9.3 Toxic Substances in the Environment

Key Concepts
- All chemicals can be hazardous in large enough quantities.
- Chemical hazards can cause cancer, birth defects, and improper functioning of human body systems.
- Our homes and buildings may contain chemical hazards including asbestos, radon, volatile organic compounds, carbon monoxide, and lead.
- There are chemical hazards in the air, on land, and in the water.
- Toxic chemicals accumulate in organisms as they feed on one another.

Vocabulary Preview

Define each vocabulary term in your own words. Then, write yourself a quick note on how you will remember each. One term has been done for you.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>How I Remember</th>
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<tbody>
<tr>
<td>Pollution</td>
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<tr>
<td>Carcinogen</td>
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<td>Teratogen</td>
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<tr>
<td>Neurotoxin</td>
<td>A chemical that harms the nervous system</td>
<td><em>Neuro</em> refers to the <em>nervous</em> system. <em>Toxin</em> is something harmful.</td>
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<tr>
<td>Asbestos</td>
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<td>Radon</td>
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<td>Bioaccumulation</td>
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<tr>
<td>Biomagnification</td>
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Chemical Hazards

1. Define “chemical hazard.”

___________________________________________________________________________

2. What is pollution?

___________________________________________________________________________

3. Are chemical hazards and pollutants the same thing? Why or why not? Explain.

___________________________________________________________________________

Types of Chemical Hazards

4. Complete the following paragraph with terms from the word bank.

Chemical hazards affect human health in different ways. Some heavy metals act as ___________ that can cause slurred speech or loss of muscle control. Chemicals that cause cancer are known as ___________. Some chemicals that do not harm adults are still hazards if they affect the development of human embryos. This type of chemical hazard is known as a ___________.

5. Why are carcinogens difficult for toxicologists to identify?

___________________________________________________________________________

6. Explain what a mutagen is and describe possible effects.

___________________________________________________________________________

7. Describe some common allergens and explain how they harm people.

___________________________________________________________________________
8. What is an endocrine disruptor?

Indoor Chemical Hazards

For Questions 9–13, match each term with the statement that best describes it.

9. asbestos
10. carbon monoxide
11. lead
12. radon
13. VOCs

14. Explain why you should not tear down asbestos and simply throw it away if you find it in your home.

15. List three types of tests you could do at your house to protect against chemical hazards.

Outdoor Chemical Hazards

16. Explain why citizens of one town might need to be concerned with the chemical hazards in the air of a town many miles away.

17. Describe how chemical hazards can get into soil and some of the ways that they can cause harm to humans.

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18. The fish in a stream running by a small town are dying in large numbers. Why might chemical hazards be suspected?

________________________________________________________________________________________

Biomagnification

19. In each arrow, write one way that a chemical such as DDT can get into waterways. In each block, add dots to represent levels of chemical concentrations and how they change due to biomagnification.

20. How did high concentrations of DDT affect bird populations?

________________________________________________________________________________________

________________________________________________________________________________________

21. Explain why a persistent organic pollutant (POP) is a problem that is often handled by international agreements or treaties.

________________________________________________________________________________________

________________________________________________________________________________________
22. Complete the T-chart by writing in details and examples of indoor chemical hazards and outdoor chemical hazards.

<table>
<thead>
<tr>
<th>Indoor Chemical Hazards</th>
<th>Outdoor Chemical Hazards</th>
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23. Define the different types of chemical hazards.

24. What is biomagnification?