Ocean Acidification Experiment

Ocean acidification occurs when carbon dissolves in seawater. When carbon dioxide dissolves in seawater, the water becomes more acidic and the ocean’s pH decreases. This process is happening on such a fast time scale that marine life, which has evolved over millions of years in a relatively stable ocean (and pH), does not have the time it needs to adapt. This is especially true for animals with shells that are already dissolving in acidic seawater. Second, this process binds up carbonate ions and makes them less abundant (ions that corals, oysters, mussels, and many other shelled organisms need to build shells and skeletons). While it is easy to predict how the chemistry of the ocean will change, it is not so easy to predict the impacts on biology. This experiment will help you see the process of acidification from your own home. Learn more about ocean acidification on our website: www.opakedu.org/webinar-resources

Supplies You Will Need:

- Two similar shells (like two clams, or two oysters) or two pieces of chalk
- Two clear containers that will fit your shells and/or chalk
- Water
- Vinegar
- Timer

Prep:

1. Fill one container with enough water that it will submerse your shell (or piece of chalk). Don’t put your shell in yet!
2. Fill the other container with enough vinegar that it will submerse your shell (or piece of chalk). Don’t put your shell in yet!

Procedure:

1. Observe your shells (or chalk). What do they look like? Are they hard? What is their color? Shape? Size? You can take a picture if you think it will help you later.
2. Put one shell (or piece of chalk) into the container with water and the other shell into the container with vinegar.
3. Wait one hour and make observations on the chart (see next page). Are there bubbles? Have the shells changed? At this point, do not remove the shells from their containers.
4. Record observations about the shells at 24 hours and 48 hours. At this point, take the shells out and feel them. Are they softer? Has the liquid changed at all?

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Use this table to document your observations:

<table>
<thead>
<tr>
<th>Time Elapsed</th>
<th>Freshwater Sample</th>
<th>Vinegar Sample</th>
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</thead>
<tbody>
<tr>
<td>Initial Observations</td>
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<tr>
<td>1 Hour</td>
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<td>12 Hours</td>
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<td>48 Hours</td>
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