

Name: _____ Date: _____ Block: _____

Sheet 2.3

Bioaccumulation

Read pages 92 - 102 of BC Science 10 and complete the following.

1. What are amphibians?
2. How do the eggs of amphibians make them sensitive to toxic chemicals?
3. How does the skin of amphibians make them sensitive to toxic chemicals?
4. What is happening to populations of amphibians worldwide?
5. What are seven reasons that amphibian populations are declining or becoming increasingly malformed?
6. Two types of pesticides are _____ that kill insects and _____ that kill weeds.
7. What is bioaccumulation?

8. Once chemicals enter an organism's body, what type of tissue can the chemicals be stored in?
9. What is a keystone species?
10. What is biomagnification?
11. Suppose producers are exposed to small concentrations of toxins. What happens to these toxins after these toxin are eaten and reach higher trophic levels?
12. What are PCB's (polychlorinated biphenols)?
13. What do PCB's cause in humans?
14. Even though the use of PCB use has been banned since 1977, what type of organism still suffers from contamination?
15. What does figure 2.55 show?
16. What is half-life?

17. What are two effects of PCB's?
18. What are the most affected organisms in terms of PCB's? How long do scientists predict they will be affected?
19. Why do PCB levels in Orcas increase when salmon stocks are low?
20. What are POP's? How do most enter the ecosystem?
21. What is a well known POP? When was it introduced? How much longer will it last?
22. What does ppm mean?
23. At what level (in ppm) is DDT considered toxic?
24. Look at table 2.2. If the producers (plankton) have a DDT level of 0.04 ppm, what level will it be at by the time it reaches the tertiary consumer (Cormorant)?
25. What are heavy metals? What are three heavy metals humans need? What are the most polluting heavy metals?
26. What is lead's naturally occurring level? Where is it naturally found?

27. What were three uses of lead in the past?
28. What are some uses of lead today?
29. What makes up 40% of lead waste these days?
30. What are a couple of ways lead can get into your body?
31. What are some negative effects of lead on humans?
32. Where is cadmium naturally found? How does it naturally get into the environment?
33. What are some unnatural ways that Cadmium enters ecosystems?
34. What effects does Cadmium have on plants and animals?
35. For humans, what is the most serious source of cadmium?
36. How do non-smokers typically get Cadmium?

37. What is Cadmium's half life in bone tissue?
38. What are some negative effects on humans of Cadmium?
39. What are some natural sources of Mercury?
40. Why has the amount of Mercury doubled in the last 150 years?
41. What percent of Mercury pollution comes from coal burning? How does this Mercury return to the earth after burning?
42. How does Mercury get into the brains of humans?
43. What are some effects of Mercury poisoning on humans?
44. Explain how lead is "trapped" in the soil.
45. What is meant by bioremediation?
46. What are some plants that naturally trap and biodegrade hazardous wastes in soil?

47. What does the oil industry often use to clean up oil spills?

Challenge Question: Each cigarette contains 1ug to 2ug of cadmium, 40 to 60 percent of which is inhaled into the lungs and from there passes throughout the body. Cadmium absorption is higher from cigarette smoke than from workplace exposure, probably because the cadmium particles are so small they pass through the filter and get into the lung tissue. Smoke from a smouldering cigarette is also very high in cadmium. Breathing air with high levels of cadmium can severely damage lungs or cause death. Breathing it in lower levels can lead to kidney disease.

Questions..

- 1) What evidence is there that Cadmium bio-accumulates in humans?
- 2) Are people exposed to second hand smoke at risk?
- 3) Suppose a person smoked 15 cigarettes per day, and 50% of the cadmium in each cigarette was absorbed. Calculate the daily intake of cadmium.
- 4) Cadmium has a half life of 30 years. Once a person stops smoking, how long will it be before the body is rid of the cadmium inhaled?