



Water Filtration Activity



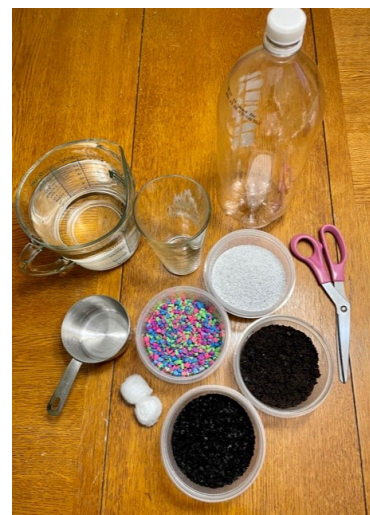
Ready to get started with this activity? To keep track of your progress, check off the instructions for each step below as they are completed. Make sure to check the box of the last step when you're done to receive congratulations for your completed activity!

Consider this: Water on the Earth's surface (from rain, watering our lawn, washing cars, or natural bodies of water) is cleaned by layers in the ground. Sometimes this water is collected in aquifers, which we use for drinking water. It is important to be careful with water and how we use it — ground layers can only do so much to keep our water clean and safe.

In this activity, muddy water will go through three different stages of filtration. The first layer of rocks will separate large particles from the water. Next, smaller particles will be captured by the sand as the water moves through this layer. Finally, the water will move through the activated charcoal, where the smallest particles are removed. Charcoal can also remove some chemicals. The cotton balls are there to make sure the charcoal stays in place. By forcing the water to move through these layers (gravity helps to push the water through the layers), the muddy water gets cleaner and cleaner. In order for the water to be clean enough to drink, it must pass through more layers, so **do not drink this water**.

1. Gather Your Materials

- (1) 2-liter plastic soda bottle
- (2) cotton balls
- (1) cup of sand
- (1) cup of rock/gravel
- (1) cup of activated charcoal (get at the pet store)
- (1) pair of scissors
- (1) clear plastic cup (or use glass if you're very careful)
- (1) measuring cup
- (1) liter of muddy water (make your own by mixing 1 liter of water with about 1 cup of dirt)





2. Cut the Bottle

- Leave the cap on the soda bottle.
- With scissors, cut the opposite end of the bottle (the bottom of the bottle).



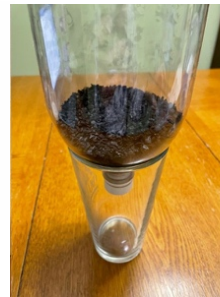
3. Add Cotton Balls

- Shove two cotton balls into the neck of the bottle and put the cap back on.
- Carefully place the soda bottle neck down into a plastic or glass cup.



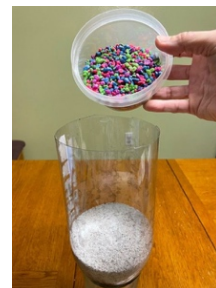
4. Add Charcoal and Sand

- Pour charcoal into the plastic bottle. It will sit on top of the cotton balls that are in the neck of the bottle.
- Add 1 cup of sand on top of the charcoal in the bottle.



5. Add Layer of Gravel

- Add 1 cup of gravel on top of the sand.
- Loosen the cap to where it is still on the bottle but water can come out.
- Set the bottle, cap down, into the clear plastic cup or, if very careful, a glass container. The cup or container needs to be large enough to hold the plastic soda bottle, neck down, and have room to hold water.





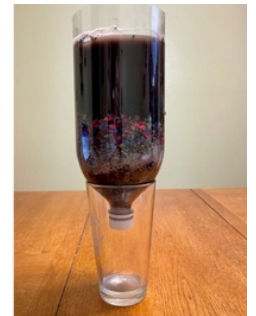
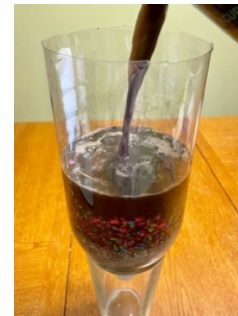
6. Make Muddy Water

- Make some muddy water – not thick muddy, just mix enough dirt to make the water cloudy.



7. Add Muddy Water and Observe

- Gently add the muddy water into the soda bottle on top of the gravel.
- Observe what happens as the muddy water is filtered by the layers.
- **DO NOT DRINK THIS WATER** – this filtration project is an example of how water is cleaned by the earth. The water in this project is not filtrated enough to be safe to drink.



8. Things to Think About

- How many times can you pour muddy water through your system before the system is compromised and the water comes out dirtier than your first few filtrations?
- Is it better for the water to go slowly through the filter, or faster?
- Why is water quality important?
- What is the purpose of a water filter?
- What happens if the filtered water is ran through the system again?

