

Natural Gas: How this Clean Energy Source was Formed

Name _____

Phenomenon: Demonstration:

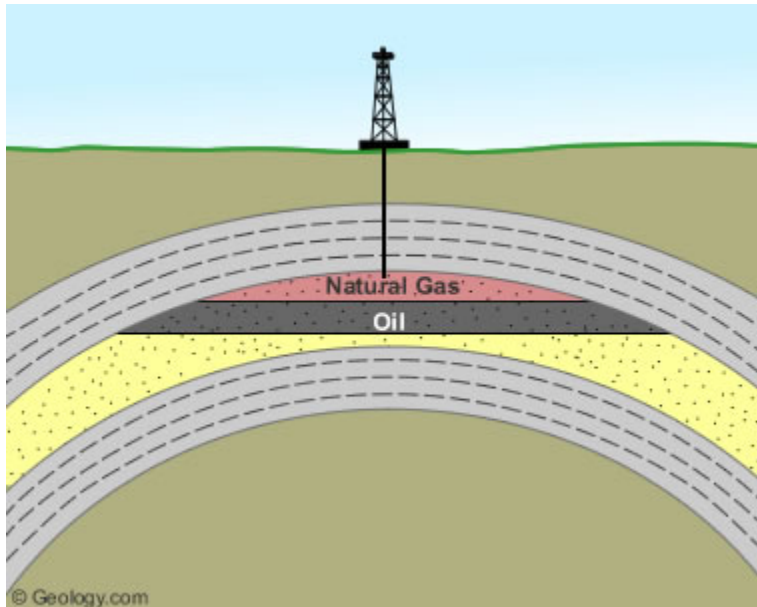
List 3 questions you have about what happened?

- 1.
- 2.
- 3.

Natural gas is one of the United States most useful gases. Natural gas that is extracted from geologic formations is considered a non-renewable fossil fuel. We use natural gas in both residential and Industrial sectors. Energy from natural gas accounts for 31% of energy consumed in the United States. So what makes this gas so unique?

Natural gas is colorless, shapeless, and odorless in its pure form. Natural gas is combustible, abundant in the United States, and when burned it gives off a great deal of energy with fewer emissions than many other sources. Compared to other fossil fuels, natural gas is cleaner burning and emits lower levels of potentially harmful byproducts into the air. An ever-increasing supply of energy is needed to heat our homes, cook our food, and generate our electricity. This need for energy has elevated the integration on natural gas in our society, and in our lives.

What are two similarities between the demo and diagram # 1?



On the picture above there are dots showing the particles that make up the oil and natural gas. Do you think they are a good model of these states of matter? Why or why not?

Watch the following video about Natural gas and oil. (**Go to minute 1:26**)

[Oil and Gas Formation](#) (2:47 minutes) Write down two connections between the video and the demonstration.

1.

2.

Answer the following questions.

1. What is the state of matter of the following?
 - a. Oil
 - b. Natural Gas
2. Why do you think the natural gas reservoir was above the oil reservoir?

Heat Energy is required to form Natural Gas. We also know that heat energy affects the particles of matter.

Experiment:

Equipment: Empty .5 Liter water bottle, balloon that will fit over the top, 2 ice cream buckets (or other containers about that size), hot water source (electric kettle), ice water

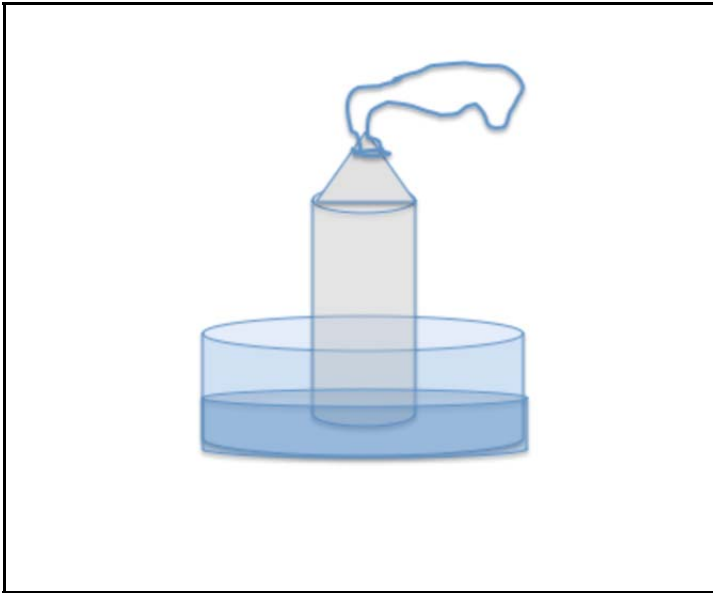
Set up: Put a balloon over the top of a plastic bottle. Add hot water to the bucket and set the bottle inside.



Use dots to show the particles of water in both the liquid and gas states in the sketch above.

Predict what you think is going to happen to the balloon when we set the bottle and balloon into hot water by writing it here:

Show the particles of the gas using dots.



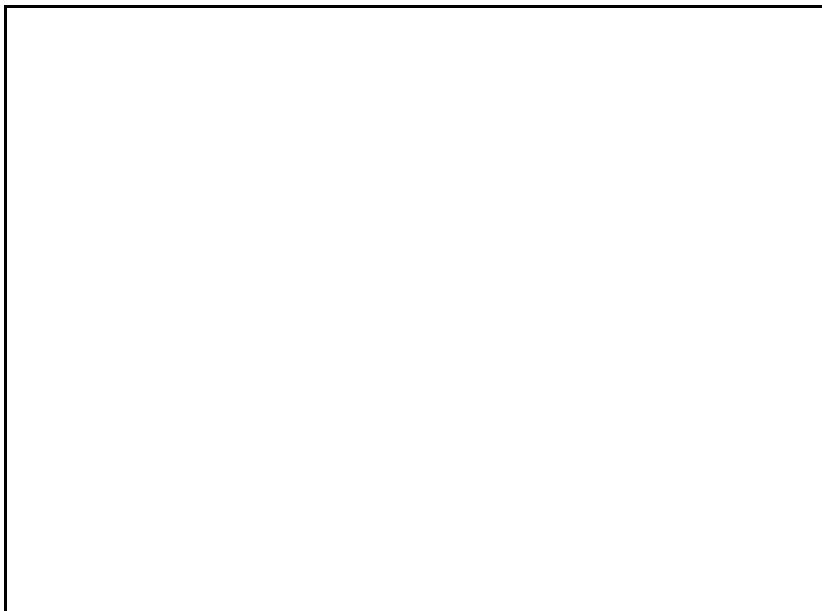
What happened to the particles of air when you added heat energy?

Now do the experiment again with cold water in the bucket. What do you think will happen?

Observe the dots that represent the layers in Diagram #1 at the beginning of this lesson. Do you think the dots are shown at the correct distance from each other for the Natural gas and the oil? Has your thinking changed?

What do you know now that might change the model?

Redraw the picture of the natural gas diagram adding more of your knowledge about the particles of natural gas and oil deposits. Use dots to show the particles of gas and oil.



Summarize what happens to particles when heat energy is added:

Write your **claim** of the changes.

State your **evidence** of these changes.

Support your **reasoning** with this explanation.