

Sudden Blue Snow

Teacher's Guide

The Initial View (Introducing the Activity)

We're going to make some "blue snow" in this activity. No, it's not colder than normal snow, in fact, it's the same temperature as the room, and it's not even snow! This happens fast, so make sure the kids are really paying attention! The materials made in this activity can be washed down the drain with a lot of water, but just like all chemicals, treat them with respect. Safety first!!! *Gloves and goggles are a great idea whenever chemicals are used!*

Take a Deeper View! (More Science)

The **Chemical Reaction** or **Change** going on here is a **Double Replacement** reaction. (This happens when two parts get swapped between chemicals.) This kind of reaction many times makes a **Precipitate**, as we saw here. (A precipitate is something which won't dissolve.) By the way, the precipitate ("blue snow") you made in this reaction is blue copper hydroxide.

The reaction is;



Precipitation occurs when the material which was **Dissolved** just won't stay dissolved for some reason. It might be **Temperature**, a chemical reaction, **Pressure**, or other factors. We call rain, snow, sleet, hail, or dew all precipitation. These forms of water were once dissolved in the air, but as the temperature changed, they couldn't stay dissolved any more and they "fell out" of the solution and onto us! Bathtub "rings" are another example of a precipitate, a combination of the soap and general gunk on us when we hit the tub. Notice the drastic color change of the blue copper sulfate solution as the copper dissolved in it was removed? Some chemical precipitations like this are used in **Refining of Metals**, waste treatment, and medical testing! Sometimes the precipitates are saved as valuable materials or removed from a solution and disposed of as waste!

More and Bigger Views! (Additional Classroom Ideas)

1. Find out how precipitation is formed in **Clouds** in the sky. Pay close attention to **Pressure** and **Temperature** changes related to moisture becoming precipitation!
2. Get on the Internet and research hail and **Thunderstorms**. Of course, as long as you're looking, find out about the **Tornadoes** formed in these powerful storms!
3. Research any precipitation reactions used in water treatment, sewage treatment, mining, or other industrial chemistry.
4. Bathtub rings are caused by soap reacting with "hard water". What kind of stuff is dissolved in "hard water" which makes the precipitate form?
5. How do people "soften" water to get rid of this stuff which makes the bathtub ring?
6. What are some other reasons why water should be softened? Find out.
7. Research the ways water is softened, or have someone who softens water for a living come to class to do some demonstrations.
8. What are some records for amounts of precipitation? (Snow and rain for example.)
9. Find out about **Nucleation Sites**, a fancy name for the dust or pollen particle which a raindrop or snowflake forms around!
10. **Cloud Seeding** is practiced in some areas. Find out about this "rain making".

Answers

1. (color change and the precipitate)