

Science Sleuth Worksheet

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| Experiment Name: Snow in July | |
| 1. The Purpose of our experiment: what question are we asking? | Is it possible to change the state of a foam colloid by adding other ingredients to it? |
| 2. Our Hypothesis: what do we think is going to happen? | <p><i>I believe that: [select one or more]</i></p> <ul style="list-style-type: none"> *the shaving foam is going to turn into paste *the baking soda will change the consistency and feel of the shaving foam * the combination of the ingredients will make a product that can be shaped and molded like snow |
| 3. The Materials we are using | <ul style="list-style-type: none"> *shallow bowl or pan *shaving foam *baking soda *measuring cups *mixing spoon *vinegar *lemon juice *spray bottles (2) *food colouring, if desired |
| 4. Trying it out! The steps followed. | <ol style="list-style-type: none"> 1. Add one cup (it doesn't have to be exact) of shaving foam to the shallow dish. Add a few drops of food colouring, if desired, and mix well. 2. In three parts, add 3/4 cup of baking soda to the shaving cream (1/4 cup at a time, stirring between each). 3. Stir well. Add a little more baking soda if the snow is too sticky, or a small amount of shaving cream if the snow is too dry. 4. When you have finished molding and shaping your snow, separate it into two piles or shapes in the bowl. Mist the first |

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| | pile with vinegar and observe what happens. Mist the second part with lemon juice and observe. |
| 5. Our results, plus our conclusion | <p><i>What has happened? [select one or more]</i></p> <ul style="list-style-type: none"> *it was too hard to get the right mix of baking soda and shaving cream to make snow *the baking soda changed the foam into a solid form, and the vinegar made it change into a mix of liquid and gas *the mold-able snow felt a bit cold to the touch, but not as cold as snow *the vinegar and lemon juice made the snow evaporate and disappear |
| <p>What this experiment was about:</p> <p>This experiment introduces some different scientific terms and results. The shaving foam used in the experiment is called a <i>colloid</i>. A colloid is a material made from two different states of matter (solid, liquid or gas). The shaving foam consists of tiny droplets of gas surrounded by liquid. It is called a liquid foam colloid.</p> <p>The foam state of the shaving cream is changed by the baking soda, which changes the liquid foam colloid to a solid. Adding the baking soda causes an <i>endothermic reaction</i>, which is why the new mixture might feel slightly cold to touch. <i>Endothermic</i> means heat is absorbed inside, leaving the outside feeling colder. When the baking soda and shaving cream are mixed together, they set off a reaction that absorbs energy (as heat) from the air around it to make the liquid (mostly water) in the shaving cream evaporate. As the liquid in the foam disappears, the foam turns to a solid.</p> <p>Spraying the snow with vinegar (acetic acid) causes another reaction. The vinegar (as an acid) is reacting with the baking soda (which acts as a base) in the mixture. This causes the foaming response, as carbon dioxide gas is produced. You can keep spraying the snow with vinegar for the foaming effect as long as there is baking soda available in the snow—though, your snow will shrink and disappear.</p> <p><i>What else can we try? Do you think your results will be the same or different?</i></p> <ul style="list-style-type: none"> *Will lemon juice work the same way as vinegar? *If you add more baking soda to the mixture after using the vinegar to cause the foam reaction, does the mixture feel like mold-able snow again? | |