Paper Chromatography

Sections

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Challenge Areas

COMMUNITY
CREATIVE
OUTDOOR
PERSONAL GROWTH

Scout Method Elements

COMMUNITY INVOLVEMENT
LEARNING BY DOING
NATURE AND THE OUTDOORS
PROMISE AND LAW
PERSONAL PROGRESSION
PATROL SYSTEM
SYMBOLIC FRAMEWORK
YOUTH LEADING, ADULTS SUPPORTING

SPICES Growth Areas

CHARACTER EMOTIONAL INTELLECTUAL PHYSICAL SOCIAL SPIRITUAL

The Adventure

Learn about chromatography and the science of coloured pens.

Plan

1. Begin to investigate colours and how they are made. What colours are mixed together to form other colours? Consider primary vs secondary colours vs tertiary colours.
2. Investigate chromatography. What is it? Science Sparks provides a good introduction to this topic.
3. Collect the materials required for the experiments and recording your results. Communicate with your patrol and leaders if you need to bring items from home. You will need absorbant paper such as paper towel or coffee filters, water, a glass, non-permanent markers, and scissors (optional).
4. Develop hypotheses regarding about what colours make up your pens.
5. Read the safety requirements and discuss with your leaders/adult supervisors what supervision and safety requirements might be needed.

Do

1. Set up the experiment and record materials and hypotheses.
2. Make sure everyone is aware of the safety rules.
3. Start by pouring a little water into a glass or onto a plate.
4. About 1cm from the bottom of your paper draw, and colour in a circle with your markers/pens/Textas.
5. You will need to suspend your filter paper over the water so that just the bottom of the paper is touching the water. Use your problem-solving skills to come up with a set up your solution.
6. Now you can suspect your filter paper in the water. Make sure the end with the markers is at the bottom, in the water.
7. Watch as you make your chromatogram. Once the first one is finished you might like to test other markers as well.
8. Make sure you record your observations during the experiment and what colours are in each marker.

Review

1. Evaluate your hypotheses. Which colours did you find in your markers?
2. What do you think would happen if you used washable pens? Would the colours still separate?
3. Can you think of any examples where we might use chromatography to discover the contents of a mixture in real life?
4. Where else can you find colours that may separate in this way? Here are some ideas
5. What other liquids could work to separate colours? Would these improve the separation?
6. If you were to do this activity again, what would you do the same? What would you do differently?

Safety

- Sharps warning: You may decide to cut your filter paper into strips for this experiment. Make sure everyone knows how to use scissors safely to avoid cuts.
- Make sure you complete a risk assessment for this activity including considering variations of liquids – i.e. water vs rubbing alcohol or nail polish remover.

Variations

- Try doing chromatography on lolly colourings. Simply put a few drops of water onto a series of M&Ms and allow the colour coating to dissolve into the water. Pipette the coloured water onto your filter paper and run your sweet chromatography!
- You can try paper chromatography using permanent markers, however will need to substitute the water for rubbing alcohol or acetone (nail polish remover). Think about the additional safety precautions you will need to take when using these chemicals.
- Find out if different brands of the same colour separate differently?
- For younger groups, consider pre-cutting the filter paper if the paper is being cut.
- A larger program can be build using other ‘Chemical Properties’ or chemistry challenge cards.
- Turn it into an art project and make butterflies.
- Consider using as a demonstration only for younger sections.