Name:_____

Colorful Chemistry Creations:Sunprint

Background - The sun print paper is coated with a photo-sensitive chemical which reacts in light. The photo-sensitive paper turns pale blue when exposed to light. Water stops the chemical process and fixes the shadows of the objects on the sun print paper. Sun print paper is coated on one side with a photo-sensitive chemical called iron (III) hexacyanferrate (III), Fe[Fe(CN)6], also known as Berlin Green.

Berlin Green is blueish-green and is water-soluble. When exposed to ultraviolet light (UV), a chemical reaction takes place where the water-soluble Berlin Green changes into a water-insoluble chemical called iron (III) hexacyanoferrate(II), Fe[Fe4(CN)6]3, also known as Prussian Blue.

When you submerge the paper in water, the water-soluble Berlin Green washes away, and the water-insoluble Prussian Blue remains fixed on the paper. The intensity of the Prussian Blue depends on the amount of time the paper is exposed to the light source and the intensity of the light source. For example, sun print paper doesn't work nearly as well on a cloudy day as it does on a sunny day.

Objective:use sunprint paper to transfer an image onto the sunprint paper and explore how time, exposure of light, and use of color filters affect the intensity and variation of the prints

Materials and Methods -

1. Clear plastic sheets
2. black and white photo laser printed
3. Masking tape and white tray
4. Sunprint or SunArt® paper
5. Timer
6. Water

Experimental Procedure

Part 1 - Creating a sunprint

1. Find a black and white image within the file folders and place it on marked cardstock paper - if you choose your own photograph you must attach it to the prelab document the week before the lab **-PICTURES MUST BE APPROPRIATE**

FOR SCHOOL and cannot and should not depict anything that would or possibly could be deemed inappropriate. When in doubt please air on the side of caution and do not use it.

2. Obtain and make sure the tray is dry (there should be no dampness or wetness present so you may want to take a paper towel and confirm the tray is dry.
3. Take the photo print paper and with minimal tape (one very small piece of tape) to secure the photo print paper to the bottom of the tray. Take the picture and overlay the picture over the photo paper and then use tape to fix in position
4. Label the print number with a marker so that you now have a photo image on a clear sheet of plastic with your initials on it.
5. Cover the paper with cardstock .
6. Following the directions that came with your Sunprint kit
7. Expose it to sunlight for 2 minutes. Use the timer to help you keep track of the time.
8. Cover the Sun Print with cardboard to stop the reaction at 2 minutes.
9. Rinse the sun print and leave to dry on puppy pad
10. Look at your results and record any observations

Part II - does color change print intensity

1.) Write the following three-letter words on the plastic sheet, using the color of ink that is listed. You can use any pattern you like for the placement of the words, but keep the size of the letters the same.

   a.) *RED* in red ink

   b.) *ORA* in orange ink

   c.) *YEL* in yellow ink

   d.) *GRE* in green ink

   e.) *BLU* in blue ink

   f.) *PUR* in purple ink

2.) Use the data table to rank the colors in order with the color that has the brightest or clearest letters being number 1 and the unclearest or duller letters as 6

3.) Use the data table to record the other lab groups

Group	RED	ORA	YEL	GRE	BLU	PUR
example	3	2	1	4	5	6
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Discussion Questions:

1. Based on the results, which colors form strong, weak, or no images?
2. Can you see a pattern in the results?
3. Can you think of why the colors that form images are colors that cause the chemical reaction that forms Prussian blue.
4. Why does the exposure time make a difference in the final blue color of the paper?

Post Lab Activity

After the materials have been dried the photos will be laminated - you should make sure that your name is printed on the photo print paper. Both photos need to be handed in and should be paper clipped to the top of the report. Please follow the checklist.