

## Topic: Cleaning up

### Cleaning products in the home

#### You will need:

- Squares of white cotton cloth
- Substances to place stains of the cloth – coffee, chocolate, grass, mud, beetroot, tomato sauce
- A variety of household cleaners, powders and detergents

#### What to do:

- Take your squares of white cloth and stain them with the staining substances. You will need 4 of each type of stained material, e.g. 4 pieces stained with tomato sauce, 4 with chocolate etc.
- Allow to dry
- Wearing disposable gloves, try to remove the stains using 4 different household cleaners plus water. (e.g. Try getting the tomato sauce out of the cloth using washing powder, washing up detergent, bathroom cleaner, vinegar or lemon juice.)
- Allow your samples to dry.
- Display the samples on a chart and compare. Which cleaning product did the best job on which stains?

#### Write your results

- Record your results in table form. Give each cleaner a score out of 5 for its cleaning ability on each stain, making a possible score of 30.
- Make a graph to show the best cleaner. Do this by adding up the scores.

	Washing powder	Detergent	Bathroom cleaner	Vinegar
chocolate				
Tomato sauce				
Coffee				
Grass				
beetroot				
mud				
TOTAL				

## **Topic: Cleaning up Clean coins with vinegar**

<http://www.sciencebob.com/experiments/pennychem.php>

### **What you will need:**

- \* A few old (not shiny) coins
- \* 1/4 cup white vinegar
- \* 1 teaspoon salt
- \* Non-metal bowl
- \* Paper towels

### **What to do:**

1. Pour the vinegar into the bowl and add the salt - stir it up.
2. Put about 5 pennies into the bowl and count to 10 slowly.
3. Take out the coins and rinse them out in some water. Admire their shininess!

### **How does it work?**

There is some pretty fancy chemistry going on in that little bowl of yours. It turns out that vinegar is an acid, and the acid in the vinegar reacts with the salt to remove what chemists call copper oxide which was making your coins dull. Now lets try another experiment:

Add more coins to the bowl for 10 seconds, but this time , don't rinse them off. Place them on a paper towel to dry off. In time the pennies will turn greenish-blue as a chemical called malachite forms on your pennies. But wait, you're still not done yet.

Place one or two nuts and bolts in the vinegar and watch - they may become COPPER in color! The vinegar removed some of the copper from the coins, if there is enough copper in the vinegar, the copper will become attracted by to the metal in the nuts and bolts and they will take on a new copper color - cool.

### **Make it an experiment:**

The project above is a DEMONSTRATION. To make it a true experiment, you can try to answer these questions:

1. Will other acids (like lemon juice or orange juice) work as well?
2. Does this cleaning chemistry work on other coins?
3. Do other amounts of salt make a difference in the chemistry of the experiment?

## **Topic: Cleaning up**

### **Make some Bath Salts**

<http://www.sciencekids.co.nz/experiments/bathsalts.html>

Whether you're making a special present for someone else, experimenting at home or just want to relax in a hot bath, give this experiment a go. Create your own bath salts with a variety of refreshing fragrances, experiment with different essential oils to see which you like best.

#### **What you'll need:**

- 1 cup of washing soda
- A plastic bag
- A rolling pin (or something similar that can crush lumps)
- A bowl
- A spoon for stirring
- Essential oil
- Food coloring

#### **Instructions:**

1. Take the cup of washing soda and put it into a plastic bag. Crush the lumps with a rolling pin or similar object.
2. Empty the bag into a bowl and stir in 5 or 6 drops of your favorite essential oil such as rosemary, lavender or mint.
3. Stir in a few drops of food coloring until the mixture is evenly colored.
4. Put the mixture into clean dry containers and enjoy as you please.

#### **What's happening?**

Bath Salts are typically made from Epsom salts (magnesium sulfate), table salt (sodium chloride) or washing soda (sodium carbonate). The chemical make up of the mixture makes it easy to form a lather. Bath salts are said to improve cleaning and deliver an appealing fragrance when bathing.