



STEM Activity: Classroom Non-point Source Pollution

Type of Teacher Tool: Small Group
Targeted Grade Level(s): 5th through 8th
Targeted Curriculum Areas: Science

Learning Objectives:

The learner will:

1. observe how non-point source pollutants are washed out of the ground.
2. develop an understanding of how to alleviate non-point source pollutants reaching the water cycle.

Featured National Standards:

Middle School

1. MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

Additional State and National Standards related to the content of our videos listed below for this lesson are also provided on the Educate.Today page where you find the video.

Resources/Materials Needed:

1. Environment 70: A Sewer Runs Through It
2. Infrastructure 3: The Science Behind Sewer Systems
3. Environment 54: Celebrate the Earth with Plants: Stormwater, Pollution, and Plant-Based Solutions
4. Environment 55: How Stormwater Runoff Pollution Affects the Environment.
5. Environment 56: What Is a Watershed?
6. Environment 57: Rainscaping: A Solution to Damaging Stormwater Runoff
7. Environment 61: Are there stormwater solutions that are better for a crowded urban area?
8. Environment 62: How do you set up your own rain catching system?

You will also need:

9. topsoil, sand, water source, cooking pans, rubber tubs to act as catch basins, Kool Aid, dish washer detergent, ketchup, or other “non-point source pollutants,” corrugated cardboard, artificial turf, bricks or two by four boards cut to the same length as the cooking pans, paper and pencils, stopwatches.

Teacher Instructions:

1. Use any combination of the Educate.Today videos listed above to provide context, background, and frame of reference information on the subject of non-point pollution before conducting the activity or use them as extension options for students to continue learning more on the subject once the activity has been completed.
2. Divide your students into groups and have each group sprinkle Kool Aid, dishwasher detergent, ketchup or one of the other “non-point source pollutants” on the bottom of the cooking pans.
3. Groups should then fill the pans with either topsoil or sand and place at an angle on the bricks or boards with the rubber tub catch basins at the bottom.
4. Assign groups to pour water over their cooking pan at different speeds. Some groups should gently pour the water, while other groups quickly drench their pans.
5. Students should observe and record how quickly the color from the “pollutant” drains from their pan.
6. Repeat the process with each group placing either corrugated cardboard or artificial turf on top of the topsoil or sand.
7. Groups should develop a report with the results and provide ideas and reasons for what occurred.

Assessment/Evaluation Options:

1. Teacher will observe the students during the experiments and review their reports for depth of understanding.