

G.I.R.L.S.

GIRLS INSPIRING RISING LADIES IN STEM

Name: _____ Date: _____

TOPIC #2: STATES OF MATTER

SODA IN A BALLOON

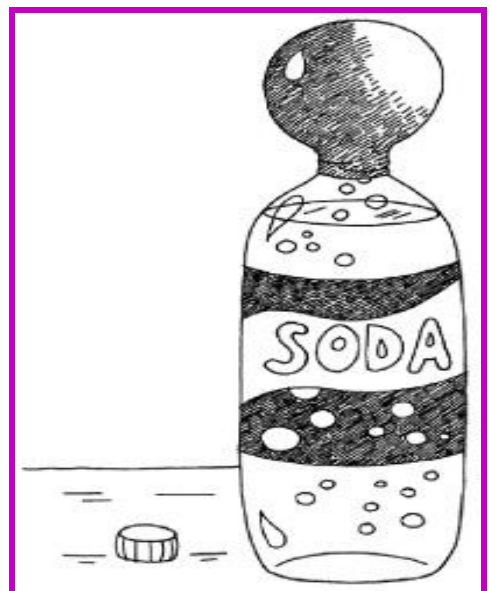
SCIENTIST OF THE DAY: MARIE CURIE

Marie Curie was born in 1867 in Warsaw, Poland. Her parents were both teachers, and she was the youngest of five children. Marie had a tough childhood in Poland. While Poland was under the control of Russia, people were not allowed to read anything. At a young age, her oldest sister died of the disease typhus, and her father of tuberculosis. Marie finally attended college in France and earned her degree in physics. In 1903, Marie and her husband Pierre earned the Nobel Prize in physics for their work in radiation, and Marie became the first woman to win this prize. Later, in 1911, Marie won the Nobel Prize in Chemistry for discovering two elements. She then became the first person to win two Nobel Prizes.



BACKGROUND

Soda is carbonated, which means carbon dioxide has been dissolved into it. Gases can dissolve in a liquid, as this experiment of soda pop in a balloon shows. But they won't stay there if you release the pressure that holds them. High pressure causes a gas to turn into a liquid, but when pressure is released it allows the gas to reform.



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NEW WORDS

- **States of Matter:** _____

- **Solid:** _____

- **Liquid:** _____

- **Gas:** _____

- **Pressure:** _____

- **Dissolve:** _____

TODAY'S EXPERIMENT

In this experiment, we will be using soda pop and a balloon to explore the topic of states of matter. When soda is made, carbon dioxide is dissolved in the liquid and the drink is sealed. Carbon dioxide is naturally a gas, so when we pressurize the container, it stays a liquid. We will be observing what happens when we open a bottle of soda with a balloon attached to the top of it, and how long it takes for us to observe a change.

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SCIENCE CONCEPT: HYPOTHESES

In science, a hypothesis is an idea or explanation that can be tested through study and experimentation. A hypothesis is always an *educated* guess that is made using information we already know. After you make a hypothesis, you test it by doing an experiment to see what happens. Outside science, a theory or guess can also be called a hypothesis. Generally, hypotheses are stated as an "if... then..." statement.

Let's create a hypothesis for our experiment:

MATERIALS LIST

- ☐ Soda pop
- ☐ Balloon
- ☐ Stopwatch

PROCEDURE

1. Open a bottle of soda pop, and set it on a table.
2. Immediately slip the end of a balloon over the neck of the bottle. Pull the balloon's end well down over the bottle so that it fits tightly.
3. Discuss observations at the end of class.

QUESTIONS

1. Why did the balloon expand overtime? What was the gas it collected?

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2. Why do you think if you leave soda open for a while it goes "flat"?

3. Can you think of other drinks that are carbonated that this would happen with?

EXIT PASS

Q D H S J O M Z R E U T R Q A
T V N T U U Q E G V E G E L A
S L N A J U R Z E L S I G R Q
X M X T T U J R W O K F S M D
B J K E S F H H S S W U Z C J
J D Y S I D X G A S S U W K B
A C E O Y P R R X I M G W L G
N R L F A R L O O D O D V K A
P W A M X U H S P V L J S F S
K Z D A Y V J Q C R E V Y O B
A C L T D V C G B L C H S Z Q
Z P R T Q Z J D F Q U O B P E
F J W E H V D S Y H L Q M P L
O M S R N W E G S I E G A G F
F U L I Q U I D D J H A G Y W

DISSOLVE
GAS
LIQUID
MOLECULE
PRESSURE
SOLID
STATESOFMATTER

EXPERIMENT LINK

- <https://lifestyle.howstuffworks.com/crafts/science-projects/science-projects-for-kids-states-of-matter4.html>