

Lesson Plan for “Freddy the Fish”

Objective/Purpose: The objective of this lesson is for students to be able to understand the various factors that can cause water pollution. In addition, they will be able to see how pollution affects water quality and aquatic life.

The story: Trout, like Freddy need cool, clear streams in which to live. This story is a good visual to show students especially young ones, how different sources of pollution can affect clear streams and eventually make them unlivable for wildlife.

Key Topic: Surface water, water quality, water pollution.

Grade Level: PreK-2nd

Duration: 15-20 minutes

Materials Needed:

- Freddy- A fishing lure, plastic fish or sponges but in the shape of a fish
- Clear plastic pint sized containers-clear tall deli containers work well
- Water to fill containers half full
- “Squirt” type containers to hold “contaminants”
- Contaminants

<u>Supply</u>	<u>Represents</u>
1. Fine Soil	Sediment
2. Black food coloring (Chocolate Syrup)	Motor Oil
3. Small pieces of shredded paper	Litter
4. Instant Coffee	Animal Waste
5. Green food coloring (Gelatin Mix)	Fertilizer

Preparation: Before class, put a small fish in each clear plastic container. Fill the container half full with clean clear water. Keep all other materials near you for easy access during the presentation.

The Lesson: Introduce yourself and tell your audience that today’s lesson is about water quality and water pollution. Water pollution is a very serious issue that we face every day in our city and it is important that we all understand how water gets polluted. Review with the students the definition of water pollution.

Definition: Water pollution can come from a lot of different places, put the number one reason that our creeks, rivers, lakes and streams get dirty is from the pollutants that the rain water picks up when it flows into the storm drains. A storm drain is the rectangle holds you that see by the curb on your street.

Activity Outline/Teacher Procedure: In the container at the front of the classroom, have the students observe how clear the water is and the physical appearance of Freddy the Fish.

Tell a short story for each contaminant and when you are finished add a small amount of the material into the container.

Sediment: There is a new building being built where Freddy lives and the trees have all been cut down. Since the trees are gone the soils begin to erode or fall away when it rains all that soil runs down the street, into the storm drain and then into Freddy's creek. (Sprinkle **soil** into the container)

Solution: Disturbed soil needs to be controlled by putting something around the pile to keep it from running into the storm drain.

Motor Oil: Ask students if they have seen oil on the streets or in parking lots. If oil is not cleaned up properly it gets picked up by the rain water and then heads down the street, in to the storm drain and then into Freddy's creek. Yuck! Oil can clog Freddy's gills and make it hard to breathe. (Sprinkle some **black food coloring/chocolate syrup** into the container)

Solution: Some cars and parking lots need to be maintained properly so the oil won't be picked up by the rain and carried down into the storm drain.

Animal Waste: Ask if anyone has pets at home and if they have ever cleaned up after their pet. Cleaning up pet waste is not very fun, but it is important to pick it up and put it into the trash because it can be washed down the street next time it rains. It too will go down the street, into the storm drain and into Freddy's creek! (Sprinkle some **instant coffee** into the container)

Solution: People should clean up after their pets. Leaving animal waste on the ground is not a very responsible thing to do.

Fertilizer: Ask if their parents have green grass in their yards and if they buy fertilizer. Sometimes they put too much on the lawn and sometimes they put it on right before it rains. When they do this, the fertilizer runs off the lawn, into the street, down the storm drain and into Freddy's Creek! (Sprinkle some **green food coloring** into the container)

Solution: There are other options that can be used to have a beautiful yard such as compost or natural products that won't harm the environment.

Possible Questions:

1. Describe how Freddy the Fish feels.
2. What other animals and/or plants would be affected by water pollution?
3. Describe the difference in how the water looked before the pollution and after the pollution.

4. What are the ways that we talked about that can help reduce the pollutants that got into Freddy's creek?
5. Can you think of other types of pollutants can cause water pollution?

End of Exercise: Allow students to help dump the dirty water into a bucket and put Freddy into a new container with clear clean water. This helps you reset if you have another group to teach and it also gives the students an opportunity to do something environmentally friendly for their "Freddy". Always leave students empowered with knowledge and strive for a positive ending to the lesson.

Please be sure to clean all sponge fishes and containers thoroughly.