Lab: Foul Water

Background:

Water entering a wastewater treatment plant can have a wide variety of contaminants. Most treatment falls into one of three categories: mechanical (phase separation), biological and chemical. In this lab, you will be competing with other lab groups to produce the cleanest water using purely mechanical treatment methods, primarily a few forms of filtration. The "foul water" that has been created by Mr. Rush/Ms. Magee includes pollutants such as vegetable oil, coffee grounds, cooking grease, sediment, motor oil, and other assorted liquids and solids that can find their way to wastewater treatment plants.

Prelab Questions:

1. What are the three major types of water treatment at a wastewater treatment facility?
2. Give one example of each of the treatment types you listed in question #1.
3. Define filtration.
4. Define filtrate.
5. When using sand filtration, why should the sand be premoistened?
6. How will you determine whether your sample is clean or not?

Procedure:

Using the materials provided, engineer a water treatment device. After development, teams will filter 100 mL of foul water. The winner will be determined based on water clarity and number of milliliters preserved.

7. Draw your water treatment device and label the various components with their purpose.

Data:

	color	clarity	odor	oil present? (y/n)	solids present? (y/n)	volume (mL)
Initial sample						**100**
Final sample						

Lab Group	Clarity Rank	Volume	Total Points
1	**150**	**+**	**=**
2	**130**	**+**	**=**
3	**110**	**+**	**=**
4	**90**	**+**	**=**
5	**70**	**+**	**=**
6	**50**	**+**	**=**
7	**30**	**+**	**=**
8	**10**	**+**	**=**
9	**0**	**+**	**=**

Analysis:

8. What percent of the original 100 mL did you recover as "clean" water?
9. How did the clarity of your sample compare with that of other lab groups?
10. Describe how these processes are similar and dissimilar to wastewater treatment plants.