



Life:Powered

**NATURAL GAS: A
Lesson on Energy
Sources for Middle
School Students**

NATURAL GAS: A Lesson on Energy Sources for Elementary and Middle School Students

EXPLAIN: What is natural gas?

Natural Gas is a fossil fuel. Fossil fuels are created over time by organisms like phytoplankton and zooplankton which sink to the bottom of the ocean and become fossil fuels with time and persistent pressure. These fuels are found in permeable rocks which are drilled in order to release the fossil fuels like petroleum and natural gas. Natural gas is processed into many products in the refinery process including heating homes, cooking, generating electricity, fueling vehicles, and manufacturing plastics.

This activity will trace this versatile and important energy source from its formation to one of many uses. Start the activity with a quick demonstration to ensure student understanding of one of the concepts involved in the formation of natural gas. This activity can be done as a teacher demonstration for a whole class or in small groups for a more hands-on approach. The supplies that you need are:

- An empty 2-liter soda bottle, label removed
- An unopened condiment package
- Water

Before starting the demonstration, drop the condiment package into a cup of water to make sure that it will only slightly float. For the demonstration, fill the soda bottle completely full with water. Drop the condiment package into the bottle and seal the bottle with the lid. Have the students make some observations.

Then, squeeze the sides of the bottle. This will make the condiment package drop to the bottom of the bottle. Questions to ask include—

- Why do you think the condiment package was floating at first?
(Answers might include that it is less dense or that there is air in the package.)
- What changes do you see in the outside of the packet?
(Depending on the type of packet used, you may notice the outside of the packet becomes wrinkled when you squeeze the bottle.)

- What do you think caused the package to drop to the bottom when the bottle was squeezed? (*Pressure caused the compaction of the molecules in the packet which caused the packet to become more dense. When the pressure is released, the molecules will spread apart again, making the packet less dense.*)

This demonstration shows how natural gas can be removed from underground wells. The natural gas is compressed and when that pressure is released, the gas becomes less dense and will flow upward toward the surface where it can be removed and processed.

ELABORATE

(see worksheet: *ELABORATE: The Adventures of Natural Gas Worksheet*)

Fossil fuels like natural gas were formed over a long period of time when pressure was applied to decaying plants and animals. The activity “Adventures of Natural Gas” is an opportunity to have students demonstrate their understanding of this process with a timeline. Have students cut out the story boxes on the worksheet and arrange them in the correct order on the following comic strip layout page. Glue one story box into each frame in the correct order. Neatly draw and color an illustration for each frame. The illustrations should show attention to detail and an understanding of the parts of the story.

ELABORATE: The Adventures of Natural Gas Worksheet

Cut out the story boxes below and arrange them in the correct order on the following comic strip layout page. Glue one story box into each frame, making sure you keep them in the correct order. Neatly draw and color an illustration for each frame. Your illustrations should show attention to detail and an understanding of the parts of the story.

Natural gas can be used for many things, including heating homes, cooking, generating electricity, fueling vehicles, and manufacturing plastics.

Millions of years ago small organisms called phytoplankton lived in the ocean. Phytoplankton gets its energy from the sun.

The gas made its way slowly upward through permeable layers of rock to the surface unless it reached a layer it couldn't get through.

Pressure from the layers of sediment covering the ancient organisms, along with heat, changed the decaying organisms into natural gas.

People drill gas wells to collect the natural gas.

The gas is transported to a processing plant where it is cleaned and made ready for use.

Phytoplankton and the Zooplankton that ate it sank to the bottom of the sea when it died.

The Adventures of Natural Gas Worksheet cont'd

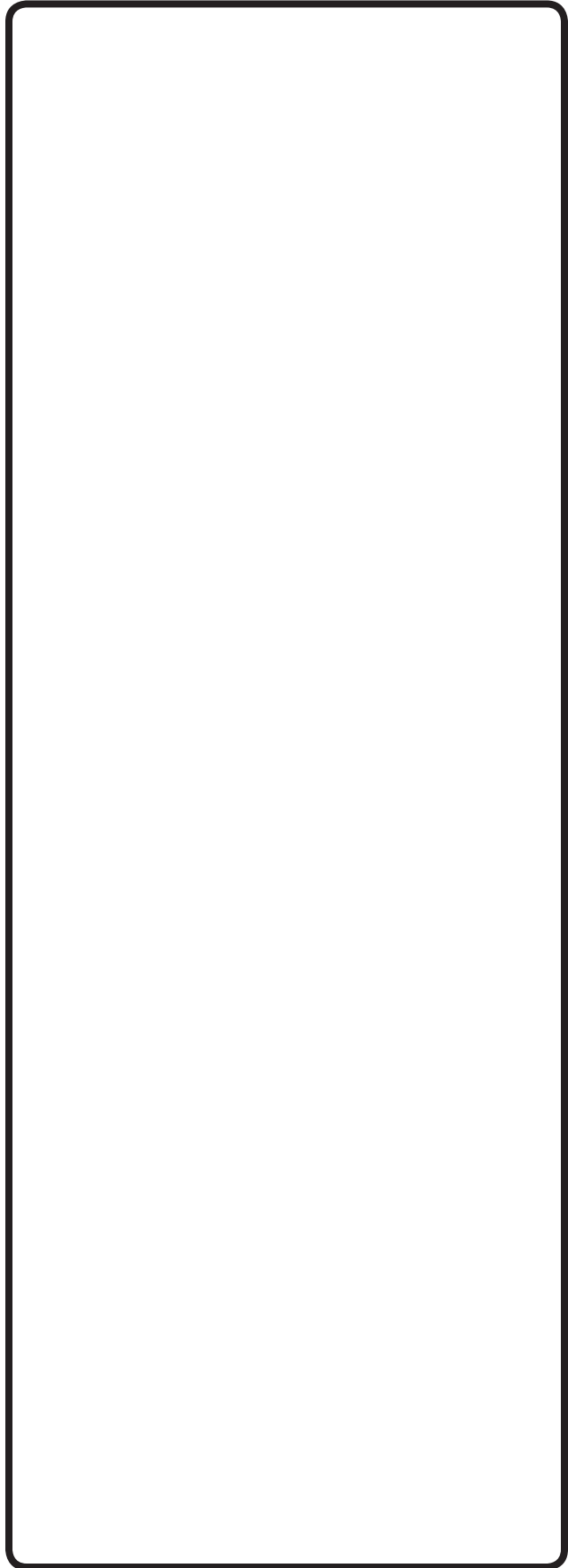
T I T L E

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A large empty rectangular box with a black border, intended for drawing or writing.

The Adventures of Natural Gas Worksheet cont'd

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Adventures of Natural Gas Activity KEY

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