Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Chromatography Lab**

**Rationale:**

This activity is used to demonstrate the process of thin-layer chromatography. Different types of ink will be substituted for different types of drugs, and will show their various components.

**Materials:**

* 3 different brands of black marker or pen
* Coffee filters or chromatography paper
* Pencil
* Tape
* Water or acetone
* 1 beaker (200-500 ml)
* Ruler
* Goggles
* Gloves
* Calculator

**Procedure:**

1. Cut 3 (2cm x 10cm) strips, making a “v” shape on one end of each to create a point. Save the remaining coffee filters for the other lab groups
2. In pencil, draw a horizontal line across each strip that is approximately 1cm from the pointed end
3. Also in pencil, lightly indicate which pen each strip represents on the top of the strip
4. Using a marker, place one dot at the center of the pencil line on the appropriate strip
5. Fill the beaker with enough acetone to cover the bottom of the beaker. *Note: the instructor will* *indicate whether or not water can be substituted for the acetone*
6. Tape each strip to the pencil horizontally with the point toward the bottom and suspend it over the opening of the beaker, or just hold them. The level of the liquid should not be deeper than the pencil line. The solution of either water or acetone represents the solvent and the “dot” represents the solute. When the strips are placed in the liquid, the solvent will travel up the strip. As it moves past the dot, the solute(s) will begin to separate and move up the strip as well
7. When the solvent nears the top, remove the strips from the beaker and lay them flat to dry
8. Sketch/color the strips in the appropriate boxes
9. Calculate the Rf value for each solute of each pen and record it in Data Table 1:

\*Rf (Rate of flow) = distance the solute traveled from the original line

distance traveled by the solvent

**Data:**

Pen\_\_\_\_\_\_\_\_\_\_ Pen\_\_\_\_\_\_\_\_\_\_ Pen\_\_\_\_\_\_\_\_\_\_

**DATA TABLE 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Pen** |  |  | **Color & RF** |  |  | **Color & RF** |  |  | **Color & RF** |  |  | **Color & RF** |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | **Value** |  |  | **Value** |  |  | **Value** |  |  | **Value** |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**\***If there are less than 4 colors for a pen, write N/A in the blank. If more than 4, stop at 4.

**Questions:**

1. Did each of the pens have more than one component?
2. Did any of the pens have the same colors? If so, were they in the same location on the strip?
3. How does this activity represent thin layer chromatography for drug testing?