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

**Paint Layer Determination Lab**

**Rationale:**

Oftentimes, paint consists of several layers of different substances, as is the case with automobile paint, or it may be several layers of different colors painted on top of one another. In the event that a paint chip is a piece of evidence, it may need to be compared to a known sample. Observation of paint layers is the first step in completing the comparison and does not destroy the sample as other methods of determination can. This activity provides an opportunity to observe and compare paint layers.

**Materials (needed per group):**

* 3x5 cards, 1 per group
* Piece of scrap paper or newspaper
* 4 different colors of poster paint (or 1 color for each group, and they trade off)
* 4 sponge paintbrushes (1 per color)
* Resealable sandwich bag
* Scissors
* Hand lens or stereoscopic microscope
* Forceps
* Colored pencils

**Procedure (Day 1):**

1. Place the 3x5 card on the piece of scrap paper or newspaper
2. Using the appropriate paintbrush, paint the entire surface of the card with one color of paint
3. Allow the paint to dry (it will dry faster if a hairdryer, fan, or incubator is available)
4. Once the paint is dry, choose another color and an appropriate paintbrush, and paint over the entire surface of the previous color
5. Repeat the steps until all 5 colors have been used (the sequence of colors used should be random among the groups)
6. When the card is completely dry, cut it into 8 equal pieces as illustrated
7. On the back, label 4 pieces with your group letter and leave the other 4 blank
8. Place all 8 pieces into the plastic bag and turn it in to the instructor



**Procedure (Day 2):**

1. Pick up a plastic bag and remove the contents using forceps. You will find 1 piece from each group (A – D) and one labeled Crime Scene
2. Using either a hand lens or the stereoscopic microscopic, observe the different layers of paint
3. Compare each of the 4 group cards to the crime scene to see which one matches it
4. In the appropriate column, draw horizontal lines in colored pencil to represent the layers
5. Answer the questions that follow

**PAINT “CHIP” LAYERS**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Group A** |  | **Group B** |  | **Group C** |  | **Group D** | **Crime Scene** |



**Top**

**Bottom**

**Questions:**

1. Did you determine which group matched the crime scene sample? If so, which one? If not, why?
2. Is it possible for the crime scene sample to match more than one group? How could that happen?
3. Would observation of paint layers alone be enough to determine an exact match? Explain your answer.