## Make an Electrical Zapper

Using simple materials found around your home you can reinforce the static electricity concept by helping your child construct a device called an "electrophorus." This simple device will produce a spark that you and your child can feel, see, and hear!

## What You Need:

- Piece of wool cloth or woolen sock
- Disposable aluminum pie pan
- Styrofoam cup
- Styrofoam pie plate
- Hot glue gun or tape





Step 1 Tape or hot-glue the open end of the Styrofoam cup to the middle of the inside of the aluminum pie plate (Caution, solvent based glues will dissolve Styrofoam. If you use glue, choose hot glue or a water based glue).

Step 2 You or your child should rub the Styrofoam plate with the woolen sock or cloth for a full minute. Next, place it on the table, and place the aluminum pan on top of it, using the attached cup as a handle.

Step 3 Briefly touch the pie pan with your finger. You may hear a snap and feel a shock. Remove the aluminum pan using the Styrofoam cup as a handle. You may have to hold the Styrofoam plate down with your other hand. The aluminum pan now has an electrical charge.

Step 4 You or your child can "discharge" the pan by touching it with your finger. You will hear a snap, feel a shock, and if the room is dark you may even see a spark. To make the largest spark possible, have the aluminum pan at least one foot away from the Styrofoam plate.

Step 5 After charging the Styrofoam once, you can charge the aluminum pan several times. If your child it uncomfortable with the small electrical shock then you should be the discharge object. Feel free to have a little fun: foreheads and ears make good targets to discharge through using your child's newly built zapper!

## What Happened?

Wondering about the science behind this device? When you rub the Styrofoam plate with a woolen cloth, you charge it negatively. That's because the Styrofoam attracts electrons – negativelty charged particle from the cloth. When you place the aluminum pan on the Styrofoam, the electrons on the Styrofoam repel the electrons on the pan. Since the electrons can't leave the pie pan because it is completely surrounded by air and Styrofoam, the pan retains its neutral charge. If you touch the pie pan while it is near the Styrofoam, the electrons will be discharge off the pan and onto you!

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