

# Transporting Natural Gas

Name \_\_\_\_\_

**Background:** Natural gas is an important source of energy for modern society. It burns cleaner than other fossil fuels and is abundant. It forms similarly to other fossil fuels and often with oil or coal. It is a gas in its original state but may be liquefied by changes in temperature or pressure. Most natural gas is delivered in its gas state by pipeline in the United States. To get the gas to the international market, the development of technology to liquefy the gas has grown. Liquefied gas is 600 times smaller in volume than the same amount of gas! Liquefied natural gas must be cooled to about -260° Fahrenheit for shipping and storage. The liquefaction process makes it possible to transport natural gas to places pipelines do not reach and to use as a transportation fuel.

**The problem:** Natural gas must be changed from a gas to a liquid and then back to a gas to be transported and used. Here is a ship that carries natural gas.



<https://www.energy.gov/fe/science-innovation/oil-gas/liquefied-natural-gas>

Write down three questions about this design:

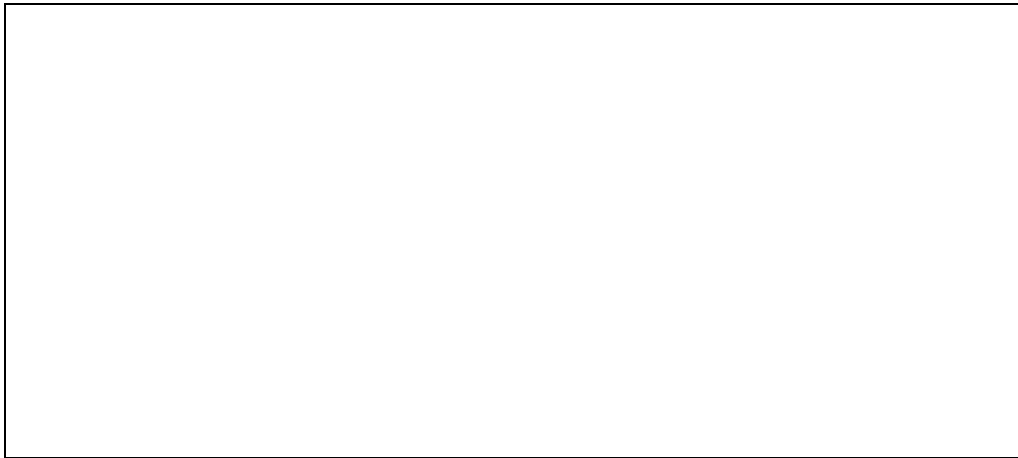
- 1.
- 2.
- 3.

Natural gas is too flammable to handle in a classroom setting, so water will be used as a model of this technology. How does water change from one phase to another?

Listen as your teacher describes the process of water distillation.

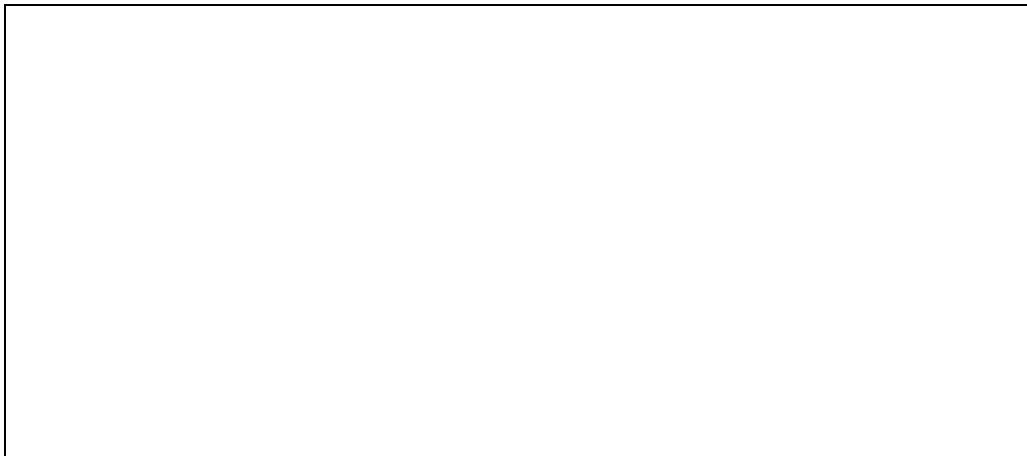
There are many ways to alter the distillation process. Work on a design that will most effectively transmit 100 mL of water from one beaker to another with your group. Your success will be measured by transforming the water from liquid to gas to liquid again and the amount of water you get in the second tube.

1st design:



Results: Trial 1: \_\_\_\_\_ mL in test tube

2nd design:



Trial 2: \_\_\_\_\_mL in test tube

Observe the class results and data. Using evidence from your investigation, write an explanation for why there may be differences in the data. Also, identify similarities and differences between your group's design and others.