



# Ocean Acidification

If you've ever been to the beach, chances are that you have seen a seashell. Most of these shells are made from a large group of organisms called *mollusks*. But what are seashells made out of? They are mostly made from a compound called *calcium bicarbonate*. Don't be scared by the name – it's the same substance as chalk! Mollusks depend on ocean chemistry be able to build their shells.

You may be aware that the ocean is saltwater. This is because of the relatively large amount of salts dissolved in it! However, the ocean also dissolves gasses like oxygen and carbon dioxide. As the amount of carbon dioxide in the atmosphere has increased from the burning of fossil fuels, the ocean's levels of carbon dioxide have also increased. The increased carbon dioxide increases the ocean's acidity – which can be a problem for the calcium bicarbonate shells of mollusks. Some common items at home that are acidic are vinegar and lemon juice. The opposite of acidic is alkaline or basic. Bleach is a common alkaline item. You can explore what happens to seashells when they are exposed to acids at home.

## Materials

- Two glass jars
- White vinegar
- Two Seashells (a stick of chalk will work too, as it's made of the same substance as a seashell!)
- Simulated ocean water (approx. 1 ½ teaspoons salt per 1 cup water)

## Performing the Experiment

1. Make some initial observations on this page about your seashells like their color, shape, and feel (hard/soft). If you have a small kitchen scale you can also take their weight! You may also want to take a picture.
2. Fill one glass jar with your simulated ocean water and the other with vinegar. There should be enough liquid to completely submerge the shells. Your vinegar represents ocean acidity.
3. Put a shell in each container and make observations in the "Ocean Acidification Observations" chart under "0 Hours."
4. Continue making observations after the shells have been in their containers for 1 hour, 12 hours, and 24 hours. If you were able to take the shell's weight before the experiment, take a final weight after 24 hours.

### Initial Observation of Seashells:

*\*A version of the ocean acidification video that explores the chemical reactions is available under Wetland Wednesdays at [www.youthwetlands.la4h.org](http://www.youthwetlands.la4h.org).*



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## Ocean Acidification Observations

Time Elapsed	Saltwater Container	Vinegar Container
0 Hours		
1 Hour		
12 Hours		
24 Hours		

## Further Questions to Consider

1. Why would an increase in ocean acidity be a problem for mollusks?
2. What are the limits of using pure vinegar to test ocean acidification's effects on seashells? What do you think were the benefits?
3. Identify activities you participate in that produce carbon dioxide. What changes can you make that would help reduce the amount of carbon dioxide your activities create?