

DIY Water Filter

Course/Grade Level: 9-12

Experiment Duration: 30 minutes

Website Link to Experiment:

[DIY Water Filters | Rowan Research | Rowan University](#)

Expectations:

Construct a simple water filter and run dirty water through the filter to show the before and after of the water sample.

Sample Data/Tables if Needed:

N/A

Context for Learning

Objectives:

- Use common household materials to create a simple water filter
- Understand basic filtration principles and how different materials can be used to remove impurities from water
- Gaining hands-on experience building and using a simple water filter
- Learning about the importance of clean water
- Develop problem solving skills

How this experiment relates to wastewater/water treatment:

DIY Water Filter illustrates the process of filtering out particles in water like in water treatment centers, and how the filter process makes the water safe for drinking and everyday use.

Instructional Delivery

Materials:

1. (1) - 2 liter clear empty bottle
2. (1) paper coffee filters
3. (2) rubber bands
4. (2) clear plastic cups
5. (1 cup) sand
6. (1+ cup) soil
7. (1 cup) rocks
8. (1 liter) of clean tap water
9. scissors

Procedures:

1. Take one 2 liter clear empty bottle and use the scissors to carefully remove about 3 inches from the bottom.
2. Remove the cap from the bottle and securely fasten a coffee filter to the open end using two rubber bands.
3. Set the bottle with the cap facing downward into an empty plastic cup.
4. Place one cup of sand into the empty bottle, followed by one cup of soil, and then topped with one cup of rocks.
5. Fill a clear empty cup halfway with clean tap water.
6. Pour the half-filled cup of clean tap water into the DIY filter bottle.

7. Observe changes in the clarity of the water; If the water clarity has no apparent changes, take the filtered water and place into the DIY filter bottle for a second filtration.

Assessment/Evaluation

Questions:

- What should we do if the water does not come out clean?
- Run the water through the filter again
- add more rocks/soil/sand
- What did you learn about the filtration process and how different materials can be used to filter water?
- Can you explain how the sand, soil, and rocks worked together to filter the water?
- How effective do you think the filter you built would be in removing impurities from real-world water sources?
- What are some of the challenges of using a simple filter like this in developing countries?
- How can you apply what you learned in this lab to your everyday life or to help others in need of clean water?
- What are some other natural materials that can be used to filter water?
- Charcoal, mulch, sticks
- How can you improve the filtration process?
- What are some of the risks of not having clean water and how can we prevent them?

Notes: