

## **Supporting with Science: Questions to Consider**

### **Introduction to Stream Gases**

- Why do scientists study gases in aquatic ecosystems?
- How can measuring gases in streams help us understand environmental changes?

### **Carbon Dioxide (CO<sub>2</sub>)**

- What are the main sources of CO<sub>2</sub> in a stream ecosystem?
- How does CO<sub>2</sub> concentration in a stream relate to biological activity?
- How can CO<sub>2</sub> influence the pH of a stream?

### **Methane (CH<sub>4</sub>)**

- What conditions lead to methane production in streams?
- How do human activities contribute to methane levels in aquatic environments?
- Why is methane considered an important greenhouse gas despite its lower atmospheric concentration?

### **Nitrous Oxide (N<sub>2</sub>O)**

- What role does N<sub>2</sub>O play in the nitrogen cycle?
- How can fertilizer runoff impact nitrous oxide concentrations in streams?
- Why is N<sub>2</sub>O considered the most potent greenhouse gas among those discussed in the reading?

### **Nitrogen-to-Argon Ratio (N<sub>2</sub>:Ar)**

- Why do scientists measure the ratio of nitrogen to argon in streams?
- How does an increased N<sub>2</sub>:Ar ratio indicate changes in microbial activity?
- What does the stability of argon concentrations tell us about nitrogen fluctuations?

### **Implications for Climate and Human Impact**

- How can studying dissolved gases in urban streams contribute to understanding climate change?
- What are some ways human activities influence the natural cycling of greenhouse gases in streams?