

# Caves: The World Underground

By: Bobbi Alcock

## How Caves are Formed

The receding of the shallow tropical sea left layers of **limestone (calcium carbonate)** and dolomite in the ground.

Rainwater is naturally acidic. As rain falls through the atmosphere, it picks up dissolved carbon dioxide and forms a weak carbonic acid solution. When the slightly acidic rainwater falls on limestone or dolomite, the bedrock begins to dissolve.

Starting with fissures and fractures in the bedrock, the acidic water liquefies the carbonate rock forming an underground network of channels and caves. The caves recapture some of the lost calcium carbonate in the form of layered rock deposits. The best known example of this is the **stalactites** that hang from cavern ceilings.

The stalactites are formed from **supersaturated** calcium carbonate solution as it drips from the ceiling. As the water evaporates, it leaves limestone behind usually in a conical shape.

The supersaturated solution may also splash on the cavern floor creating **stalagmites** growing upwards. Stalactites and stalagmites take hundreds of thousands of years to form. When the stalactite and stalagmite meet to form a solid cone shape from ceiling to floor, we call this a **column**.

# MOST\*

### VOCABULARY

Calcium Carbonate

Columns

Limestone

Stalactites

Stalagmites

Supersaturated

### HELPFUL TERMS

Acidic

Bedrock

Conical shape Dissolve

Evaporates

## What Can You Find Inside a Cave?



Stalactites



Columns



Stalagmites

### Inside This Packet

How Caves are Formed	1
New York State Standards	1
Activity: Stalactites and Stalagmites	2

### New York State Standards

#### Middle School Activity

Standard 1: Analysis, Inquiry and Design,  
Scientific Analysis:  
Key Idea 1: s1.1a, s1.2

Standard 4: Physical Setting  
Key idea 2: 2.1i, 2.2g  
Key idea 3: 3.1b

# Activity: Stalactites and Stalagmites

## MATERIALS NEEDED

Two plastic 8-16oz. cups

Water

Epsom salt

String

Small weights (such as washers)

Plate

## Students should be able to:

Define the terms in the vocabulary list

Describe the process of cave formation

## What to do:

1. Fill both cups nearly full with warm water.
2. Mix Epsom salt in both cups until no more salt can be dissolved, creating a supersaturated solution. This should be at least a 1/4 cup of Epsom salts.
3. Set cups apart with plate sitting in between them.
4. Cut a length of string long enough to reach from the bottom of one cup to the bottom of the other. Wet the string and tie a weight to each end. Add some Epsom salt crystals to the moist string and some to the plate below the area where the salt mixture will drip. This will provide a starting point for the crystals to grow.
5. Drop one end of string into each cup. The string should be hanging over the plate.
6. Over the course of several days to a week, stalactites and stalagmites should begin to form. Each day, add more Epsom salts to each water mixture.

**Modifications:** Try using an unwaxed paper plate and another set up with a hard plastic plate to see if there is any difference in crystal formation.

