storage tanks
* groundwater recharges very slowly, the process for some aquifers to recycle water and purge contaminants can take hundreds or thousands of years also because the water is dispersed throughout large areas of rock and sand

9. What are the main causes of ocean pollution? Does most of the oil pollution come from oil spills or from other sources? If other sources, name them.

Activities on land
*other sources - cities and towns

10. Define biomagnification.

*the buildup of pollutants at higher levels of the food chain

11. What was the 1st major law regarding water quality? What did it say? When was it passed? What is the most recent law on record regarding water quality and what event may have directly led to this law?

*Clean Water Act (1972) – set a national goal of making all natural surface water fit for fishing and swimming by 1983 and banned pollutant discharge into surface water after 1985. The act also required that metals be removed from wastewater.
* Oil Pollution Act (1990) – oil tankers in U. S. waters must be double-hulled by 2015
- 1989 Exxon Valdez oil spill – Prince William Sound