23.0.B Discussion Energy Resources

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Combustion is when fuel reacts with oxygen in air to produce heat. It relates to crude oil because crude oil is the fossil fuel that reacts.

Remains of animals and plants covered by mud, which becomes rock. Pressure from rock turns remains into oil.

Crude oil is used as gasoline. “Cracked”-high pressures & temperature make crude oil into gasoline and remove impurities.

Crude oil is toxic to most living organisms. Burning gasoline releases lots of different components into the air.

Society makes gasoline very necessary.
1) Combustion is when a fossil fuel reacts with oxygen to produce heat. It relates to our topic because biodiesel burns like diesel.

2) It is made from oils and fats and uses a chemical process called transmethylation where glycerol is separated from the fat or vegetable oil.

3) Biodiesel mixed with air then compressed into combustion chamber. The mixture is compressed and spark plug provides a spark. Spark ignites the fuel causing explosive forces to push piston down which generates mechanical energy. Then the piston moves back up pushing gases out of the cylinder.

4) It decreases CO₂ and sulfur dioxide. It is clean and renewable. It causes deforestation and it increases nitrous oxides. Cheaper price.
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<th>Group Member Name</th>
<th>Role</th>
<th>Date: April 16, 2015</th>
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<td>Charles</td>
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1) Combustion occurs when fuel reacts with oxygen in the air to produce heat. Carbon dioxide and water are byproducts of this process. Combustion relates to natural gas in the use of furnaces where this gas and air combine in the combustion chamber, where the mixture is ignited.

2) Natural gas is created by the breakdown of prehistoric marine zooplankton.

3) Natural gas is burned in the process of residential heating. There is a constant ignition source located in the burner. The air and the gas go into the combustion chamber, causing the lighting of the pilot light, starting the heating cycle. This controlled fire continues to burn within the chamber. The heat exchanger absorbs the heat and fans blow the heat into the heat ducts, thus heating the home.

4) The fracking process releases toxic chemicals, which can contaminate water and put agriculture in danger.
1) Combustion is when (fossil) fuels react with oxygen to produce heat. This allows for coal to produce energy.

2) Coal is formed by geological heat and pressure for a long period of time. It is extracted from the surface or underground mines and cleaned and transported.

3) It is crushed into a fine powder, mixed with hot air and blown into a boiler where the most complete combustion occurs. The heat from combustion turns the water into steam. The power from the steam powers the turbine which powers the generator to create electricity.

4) Coal gives off major CO₂ emissions which contribute to greenhouse gases and global warming. To produce the energy from coal, energy is necessary to pulverize the coal for combustion. It also disturbs the land around it. The oxides emitted from coal affect human health and air quality.
1. Combustion is the process that occurs when fuel and oxygen combine and produce heat and waste products. Hydrogen fuel replaces the internal combustion engine and results in water as a waste product, which is better for the environment.

2. Hydrogen fuel is created through Methane Reforming, in which methane is exposed to high temperature steam. Hydrogen gas is formed, in addition to CO2 and CO. Then, the products are separated.

3. Hydrogen and oxygen gas are released into the fuel cell. Their interaction generates electrical energy, which is transferred across the cell to power the vehicle.

4. The use of hydrogen fuel itself is good for the environment because the end product (H2O) is not harmful. However, the production requires natural gas, which results in CO2 and 0. It is also expensive, which negatively impacts the environment and society. In addition, hydrogen fuel...
is explosive and challenging to store. This poses a threat to society and the environment as well.
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We believe the United States should invest in hydrogen fuel as its main energy source because its byproduct is water. There are situations where hydrogen fuel should be used as an energy source for things other than cars, or any vehicle.

"But now we're not very sure what to do. We think the environment and safety is the most important factor to consider.

We thought biodiesel would be good to use for vehicles, but it would be costly for us to convert vehicles to be able to use it. The process of making the biodiesel could be harmful for the environment—deforestation.

We don't want to use fossil fuels because the byproducts are terrible for the environment and they are running out.
RECORD REPORT, Chem 444A “Fire & Ice”

Group Member Name | Role
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Samantha | recorder
Emma | spectrometer
Kyle | manager
Marissa | reflector

Date: 4/16/15

If we had to choose a fuel source for the United States to convert to completely, we would choose biodiesel. We would choose this because it is made from recycled vegetable oil, animal fat, so we are not harming the environment to make it. It reduces CO₂ levels 85% compared to the gas we use now. It is a renewable resource, so it can always be sustained in our country. While it does produce large amounts of nitrous oxide, it would be better to have high nitrous oxide, and less CO₂, than a high level of both. It is also a lot more cost effective, around $1.50-2 per gallon. Compared to all of the other options, it seems to have the most beneficial results.
Our group chose biodiesel as the primary fuel source to invest in. Biodiesel is a renewable, clean burning diesel fuel replacement. Advantages of biodiesel is that it can be used in a diesel engine without any modifications and the cost is as much as half that of diesel. A major drawback is that it can cause an increase in deforestation because cooking oil, soybean oil, and animal fats are used to make biodiesel. The greater the demand for biodiesel, the more land that has to be cleared and the greater increase of deforestation. Despite this, biodiesel is still more environmentally friendly than other fuel sources. Zero emissions of carbon dioxide and sulfur dioxide are generated from biodiesel. Biodiesel also has one of the lowest impacts of production compared to the other fuels. Recycled materials can also be used to create biodiesel, which would lower the effect of deforestation, but may not be as effective. Glycerin is another byproduct when biodiesel is formed and it can be used in products such as soap.
Our decision is to use biodiesel fuel. It is cost effective because it only costs $1.20 per gallon. While hydrogen fuel is better for the environment than the other 20 percent, it is costly to produce, both in time and money.

Biodiesel fuel is also environmentally friendlier because the only byproduct of its production is glycerine, which is actually useful. Methanol is used in the production, as well as recycled oils, which is not harmful or difficult to procure. Furthermore, no CO2 or SO2 are released, which is important because current fuels release too much of these. It can reduce CO2 emissions by 85%, which will reduce global warming. This compares favorably to crude oil and fossil fuels, which both release CO2 and toxic materials during its combustion.

Hydrogen fuel also releases carbon dioxide and carbon monoxide during its production, which also contribute to global warming and toxicity.

The drawbacks of biodiesel fuel is the requirement for increased corn. This could require more farmland and increased food prices. Farm and fuel requirements could promote deforestation.

In addition, combustion of biodiesel fuel releases nitrogen.
Nitrogen oxide is harmful, but only a small amount is released when compared to the amount of CO₂ released by other fuel sources. In addition, we feel that methods to address the corn production could be developed. For example, recycled oils and waste fats could be promoted. Industries that produce these wastes could be offered tax cuts or rewards for turning in their fats/oils. Furthermore, space we have could be put to better use. For example, corn could be grown on rooftops.