

Anticipation Guide

Name: _____

Directions: *Before reading the article*, in the first column, write “A” or “D,” indicating your Agreement or Disagreement with each statement. Complete the activity in the box.

As you read, compare your opinions with information from the article. In the space under each statement, cite information from the article that supports or refutes your original ideas.

Me	Text	Statement
		1. Burning biogas produces CO ₂ , but the process is considered carbon neutral.
		2. Methane (CH ₄) has a higher global warming potential than CO ₂ .
		3. Dairy farms and livestock account for about 50% of all methane released into the atmosphere in the U.S. due to human activities.
		4. Greenhouse gases absorb infrared radiation from Earth’s surface.
		5. Cows release methane only when they burp.
		6. Cow manure is a good natural fertilizer.
		7. Both CO ₂ and CH ₄ are produced in anaerobic digesters.
		8. Dairy farmers can save money by generating electricity from methane to power their farms and heat their homes.
		9. Food scraps cannot be used to generate methane.
		10. Almost all dairy farms in the U. S. now have anaerobic digesters.

Student Reading Comprehension Questions

Name: _____

Directions: Use the article to answer the questions below.

1. How many biogas systems were in operation in the U.S. in 2017?
2. How much manure do the cows at Noblehurst Farms produce each day?
3. What is the approximate monthly reduction in carbon dioxide production by Noblehurst Farms after implementing a methane digester?
4. Which two industries account for 10% of the methane generated by human activities in the U.S.?
5. How much money does Noblehurst Farms save by using methane digesters?
6. How do cows contribute to the production of greenhouse gases?
7. Which elements combine to make methane?
8. Define global warming potential.
9. Aside from dairy farms, list three other potential sources of biogas.
10. What is enteric fermentation?
11. Explain how a methane digester functions.

Student Reading Comprehension Questions, cont.

Questions for Further Learning

Write your answers on another piece of paper if needed.

1. Burning methane releases CO_2 , which is also a greenhouse gas. Explain why burning methane is better than releasing it into the atmosphere.
2. Explain how greenhouse gases raise global temperatures.
3. Compare and contrast the chemical formulas for the reaction that takes place in a digester and the combustion of methane.
4. Do you think farms should be required to implement methane digesters? Why or why not?
5. California passed a law requiring dairy farms to reduce their production of methane, so many farms have begun using a digester. What could other industries or organizations do to reduce their methane production? Be creative yet reasonable.

Graphic Organizer

Name: _____

Directions: As you read, complete the graphic organizer below to describe the role of dairy farms and livestock production in producing and removing greenhouse gases from the atmosphere.

	Describe the process and greenhouse gases involved
Burning biogas	
Enteric fermentation	
Anaerobic digester	<i>Describe temperature, chemicals, and overall process.</i>
Burning methane (generator)	<i>Include chemical equation and advantages.</i>

Summary: In the space below, or on the back of this paper, write a one-sentence summary (18 words or less) of the information in the article.