

## Suggested Discussion Questions for the Greenhouse Gas Videos

The video “Climate 101 with Bill Nye” is appropriate for Middle School and early High School students. The video “How do Greenhouse Gases Actually Work?” can be added for older students.

### CLIMATE 101 with BILL NYE Suggested Questions and Answers:

1. What is the purpose of having a “scientific control” in an experiment?
  - a. The “control” reduces error by isolating the experimental factor. Because all the variables in the control are kept constant, an experimenter can compare the control to the effects of changing an independent variable.
2. In the demonstration with the glass jars, which jar is the “control” - common air or increased carbon dioxide? And what is the independent variable being tested?
  - a. The jar with increased carbon dioxide because carbon dioxide is the independent variable
3. Ask the students to identify how the experimenter reduced experimental errors to isolate the effect of the independent variable (carbon dioxide concentration)?
  - a. By ensuring the jars are the same type of bottle, temperature, initial condition before adding CO<sub>2</sub>, the same temperature probes, the same heat lamps at the same distance
4. Why are greenhouse gases sometimes good?
  - a. They help regulate Earth’s temperature, without them it would get cold without the sun out
5. What are negative factors of increased carbon dioxide?
  - a. Global warming, sea level rise, dramatic weather events

### How Do Greenhouse Gases Actually Work? Suggested Questions and Answers:

6. What helps regulate temperature on the Earth in comparison to the moon?
  - a. The Earth’s atmosphere
7. Infrared radiation is an electromagnetic wave (light) but it is also called what other name?
  - a. Heat
8. How do molecules absorb heat?
  - a. When molecules are electrically charged, they can absorb radiation. This can happen because they’re charge distribution is lopsided (water vapor) or because they are being knocked around in a way that changes their charge distribution
9. What two gases make up most of the atmosphere and are they greenhouse gases?
  - a. Nitrogen and oxygen. They are not greenhouse gases.