



Water Filtration Activity

This activity explores the water filtration process. You'll use your engineering skills to design a water filter to remove contaminants from water.

Materials to Gather

- Large empty bowl or jar or the bottom of a 2L soda bottle
- It's best if the container is see-through but not required
- A funnel or cut the top off a soda or water bottle
- A watch or phone with a stop watch
- A spoon for measuring and mixing
- A towel or rag to clean up any spills

Pick 2 or 3 items from the below lists- you don't need to have everything that is listed though you can use them all if you have them around.

Source Water

- Coffee grounds or dirt – 1 spoonful
- grass clippings, dried leaves or small sticks – a small handful
- vinegar – 1 spoonful
- food coloring – 2 to 3 drops color of your choice
- trash/plastic beads – rip the trash into small pieces
- bowl of water (about 2 cups of water)

Filter Materials

- Cotton balls – 2 to 3
- Kitchen Sponge
- Scraps of fabric – about the same size as a tissue or napkin
- Coffee filter – 1
- Paper towel – 1
- Rubber bands
- Small strainer

Activity

Goal- You are an engineer and it is your job to design a filter that will be used to make your source water safe for your community to drink.

Design Steps

****** it may be best to move this activity outside or close to a sink because it could get messy**

1. Gather your bowl of water and source water materials

2. Put your source water materials in the bowl of water and stir
3. List the contaminants in your water and describe the mixture

4. Gather your funnel, large bowl or jar and your filter materials
5. Looking at your source water and your filter materials take a few minutes to think about your materials and the best way to design a filter with various layers to help trap the different contaminants.

Build – Gather your filter materials and place the materials in layers in the funnel

Test

1. Gather your bowl of source water, empty bowl/jar, funnel with materials, a stopwatch, and a rag or towel.
 - You may need a second set of hands so ask a family member to help.
2. Hold the funnel with the filter materials over the empty bowl or jar. Have one person hold the funnel as another pours the source water into the funnel – make sure to pour slowly.
 - The other person should start the stop watch as soon as the water goes in the filter.
3. Now watch. Look at the water that comes out of the funnel and think about the contaminants removed by the filter vs. what the filter can't remove
4. Stop the stopwatch when no more water is coming out of the funnel
5. Record the time it took to filter the water _____ minutes _____ seconds

Record Results

1. Observations – what contaminants were removed by the filter? Is the water clear? Would you drink the water that was filtered?

2. What parts of your filter worked well?

3. Did any part of your filter fail, not work the way you expected it to?

4. What would you do differently if you could rebuild your filter?

Extensions

- Learn more about your filter
 - Empty the bowl of water into the sink and slowly start to take the layers of your filter apart. Examine your filter materials and see what they trapped.
- Learn more about the [water filtration process](#)