



## Activity: Fats, Oils, and Grease States of Matter Activity

**Topic:** FOG

**TEKS:** S.5.5.A;

**Background:** <watch the Galveston Bay Foundation and City of Houston FOG videos>

Fats, Oils, and Grease (collectively known as FOG) pose a big, and often costly, problem for water quality and public health. Fats, Oils, and Grease from cooking or other foods are frequently disposed of down the drain when washing dishes after meals. Items like butter, margarine, salad dressing, gravy, bacon grease, sour cream, milk, yogurt, and more go down the drain, but unlike water they can congeal, harden and stick to pipes forming clogs. These clogs can force water (or sewage) back up the pipes and into your homes. Even when hot or boiling water is poured down the drain, it just pushes the issue further along the pipe system where clogs can cause sanitary sewer overflows (SSOs) in the streets and lead to pollution of our waterways and public health hazards. Fortunately, helping to “Cease the Grease” and “Protect Our Pipes” is simple – before rinsing or washing dishes pour oils and grease in a container that you can throw away when it is full, or use a paper towel or scraper to wipe the excess food and FOG into the trash can.



### Materials:

- Butter (about 2 tablespoons)
- 2 Bowls or small dishes (microwave safe)
- Microwave
- Freezer
- Timer
- Notebook

### Instructions:



### Part 1 – Butter Experiment

1. Get two small microwave safe bowls and put about 1 tablespoon of butter into each. You will test what happens when the butter is heated, cooled rapidly, and cooled over a period of time.
  - a. Record the butter's state of matter.
  - b. Form a hypothesis of what you think will happen to the butter in each of the 3 scenarios (heated, cooled quickly, cooled slowly).
2. Microwave each bowl for about 30 seconds or until the butter is uniform (some stirring might be necessary).
  - a. Record what happened to the butter and its state of matter.
3. Take one microwaved bowl of butter and put it in the freezer for 5-10 minutes, then remove the bowl.
  - a. Record what happened to the butter and its state of matter.
4. Take the second microwaved bowl of butter and leave it on the counter for 20-30 minutes.
  - a. Record what happened to the butter and its state of matter.
5. Use a paper towel or scraper to remove all of the butter from the bowls and dispose of it in the trash can.

### Part 2 – Discuss/Report

1. Based on your results from the butter experiment in Part 1, review your hypotheses about what would happen. Based on these results, infer what is likely to happen to butter from cooking or a meal that is washed down the sink? What about if you also pour hot water down the drain?
2. Discuss your hypotheses and results with your family or class.
3. Make a list of what foods you (or your parents) cooked with or ate this week that included Fats, Oils, or Grease (FOG). Some examples are included in the graphic below. If any of the items were not disposed of properly to avoid clogs (in a jar or in the trash), make a plan on how to properly dispose of them next time and assign a person to be in charge of doing it.