**Overview**

Students find out what happens to the substances that we "just throw away" in our daily water use. This activity challenges the students' understanding of math and measurement. This activity can be used with the Washing Water Activity found at www.hrsd.com/classroom.

**Teacher Notes**

Our society often "throws away" waste and trash when, in reality, it must go somewhere and be dealt with. Prior to HRSD, dirty water from your toilets, sinks, and showers was sent directly to local waterways, contributing to the pollution of the Chesapeake Bay. The pollution of the Chesapeake Bay became so bad, people began getting sick from the oysters. HRSD was created in 1940 to protect public health and the waters of Hampton Roads by treating wastewater effectively. For cities in the HRSD service area, dirty water from your home flows through hundreds of miles of pipes before it reaches an HRSD wastewater treatment plant. At this plant, the dirty water is cleaned before it is returned to the Chesapeake Bay or Atlantic Ocean. People throw away much more than human waste in the wastewater stream! This makes it incredibly difficult for the wastewater treatment plant to clean the water. HRSD maintains the standard for clean water through the Chesapeake Total Maximum Daily Load. As the regulations for clean water continue to become more stringent, we must work harder to be conscious of what we are throwing away and how it contributes to pollution.

**Procedures**

Divide the class into groups of three or more students (depending on the number of students). For small classes, each student will get a card or the students can work in pairs.

1. Explain to the class that they are going to represent HRSD customers. Show the students the clean water on their desks and explain that the water that enters each house and business is as clean as the water they see in front of them; however, the water that leaves the house is quite a different story.
2. Give each group a scenario and ask them to read it together as a group. Each scenario tells the group which waste they are to put into the water.
3. Give the groups a few minutes to discuss which measuring device they will use (measuring spoons, graduated cylinder, metric ruler, or measuring cups) to measure the pollutants from the scenario.
4. Circulate among the groups to make sure they are on the right track with their measurements and to answer any questions that arise.
5. One at a time, have each group read the information aloud from their scenario and explain how they will measure their substance.
6. Have the group add the substances to their household wastewater pipe (container).
7. When all the pollutants are added to the individual groups, allow the students to dump their individual container into one bucket. Stir the wastewater well to allow the pollutants to mix together and the tissue to liquefy. Explain that this represents the wastewater that enters the HRSD wastewater treatment plants. Allow the entire class to see the final wastewater.
8. Ask the class if they think the wastewater could ever be clean enough to be discharged into a lake, stream, or river. That is the problem that HRSD faces every day.
9. Optional. Save the wastewater and use it in the water cleaning activity Washing Water

**Materials**

- 1 bucket (clear buckets work best)
- 4 Small container (one for each group)

- 1 large mixing spoon
- 4 small mixing spoons for each group
- 4 water scenarios (one for each group)
- Coffee grounds
- Vegetable oil
- Laundry detergent
- Food scraps (I use crushed up crackers, granola, or dried pasta)
- Vinegar
- "Chemicals" (water with food coloring)
- Dishwashing soap
- Hand soap
- Shower gel
- Toilet tissue
- Flushable Wipes
- Soil/dirt
- Plastic drinking straws
- Paper towels or towels (for cleanup)

*Measuring Tools*

- Scissors
- Ruler
- Measuring cups
- Measuring spoons
- 100 ml granulated cylinder

**Discussion**

- Have each group explain a way to prevent or reduce their type of pollution in our wastewater.
- Make sure the students explain the measurement method and the metric instrument their group used.
- Ask students to explain what wastewater is and who produces it. Must we have wastewater in our society? (yes) Should we try to produce less wastewater with fewer pollutants? (yes)