

# [Soap lab](https://assignbuster.com/soap-lab/)

The goal of this laboratory project was to test which ingredient (fat oil) makes for the best soap using the properties of fats/ oils. Another goal was to test the soap, detergents, and their waste water to decide which is the most effect eve and environmentally friendly. The group was also to determine what was causing t he scum after washing and figure out a solution to stop it. Experimental Design To achieve the abovegoals, four different types of soaps and two detergents were made with certain ingredients and the desirable properties were taken onto account.

The waste water of each soap and detergent was titrated to determine en how the waste water would affect theenvironment. To make four different types o pop, we used ; o oils, vegetable oil and olive oil, and two fats, shortening an d lard. 10 ml of the oils and log of the fat were obtained in a mill beaker. 15 ml of 6 M sodium hydroxide and about 1 ml of glycerol were added to each ingredient drop by drop then mixed thoroughly with a glass rod. The solution was then heated with a heating plate to boiling until it became pasty.

After the pas tee cooled, 50 ml of saturated sodium chloride solution and ice was mixed into t he solution. The soap was then filtered using suction filtration and washed with t ml portions of cold water. Each filtrate was saved separately. Two methods ere used for making detergents. The first method required 4 ml of laurel alcohol t o be placed in a mill beaker. While stirring, 2 ml of concentrated sulfuric acid w added to the beaker. While to mixture sat for 10 minutes another mill BEA Kerr was filled with ice, log of sodium chloride, and water until the total volume w as 75 ml.

Then, in a ml beaker, 5 ml of 6 M sodium hydroxide and 10 ml of watt were mixed. Four to five drops of phenolphthalein to the sodium hydroxide solution. After the 10 minutes, the sodium hydroxide solution was added to t he sulfuric caudally alcohol mixture until the pink color produced by the honorableness faded. The solution was poured into the saltwater bath an stirred until the clumps were broken up. The second detergent was made AC Roding to method II. 5 ml of laurel alcohol was carefully added to 5 ml of concentrate sulfuric acid.

In another beaker, 3 drops Of phenolphthalein was added to 10 ml of 6 M Noah. Then, the acidic solution of laurel alcohol was added to the Noah solution with constant stirring until the pink color faded. Both detergents were e filtered using vacuum filtration and saved for the following weeks tests. The following week, solubility, cleaning, and lathering tests were performed o determine which soap and detergent cleaned the best. The wastewater WA s also analyzed from the processes of making the soaps and detergents.

In addition, the contaminants and the environmental impact of the wastewater were identified deed. After these tests were conducted, the group had to decide which soap or detergent would be best for the environmental group to use. To test the solubility of each soap and detergent, appeased clumps of each were added to ml of water, acetone, an ethyl acetate. To test the cleaning abilities of each soap and detergent, a wet paper towel was used with samples of each soap and detergent to clean a dirty spot he lab counter. Cleaning abilities were measured by the amount of residue a ND dirt left behind.

Lathering of the soap and detergents were tested by adding Pease zed clumps of each to water and determining how many bubbles were produced. The more bubbles that were produced, the better the lathering was. To test the contaminants and environmental impact of the wastewater we used titration. Sing 5 ml filtrate of our vacuumed filtering and 45 ml of H2O the group first tested t pH of each filtrate. If a pH over 7 was found the group slowly added HCI and t drops were counted by a sensor and the initial and final volumes were also re order from the burette. If a pH under 7 was found, then Noah was added to the filter ate.

The most environmentally friendly wastewater was determined based on the volume of iterant added. A lower volume of iterant was more desirable because it me ant that the wastewater could be more easily neutralized. The final week, the best soap's and detergent's solubility was tested in different types of water. Well water, pond water, and tap water are the waters that were used. Then, the pond water and well water were tested for contaminant s. If the water contained calcium ions, DEED was added to the water to get rid of them he water was acidic, the base Noah was added to neutralize the water.