

## **Episode 25 - Chemistry and the Environment**

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1. What does it mean to say that the Earth is a “closed system”?
2. List three examples of how nature recycles.
3. What is the ultimate power source for the chemical reactions in life?
4. What gas is produced by burning coal and wood? What is a possible side effect of increasing the levels of this gas in the atmosphere?
5. What insecticide which saved many lives from insect borne diseases was banned because it killed birds and fish?
6. What class of compounds used as coolants and insulators was banned because of environmental hazards?
7. What is the name of the 1980 law to clean up waste sites?
8. When chemical wastes are burned what materials are released into the environment?
9. What do scrubbers do?
10. What is the name for the process that uses bacteria to break down chemicals?
11. What process can help reduce possible pollution while saving money at the same time?

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## Answer Key

1. What does it mean to say that the Earth is a “closed system”?

*Nothing can leave the ecosystem once it is created. There is no “away”. We can't just throw something “away” when we no longer want it.*

2. List three examples of how nature recycles.

*Production and recycling of oxygen, nitrogen, and carbon dioxide gases. The dissolving and reforming of limestone.*

3. What is the ultimate power source for the chemical reactions in life? *Sun*

4. What gas is produced by burning coal and wood? What is a possible side effect of increasing the levels of this gas in the atmosphere?

*Carbon dioxide - greenhouse effect*

5. What insecticide which saved many lives from insect borne diseases was banned because it killed birds and fish?

*DDT*

6. What class of compounds used as coolants and insulators was banned because of environmental hazards?

*PCB's*

7. What is the name of the 1980 law to clean up waste sites?

*Super Fund*

8. When chemical wastes are burned what materials are released into the environment?

*Carbon dioxide and water vapor if complete combustion takes place.*

9. What do scrubbers do?

*They remove undesirable materials from smokestacks (fly ash, sulfur compounds, etc.).*

10. What is the name for the process that uses bacteria to break down chemicals?

*Bioremediation*

11. What process can help reduce possible pollution while saving money at the same time?

*Waste reduction at the point of manufacturing*