

1. Why are some substances biodegradable and some non-biodegradable ?

Substances that are broken down by biological processes are said to be biodegradable. In our environment, many of the substances are broken easily by decomposers (bacteria and fungi) as they possess specific enzymes for such activity. However, there are other substances also which are not broken down in this manner and are known as non-biodegradable substances. Since these substances are not degraded by bacteria and fungi, so they persist for a long time. These non-biodegradable substances will be acted upon by physical processes like heat and pressure.

2. Give any two ways in which biodegradable substances would affect the environment.

They may produce foul smell during decomposition process.

They may produce some harmful gases such as ammonia, methane, carbon dioxide, etc., which can further-cause global warming.

3. Give any two ways in which non-biodegradable substances would affect the environment.

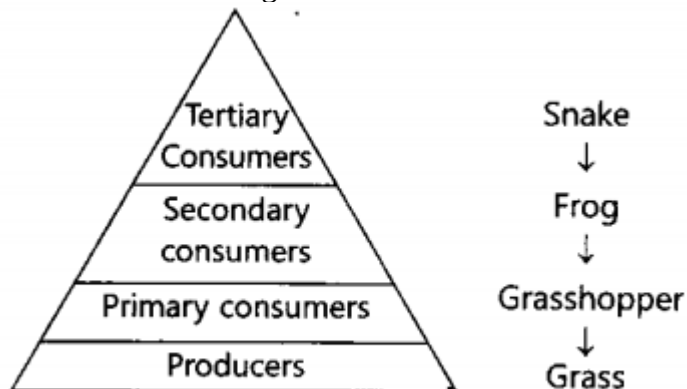
These inert substances simply persist in the environment. This means that these substances require land area for dumping.

Excess of fertilizers, pesticides and other chemicals changes soil chemistry and also affects aquatic life.

Most of these chemicals and heavy metal are easily absorbed by the organisms. This causes biological magnification.

4. What are trophic levels? Give an example of a food chain and state the different trophic levels in it.

Each step or level of the food chain forms a trophic level. Consider the following food chain:



5. What is the role of decomposers in the ecosystem?

Role of decomposers in the ecosystem :

They help in breaking down the complex organic substances into simple inorganic substances that go into the soil and are used up by the plants.

They clean the nutrient pool and in this way, act as cleansing agents of nature.

They help in maintaining the fertility of by adding humus content to it.

6. What is ozone and how does it affect an ecosystem?

Ozone (O₃) is a molecule formed by three atoms of oxygen. At the higher layers of the atmosphere, it shields the surface of the earth from ultraviolet (UV) radiation from the Sun. It may affect any ecosystem in the following ways :

At the surface of the earth, it is a deadly poison for all lower forms of life.

If this layer gets depleted, then it may cause cancer in human beings including other plants and animals.

7. How can you help in reducing the problem of waste disposal? Give any two methods?

- By changing our lifestyle and changing our attitude
- Reducing packaging.
- Recycling of waste.
- Preparing compost of biodegradable waste.

8. Which of the following groups contain only biodegradable items?

- (a) Grass, flowers and leather
 - (b) Grass, wood and plastic
 - (c) Fruit-peels, cake and lime-juice
 - (d) Cake, wood and grass
- (c) Fruit-peels, cake and lime-juice and (d) Cake, wood and grass

9. Which of the following constitute a food-chain?

- (a) Grass, wheat and mango
 - (b) Grass, goat and human
 - (c) Goat, cow and elephant
 - (d) Grass, fish and goat
- (b) Grass, goat and human

10. Which of the following are environment-friendly practices?

- (a) Carrying cloth-bags to put purchases in while shopping
 - (b) Switching off unnecessary lights and fans
 - (c) Walking to school instead of getting your mother to drop you on her scooter
 - (d) All of the above
- (d) All of the above

11. What will happen if we kill all the organisms in one trophic level?

If we kill all the organisms in one trophic level, then transfer of energy as well as matter to next higher level will stop. It will lead to over- population at a lower level while killing off members at the higher trophic levels.

This would seriously disturb the food chain and can even cause the collapse of an ecosystem.

12. Will the impact of removing all the organisms in a trophic level be different for different trophic levels? Can the organisms of any trophic level be removed without causing any damage to the ecosystem?

Yes, the impact of removing all the organisms in a trophic level will be different for different trophic levels. It will not be possible to remove any organism in any trophic level without causing damage to the ecosystem.

13. What is biological magnification? Will the levels of this magnification be different at different levels of the ecosystem?

The accumulation of harmful chemicals in the body of living organisms at different trophic levels in a food chain is called biological magnification. Yes, the concentration of these harmful chemicals will be different at different trophic levels. It will be maximum at the last trophic levels which are at the top of the food pyramid i.e. the carnivores (quaternary consumers).

14. What are the problems caused by the non-biodegradable wastes that we generate?

(i) Non-biodegradable wastes persist in the environment for a long time and cause greater harm to the various members of the ecosystem by causing biological magnification.

(ii) Non-biodegradable wastes such as fertilizers, pesticides, weedicides, etc., change the soil chemistry which in turn affects the fertility of soil and subsequently reduces the crop yield.

15. If all the waste we generate is biodegradable, will this have no impact on the environment?

Biodegradable waste will be recycled easily by decomposers such as bacteria and fungi. However, there is no guarantee that impact on environment will be zero. Decomposition also leads to creation of greenhouse gases (GHGs) like methane and carbon dioxide that lead to global warming.

16. Why is damage to the ozone layer a cause for concern? What steps are being taken to limit this damage?

The ozone shields the surface of the earth from ultraviolet (UV) radiation from the sun. These radiations are highly damaging as they can cause cancer in both plants and animals, damage eyes and immune system. They can also lead to variations in global rainfall, ecological disturbances and dwindling of global food supplies. Due to these reasons, damage to the ozone layer is a major cause for concern.

Steps which are taken to limit this damage :

To decrease the use of synthetic chemicals like chlorofluorocarbons (CFCs) which are used as refrigerants and in fire extinguishers.

In 1987, the United Nations Environment Programme (UNEP) succeeded in reaching an agreement to freeze CFC production at 1986