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| **Ocean Acidification**  **Student Activity** |

**Introduction**

About a quarter of the carbon dioxide emitted into the atmosphere from the burning of fossil fuels, ends up in our ocean. Carbon dioxide causes the ocean to become more acidic, which is represented by a lower pH. Even though the ocean waters aren’t acidic, a small shift in this balance in pH, can make a big difference for the survival of organisms.

**Materials – per 6 students**

* 1 set of index cards
* 1 glass jar with seawater
* pH indicator solution with pH scale
* Soda Stream with carbonator

**Activity Directions**

pH Activity:

1. Place cards with numbers 1-14 in numerical order in line from left to right (along a table, or along floor depending on setting).
2. Label your pH scale with the “neutral”, “acidic” and “basic” cards.
3. Place the items cards at the correct pH number along your pH scale.
4. Fill out the worksheet.
5. Your instructor will reveal the answer key during your group discussion.

Soda Stream Activity:

1. Add about 10-15 drops full of universal indicator solution to the jar of seawater provided.
2. Gently swirl to mix.
3. What color is the seawater sample? Record this on the worksheet.
4. Compare this color to the printed pH scale. What is the pH? Is it an acid, a base or neutral? Record this on the worksheet.
5. Bring the jar to the Soda Stream and place the tube inside the seawater of the jar.
6. Hold the jar with one hand. With the other hand press the button on the Soda Stream 3 times (firmly!).
7. What color is the seawater sample now that CO₂ has been added? Record this on the worksheet.
8. Compare this color to the printed pH scale. What is the pH? Is it an acid, a base or neutral? Record this on the worksheet.
9. Fill out your worksheet and participate in the class discussion.

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| **Investigating Human Impacts**  **Ocean Acidification Worksheet** |

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. As a group, use the provided materials to place each card on the correct spot of the pH scale. Record your answers below. Label neutral, acidic and basic.



1. Fill out the following table while completing the Soda Stream Activity:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Color of seawater** | **pH of seawater** | **Acid, base or neutral?** |
| **Before adding CO₂** |  |  |  |
| **After adding CO₂** |  |  |  |

1. When you added carbon dioxide with the Soda Stream into your water, what happened?
2. What are some ways you can decrease your carbon footprint and help the marine life of our local estuary? List 3 examples and explain how these approaches will help decrease the excess production of carbon dioxide in our environment.