

Clean Water Investigation

Grade Level: 5, 6, 7, 8

Duration: 30 - 60

Classification: Classroom

Subject(s): Biology, Environmental Science, Ecology

Categories (STEM): Science

Keywords: Pollution, Environment, Water, Filtration

Introduction

- Summary: The world needs water to survive and as the population grows, more pollutants end up in the water, making the usable water supply smaller.
- Description: Students will gain a better understanding of the damaging effects of water pollution by creating a filter and discussing solutions to creating cleaner water.

Online Resource: <https://teachbesideme.com/water-filtration-experiment/>

Materials

Materials	Quantity	Reusable?
Short, wide-mouthed, clear plastic cups	3 per 2 students	Yes
Stirring Sticks	1 per 2 students	No
Coffee Filters	2 per 2 students	No
Aquarium Gravel	¼ cup per 2 students	Yes
Sand	¼ cup per 2 students	No
Pitcher	1 per classroom	Yes
Pencil	1 per 2 students	Yes
Pencil Sharpener	1 per classroom	Yes
Pollutants*	3-4 types per classroom, 1 type per 10 students	Yes
Food Coloring	1-2 drops per 2 students	No

*Various items of different textures/consistencies. Examples: soil, vinegar, salt, Styrofoam, oil, sand, etc.

Prep

- Fill a pitcher with tap water
- Create a small handful of pencil shavings per group

Activity

- Separate students into groups of 2. Before they begin, they should wash their hands. If hands are oily, the activity might not work.

- Compare the differences between clean and polluted water. Have students describe the taste, smell, and looks.
- Fill one cup full of clean water per group. Leave room to add pollutants.
- Pick 1-2 pollutants and the pencil shavings to “pollute” the clean water with. Give students time to watch the impact as the items are mixed in.
- Pass out coffee filters and new cups, have students try to filter the pollutants out.
- Repeat until no more can be filtered out. Discuss safe ways to determine what is still in the water.
 - Sight, using surrounding area
 - Wafting the smell
 - **Do not** drink the water

Activity Extension

- Create a small “pond” using gravel at the bottom of a clean cup.
- Place a coffee filter above the cup and fill the pond with water. This simulates rain.
- Discuss with students how water is in the pond and in between the gravel also. What does the water in between the gravel represent? (groundwater)
- Add 1-2 drops of food dye to the pond and discuss how water from the pond polluted the groundwater.

Discussion Questions

- What were you able to filter out of the water? What were you not able to filter out of the water?
- How were you able to get the water “clean” again?
- Was it easy to clean the pollution from the water?
- How do you think pollution affects the environment in and around the water?
- What are some ways water is polluted in real life?

What is happening?

- Polluting negatively affects our water and the environment around it.
- The filtration of water helps to get rid of pollutants, but others are tougher to get out.
- Pollutants make our clean water unusable and unsafe.

Applications

- Majors
 - Biology
 - Environmental Science
 - Ecology
 - Forestry
- Jobs
 - Biologist
 - Environmental Scientist

- Ecologist
- Preservationist & Conservationist
- Water Quality Engineer
- Pollution Control Technician
- Wastewater Treatment Plant Operator
- Hobbies
 - Environmentalist
 - Camping (filtering water)
- Real-world applications
 - Oil spills in the ocean
 - Inappropriate disposal of toxins by individuals or companies
 - Debris ends up in oceans after tropical storms



This activity was last updated in fall 2020 by Student Role Models.