

Cross-Curricular Discussion: Q

Directions: The following list of discussion questions is provided to help you take notes, brainstorm ideas and test your thinking in order to be more actively engaged in class discussions related to this article. All questions in this section are related to topics covered in "[Rising CO₂ threatens lake food webs.](#)"

CHEMICAL AND BIOLOGICAL SCIENCES**Discussion questions:**

1. Explain the pH scale. What is the benefit to it being a logarithmic-based scale?
2. What chemical reactions happen when carbon dioxide mixes with water? Explain why these reactions produce a more acidic environment?
3. What is Henry's law and how does it relate to the amount of dissolved CO₂ in a body of water. Can you think of another real-life example of Henry's law?
4. How does temperature affect the solubility of solids or gases in liquids?

5. What are arthropods and their related families?

6. What is a food web?

7. What are chemical defense signals? Why would these defenses be selected for over time?

Extension prompts:

8. Based on the normal mode of oxygen and carbon dioxide transport in animals, how might increased CO₂ make animals less alert?

9. For this week's article, make a diagram of how each event causes or interacts with other events, starting with removal of fossil fuels from the ground.

ENGINEERING AND EXPERIMENTAL DESIGN

Discussion questions:

1. What additional aquatic organisms could be tested for sensitivity to climate change?

2. Based on current climate trends and general human behavior, what variables could be tested for these organisms?

Extension prompts:

3. Design a simple procedure that would demonstrate the reaction of CO₂ and water yielding a more acidic solution?

4. Shells are made of calcium carbonate (CaCO₃), the same chemical as over-the-counter antacids like Tums, chalk, limestone and marble. How can you demonstrate the effect of a mildly acidic liquid on calcium carbonate?

5. How could you reduce or counteract the effects of rising CO₂ on water and water-dwelling organisms?