



## ACTIVITY: COFFEE FILTER

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### Introduction:

Water treatment is an intricate process through which we take water from the natural environment where it flows, like a river or lake, and pipe it underground to a water treatment facility to filter out all the harmful pollutants and microorganisms. Through many steps of treatment, water becomes cleaner and cleaner until it is ready to head to homes, schools, and businesses through drinking water pipes.

Because your drinking water comes from the natural environment, everything that is in the water in the environment – bacteria, pollutants, nutrients – is filtered out at the treatment plant. This activity will demonstrate the most basic concept of water treatment and will help you get an idea of how filtration works.

### Supplies List:

- Water pitcher
- Water
- Items that represent bacteria, chemicals, small particles, and harmful pollutants (candies, honey, cooking oil, chocolate pieces, sesame seeds, or sprinkles)
- Coffee filters
- Coffee filter funnel/holder that fits over a cup
- Clear jars or cups (a mason jar will work well)

### Activity:

1. Fill the pitcher with tap water.
2. Add your “harmful pollutants” and “bacteria” to the pitcher:
  - a. Sesame seeds or similar spices can represent dirt or sediment in the water
  - b. Cooking oil or honey can represent car oil that washes off roadways during storm events
  - c. Rainbow sprinkles and other candies can represent plastics, like water bottles, bags and other items that may wash or blow into waterways
  - d. Chocolate pieces can represent pet waste that didn’t get cleaned up
3. Stir the pitcher and mix all the items up together with the water
4. Place the coffee filter in the holder, and place the holder over the jar or cup
5. Carefully pour the water into the filter and observe the water that falls into the jar
6. Once the water is filtered through, you can change out the coffee filter for a new one, and filter the water again into another jar or cup; continue the process as many times as you prefer



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### Wrap-up:

Observe the water as it is filtered into the jar or cup:

- What color is the water? Does the water look clearer/cleaner after the filtration process?
- What happens to the various food items that represent pollutants? Do they stay in the filter? Do any of them not stay in the filter, and why or why not? Does any of the color leech into the water?
- Can they see any oil on the surface of the filtered water?

If you filter more than once during this activity, compare and contrast a single filtration with the results of an additional filtration.

- How does the water change after each additional filtration?
- What about the filter itself? Describe how the filter looks after the first filtration, and how each additional filter looks after that.
- How does this activity make you think about keeping source water or natural water clean? Is it harder, more time consuming, or more expensive to filter water that is more polluted to begin with?