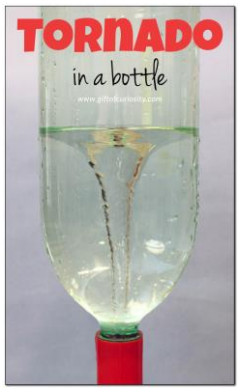
Make a Tornado in a Bottle



Learn how to make a tornado in a bottle with this fun science experiment for kids. Using easy to find items such as dish washing liquid, water, glitter and a bottle you can make your own mini tornado that's a lot safer than one you might see on the weather channel. Follow the instructions and enjoy the cool water vortex you create!

Materials:

- Water
- Two (2) clear plastic bottle with a cap (that won't leak)
- Glitter
- Dish washing liquid
- Tape – Duct tape
- Optional: small foam pieces, beads or other small floating bits
- Towel

Instructions:

1. Make a hole in the center of the caps, then tape them together face to face, without sealing over the hole. Have a towel ready.

2. Fill one of the bottles with water two thirds full.
   - Add the couple drops of dish washing liquid and optional floating bits.
   -Add the tornado connector, or the home-made connector, before screwing on the other bottle.

3. Turn the bottles upside down so that the water is in the upper bottle, hold the bottles tightly at the join and rotate in a large circle to initiate a tornado of water down into the lower bottle.

4. The floating bits will help visualize the rotation of the water through the tornado.

5. This activity can be used to model several real phenomena including:
    - Black hole accretion discs: the cloud of gas and dust swirling around a black hole form a spinning "accretion disc". Long streamers of gas are pulled into the black hole by gravity, travelling faster as they are pulled in. Although a black hole itself is not visible, the accretion disc around it is.
    - Tornadoes, hurricanes and waterspouts - although note that these swirl upwards not downwards.

What's happening?

Spinning the bottle in a circular motion creates a water vortex that looks like a mini tornado. The water is rapidly spinning around the center of the vortex due to centripetal force (an inward force directing an object or fluid such as water towards the center of its circular path). Vortexes found in nature include tornadoes, hurricanes and waterspouts (a tornado that forms over water).