

Carbon footprint essay sample

[Science](#), [Chemistry](#)



Until very recently, most people had never heard of a “ carbon footprint.” Now, all of a sudden, the phrase is hard to avoid. In an age of slick slogans, fast fashions and fickle fads it’s easy to assume that this is just another quirky passing gimmick. But it could well be the most important concept of our time. A carbon footprint is the amount of carbon dioxide (CO₂) emitted as a direct or indirect result of an activity (Yarrow, Joanna. How to Reduce Your Carbon Footprint: 365).

Earth’s biological cycle produces carbon dioxide and supports plants and other microorganisms to grow (Walser, Maggie L. “ Carbon Footprint.”). However, ever since the industrial revolution, the amount of carbon dioxide (CO₂) in the atmosphere has increased dramatically compared it to its natural balance. CO₂ is being released about three times faster than it can be reabsorbed. Every second, human activity emits another 770 tons-enough to fill 140 Olympic-size swimming pool (Yarrow, Joanna. How to Reduce Your Carbon Footprint: 365). A carbon footprint is produced by human activities and the burning of fossil fuel. A carbon footprint is the measure of the amount of greenhouse gas in the earth’s atmosphere, typically measured in tons CO₂-equivalent. For example, the North American generates about 20 tons of CO₂- eq each year. The global average carbon footprint is about 4 tons of CO₂-eq per year (Walser, Maggie L. “ Carbon Footprint.”).

Greenhouse gas is the main cause of climate change (“ Carbon Footprint.” Carbon Footprint). Due to high concentration of CO₂ and many other gases in the atmosphere, greenhouse gases trap the sun’s heat in the atmosphere, increasing the surface temperature of Earth. With the presence of

greenhouse gases the average temperature of the atmosphere is 56 F. With its absence the average temperature of atmosphere would be 22 F. The United States alone produced 20 tons of CO₂-eq in 2005 (Walser, Maggie L. “ Carbon Footprint.”). This exceeds world average 4 tons of carbon dioxide emission. There are ways to reduce the greenhouse gas emission produced by households in United States by increasing the number of energy efficient houses, such as earth sheltered house. In the United States, 20% of the total CO₂ emissions come from house heating and cooling processes. Heating and cooling consumes a lot more energy than any other house appliances (Walser, Maggie L. “ Carbon Footprint.”). A house’s carbon footprint varies depending on the region and the weather. During a winter, heating an average American house by either natural gas or electricity leaves a carbon footprint of 4, 900 to 6, 400 pounds CO₂-eq per year. In hotter regions or during a summer time, air conditioning a typical house produces carbon footprint of 6, 600 pounds of CO₂-eq annually (Walser, Maggie L. “ Carbon Footprint.”).

An individual’s or organization’s carbon footprint can be broken down into two pieces, primary and secondary footprints. The primary footprint is when greenhouse gases are emitted directly from the burning of fossil fuel or gasoline. For instance, cars, factories, wild fires, airplanes and many others count as primary footprints. The secondary footprint is when greenhouse gases are emitted indirectly from use of energy, home appliances, transportation, street lights, manufacturing and many others. Everything that consumes energy, either from natural gas or electricity, produces a

carbon footprint. Reducing it is 100% dependent upon us (Walser, Maggie L. “ Carbon Footprint.”).

There are handful of techniques and designs that allow reducing carbon footprints and to improving energy efficiency. Earth sheltered homes are one of the most efficient house designs, intended to save money and improve energy efficiency. Earth sheltered homes can be broken down in two types: Underground or Bermed Earth-sheltered homes. Bermed earth-sheltered houses are partially underground or below grade level. Oftentimes house are covered by earth around the walls and even the roofs to insulate the house or earth is built around the house, covering the walls except windows and doors. Earth sheltered homes are built underground or below grade structures. Studies show that these type of houses a more cost efficient in extreme climates and low humidity environments.

Part of the house being under-ground or being below grade level helps the interior temperature to maintain at a desirable temperature. Earth’s soil temperature in low humidity regions is less than the air temperature. The soil acts as an absorber, which helps the house to cool down much quicker than conventional houses and insulate the warmth to maintain warmth in cold weather (“ Energy. gov.” Energy. gov.). Underground structures also offer protection against natural disasters such as tornadoes and hurricanes (“ Energy. gov.” Energy. gov.). These types of houses do not require exterior designing as much as conventional houses due to their walls being below grade level.

Bermed house designs use the sun's heat to warm up the interior of the house rather than using heaters. The face of the house would be facing the south where there is extended exposure of the sun. Earth, surrounding the house walls, guarantees Great resistance to hard wind and other natural disasters. Although earth covered houses offer a great deal of savings on utility bills and reduce carbon footprint, as usual everything is weaknesses; underground-houses face multiple challenges and considerations as far as materials and drainage system. Underground rooms and walls may experience condensation and internal humidity due to moisture from the soil surrounding the house. In order to reduce this problem materials are the main components of the design and insulations of the walls making physical contact with the soil. One of the major considerations is the soil choice. Earth is very good material for collecting and distributing water. Humidity and the condensation of the house are results of the moisture in the soil penetrating the house wall (“ Energy. gov.” Energy. gov.).

In hot weather disallows the house to cool down with no outside technological health such as air conditioning. Sand and gravel are the best known earth to use in this house design. Sand and gravel drain water collections down much quicker than dirt and mud. Mud is the least favorable material to be involved in this design. In order to keep the house from water and humidity related problems, the house must have good above-grade-level and below-grade-level drainage system. Waterproofing the house is also necessary (“ Energy. gov.” Energy. gov.). As far as the materials are concerned, earth-sheltered houses are made out of strong and durable materials other than wood. The core of the house should be made out of

concrete because it is durable, strong and fire resistant. Also, concrete blocks reinforced by steel bars inside of it can be used in the house. It is cost efficient compared to using a solid concrete mixture.

In this project, I am focused extensively on structural engineering and reducing a carbon footprint of house and exploring the ways that it can be reduced. During the process of research, earth sheltered house design is one of the energy efficient house plans that is available, ready to be built. In fact, if houses did not use energy just to cool down and heat up the house, the United States would decrease the amount of carbon footprint emitted by houses by 20%, and estimation of 6, 500 tons of CO₂-eq from each house throughout the nation each year.

Reducing the global warming and decreasing the carbon footprint is a critical subject now days. It could be achieved in various ways, in which building an earth-sheltered house is one of them.

Works Cited

“ Carbon Footprint.” Carbon Footprint. Global Footpring Network, 07 July 2012. Web. 11 Jan. 2013. “ Energy. gov.” Energy. gov. U. S Department of Energy, 12 Apr. 2012. Web. 11 Jan. 2013. Walser, Maggie L. “ Carbon Footprint.” Carbon Footprint. The Encyclopedia of Earth, 14 July 2010. Web. 11 Jan. 2013. Yarrow, Joanna. How to Reduce Your Carbon Footprint: 365 Simple Ways to save Energy, Resources, and Money. San Francisco: Chronicle, 2008. Print.