

Icky Squishy Matter (K-2nd Grades) Pre-Visit Activities

Vocabulary List and Student Definitions (early elementary level):

- **Matter:** the material substance of the universe that has mass and occupies space
- **Atom:** particle of matter; building block of the universe
- **Solid:** state of matter that holds its own shape
- **Liquid:** state of matter that takes the shape of its container
- **Gas:** state of matter that is invisible and has the ability to expand indefinitely
- **Chemistry:** area of science that studies matter and the reactions of matter

Teacher Background and Supporting Information

1. What is Chemistry?

- a. **Chemistry** is the study of matter. It studies what makes up matter, how matter acts, and how it changes.
- b. **Matter** is anything that takes up space. All matter is composed of **atoms**, the building blocks of the universe. Atoms are too small to see.
- c. Molecules are made up of two or more atoms that are bonded together.
- d. Chemistry happens around us all of the time. Chemistry occurs when our body digests food, when cooking, when making ice tea or Kool-Aid, etc.

2. What are Physical and Chemical Reactions?

- a. A **physical reaction** occurs when the appearance of a substance (matter) is changed (melting ice, boiling water, crumpled piece of paper) but the makeup of the substance remains the same.
- b. A **chemical reaction** occurs when one or more substances change into a new substance. That is, the bonds between atoms change and the atoms are rearranged to create new substances. When chemical reactions occur there is always a change in energy. Sometimes energy is given off and sometimes energy is absorbed.
- c. Predicting Reactions Analogy
 - i. What would your reaction be if I came up to you on a day like today and said boo (in a normal tone of voice)? Would you be scared?
 - ii. What if you were lost alone in the woods at night without a flashlight and I came up to you and said boo (in a louder voice)? Would you be scared?
 - iii. You just predicted how you would react in different situations. Chemists predict how different materials or substances react in different situations.

3. States of Matter

- a. In chemistry, it is important to carefully observe the properties of matter. Matter can exist in different states:
 - i. **Solid:** Has a definite shape (and volume). Molecules are tightly packed together. Solids hold their own shape. Solids cannot be compressed or made smaller. Examples of solids include wood, ice, and iron.
 - ii. **Liquid:** Takes the shape of its container (and has a fixed volume). Molecules are in contact with one another, but they are packed less

tightly than a solid. Liquids flow. Examples of liquids include milk, water and blood.

- iii. **Gas:** Takes the shape (and volume) of its container. Can be compressed. Molecules are spaced far apart. Oxygen, carbon dioxide and helium are examples of gases.
- vi. There are two other states of matter:
 - a. Plasmas: similar to gases but are not on Earth. Stars are examples of plasmas.
 - b. Bose-Einstein condensates: atoms clump at extremely low temperatures and become one “super atom”.
 - i. www.chem4kids.com

Student Activities

1. Recommended Readings:
 - a. *What is the World Made of? All About Solids, Liquids, and Gases* by Kathleen Zoehfeld
 - b. *What is Matter?* by Don Curry
 - c. *Solids, Liquids, and Gases* by Ginger Garrett
 - d. *Change It! Solids, Liquids, Gases and You* by Adrienne Mason
 - e. *What's the Matter in Mr. Whisker's Room?* by Michael Ross and Paul Meisel
2. Explore water as a solid, liquid and gas by filling a disposable, plastic glove with water. Seal it with a rubber band or twist tie and place in a freezer overnight (Optional: Add food coloring to the water before freezing). Allow students to make observations about the frozen hand as it melts. Have them write, draw, and discuss observations and ideas.

Name: _____

Exploring Ice Hands



What I know about ice is ...

1.

2.

3.



What I wonder about ice is...

1.

2.

3.



Water as a **SOLID** looks like:

Water as a **SOLID** feels like:

<p>Water as a LIQUID looks like:</p>	<p>Water as a LIQUID feels like:</p>
<p>Water as a GAS looks like:</p>	<p>Water as a GAS feels like:</p>