

Experiment Number Two

Rocks and Acid Rain

Rocks that contain *carbonate compounds* such as limestone erode or dissolve when they come in contact with acidic chemicals. Carbon dioxide in the atmosphere sometimes can produce rain that is slightly acidic. Over time, this acid rain erodes rocks. You can see it happen quickly if you use vinegar, which is a *much* stronger acid than acid rain.

Check to see if the rocks you have contain calcium carbonate.

What you need:

- A glass bowl
- A rock you suspect is limestone
- A piece of chalk

What to do:

- Scratch your rock with a stick.
- Put the rock in a bowl, pour a little vinegar on top of it and watch what happens.
- If it contains calcium carbonate, it will fizz and form bubbles, because the vinegar reacts with the carbonate ions.
- As it reacts, it dissolves the rock.
- When you're done watching it fizz, take the rock out and look in the bottom of the bowl.
- If you had a big reaction, you should see a layer of sediment made of small particles of calcium acetate, a chemical made when the acid and carbonates react.

Just for fun, try it again, but this time use a piece of chalk, which is also made of calcium carbonate.

- Set one piece of chalk in a cup of vinegar and one in water.
- The chalk will immediately start reacting with the vinegar, making quite a show! Pour off the liquid after about an hour.
- Is there sediment in the bottom of the vinegar cup?

What are your results:

How much calcium carbonate do you think was in your rock? Did you see a difference in the chemical reaction between the chalk and the rock?