



## MORRIS' DISAPPEARING BAG

by  
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Morris finds that the ability to disappear may be the best gift of all. His siblings hop into his special bag and he finally is able to play with all their toys.

Everyone has probably wished at some time or place for the ability to disappear, but would always want to *COME BACK!* Children discover puddles after a rainstorm and wonder where they "disappear to" when the sun comes out. Water can "disappear" into water vapor through evaporation and come back as rain or snow.

Students would love to be able to make a message appear, disappear, and reappear again. This special paper will allow them to send hidden messages to friends and family. It is goldenrod paper and it acts as an indicator. When it is sprayed with Windex™, it will become bright pink and the hidden message appears. As the Windex™ evaporates, the goldenrod color reappears, and the message disappears. The goldenrod paper is acidic and the Windex™ is basic; the students are seeing an acid-base reaction. This reaction is a chemical change.

**MATERIALS:** goldenrod paper, yellow crayon as close to the color of the paper as possible, spray bottle of Windex™

**ACTIVITY:** Write message on paper with yellow crayon. The wax of the crayon will keep this portion of the paper DRY! When ready to share "hidden message" or allow it to appear, spray paper with Windex™. Have an adult help if child is too young. Allow Windex™ to evaporate or "disappear" and the message will disappear, too!

**SOURCE:** ICE Summer Activities WORKSHOP, 1990, University of Wisconsin, Madison, WI.

**STANDARDS:**

**BSL:** 1.1, 1.3, 1.5, 1.6, 6.2, 11.2, 11.4, 12.1, 12.6, 12.10

**NCTM:** none

**SCS:** A1, A2, B1, H2, H4

Wells, Rosemary. Morris's Disappearing Bag. Dial Books for Young Readers, 1975. ISBN#0-8037-5509-0.

### TEACHER NOTES:

- You can use many items to write a hidden message: scotch tape, candle stub, birthday candles, yellow crayon (Crayola™ yellow orange is the best match), Craypas yellow crayon, yellow china marker found in art supply store, yellow colored pencil.

- To make the message "appear", the following chemicals can be used:

1. Windex™ or any generic window cleaner containing ammonia; it can be diluted
2. Diluted solution of ammonia
3. White Board cleaner

The paper will be magenta in color. The above can be sprayed on or wiped on with a sponge. Goggles should be used by the adult spraying the chemical

- Ammonia is soluble in water, but it will "escape" from the solution on the paper into the air as a gas. Once it is gone, the paper will return to its original yellow color, and the experiment can be repeated. The message can be in pictures or in words.

- You can also use a solution of baking soda, but this is a permanent color change. Baking soda and ammonia are both basic, the dye in the paper is acidic, and a chemical reaction and color change occur when the two chemicals mix.

- You can make your own indicator paper using turmeric, a spice found in the grocery store. Dissolve two tablespoons of turmeric in one cup of hot water and mix well. It will not dissolve easily and produce a muddy yellow solution/suspension. Paint coffee filters with a q-tip dipped in the solution or cut small strips of coffee filters and soak in the solution overnight. In both cases the excess turmeric will shake off after the paper is dry.

- A story: I did this experiment with my fourth graders on the first day of science when they were learning the "role of a fourth grade scientist". They took samples of the paper home to use to investigate different chemicals under parent supervision. About six weeks later, two girls came running into the science center with a piece of what appeared to be goldenrod paper. It contained a message that was being sent home to their parents. They recognized the color, and had sprayed it with white board cleaner; it was magenta, and they were so excited! Two weeks later, I read all four classes of

fourth graders Possum Magic, and asked them to write in their journals if they could make any connection between the story and any experiment they had done since September. Over 80% of them wrote, the "yellow paper" experiment. A great assessment activity!