

Environmental Impact of Waste Management

Waste Management · Answer Key · 20 Questions

1. Which specific substance found in plastic marine debris is known to act as a chemical sponge, adsorbing persistent organic pollutants like PCBs from the surrounding seawater?

- A) Polyethylene terephthalate
- B) Hydrophobic organic contaminants**
- C) Polylactic acid
- D) Phthalate esters

2. In the context of landfill ecology, which gas byproduct poses the greatest risk of thermal atmospheric trapping and is generated via the anaerobic decomposition of organic matter?

- A) Nitrogen dioxide
- B) Methane**
- C) Sulfur hexafluoride
- D) Carbon monoxide

3. Which marine species is critically threatened by the ingestion of balloon fragments, which cause fatal blockages in the gastrointestinal tract due to their resemblance to gelatinous prey?

- A) Loggerhead sea turtle**
- B) Blue whale
- C) Great white shark
- D) Emperor penguin

4. What is the primary mechanism by which leachate from unlined landfills negatively impacts local groundwater biodiversity?

- A) Increased salinity levels
- B) Heavy metal contamination**
- C) Depletion of atmospheric nitrogen
- D) Excessive thermal discharge

5. Which toxic chemical, historically added to plastics as a flame retardant, has been found to bioaccumulate in the fatty tissues of Arctic apex predators?

- A) Polybrominated diphenyl ethers (PBDEs)**
- B) Bisphenol A
- C) Polyvinyl chloride
- D) Polyethylene glycol

6. What term describes the process where plastic debris enters the marine food web at the microscopic level through ingestion by zooplankton?

- A) Biomagnification
- B) Trophic transfer**
- C) Bio-uptake
- D) Sedimentation

7. Microplastics are defined by researchers as plastic particles having a diameter of less than:

- A) 50 micrometers
- B) 5 millimeters**
- C) 1 centimeter
- D) 1 nanometer

8. Which bird species is often used as an indicator for marine plastic pollution due to its habit of feeding at the ocean surface where plastics accumulate?

- A) Albatross**
- B) Penguin
- C) Ostrich
- D) Eagle

9. What negative impact does excessive nitrogenous waste in agricultural runoff have on aquatic environments?

- A) Eutrophication leading to hypoxic dead zones**
- B) Increased biodiversity of freshwater fish
- C) Rapid growth of healthy coral reefs
- D) Depletion of heavy metals in sediment

10. Which heavy metal, frequently released during the improper disposal of electronic waste (e-waste), is a known potent neurotoxin that accumulates in aquatic sediment?

- A) Mercury**
- B) Calcium
- C) Iron
- D) Magnesium

11. The Great Pacific Garbage Patch is primarily composed of what type of plastic material that has undergone photodegradation?

- A) Low-density polyethylene**
- B) Polyurethane foam
- C) Polyester fibers
- D) Polytetrafluoroethylene

12. How does the accumulation of non-biodegradable waste on sandy beaches affect the nesting success of sea turtles?

- A) It increases the incubation temperature of the sand**
- B) It alters the chemical composition of eggshells
- C) It prevents hatchlings from reaching the water
- D) It attracts invasive predators to the nest sites

13. What is the primary biological consequence of 'entanglement' in discarded fishing gear (ghost nets) for marine mammals like seals?

- A) Infection of the respiratory tract
- B) Physical trauma and restriction of movement leading to drowning**
- C) Increased vulnerability to bacterial skin diseases
- D) Interference with echolocation abilities

14. Which process involves the transformation of waste organic material into stable humus through the action of soil macro-invertebrates?

- A) Vermicomposting**
- B) Incineration
- C) Pyrolysis
- D) Gasification

15. Which chemical additive commonly found in plastic water bottles is a known endocrine disruptor that leaches into the environment upon degradation?

- A) Bisphenol A (BPA)**
- B) Sodium bicarbonate
- C) Titanium dioxide
- D) Calcium carbonate

16. In landfill waste streams, which category of material is the largest contributor to the production of acidic leachate?

- A) Inorganic construction debris
- B) Food and organic yard waste**
- C) Rubber tires
- D) Glass bottles

17. What phenomenon occurs when plastic debris inhibits the photosynthetic capacity of coral reefs by blocking light and carrying pathogens?

- A) Coralline bleaching**
- B) Increased skeletal calcification
- C) Rapid polyp regeneration
- D) Enhanced symbiotic algae growth

18. Which waste management process is technically considered an 'exothermic' reaction that releases energy while converting carbonaceous materials into biochar and syngas?

A) Pyrolysis

B) Composting

C) Aerobic digestion

D) Landfilling

19. Persistent organic pollutants (POPs) accumulate in the environment and exhibit which characteristic that makes them dangerous to wildlife?

A) High water solubility

B) Rapid metabolic degradation

C) Lipophilic (fat-loving) nature

D) Low toxicity at high concentrations

20. The term 'leachate' refers to:

A) The liquid that drains from a landfill after rainfall or decomposition

B) The gaseous emissions from waste incineration

C) The solid residue remaining after plastic recycling

D) The synthetic fibers shed by clothing during washing