

What Is the Big Deal with Carbon?

This text is from NASA's "Climate Kids."

Why are they called fossil fuels?

They're called fossil fuels because the fuel in your gas tank comes from the chemical remains of prehistoric plants and animals!

All living things on Earth contain carbon. Even you contain carbon. Lots of it. If you weigh 100 pounds, 18 pounds of you is pure carbon! And plants are almost half carbon!



Courtesy NASA/JPL-Caltech.

You are 18 percent carbon. Plants are 45 percent carbon.

With so much carbon, why isn't everything black and sooty? How can dogs be white and trees green? Because carbon, an element, combines easily with other elements to form new materials. The new stuff, called compounds, are quite different from pure carbon.

An atom is the tiniest possible particle of any element, like carbon or oxygen. A carbon atom combines easily with two oxygen atoms to make the compound carbon dioxide.

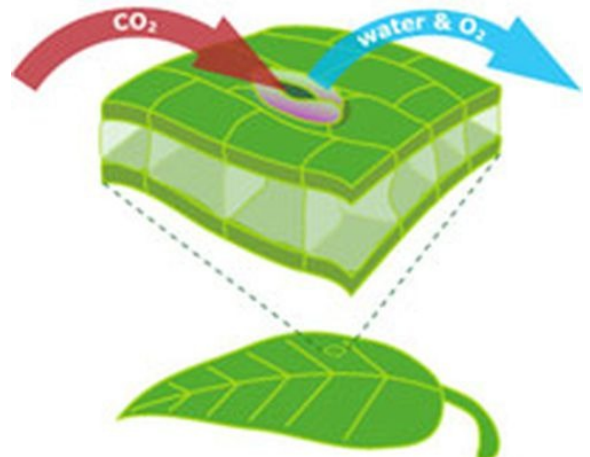
"C" stands for carbon, "O" stands for oxygen, so carbon dioxide is often called "C-O-2." Carbon dioxide is a gas. It is invisible. Carbon dioxide is really important.

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How does carbon get into living things?

Plants take in carbon dioxide. They keep the carbon and give away the oxygen. Animals breathe in the oxygen and breathe out carbon dioxide.

Plants and animals depend on each other. It works out well. For hundreds of millions of years, plants and animals have lived and died. Their remains have gotten buried deep beneath Earth's surface. So for



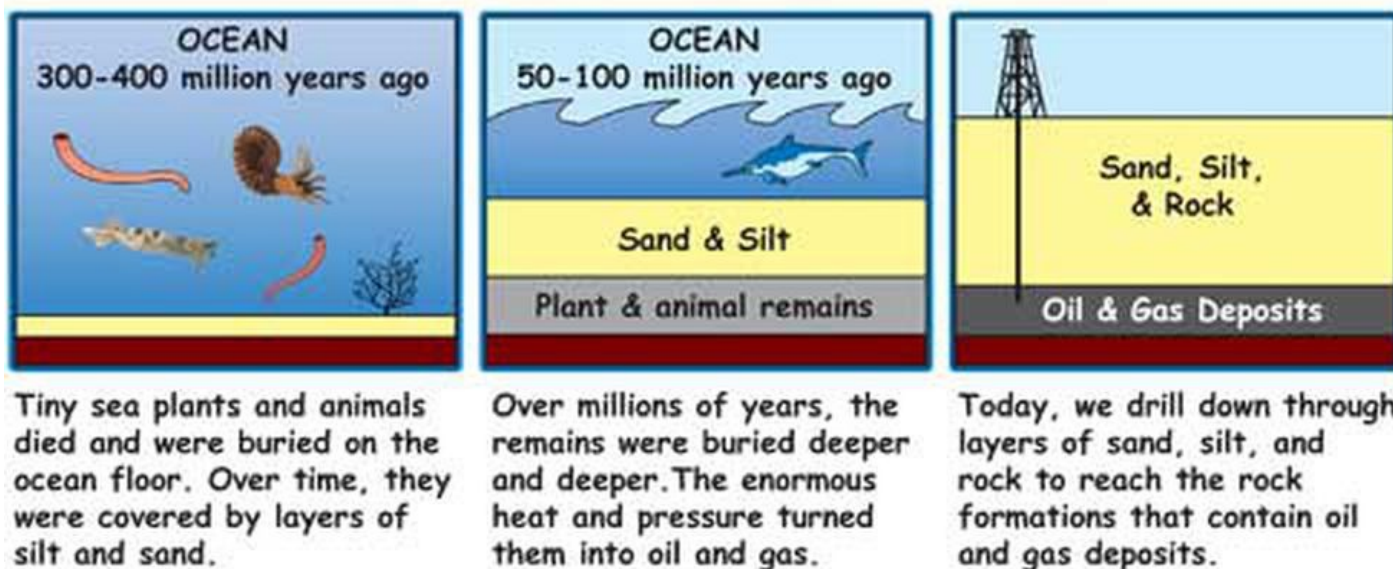
Courtesy NASA/JPL-Caltech.

Carbon dioxide in, water and oxygen out.

hundreds of millions of years, this material has been getting squished and cooked by lots of pressure and heat.

So what happens to all this dead plant and animal stuff? It turns into what we call fossil fuels: oil, coal, and natural gas. This is the stuff we now use to energize our world. We burn these carbon-rich materials in cars, trucks, planes, trains, power plants, heaters, speed boats, barbecues, and many other things that require energy.

OIL AND NATURAL GAS FORMATION



Courtesy NASA/JPL-Caltech.

For hundreds of millions of years, dead plants and animals were buried under water and dirt. Heat and pressure turned the dead plants and animals into oil, coal, and natural gas.

How does the carbon get out of living things?

When fossil fuels burn, we mostly get three things: heat, water, and carbon dioxide. We also get some solid forms of carbon, like soot and grease.

So that's where all the old carbon goes. All that carbon stored in all those plants and animals over hundreds of millions of years is getting pumped back into the atmosphere over just one or two hundred years. (Did you know that burning 6.3 pounds of gasoline produces 20 pounds of carbon dioxide?)



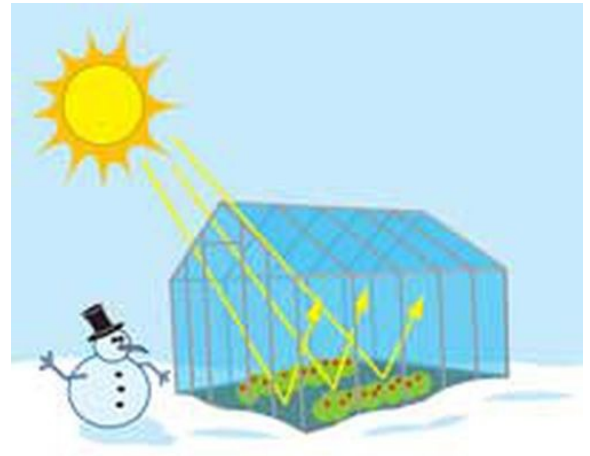
Courtesy NASA/JPL-Caltech.

Is carbon in the air good, bad, or just ugly?

Here's the big, important thing about carbon dioxide: It's a greenhouse gas. That means carbon dioxide in the atmosphere works to trap heat close to Earth.

It helps Earth to hold on to some of the energy it gets from the Sun so the energy doesn't all leak back out into space. If it weren't for this greenhouse effect, Earth's oceans would be frozen solid. Earth would not be the beautiful blue and green planet of life that it is.

So, carbon dioxide and other greenhouse gases are good-up to a point. But carbon dioxide is so good at holding in heat from the Sun, that even a small increase of it in the atmosphere can cause Earth to get even warmer. Throughout Earth's history, whenever the amount of carbon dioxide in the atmosphere has gone up, the temperature of Earth has also gone up. And when the temperature goes up, the carbon dioxide in the atmosphere goes up even more.



Courtesy NASA/JPL-Caltech.

A greenhouse traps the Sun's energy inside and keeps the plants warm.