

ISLAND-WATER ACTIVITY

Introduction

Imagine, you're on your way to England but your plane loses control. The pilot manages to save the plane and land on a nearby island. The plane has enough food to feed all the passengers but there is not enough water for everyone. A small river cuts through the island, but is dirty and not safe to drink.

Your job is to create a filter that helps the water be safe to drink at a physical and a bacterial level! You have the supplies to do it, but depending on the proportions it may stay harmful or you will be able to filter everything out!

Students will be able to do 3 trials, each lasting 10 minutes, to filter out their "unclean" water. Hopefully each trial will provide more information on how much they should rearrange, add or take out materials, etc.

Learning Objectives

1. Learn the basics of filtering water on a physical level to try and get it to LOOK clear.
2. Learn what proportions and leveling of the materials should be used.

Materials

1. 2L soda bottles
2. Sand
3. Charcoal

4. Gravel
5. Rocks
6. Activated carbon
7. Coffee filters
8. Teacher: Gather or create a muddy water that students will be filtering.

Step-by-Step

1. Take a look at all the materials. Then alone or in a group, begin to create various designs. Each design should be contained in the 2L bottle and show how much of each material the group plans on doing.
2. Next, after getting approval from the teacher, students will begin to gather materials and put in the 2L bottle. The bottle should be upside down so that the cap is facing downward. (Ps. Make sure the cap is on until the end!)
3. Once they are done, get 200 ml of “unfiltered” water from the teacher. Take off the soda bottle cap and pour the water through the filter. (Have a 200 ml beaker at the bottom of the filter to catch the water).
4. After completely done, discuss what did and didn't work. Make changes to fix the problems the prototype failed to do.
5. After fixing the design, recreate the new/final filter system.
6. Test it one last time and compare results from the 1st and 2nd filter.

Conclusion Qs

1. What materials did you use and why? What purpose did they serve in filtering the water?

2. What improvements did your team make from the first prototype to the final design?

3. Do you think it's enough for water to just LOOK clean? What else do you think we have to do to make sure water is safe to drink?