

Environmental Science 3205

Chapter 1

An Introduction to Environmental Science

Biosphere:

A complex system of _____ that interact with each other and extend into the geosphere, atmosphere, and hydrosphere.

Need to know ...

_____ : all of the rocks, minerals and ground that are found on and in Earth.

_____ : the layer of gases that surround the Earth.

_____ : all the water on Earth.

_____ : all the living organisms on Earth.

Earth as a spaceship.

Earth is like a spaceship with limited amounts of _____

_____.

Earth is unlike a spaceship (e.g. Spaceship is much smaller, has fewer occupants).

How Much of Planet Earth is Inhabitable?

- Urban areas cover _____
_____.
- Farms and agricultural areas _____
_____.
- _____

Impacts of Human Civilization

that can have a great impact on the other systems

"Impact" does not always mean "_____".

Even though humans are only one part of the system of living things, they often have the _____

This impact is often because of our use of _____.

Aboriginal People, European Settlers and Today

Aboriginal or first nations cultures _____ of the "environmental system". They had the first concepts of *sustainability*, which included respect for the environment, understanding of interconnectedness, and "_____".

Early European settlers' in North America at that time, considered their environment: "_____ " and as such settlers wanted to "_____ " and shape their environment.

Early settlers saw the environment as a _____. This differed from the aboriginal view and led to substantial _____ of resources.

Paradigm Shift

_____: a way of looking at or thinking about something.

_____ : an important change that happens when the usual way of thinking about or doing something is replaced by a new and different way.

Environmental Science and Decision Making

Environmental science draws from a variety of areas including:

Scientific knowledge is _____
_____ of environmental decision-making.

_____, etc, all play a part.

In this context " _____" refers to the policymaking, legislation and decision-making that occurs at all levels of government agencies.

Find two (2) examples of decision making in page 8 of your textbook:

What groups may have been involved in making these decisions?

Common Misconceptions about Science:

(i) science can _____

(ii) scientific knowledge is _____

(iii) science is done for _____

(iv) there is one _____

(v) science is not _____

Some Applications of Environmental Science:

(i) _____

a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.

(ii) _____

(iii) _____

(iv) _____

Our Attitudes

_____ attitudes have contributed to many of today's environmental issues

Anthropocentric: _____

_____.

Human-centered attitudes have influenced environmental values, attitudes and decision making: For example, ideas such as " _____ " or " _____ "
" _____ "

There are different belief systems and that our view is not the _____
_____.

Belief systems impact how people _____ with their environment.

Human Population

Identify the relationship between
(1) human population growth,
(2) demand for resources, and
(3) increased consumerism.

Our resource demands go _____ our life-sustaining need for food, water, and space.

Renewable and Non-Renewable Resources

_____ : are replenished naturally and over relatively short periods of time. (eg. fish, crops, cattle)

_____ : are available in limited supplies. This is usually due to the long time it takes for them to be replenished. (eg. coal, oil, natural gas)

Human Demand:

- _____ such as cars, motorcycles, snowmobiles, ATVs, etc.
- _____ such as videogames, computers, movies, books, etc., which utilize resources
- the use of _____ resources such as fossil fuels, electrical, and nuclear power

What are some of the resources we use in our province?

What types of things demand energy in our lives?

We must understand that our resource demands are driven by
_____ both
on a collective level and an individual level.

North American and European lifestyles have been developing (and continue to develop) _____.

Lifestyle trends in Asia (the most populated areas of the world) are shifting towards a more western lifestyle. This shift will have an _____.

What are ways in which humans could reduce the impact of their resource demands and consumption of energy?

Sustainability

This is a human practice to _____.

Ecosystems _____ For example, populations stop growing when they reach their _____.

When humans interact with the ecosystem such as by hunting animals or cutting down trees, _____

Sustainable practices are human attempts to _____ and to help ensure the ecosystem will continue to exist and thus continue to provide the things humans want.

Ecological Concepts

What is ecology? (p.9)

_____. These interactions involve energy and matter. Living things require a constant flow of energy and matter to ensure their survival.

What is an ecosystem? (glossary)

_____; e.g. a prairie ecosystem including coyotes, the rabbits on which the coyotes feed on, and the grasses on which the rabbits feed on.

What is meant by abiotic and biotic factors? (glossary)

- _____; e.g. sunlight, temperature, minerals, air, water.
- _____; e.g. plants, animals, bacteria.

How balance is maintained in ecosystems:

(i) energy transfer (food chains/webs, pyramids)

(ii) nutrient cycling

_____ when
their use comes to an end. For example, nitrogen, carbon, and oxygen from once living things are returned back into a form that can be used by other living things.

Identify example organisms within each of the three ecosystems:

- (i) freshwater: _____
(ii) terrestrial: _____
(iii) marine areas: _____

What is a food chain? (glossary)

Food Chain: _____
_____.

Draw the example of a food chain from your textbook on p. 11.

What is the difference between a food chain and a food web? (glossary)

Food Web: _____

_____.

(a) producers

_____ are called producers. This is because _____. They do this by using light energy from the Sun, carbon dioxide from the air and water from the soil to produce food - in the form of sugar. The process is called _____.

(b) consumers

_____ are called consumers. This is because they cannot make their own food, so they need to _____
_____.

(c) decomposers

_____ are decomposers.
They eat _____ - dead plants and animals and in the process they break them down and decompose them. When that happens, they release _____ back into the soil which will then be used by plants.

(d) herbivores

Herbivores are animals that _____.

(e) carnivores

A carnivore is an animal or plant that eats _____
_____.

(f) omnivores

An omnivore is a kind of animal that eats _____
_____.

(g) scavengers

Scavenger definition, an animal or other organism that feeds
on _____.