

# Chemistry and Comics!

The type of inks and paper that are used for comics in the newspaper make it possible to copy the pictures from the newspaper onto other papers. Let's try it!

## What you'll need

- Comics from the newspaper
- Scissors
- White paper
- Water
- Liquid Dish Detergent (Dawn)
- Isopropyl alcohol (70%)
- 3 small cups
- 3 Cotton swabs
- Spoon

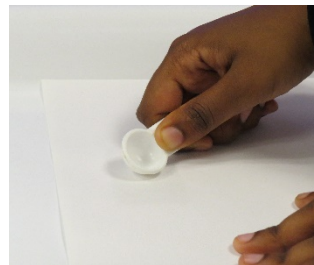


## Be safe

Isopropyl "rubbing" alcohol is flammable and may irritate your skin and eyes. Keep it away from all flames. Always work with an adult to supervise and guide you. You and your adult partner should both wear properly fitting safety goggles. Wear gloves when pouring isopropyl alcohol.

## Here's what to do

1. Use scissors to carefully cut out part of a comic strip and place it face-down on a white piece of paper.
2. Place another piece of white paper over the comic. Use the back of a spoon to press down and rub the spoon back and forth on the paper over the entire area of the comic.
3. Lift the paper up and turn the comic over to see if any of the ink transferred onto the paper and made a copy of the comic.

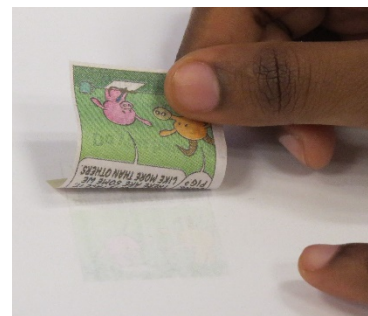


## What to expect

Some of the ink from the comic will be transferred to the white paper. The colors will be much fainter than in the original.

## What's happening in there?

Newspapers are expected to be recycled pretty quickly and are not made to last a long time the way books or magazines are. The ink from a newspaper is not meant to be permanent and can be pretty easily transferred to another paper.



## What else could you try?

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Adding some kind of liquid to the newspaper may help transfer the ink better and make a better copy. Let's try it and see.

### Be safe

Be sure to review the safety instructions on page 1 before proceeding.

### Here's what to do

1. Add 1 teaspoon of water to two small cups and 1 teaspoon of alcohol to another.
2. Make a detergent solution in one of the cups by adding a few drops of liquid dish detergent.
3. Use scissors to carefully cut out three parts of the same comic strip and lay them down on a piece of paper.
4. First dip a cotton swab in water and use the swab to completely cover one of the comics with water. Make sure that every part of the picture is covered with water.
5. Next, dip another cotton swab in the detergent solution and use the swab to cover another comic with detergent solution. Make sure that every part of the picture is covered with detergent solution.
6. Finally, dip another cotton swab in the alcohol and use the swab to cover another comic with alcohol. Make sure that every part of the picture is covered with alcohol.
7. Place all three comics face-down on a white piece of paper. Cover the paper and the comics with another piece of white paper.
8. Use the back of a spoon to rub the entire area of both comics.
9. Remove the upper paper and turn over the comics to see if copies of the comics appear on the paper.



What did you notice about how well the colors transferred? Did some seem to transfer better than others? Can you tell whether the water, detergent solution, or alcohol made the better copy? You could also try a black-and-white picture to see how well it transfers.

### **What to expect**

The ink from each comic will be transferred to the white paper. The copies should be darker and clearer than with no liquid at all. The detergent solution may make the best copy, then the alcohol, and then the water. Your results may be different depending on the type of ink used on your newspaper and the white paper used to copy it.

### **What's happening in there?**

The different liquids each have their own molecules which interact differently with the ink and the papers. The liquids that dissolve the inks the best probably make the best copies.