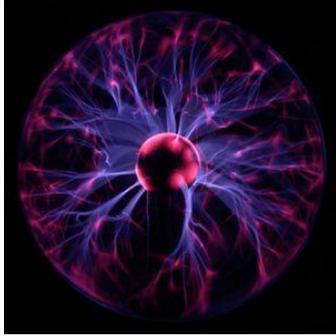


# Plasma (physics) facts for kids

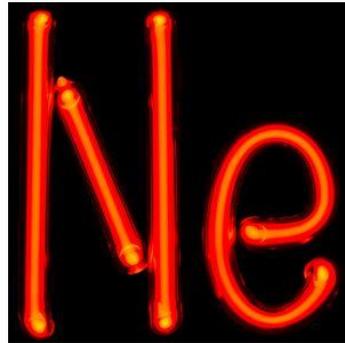
Kids Encyclopedia Facts

Plasma is a 4th state of matter.



A **plasma lamp**, showing some of the more complex things a plasma can do. The colors come from the **gas** in the lamp. Each type of gas makes a different color

**Gas-filled tubes** often contain plasma. This one shows **neon**. The color of the tube gives a hint to the gas inside



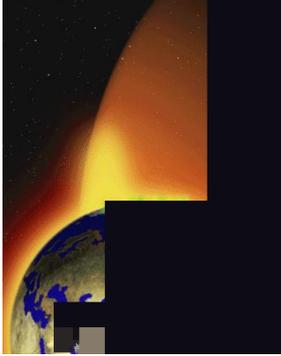
Plasma is created by adding energy to a gas so that some of its electrons leave its atoms. This is called **ionization**. It results in negatively charged **electrons**, and positively charged **ions**. Unlike the other states of matter, the charged particles in a plasma will react strongly to electric and magnetic fields (i.e. electromagnetic fields). If a plasma loses heat, the ions will re-form into a gas, emitting the energy which had caused them to ionize.

Over 99% of the **matter** in the **visible universe** is believed to be plasma. When the **atoms** in a gas are broken up, the pieces are called **electrons** and **ions**. Because they have an **electric charge**, they are pulled together or pushed apart by **electric fields** and **magnetic fields**. This makes a plasma act differently than a gas. For example, magnetic fields can be used to hold a plasma, but not to hold a gas. Plasma is a better **conductor** of electricity than copper.

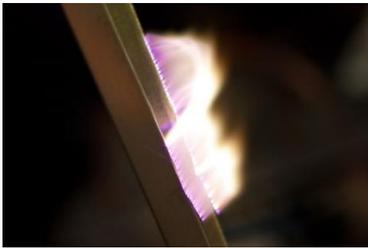
Plasma is usually very hot, because it takes very high **temperatures** to break the bonds between electrons and the nuclei of the atoms. Sometimes plasmas can have very high **pressure**, like in **stars**. Stars (including the **Sun**) are mostly made of plasma. Plasmas can also have very low pressure, like in **outer space**.

On **Earth**, **lightning** makes plasma. Artificial (man-made) uses of plasma include **fluorescent lightbulbs**, **neon signs**, and **plasma displays** used for **television** or **computer** screens, as well as plasma lamps and globes which are a popular children's toy and room decoration. Scientists are experimenting with plasma to make a new kind of **nuclear power**, called **fusion**, which would be much better and safer than **ordinary nuclear power**, and would produce much less **radioactive** waste.

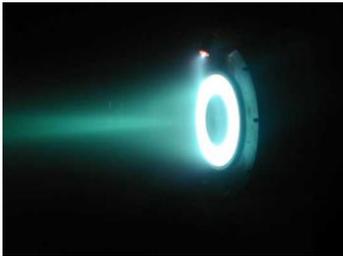
## Images for kids



Artist's rendition of the Earth's plasma fountain, showing oxygen, helium, and hydrogen ions that gush into space from regions near the Earth's poles. The faint yellow area shown above the north pole represents gas lost from Earth into space; the green area is the [aurora borealis](#), where plasma energy pours back into the atmosphere.



Artificial plasma produced in air by a Jacob's Ladder



Hall effect thruster. The electric field in a plasma double layer is so effective at accelerating ions that electric fields are used in [ion drives](#).

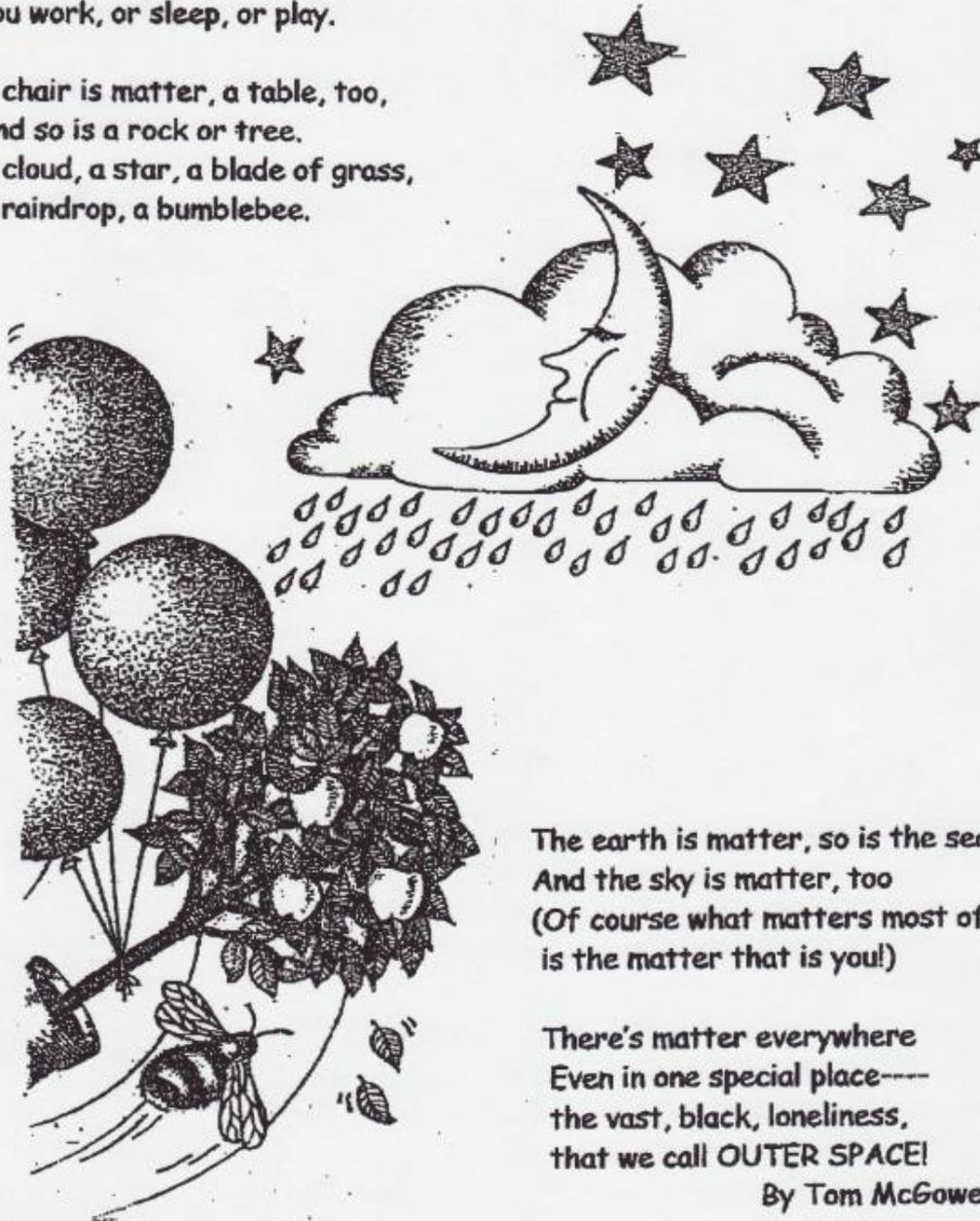


Plasma spraying

## What's the Matter?

What's the matter, do you ask?  
I'll tell you right away.  
It's everything around you, as  
You work, or sleep, or play.

A chair is matter, a table, too,  
And so is a rock or tree.  
A cloud, a star, a blade of grass,  
A raindrop, a bumblebee.



The earth is matter, so is the sea  
And the sky is matter, too  
(Of course what matters most of all  
is the matter that is you!)

There's matter everywhere  
Even in one special place----  
the vast, black, loneliness,  
that we call OUTER SPACE!

By Tom McGowen