Rust – the Crust that Makes Stuff Bust

Iron is a metal that easily rusts. Steel wool has iron in it so steel wool can rust. Besides iron, two other substances are needed to make steel wool rust. By doing this activity, you can get a good idea about what they are!

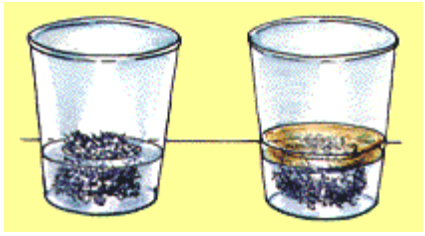
Materials:

- Steel wool pad
- 2 clear plastic cups
- Water
- Vegetable oil

Procedures:

1. Ask an adult to wash all the soap out of the steel wool pad. When all the soap is out, ask your adult partner to separate the steel wool into two equal clumps.
2. Place each clump into the bottom of its own plastic cup.
3. Add water to one cup so that some of the steel wool is sticking out above the surface of the water.

4. Add water to the other cup so that it completely covers the steel wool. Next, carefully add vegetable oil on top of the water so that a layer of oil about 1 1/2– 2 centimeters thick is on the water's surface. Let the cups sit over night.



Look at the cups the next day. What do you observe? In which cup did the steel wool seem the most rusted? Based on this experiment, what two substances do you think are needed to make steel wool rust?

Think about this …

Some pennies are bright and shiny and some are dull and dark. The dark ones have had a chemical reaction take place on the surface of the copper. Water, oxygen and the chemical sulfur have joined with the copper to produce the dark material. Have your adult partner help you squeeze one drop of lemon juice onto a dark penny. Let the drop stay on the penny for about 10 minutes and then wash it off. What did you notice?

Where's the Chemistry?

Rust is a combination of iron, water, and oxygen. In the first cup, the steel wool was exposed to water and oxygen from the air. In the second cup, the steel wool was not able to come in contact with as much oxygen since it was under water and was covered with a coating of oil. Since it could not get as much oxygen from the air, you should have observed less rust in the second cup.

The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at www.acs.org/kids.

Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

Never eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

Never experiment on your own!

For more detailed information on safety go to www.acs.org/education and click on "Safety Guidelines".