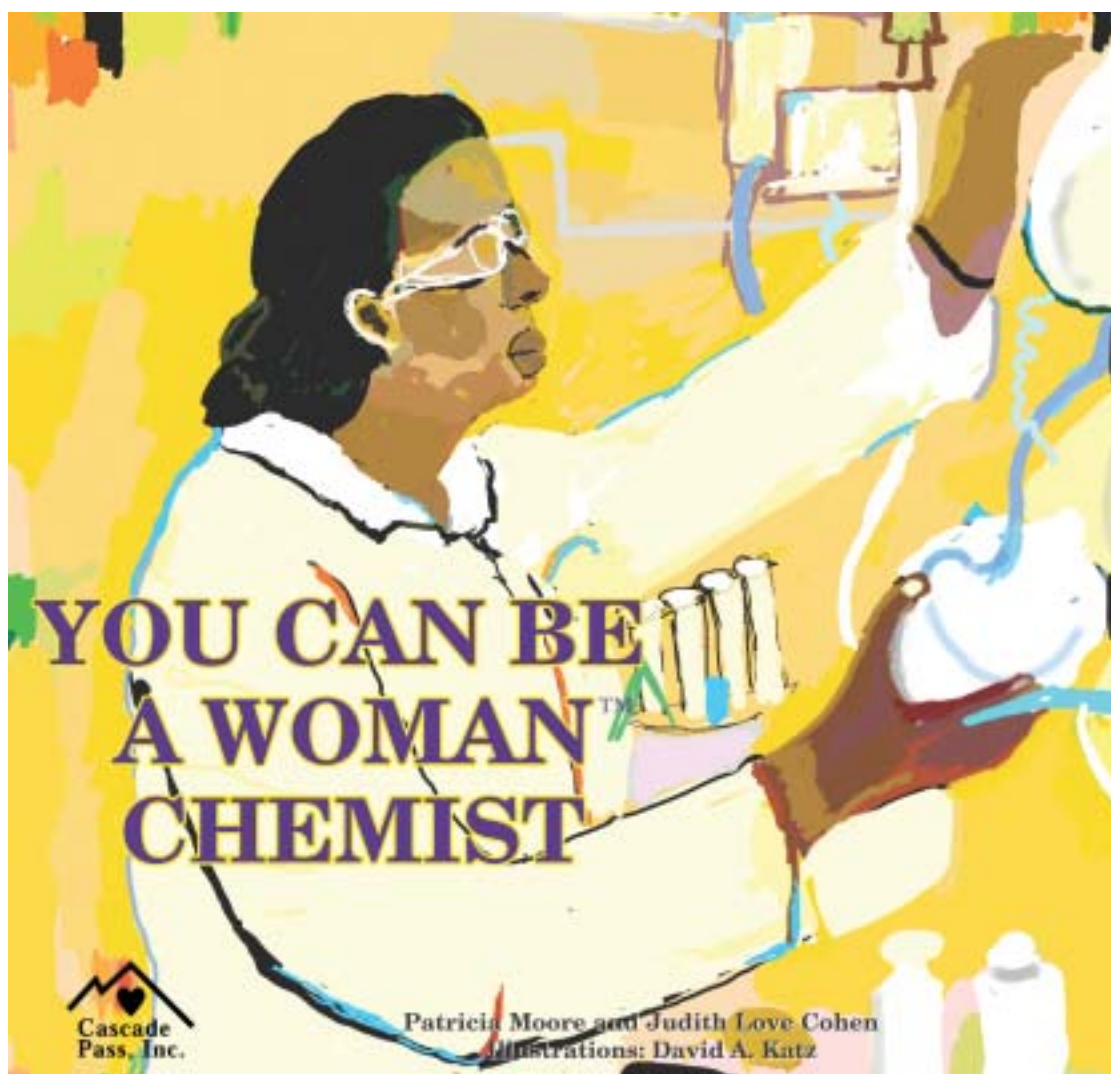


## YOU CAN BE A WOMAN™ CHEMIST



## YOU CAN BE A CHEMIST

### SCIENCE LESSON PLAN 1

- PURPOSE:** To gain an understanding of physical changes of state, such as solid to liquid (ice melting).
- MATERIALS:** Large space for children to move, ice cubes in plastic bags, sunny spot or table lamp.
- PROCEDURES:** Have a half-dozen or so children huddle together in the center of the room. Tell them that they represent a solid. (e.g. ice cube)  
Have another child observing an ice cube in a plastic bag under a lamp or in the sunny spot. Have the child report on the condition of the ice cube. As the ice cube melts, the group of children in the center of the room should start to move away from each other and move around each other, but still stay within a designated square. They are melting into liquid water.  
Take a few drops of the melted ice and put it under a lamp. Have another child observe what happens and report on the evaporation of the water. Have the group of children become more active and run around the room, using all the room they can. They are evaporating into gas or steam.
- CONCLUSIONS:** What makes a substance change state? (e.g. temperature change)  
Can the changes be reversed? (can water go back to being ice?)

### SCIENCE LESSON PLAN 2

- PURPOSE:** To begin to understand how the separate elements are combined into compounds.
- MATERIALS:** List of elements, list of common compounds, package of various colored gumdrops, box of toothpicks.
- PROCEDURES:** Have the children separate the gumdrops by color. Have them pick a few compounds from the list provided. (e.g. sodium chloride (table salt); di-hydrogen oxide (water); di-hydrogen sulfide (rotten egg gas).  
Have the children select a color for each element in the compounds chosen (hydrogen, sulfur, oxygen, sodium, chlorine)  
Have the children use toothpicks to connect the gumdrops representing individual elements. One oxygen element and two hydrogen elements can be connected with two toothpicks; one carbon and one oxygen element can be connected with one toothpick; One sodium element and one chlorine element are connected with one toothpick. Each model represents a molecule of the compound.
- CONCLUSIONS:** What does the chemical formula  $H_2O$  represent? What do the numbers in formulas mean? What do the letters mean?
- RESOURCES:** Periodic Table or Library books such as *The Usborne Book of Science*.

## SCIENCE LESSON PLAN 3

**PURPOSE:** Learn about chemical reactions.

**MATERIALS:** Plastic cups, tablespoons, flour, cornstarch, baking soda, confectioner's sugar, water and vinegar, paper and pencils.

**PROCEDURE:** Have the children take notes on what happens when each white powder is mixed with first water and then vinegar (in separate plastic cups). They should note changes in temperature, appearance, texture, and taste. (All substances are edible)

Note: Flour will form paste in the water and in the vinegar; baking soda make carbon dioxide bubbles when mixed with vinegar; cornstarch and water form a suspended goo; confectioner's sugar in water is sweet.

**CONCLUSIONS:** Which of these are chemical reactions and which are not. (Sugar and water is not - it is a mixture; baking soda and vinegar is a chemical reaction.) Why does the glass feel cooler after the baking soda is mixed with vinegar? (heat is absorbed by chemical reaction)

**RESOURCES:** A recipe for baking a cake is a good example of a chemical reaction; some of the children might ask an adult to help them bake a cake.

