

OLD DOMINION UNIVERSITY
COLLEGE OF HEALTH SCIENCES
COMMUNITY AND ENVIRONMENTAL HEALTH PROFESSIONS

ENVH 301
PRINCIPLES OF ENVIRONMENTAL HEALTH
LESSON 8

Lesson 8: Water Quality

Textbook: Essentials of Environmental Health, 3rd Edition, Robert H. Friis, 2019, Jones and Bartlett Learning Publisher, ISBN: 978-1284123975

Student Activities:

Read Chapter 9 in the textbook - Water Quality

Review Learning Objectives in Text page 211

Review ENVH 301 Assignment 8 Handout - Chapter 9 Slides

Review the Assignment 8 Handout - Flint Water Crisis, or access it at
https://www.cdc.gov/nceh/hsb/disaster/casper/pdf-html/flint_water_crisis_pdf.html



Learning Objectives (as indicated in the text)

By the end of this lesson the student will be able to:

- Describe sources of potable water.
- Define what is meant by the hydrological cycle.
- List hazardous substances that may be found in drinking water.
- Describe how water is made safe for human consumption.
- Discuss hazards to the aquatic environment (oceans, lakes, rivers) associated with environmental pollution.

Complete Assignment 8 as homework.

**ENVH 301
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Student Name: _Niasia Dickerson

Fill in the short answer or bold/highlight the correct multiple choice answer.

1. Which of the following groups are particularly at risk for waterborne pathogens?
 - a. Young children
 - b. Elderly persons
 - c. Persons taking steroids
 - d. **All of these are correct.**

2. In dry climates of western United States, the major use of water is often for which of the following?
 - a. Showers
 - b. Toilets
 - c. **Landscapes**
 - d. Baths

3. Water supplied to the public in the U.S. undergoes treatment in order to meet quality standards set by the EPA for safe levels of chemical contaminants and waterborne microorganisms. Explain the four stages of water treatment.
 1. **Coagulation-removes suspended material.**
 2. **Sedimentation- removes solids that float and settle in the water**
 3. **Filtration-removes smaller impurities**
 4. **Disinfection-destroys pathogens.**

4. Finished water is defined as:
 - a. the natural cycle by which water evaporates from water bodies.
 - b. an annual supply of renewable freshwater less than 1,000 cubic meters per person.
 - c. a layer or section of earth that contains freshwater.

d. **the water that is delivered to the distribution system after treatment.**

5. An aquifer is defined as:

- a. the natural cycle by which water evaporates from water bodies.
- b. an annual supply of renewable freshwater less than 1,000 cubic meters per person.
- c. an annual supply of renewable freshwater between 1,000 and 1,700 cubic meters per person.
- d. **a layer or section of earth that contains freshwater.**

6. Water scarcity is defined as:

- a. the natural cycle by which water evaporates from water bodies.
- b. **an annual supply of renewable freshwater less than 1,000 cubic meters per person.**
- c. an annual supply of renewable freshwater between 1,000 and 1,700 cubic meters per person.
- d. a layer or section of earth that contains freshwater.

7. Fluoridation of water has become rather controversial, since some people believe it is not necessary and others depend on that fluoride for dental health. What was the historical reason that caused us to fluoridate drinking water? What happens when there is too much fluoride?

The main reason that caused us to fluoridate drinking water because dentists during the early 1900sa notice an increase in tooth decay and the addition to the water was supposed to limit that. Patients began getting stains on their teeth due to the high levels of fluoride in the water.

8. The hydrological cycle is defined as:

- a. **the natural cycle by which water evaporates from water bodies.**
- b. an annual supply of renewable freshwater less than 1,000 cubic meters per person.

- c. an annual supply of renewable freshwater between 1,000 and 1,700 cubic meters per person.
- d. the water that is delivered to the distribution system after treatment.

9. In the United States, disinfection of drinking water with chlorine or other methods is done to remove:

- a. **pathogenic microorganisms.**
- b. particles suspended in water.
- c. sand and gravel.
- d. bad smells.

10. One of our most critical, recent water contamination problems in the U.S. has been in Flint, Michigan. On April 25, 2014, the City of Flint, Michigan changed their municipal water supply source from the Detroit-supplied Lake Huron water to the Flint River. According to the Centers for Disease Control (CDC), in the article at https://www.cdc.gov/nceh/hsb/disaster/casper/pdf-html/flint_water_crisis_pdf.html or the PDF Handout in Blackboard, 51% of households felt that the physical health of at least one member had worsened due to Flint water crisis. What was the hazard of concern in the water, and where do they think that hazard originated (the source)?

The hazard was the levels of lead in the water. The hazard originated from corroded pipes that leaked lead and other contaminants into the drinking water