Coin Cleaning

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

Explore the chemistry of household acids and bases and how they react with coins.

Plan

1. Investigate acids and their properties. Try identifying some household acids and bases and see if you can rank these from weakest to strongest.
2. Consider and investigate what makes copper coins look dirty over time.
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.
4. Develop hypotheses regarding which liquids will clean the coins best and why.
5. Read the safety requirements and discuss with your leaders/adult supervisors what supervision and safety requirements might be needed.
6. Collect the equipment that you will need for this activity. You will need the following: a range of common liquids of various acidity such as tomato sause, Coke, apple juice, water, vinegar, a vinegar and salt mix - made with ¼ cup of vinegar and enough salt until no more will dissolve -, and lemon juice, the same number of cups or plates as liquids, the same number of copper coins (Australian 1 and 2 cent coins) as liquids, paper towel, and a timer.

Do

1. Set up the experiment and record materials and hypotheses. Make labels where appropriate.
2. Make sure everyone is aware of the safety rules.
3. To different cups, add ¼ cup of liquid with one liquid per cup.
4. Submerge a copper coin (e.g. Australian 1 cent piece) into each of the liquids and leave it for 10 minutes.
5. Remove the coins safely and wipe clean. Evaluate which coin is the cleanest. What liquids seems to work the best? Why? Record your results.
6. Using only the 2 best cleaners, put their coins back in the liquid and leave them for another 10 minutes.
7. Remove the coins and without wiping clean, leave them to air dry on some paper towel.
8. After 30 minutes look at your coins again. What has happened to them? Why might this have happened?

Review

1. Evaluate your hypotheses. Which liquids cleaned the coins best, why? Was this what you had predicted?
2. What other household chemicals could clean coins? Would these be better or worse than the liquids you tested? To better understand why the liquid clean the coins, you may like to look at this useful resource
3. Can you think of any examples of these reactions occurring in the real world?
4. If you were to do this activity again, what would you do the same? What would you do differently?

Safety

- Chemicals warning: Some of the chemicals used and produced in reactions may irritate skin. Make sure everyone takes care to wash their hands after handling the chemicals. Those with known sensitivities, particularly to copper, may wish to use gloves.

Variations

- Try keeping the coins in the liquids for shorter or longer times. Does time affect how clean the coins are?
- A larger program can be build using other ‘Acid and Bases’ or chemistry challenge cards.
- Consider pre-preparing cups of the liquids for younger sections.
- Using what you have learnt, patrols could have a competition to find the best household or food liquid for cleaning coins.