Water Filtration Lab

NGSS Standards: MS-LS2-5, MS-ESS2-4, MS-ESS3-3, MS-ETS1-2, MS-ETS1-3

Introduction:

About 71% of the Earth's surface is covered in water. Oceans hold 96.5% of the water found on Earth and is saltwater that is not drinkable. The other 3.5% is fresh water that is found in rivers, lakes, and ice caps. Only 0.5% of the water found on Earth is drinkable, since 3% of fresh water makes up glaciers and ice caps. Our usable freshwater supply is low and needs to be protected to preserve life on this planet. Pollution to our watersheds puts all life on Earth in danger! It is important to understand causes of water pollution and the importance of protecting our waterways.

Pre-Lab Questions:

1. List as many things you can that require the use of water.
   _____
   _____
   _____
2. Identify 3 ways in which water can become polluted.
   _____
   _____
   _____
3. Think about where your drinking water comes from. What type of bodies of water are near your home town? _____
4. Is the water found in the bodies of water near you, drinkable? Why or why not?
   _____
   _____
5. Why do you think it is unsafe to drink water straight from a pond, river, or lake? What might you find in the water?
   _____
   _____

Material:

- 2 liter bottle (cut bottle circumference/around about ⅓ from top)

<u>Filtration materials</u>

- Napkins
- Gravel
- Coffee filters
- Sand cotton balls

- Clay

  Pollutants
- Dirt
- Pieces of trash (paper, plastic, etc)
- Food scraps (egg shells, lettuce, orange peel)
- Leaves and/or grass
- Food coloring
- Cooking oil
- Glitter
- Cups (for mixing polluted water)

Procedure:

1. Flip the top cut portion of the 2 liter bottle upside down and place it in the bottom portion (make sure the cap is off).
2. Create a filter using the filter materials listed above. Record what materials you chose to use and why?

   _____

   _____
3. Make polluted water by mixing pollutants in a cup of water.
4. Record the ingredients you used to make polluted water.

   _____

   _____
5. Make a prediction about which pollutants might be removed by which layer of the filter you created.

   _____

   _____

   _____
6. Slowly pour the polluted water through the filter. Record your observations:

   _____

   _____

   _____

   _____
7. Carefully take apart your filter and record your observations. Describe what materials were found in each layer? (list the filter layer and pollutants found in the layer)

   _____

   _____

   _____
8. Clean out the filter and bottle and repeat steps 2-7. Record your answers and observations below for the corresponding steps under part 2.

Part 2:

2.

4.

5.

6.

7.

Conclucion:

1. How successful was your filter? Were you able to produce clear water?
2. Draw an illustration of the filter you made

3. In Part 2, how were you able to improve your filter? What changes did you make and why?
4. Why is it important to keep our water clean and what can you do to help protect Earth's waterways?