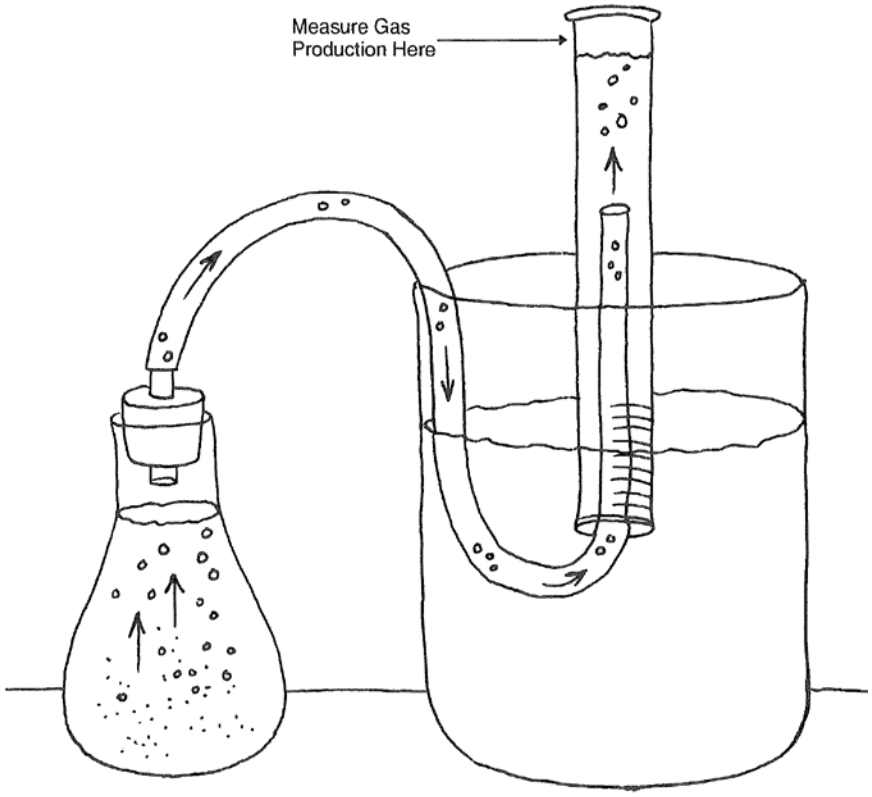
Can You "Gas" What's Happening
Gas Production in Living and Nonliving Systems

Measuring Gas Production-Transparency

Figure 12.3-Gas Production Setup.



Can You "Gas" What's Happening?
Gas Production in Living and Nonliving Systems

Gas Production Graphs-Transparency

Figure 12.4-Gas Production Graph, Living Systems.

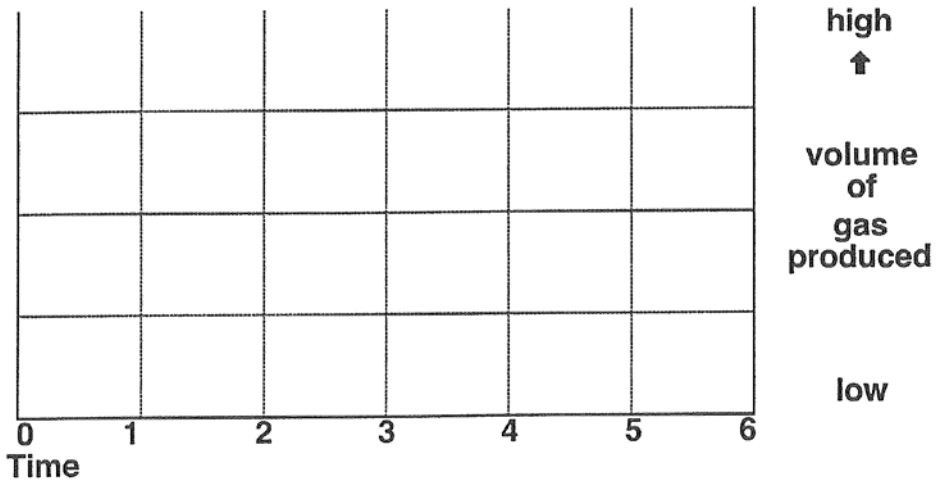
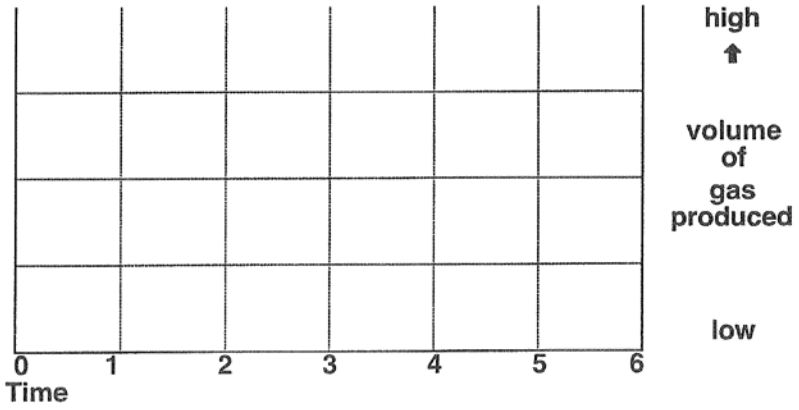


Figure 12.5-Gas Production Graph, Nonliving Systems.



Can You "Gas" What's Happening?
Gas Production in Living and Nonliving Systems

Measuring Gas Production- Directions

1. Measure 2 tablespoons of each soil sample into a carrying dish. Be sure to label each dish.

2. Obtain a single-holed stopper that has a glass tube in it.

3. a. Connect 1 foot of rubber tube to one end of the glass tube.

   b. Fill your water bath halfway with warm water.

   c. Put together the stopper-tube assembly and submerge it in the water bath.

   d. Submerge the graduated cylinder in the water bath.

   e. Put the rubber tube 10 centimeters into the graduated cylinder while holding it under water.

   f. Let any air bubbles escape.

   g. Now invert (turn upside down) the graduated cylinder.

   h. Make sure there is very little air in the cylinder. Be careful to keep the rubber tube in the graduated cylinder and the mouth of the graduated cylinder underwater throughout the entire experiment.

4. One student must continue to hold the graduated cylinder under water. This student also holds the rubber tube in the cylinder, keeps track of timing, and makes the readings of gas production.

5. The other student should pour 200 ml of hot nutrient solution into the Erlenmeyer flask and hold the flask on the bottom of the tub. As quickly as possible, this student should pour the soil sample into the flask and seal the flask with the stopper end of the stopper-tube assembly.

6. The first student should take an initial reading of the graduated cylinder by holding it vertical and stationary and lowering his or her eye-level to the reading level.

7. The second student should record all readings on the student worksheet. Readings should be made at 30-second intervals. After three minutes, change the reading interval to every minute. Stop taking readings after 15 minutes or after the gas-level in the cylinder has not changed for two minutes.

8. Repeat this procedure with the other Earth Sample. Switch roles for holding the flask and taking the readings.

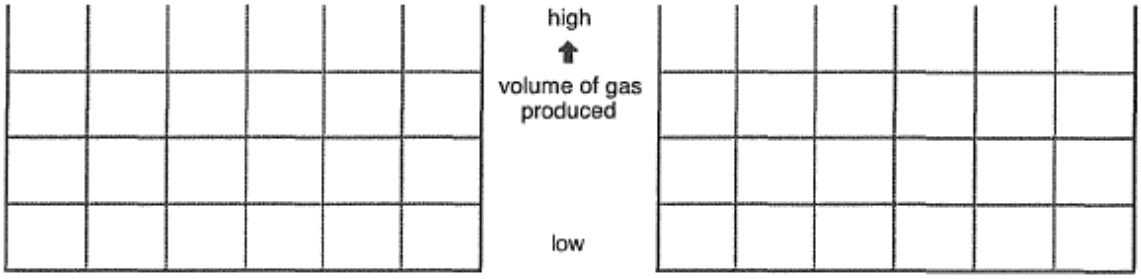
Can You "Gas" What's Happening?
Gas Production in Living and Nonliving Systems

It's Gas! Worksheet

Name: _____ Date: _____

1. What do you think your graphs will look like? Sketch your best guesses below.

Figure 12.6—Gas production Graphs



2. State your hypothesis:

3. Record your data into table 12.1 on **XXXXX.**

Table 12.1—Gas Production Data

Time in Minutes	Sample # 7 Gas Production in ml or cubic cm	Time in Minutes	Sample # 8 Gas Production in ml or cubic cm
0.5		0.5	
1.0		1.0	
1.5		1.5	
2.0		2.0	
2.5		2.5	
3.0		3.0	
4.0		4.0	
5.0		5.0	
6.0		6.0	
7.0		7.0	
8.0		8.0	
9.0		9.0	
10.0		10.0	
11.0		11.0	
12.0		12.0	
13.0		13.0	
14.0		14.0	
15.0		15.0	

Can You "Gas" What's Happening?
Gas Production in Living and Nonliving Systems

Gas Analysis – Worksheet

Name: _____ Date: _____

1. What were your observations of Earth Sample # 3?

2. What were your observations of Earth Sample # 4?

3. Graph your results. Use the hypothesis graphs as a guide to set up a proper graph.

4. Describe what you think is happening in the graph of Earth Sample # 3?

5. Describe what you think is happening in the graph of Earth Sample # 4?

6. What were the differences and similarities in the gas production of the two soils?

7. Do you think that either of the soils contains a living system? Why or why not?

8. How did the final results differ from your initial hypothesis?