Biomagnification

**Definition** - The accumulation of a toxin in the bodies of organisms as you move from producers, to primary consumers, to secondary consumers etc.

- It occurs when a chemical becomes more and more concentrated as you move up a food chain.

- Some of the most dangerous pollutants dissolve much better in fat than they do in water.

**Example 1:** PCB's (polychlorinated biphenyls) in fish such as salmon.
Biomagnification

• Pollutants will remain in the plants and animals until they die

• When a predator eats another animal, the predator also eats all the pollutants of the prey animal

Example 2: DDT is a pesticide that accumulates in the bodies of organisms
DDT

- First modern pesticide
- Developed in WW II to combat mosquitoes
- Pesticides can accumulate in the bodies of organisms
- As a result, they can increase in concentration in specific tissues or organs
• DDT is a persistent pesticide that remains in the environment for long periods of time

• The longer the pesticide is in the environment, the more likely it will be consumed by organisms
Biomagnification

- DDT increases in the concentration in a biological organism over time
Hey farmer farmer
Put away that DDT now
Give me spots on my apples
But leave me the birds and the bees
Please!
Dont it always seem to go
That you dont know what you've got
Till it's gone
They paved paradise
And put up a parking lot

Big Yellow Taxi

- Song originally written and performed Joni Mitchell in the 1970's
Biomagnification

from Miller *Living in the Environment* Brooks/Cole
Bioaccumulation Game

Food - pasta noodles and candy

Mice - WHITE bands
• Collect as much food as possible in 1 minute and put it in your "stomach"
• Run away from foxes and wolves (predators)
• If you are tagged or 'eaten' you must give your bag of food to your predator and sit on the sidelines

Foxes - GREEN bands
• To eat the mice AND run away from the wolves
• When you tag or 'eat' mice you must take their bag of food and seal it before you can eat another mouse
• If you are eaten by a wolf you must give them you bag(s) of food and sit on the sidelines

Wolves - ORANGE bands
• To eat foxes (and mice if you have to)
• When you tag or 'eat' foxes you must take their bag(s) of food
1. Draw the food web that we physically created in class today. Label each organisms with the appropriate terminology (i.e. primary consumer, secondary consumer, etc.)

2. Based on today’s activity and previous lessons describe how energy is lost in the food chain

3. Describe in your own words the process of biomagnification (bioaccumulation)

4. For the aquatic food web below describe how increasing levels of toxic mercury would affect the food chain.

![Food Web Diagram]

- Algae (producer)
- Cat Fish (Primary Consumer)
- Walleye (secondary consumer)
- Loon (tertiary consumer)
Food Chain:

- grass → mice → fox → wolf → bear
- Each wolf eats hundreds of foxes
- Each fox eats thousands of mice
- Each mouse eats pounds of grass

Therefore bear ingests billions of doses of chemical
Homework: Read pages 40-42
Answer: #1-6 on pg 42
REMINDER: TEST Wednesday April 2
      Eco Challenge due Tues April 8