

Carbon Dioxide and Its Effects

KG

Introduction

Carbon dioxide is a gas that is everywhere. It is in our atmosphere, the air we breathe, and even is found in plant life. Everywhere we turn, there is carbon dioxide. There is no way to escape it. This paper presents the pros and cons of carbon dioxide, the largest contributor to the carbon footprint.

Carbon dioxide has many different names in the scientific world. You may know it as carbon dioxide, or as dry ice in its solid form. Carbon dioxide, however, can also be known as Carbonic acid gas, Carbonic anhydride, Carbonic oxide, Carbon oxide, or Carbon (IV) oxide. Carbon dioxide is a linear covalent molecule. This means that it was formed by atoms sharing electrons, forming a molecule in a straight line. Carbon dioxide is an acidic oxide that reacts with water to form carbonic acid. Carbon dioxide also reacts with alkalis to produce carbonates and bicarbonates. Alkalis are chemical compounds that neutralize with acids.

Carbon dioxide has two oxygen atoms and one carbon atom. It is therefore formed by burning carbon in air; $C+O_2=CO_2$. The balanced equation would be $1C+1O_2= 1CO_2$. To balance a chemical equation, you should recognize what kind of bond it forms. Carbon dioxide forms a double bond, since two atoms share two pairs of electrons with each other. You then need to have the same number and type of atoms on each side. Carbon has 6 electrons and oxygen has 8 electrons. Each Oxygen atom has 6 valence electrons, because the first 2 electrons fill the first orbital, whereas the Carbon atom only has 4 valence electrons for the same reason. Valence electrons can participate in the formation of a chemical reaction. To satisfy the octet rule, Carbon needs 4 more valence electrons. Each oxygen atom can share 2 electrons with carbon to satisfy the octet rule as a result, they fill Carbon's outer valence shell.



Exhibit A- Here is the electron configuration of carbon dioxide. G,K. (2013).

Carbon Footprint

Carbon dioxide is the biggest contributor to the carbon footprint. A carbon footprint is the amount of carbon dioxide emitted by a particular person, object or group. In order to get a better understanding of how much carbon dioxide my family emits, I measured our carbon footprint. Our carbon footprint is 86,683 emissions of carbon dioxide per year. There are many different components that go into one's carbon footprint. Some of these components include how many miles we drive our car per week, how many miles per gallon our car uses, and what kind of energy we use at home. These types of energy can be either electric, gas, oil, propane, or wood. Different energy sources will provide different outcomes for your carbon footprint.

I researched carbon dioxide as a form of energy as well as a pollutant. Carbon dioxide has a direct correlation with the carbon footprint. First, the word carbon is in both of their names. Also, the carbon footprint is measuring the amount of carbon dioxide that is emitted.

External Investigation

There are many pros and cons to carbon dioxide. These pros and cons are supported by numerical data. One pro is that the more carbon emissions we dump into the air, the faster forests and plants grow. We need forests and plants to survive, because they emit oxygen, which in turn maintains life. Trees also need to absorb 13 pounds of carbon dioxide a year to remain healthy. One con would be that carbon dioxide is a factor in global warming. Global warming is the gradual increase in the temperature of the earth's atmosphere. It is believed that global warming will eventually change the chemical composition of plants due to the high temperatures it causes. The earth's temperature is supposed to rise anywhere from 2-11.5 degrees Fahrenheit due to global warming by 2100.

Here is a map of 8 pros and 8 cons of using carbon dioxide and its emission into the atmosphere. In the graph below, you will see that it is divided into four quadrants. First, I divided it into the pros and cons of carbon dioxide. Then I divided those into pros and cons to humans, and pros and cons to the environment.

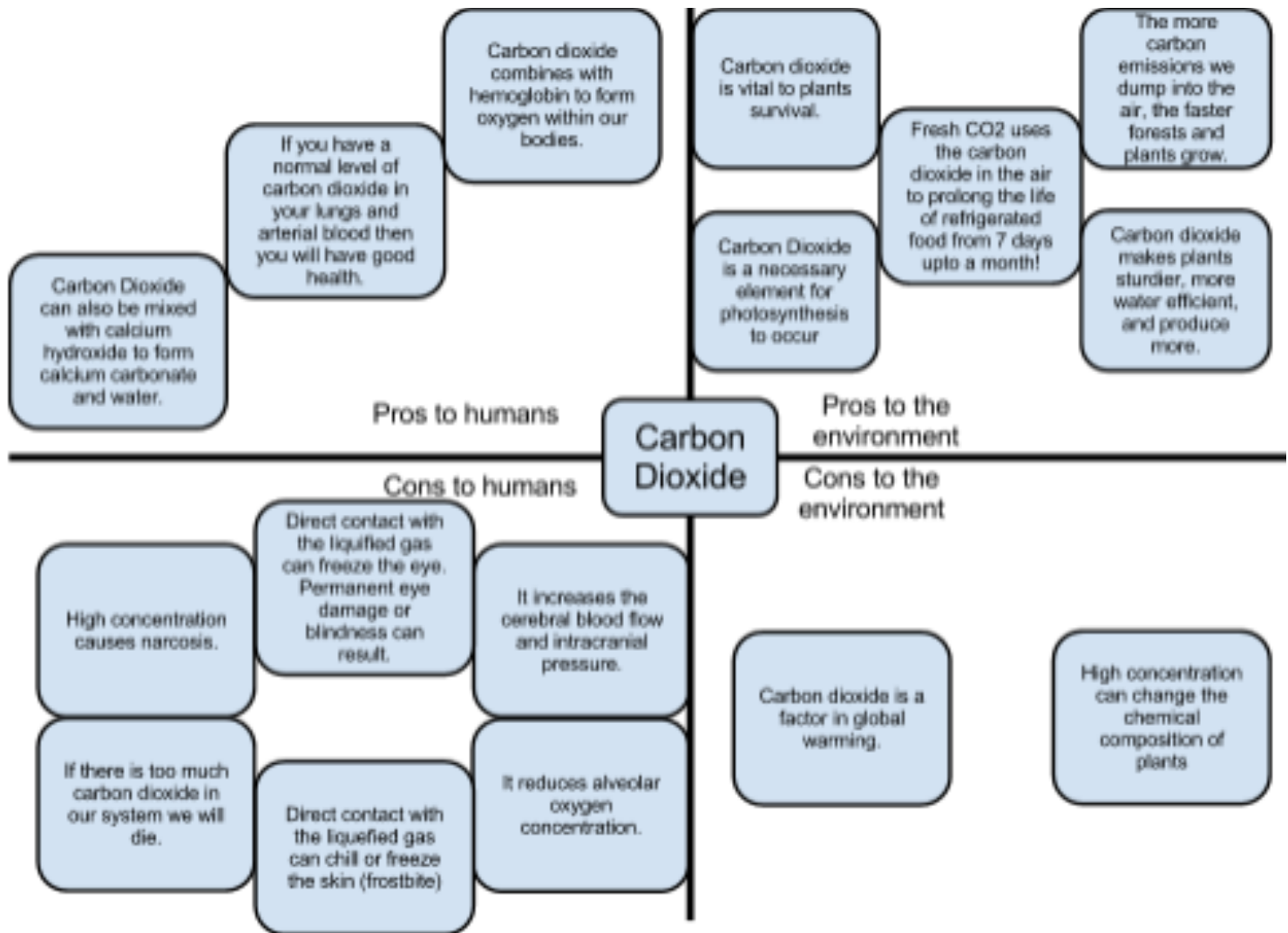


Exhibit B- Here is a pros and cons map of using carbon dioxide and its emission into the atmosphere. G,K. (2013).

Conclusion

I am pro carbon dioxide. Even though carbon dioxide is a major contributor to global warming, there are still a lot of benefits to it. Carbon dioxide helps plants grow, be sturdier, and reproduce more. We need plants to survive, as our carbon dioxide emissions allow plants to emit oxygen, a necessity for human life. So even though it does have its downsides, I believe that maintaining human life outweighs the negative effects of carbon dioxide.

References

Burdt, R. (2012, January 22). The Benefits of Carbon Dioxide - Right of Center by Rick Burdt - AdirondackDailyEnterprise.com | News, Sports, Jobs, Saranac Lake region — Adirondack Daily Enterprise. *AdirondackDailyEnterprise.com | News, Sports, Jobs, Saranac*

- Lake region* — *Adirondack Daily Enterprise*. Retrieved March 6, 2013, from <http://www.adirondackdailyenterprise.com/page/blogs.detail/display/1589/The-Benefits-of-Carbon-Dioxide.html>
- Can Carbon Dioxide Be A Good Thing?. (2007, June 1). *Science Daily*. Retrieved March 6, 2013, from www.sciencedaily.com/videos/2007/0603-can_carbon_dioxide_be_a_good_thing.htm
- Carbon Dioxide : OSH Answers. (n.d.). *CCOHS: Canada's National Centre for Occupational Health and Safety information*. Retrieved March 6, 2013, from http://www.ccohs.ca/oshanswers/chemicals/chem_profiles/carbon_dioxide.html
- Dioxide, c. (n.d.). Carbon Dioxide: Health Effects, Uses and Benefits. *Breathing Slower and Less: The Greatest Health Discovery Ever*. Retrieved March 6, 2013, from <http://www.normalbreathing.com/CO2.php#.UTdrl6VmabI>
- Disadvantages of carbon dioxide | Anesthesia General. (n.d.). *Anesthesia General - General, Regional Anesthesia and Critical care*. Retrieved March 6, 2013, from <http://anesthesiageneral.com/disadvantages-of-carbon-dioxide/>
- Fresh CO2 – Air Freshness Controller by Feng Cheng-Tsung, Lin Yao-Chieh & Wang Bo-Jin » Yanko Design. (n.d.). *Yanko Design - Modern Industrial Design News*. Retrieved March 6, 2013, from <http://www.yankodesign.com/2011/11/24/benefits-of-co2/>
- Landers, J. (n.d.). The Advantages & Disadvantages of Carbon Dioxide | eHow.com. *eHow | How to Videos, Articles & More - Discover the expert in you. | eHow.com*. Retrieved March 6, 2013, from http://www.ehow.com/info_8598446_advantages-disadvantages-carbon-dioxide.html