

APES- "Tuna for Lunch"

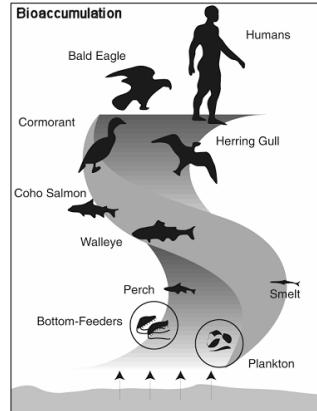
A Case Study Examining Mercury Bioaccumulation and Biomagnification

Name: _____

Directions: Read the case study and answer the following questions on your scrAPES website as STATEMENTS, not simply answering the questions number by number.

Part I:

1: What is in some fish and shellfish that has caused the EPA and FDA to issue the restriction for pregnant women and for young children?



2: Why is there a restriction for pregnant women and young children, but not the rest of the population?

3: Do pregnant women have to avoid all fish? **Explain your answer.**

4: Should Amanda have avoided the pan-seared tuna for lunch?

5: Why is eating fish good for you? Do you want to avoid fish all together? *Why or why not?*

Part II:

1: What human actions lead to increased Mercury levels in the environment?

2: How does the Mercury end in fish? DRAW a flow chart following the Mercury path.

3: Where in the United States are Mercury wet deposition levels highest? *What do you think explains this pattern?*

4: The EPA criterion for human health is 0.3 ug/g. *Which fish species have average concentrations that exceed the EPA limits?*

5: The concern level for piscivorous (fish-eating) mammals is 0.1 Hg ug/g. Which fish species have average mercury concentrations that exceed this limit? *Why is the mercury level for piscivorous mammals lower than the level for human health?*

6: Should you be concerned about mercury toxicity if you catch and eat a largemouth bass in a local lake? *Why or why not?*

7: In which samples were mercury concentrations the highest (*fish, streams, or sediment*)? Why do you think this is?

Part III:

1: Draw a food web for Lake Washington using the species and food preferences given in **Table 3**. *Start with phytoplankton (algae) as the base of your web and then build up the food chain.*

2: Label the species in your food chain as either high (>100 ug/kg), medium (20-100 ug/kg), or low (below 20 ug/kg) mercury concentrations. *Which types of animals have the highest levels of mercury? Which types of animals have the lowest? Why do you think this is?*

Final Activity

1: Imagine you are Tara. Write a letter to your friend Amanda explaining what you have learned about mercury. *Be sure to convey the aspects of your learning that will be most useful to Amanda.*

2: Find two other samples of compounds that **biomagnify**. *Explain how each compound and/or toxin enters the biosphere and what impacts it has on living organisms in general and humans in particular.*