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**Mercury in Fish - Bioaccumulation**

All Grades

Subjects: Science, Health, Biology, Ecology and Math

Type of Lesson Plan: Activity

Duration: 20 minutes

Materials

* Napkins or sheets of paper
* Optional: Cups and pennies for younger kids

**Objective**

* Experience how toxins can bioaccumulate through the food chain.
* Recognize that bioaccumulation of mercury and other toxins in the food chain can harm humans if they consume the fish.

**Lesson Plan**

1. Introduce, or review the concept of the food chain/web.
2. You will be using the class to actively demonstrate the mechanics of the food chain as well as the mechanics and effects of bioaccumulation.



**Plankton**

**Krill**

**Trout**

**Bass**

**Human**

1. Arrange the students in the above formation. The formation is based on a class of 26. Adjust the formation to suit your class size.
2. Place a sheet of paper or napkin in the hands of each student in the front row (“plankton”).
3. Instruct the students in the row behind (“krill”) to take the paper from the students in front of them and place it in their own hands. This represents krill feeding on plankton.
4. Next, have the “trout” feed on the “krill”, and then the “Bass” should feed on the “trout.”
5. The human should feed on all of the bass, and should have accumulated all of the napkins. This can be done with pennies and cups with younger kids. The kids can then decorate their cup as what they are (plankton, krill, trout, bass, or human). With older kids, colored pieces of paper with each color representing plankton, krill etc. will work.
6. The contaminated plankton can have a black “X” placed on the back. The students can then see the build-up in chemicals only at certain levels because everything would not be contaminated.
7. Next, explain that the sheets of paper or napkins represent mercury. The mercury made its way from a nearby source (the Mine site) into the sediment of the stream in which the plants and animals live.
	1. The mercury entered the plants from the sediment.
	2. When the plankton ate the mercury-contaminated plants, the mercury entered and stayed in their bodies.
	3. When the krill ate the plankton, they also accumulated the mercury present in the plankton.
	4. When the trout ate the krill, the mercury concentrated in the krill was transferred to the trout.
	5. When the bass ate the trout, the mercury concentrated in the trout was transferred to the bass.
	6. When the human consumed the bass, the entire load of mercury was transferred to the humans.
	7. This phenomenon is called bioaccumulation.
	8. Point out that even small amounts of mercury in the environment can be concentrated into amounts that are harmful to humans due to bioaccumulation.