**Lesson 2A: Introduction to Ocean Acidification**

Students will develop new knowledge and apply existing knowledge of how CO2 is increasing in the atmosphere and how it interacts with our oceans

**Learning Objectives:**

* Students will review the anthropogenic factors contributing to increased CO2 levels in the Earth’s atmosphere
* Students will understand how CO2 in the atmosphere dissolves into the Earth’s oceans, and how agitation impacts this process

**NGSS Standards that apply**

* **MS-LS2-3:** Develop a model to describe cycling of matter and flow of energy among living and nonliving parts of an ecosystem. *The living aspect of this standard will be achieved in conjunction with the shelled organism lessons.*
* **MS-LS2-4** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
  + Emphasis is on recognizing patterns in data and making warranted inferences about changes in populations, and on evaluating empirical evidence supporting arguments about changes to ecosystems. *This standard will be achieved in conjunction with the shelled organism and data lessons.*

**Materials:**

* Worksheet
* Two liter bottle of soda, label removed

**Activity 1:** Graph Interpretation Worksheet

Have students interpret graphs regarding the history of CO2 in the Earth’s atmosphere historically vs. after the industrial revolution. Use the provided worksheet. This activity should take approximately 15-20min.

**Activity 2:** Soda Demo

This demo should help students conceptualize how gases can dissolve in liquids. This activity should take no more than 5min.

1. Sart by asking students how soda or soda water differs from regular water
2. Ask students if they see any bubbles in the unopened bottle of soda
3. Slowly uncap the bottle and ask student what they see
4. Slowly recap the bottle. What happens now?
5. Ask students what the bubbles are made up of (hint for students: we sometimes call soda carbonated beverages)
6. Ask students if any have or know about soda machines. If yes, how do they work?
7. Return to presentation and explain more about CO2 dissolving into water