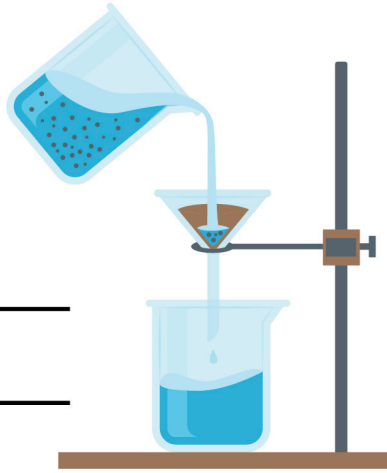
Build a Filter

Prince William Water cleans wastewater from our customers' homes and businesses 24/7! One very important step in this process is passing the water through a filter made of sand. Using materials in your home, you can conduct your own water filter experiment!

Hypothesis

You will create two filters, one following our instructions and one that you invent yourself. Write your hypothesis (your guess) about which filter will work better to clean muddy water and why.



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Materials

- Two (2) paper cups
- Pen or pencil
- Two (2) plastic cups to catch the water
- Measuring cup or scoop
- Bowl
- Spoon for stirring
- Small rocks or aquarium gravel
- Sand
- Paper towel or toilet paper
- Things from around your house that you think might make a good filter

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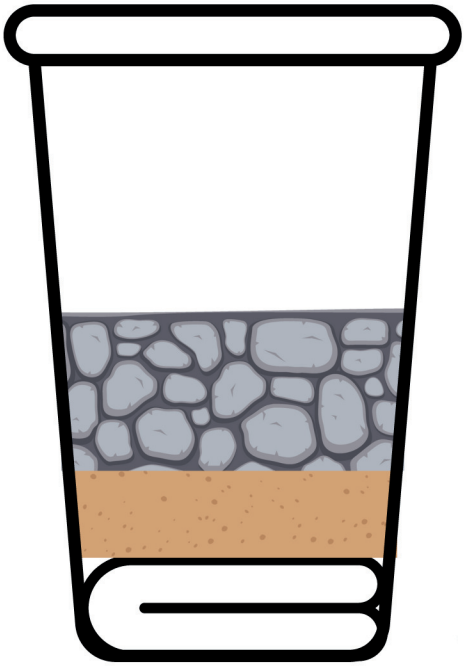
Build your Filters

1. Find all of your materials for both filters.
2. Poke 10 small holes in the bottom of your paper cups using the pen or pencil.
3. Fold your paper towel into a square and then put it inside one of your paper cups. Make sure you cover all the holes you made in step 2!
4. Pour sand into the cup from step 3, about 1/4th of the way up the side of the cup.
5. Pour gravel on top of the sand until the cup is 1/2 way full of gravel and sand.
6. Set this filter aside and build your second filter.
7. Use your imagination and what you know about filtering water to build your second filter in the second paper cup. Make sure the cup is only 1/2 way full of filter material.



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Test your Filters

1. In the bowl, mix two spoonfuls of dirt with one cup of water.
2. Hold your filters over the empty plastic cups.
3. Pour half of the dirty water into each of your filter cups and watch the water go through!
4. Record your observations about how clean (or dirty) the water looks after it passes through each filter. Only use your eyes and nose, don't taste the water. It's not clean enough to drink!
5. Repeat the experiment, using different materials for the filter you designed.

Observations

1. Which filter worked better? How do you know that it worked better?

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2. What kind of materials seem to create better filters?

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More Research

1. List three different ways people filter water around the world

2. Why is charcoal good at trapping small particles in the water?

3. How do water treatment plants use light to help clean water?