

Lab 3.1: A Dairy's Role in the Environment

Name:

Each of us plays an important role in protecting our environment, whether we live on a dairy farm or in a residential community. Dairy farms have a positive effect on the environment because dairy farmers continue to apply environmentally-friendly practices. Use the two sketches on the back of this page to compare and contrast the two communities and their impact on the environment.

What aspects of the farm have a positive effect on the environment? What should the farmer do to make sure he or she protects the environment from any harmful effects? What aspects of the residential and industrial community could negatively impact the environment? What can we do to protect the environment from those negative effects?

Farm Community Attribute	Positive or Negative	Residential and Industrial Community Attribute	Positive or Negative

1. List 3-5 attributes of each community that could affect the environment:

2. List ways the farmer can make all of the attributes have a positive impact on the environment:

3. List ways we can ensure the residential community has a positive impact on the environment:

4. Explain ways the dairy farm in the sketch benefits the environment around it:



Discover Dairy is an initiative of the American Dairy Association North East, Center for Dairy Excellence, Midwest Dairy Council and the Pennsylvania Dairy Promotion Program, and, funded in part by the Center for Dairy Excellence Foundation of Pennsylvania.









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Lab 3.2: Sources of Energy on the Farm

Name:

In this activity, you will be determining whether thermal energy, which is energy produced from heat, can be made to do useful work. Before you begin the experiment, circle the hypotheses you believe is true and write it below.

Hypotheses:

Thermal Energy <u>can / can not</u> be made to do useful work.

Rewrite Your Hypotheses:

What you will need:

Plastic 1-liter bottle (empty) Bowl of hot (not boiling) water Small rock Large balloon Bowl of ice water Freezer to cool bottle and balloon

Steps:

- 1. Cool the balloon and the bottle in a freezer for 5 minutes.
- 2. Fill the bowl with hot, not boiling, water.
- 3. Put the balloon over the mouth of the bottle, making sure the air has been squeezed from the bottle.
- 4. Place the bottle into the bowl of hot water.
- 5. The air inside the bottle should expand and inflate the balloon.
- 6. After it is inflated, put the bottle with the balloon in the bowl of ice water and observe what happens.
- 7. Put the rock on top of the balloon to observe how the expansion and contraction can be converted into useable work.

Questions:

MidwestDairv

1. What happened when you put the bottle in the warm water?	
Why?	
2. What happened when you put the bottle in cold water?	
Why?	
 Were you able to create a device that performed useful work? YES or How? 	NO
4. What other devices can you think of that use thermal energy to do work?	
5. How do you think sunlight and solar energy relate to thermal energy?	
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