

STEAM NIGHT - **SCIENCE ACTIVITY 1**

Introduction to Chromatography – “Invisible” Ink

ACTIVITY OVERVIEW:

Chromatography is a way to look at complex mixtures by separating them into their components. Criminal investigators use this technology to identify substances such as drugs, blood, ink and other fluids. Environmental engineers use this technology to test for and identify pollutants in water.

WHAT DOES THIS SCIENCE ACTIVITY HELP US LEARN?

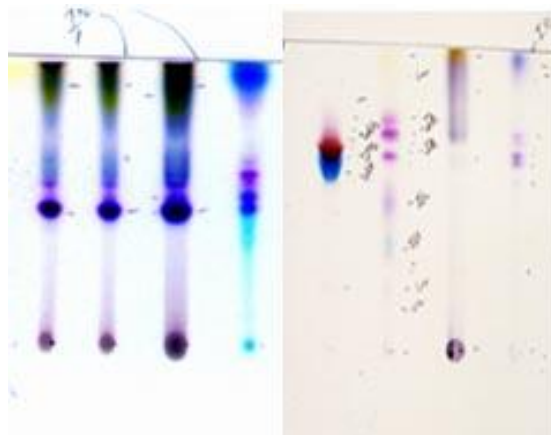
Different inks have different properties, such as how much they can be dissolved in solvents. When you place chromatography paper into the solvent, the solvent begins to move up the paper. As the solvent rises, it dissolves the ink on the paper and separates the ink into its components. The farther the ink travels, the more it is attracted to the solvent.

NGSS Standard: MS-PS1-2

Grade Levels: 6 - 8

MATERIALS (per group):

Chromatography paper (available online), cut into at least four 2-inch wide strips, 2 pencils, Sharpie black ink marker, Sharpie colored markers, rubbing (isopropyl) alcohol, 2 clear glass beakers or other clear glass containers at least 3 inches wide



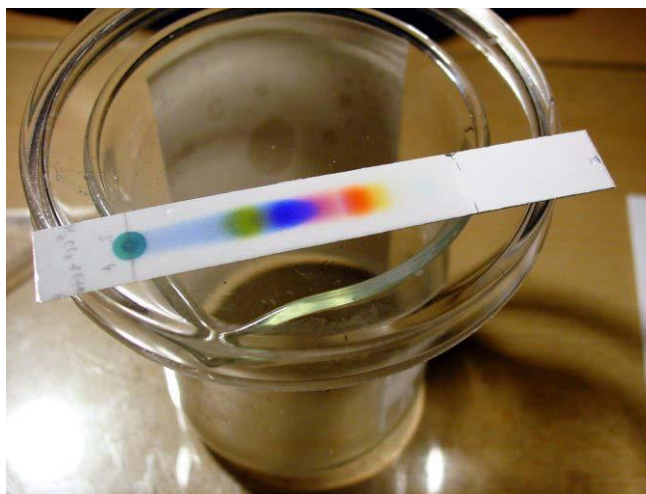
STEP-BY-STEP INSTRUCTIONS:

1. Take the strips of chromatography paper and fold both pieces about an inch from the top.
2. Using the black Sharpie, draw a horizontal line near the other end of the chromatography paper. Make the line about as high off the bottom as the width of your thumb.

3. Use a pencil to suspend the paper in each beaker by hanging the folded end of the strip over a pencil laid across the top of the beaker. Make sure the strip does not touch the sides of the beaker.
4. Carefully add water to one beaker and alcohol to the other. Add just enough of each liquid so that it touches the bottom of the hanging strip.
5. **Watch what happens!!** Once you see the ink separation is complete, get new strips and repeat using ink from a colored Sharpie marker.

HOW CAN I DO THIS AT HOME WITH MY CHILD?

Students can easily perform this lab activity at home to test different colored markers and different marker types (such as dry erase board markers). Designing inks with different properties and characteristics is a vast chemical engineering industry. Chromatography paper is available online and isopropyl (rubbing) alcohol is available in local grocery stores and pharmacies.



ADDITIONAL RESOURCES:

<http://www.nextgenscience.org/>
<http://static.lawrencehallofscience.org/kidsite/>

Adapted from: https://www.teachengineering.org/activities/view/wst_environmental_lesson02_activity1