



New York-New Jersey Harbor Estuary Education Program

A New York-New Jersey Harbor Estuary Program Stewardship Project

A Salty Experiment

Estuaries are places where fresh water from rivers meets salty ocean water. Because salt water is heavier than fresh, the water in an estuary like our own NY/NJ Harbor Estuary settles into two layers; a salt water layer that lies on the bottom with a freshwater layer above. Mixing occurs where the layers meet. Further mixing takes place as a result of wind, tides, temperature changes and rainfall.

Try this experiment to show how salt and fresh water in a typical estuary layer and mix.

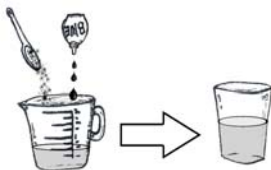
What you need:

- Water (tap water if fine)
- Measuring cup
- 3 teaspoons of salt
- 2 clear cups
- Red and blue food coloring.

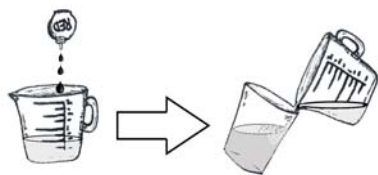


What you will do:

1. In the measuring cup combine 1/2 cup of water with the 3 teaspoons of salt. Stir well to dissolve the salt as much as possible. Add 3 drops of blue food coloring. Pour this into a clear cup. Wash your measuring cup thoroughly.



2. In the measuring cup add 3 drops of red food coloring to 1/2 cup of fresh water. Very slowly, pour the freshwater mixture down the side of the cup with the salt water. What happened? Why do you think this happened?



3. Now reverse the experiment. First pour the fresh water into clear container then very slowly

What Happened?

In the first experiment you should have seen two distinct layers form. The fresh water should have floated on top of the salt water because it is less dense (lighter). You can also try slowly dripping the salt water into the fresh water to form layers.



In the second experiment you should have observed swirls of salt water sinking to the bottom of the cup. You created an estuarine current!



What is Salinity?

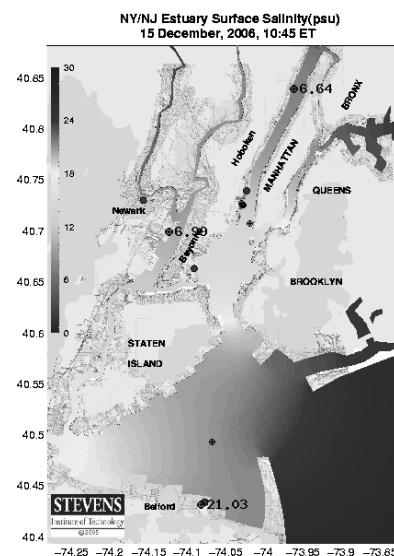
Salinity is the term scientists use to describe how much salt is in water. Salinity is one of the most important features in determining what plants and animals can live in the estuary and where.

Want to know the salinity of the NY/NJ Harbor Estuary today?

Visit Stevens Institute of Technology's Urban Ocean Observatory website!

Go to www.stevens.edu/maritimeforecast

Near the top of the webpage click on salinity and a colorful map of the Harbor will appear. The key on the left side of the map explains how the colors represent the differing amount of salts, measured in psu (practical salinity units). Deep red is 30 psu, which is the general salinity of ocean water. Freshwater rivers typically have a salinity 0-10 psu. What is the salinity of the water on the southern tip of Manhattan? Bayonne NJ? Visit this map again at different times and you'll see the salinity changes? Why?



This lesson plan was developed by the Education Program at the NJ Sea Grant Consortium. For complete program information contact the NJS GC at 732-872-1300 or njseagrant.org