

# The Flow of ELECTRIC CHARGE

**e•lec•tric dis•charge** (i´lektrik dis´CHärj) 1. any flow of electric charge through a gas, liquid or solid. It can occur under a wide variety of conditions.

Violent electric discharges are responsible for some of the most spectacular displays of sudden energy release.

## WHERE CAN WE SEE THE EFFECTS OF ELECTRIC DISCHARGES?

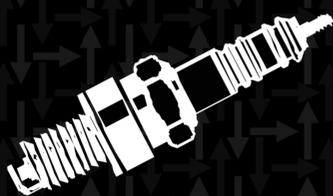


**HERE.**

A mild electric discharge is created when negative charge accumulated on your body from walking across a carpet is discharged when a doorknob is touched.



Electric discharges have many practical uses: electronic camera flashes, spark plugs in cars and trucks, arc welding, and electric arc furnaces for use in steelmaking and the production of alloys.



Because of the large electric voltage between the welder's tool and the metal, sparks fly and a strong electric current flows, generating a brilliant light display and enough heat to melt the metal.



**THERE.**

Because the soil is so dry on the Moon or Mars, astronauts might pick up so much charge on their boots, and trigger an electrostatic discharge that could damage critical electronic components.



The Itaipu Dam, a hydroelectric dam, is one of the world's largest operating hydroelectric facility in terms of annual energy generation. It has 20 turbo generators providing 700 megawatts each.



When the voltage of massive storm clouds approaches 100 million volts, it can cause an explosive electric discharge observed as a lightning bolt.



**EVERYWHERE.**

NASA's New Horizons captured lightning strikes near Jupiter's North and South poles and equator. Some of the bolts were 10 times as powerful as anything ever recorded on Earth.



Rapidly spinning, highly magnetic neutron stars can act as generators and produce electric voltages in excess of a trillion volts.



The energy released by these cosmic super-generators can light up clouds that extend over several light years.



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