

COLUMBUS STATE COMMUNITY COLLEGE

ESSH 1101 - Introduction to Environmental Science, Safety & Health

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Homework 1 – Introduction to Environmental Science, Safety & Health

Environmental Science, 16th Ed. by Tyler and Spoolman - Chapter 1, Sec. 17.3 & 17.4

1. Distinguish between the following three terms: *environmental science*, *ecology*, and *environmentalism*.

Environmental science is the study of connections in the natural environment. Particularly the connections between the following three interdisciplinary studies:

- How the earth (nature) works and managed to survive
- How humans interact with the environment (nature), and;
- How humans can live a more sustainable existence within the natural environment (nature)

Ecology is a key component within environmental science. This component is a branch of biology that focuses on how living organisms interact with living and nonliving parts of the environment. A major focus of ecology is the study of ecosystems, which is a biological community of organisms within a defined area of land or volume of water.

Environmentalism is a social construct or movement designed to dedicate resources for the protection of the earth's life support systems necessary for humans and other species.

2. In your own words, define the phrase *environmental sustainability*. What are the three *scientific principles* of sustainability?

Environmental sustainability, to me, is the ability for nature to support life and survive while adapting to the ever changing landscape of the agricultural and economic policies.

The three scientific principles of sustainability are:

- Solar energy
- Biodiversity
- Chemical cycling

3. Define *natural capital*. Give two examples of how humans are degrading natural capital.

Natural capital is a key component of sustainability. This component can be defined as the natural resources and ecosystem services that keep humans and other species alive and that support human economies.

Two example of humans degrading natural capital would be:

- Using renewable resources faster than they can be replenished
- Overloading the earth's normally renewable air, water, and soil with pollution and wastes.

4. Identify whether the following examples are *inexhaustible*, *renewable* or *nonrenewable* natural resources: (choose one of the three)

- Natural gas: nonrenewable
- Wind: inexhaustible
- Water in a stream: renewable

5. What is *full-cost pricing* with regard to the environment, and why is it important?

Full-cost pricing is the proposed pricing of goods and services that takes into account the environmental impacts and health costs required to produce the product or service. The perceived importance or benefit from this proposed pricing model would be to provide consumers with the information necessary to make better purchasing decisions. Specifically, they affect the product of service had on the environment.

6. What pressures does the large human population put on natural resources and on maintaining a healthy environment?

Humans put pressure on natural resources because humans decide:

- What forests are harvested and whether or not they are replanted (air quality)
- How much fish they haul from the oceans or raise on farms (water quality)
- What crops to plant and whether cover crop or crop rotation occur (soil quality)

7. What is the current size of the human population? About how many people are there projected to be in the year 2050?

The **current human population** is approximately 7.4 billion. **By 2050**, the population is expected to climb to 9.9 billion people.

8. Explain why environmental conservation is economically important to humans. (You may choose to give examples.)

Environmental conservation is not only **economically important to humans**, it is vital to the survival of every single human on this planet. It is through this conservationist view and land practices that humans are able to feed all 7.4 billion people on the planet. The GDP of most countries is determined by how much food (crops/plants and animals) they are able to raise, grow, and cultivate. This in turn, to an extent, determines their buying power on the world stage and the overall health of their respective economy with some notable exceptions like fossil fuel exports. The ability of any given country to productively and responsibly use the lands within their borders for environmental conservation by sustaining the world's food supply ultimately determines a wide variety of economic indicators globally.

9. Describe how the book *Silent Spring* had an impact on educating the public about environmental concerns.

Rachael Carson wrote a book titled ***Silent Spring***, which was published in 1962. In it, she detailed the harmful effects of pesticides like DDT on the environment. She **chronicled how the pesticides were harming air, soil, and water** thereby endangering the populations of bald eagle, grizzly bear, whooping crane, and peregrine falcon. Other natural disasters occurred throughout the 1960's and, when coupled with the awareness campaign (educating the public) her book started, led to the first Earth Day and the formation of the United States Environmental Protection Agency.

10. Explain the difference between a *conservationist view* and a *preservationist view*.

The **conservationist view** believes that lands should be managed wisely and scientifically in order to provide resources for people.

The **preservationist view** wants wilderness areas to be left untouched so they are preserved indefinitely.

11. What factors lead to the passage of *environmental laws and regulations* in the U.S.?

Several factors led to the passage of environmental laws and regulations in the U.S.

These factors include:

- The work of preservationist John Muir and conservationist President Teddy Roosevelt.
- Then several books (*A Sand County Almanac* and *Silent Spring*) were published that pushed environmental concerns into the social consciousness.
- The Cuyahoga River caught fire in Cleveland, Ohio
- The massive oil spill off the coast of California
- Earth day was established
- Grassroots (bottom-up) political pressure
- The establishment of the U.S. EPA

Once the EPA was established, a mechanism was now in place for the writing and enforcement of environmental laws and regulations

12. Explain the differences between *human-centered environmental worldviews* and *life/earth-centered environmental worldviews*.

A **human centered environmental worldview** predicates the decision making process on the needs and wants of people assuming that humans are the most important, intelligent, and dominate species.

A **life/earth centered environmental worldview** takes all forms of life into account as valuable members of a biosphere regardless of whether or not they are useful or potentially useful to humans.

13. Identify two current human practices that are considered environmentally *unsustainable*.

Two current human practices that are environmentally unsustainable are:

- Removal of, or clear cutting, mature forests, particularly rain forests
- Exhaustion of nonrenewable resources like oil, gas, ore, and minerals

14. Describe how an understanding of environmental science could be important to your chosen area of study. (If you have not selected a college major, describe how an understanding of environmental issues may be important to you personally.)

An **understanding of environmental science is an important factor** toward furthering my career in the IT field. While I could, in theory, take my 20+ years as a technical/functional business analyst and work in any industry, the environmental industry prefers that anyone working in this field have at least a cursory understanding of many facets within the industry. On a personal note, having more than just a general understanding of the environmental industry will allow me to delve into newer more interesting topics in my fictional writing.