Magnet Biochem Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block \_\_\_\_\_

**ALTERNATIVE FUELS**

**Introduction**

It seems that every year when the summer travel season comes around, the price of gasoline goes up. Because most Americans depend upon personal vehicles to get from one place to another, this increase in price affects all of us. Gasoline is one of the products of the petroleum refining process. Much of the petroleum used in the United States is imported from overseas. This means that gasoline prices are tied to the prices that oil-exporting countries charge for crude oil.

However, it doesn't have to be this way. For the last thirty years, many researchers and scientists have been experimenting with alternatives to gasoline. Some alternative fuels have been developed that can be added to gasoline to reduce the overall cost. Other alternative fuels can be used directly in present-day engines. Most alternative fuels can be considered renewable resources because they can be replenished easily, and can never run out. Petroleum, on the other hand, is a nonrenewable resource that can be used up. What are alternative fuels? Where do alternative fuels come from? What alternative fuels are in use today? In this WebQuest, you will explore the topic of alternative fuels and find the answers to some of these questions.

**Task**

Your job in this WebQuest is to discover what alternative fuels are, and find out how the use of such fuels can reduce overall air pollution from vehicles. You will explore the different types of alternative fuels, and identify those that appear to be most cost-effective. You will also learn about other energy sources that could be used to power vehicles. Finally, you will answer a set of questions about alternative fuels to demonstrate what you have learned.

**Resources**

Look at the web sites given here to find the information that will enable you to answer questions about alternative fuels.

* [**Alternative Fuels Data Center.**](http://www.afdc.doe.gov/)Visit this U.S. Department of Energy site to learn all about alternative fuels, alternative fuel vehicles, and refueling sites. Scroll down and click on frequently asked questions to find out the definition of alternative fuels. Explore the site for information on biodiesel fuel, electric fuel, ethanol, methanol, hydrogen, natural gas, propane, and more.
* [**Alternative Fuels.**](http://www.epa.gov/otaq/consumer/fuels/altfuels/altfuels.htm)Go to this Environmental Protection Agency (EPA) site to learn more about alternative fuels. Scroll down and click on clean fuels: an overview to find out what clean fuels are and how they can reduce overall vehicular air pollution.
* [**Bio Energy.**](http://www.fsa.usda.gov/daco/bio_daco.htm)Visit this site by the Farm Service Agency of the U.S. Department of Agriculture to learn how this agency seeks to expand the industrial consumption of agricultural products by promoting their use in the production of bioenergy, primarily ethanol and biodiesel fuel.
* [**The BioEnergy Home Page.**](http://calvin.biotech.wisc.edu/jeffries/)Go to this site to find out all about bioenergy, bioconversion, and bioprocess technology. Although this is a more technical site intended for those in the energy industry, you can scroll down and click on frequently asked questions for a brief explanation of how biomass energy forms.
* [**National Renewable Energy Laboratory.**](http://www.nrel.gov/)Go to this U.S. Department of Energy site to read about this laboratory where scientists evaluate biomass fuels such as ethanol and methanol, as well as other renewable energy resources such as hydropower and wind energy.

**Time**

1 class period (60 minutes) for research and answering the set of questions

**Process**

Read through the following set of questions before you begin your Internet research. As you explore each site, look for answers to the questions.

***Questions about Alternative Fuels (\*You may attach the answers to this page. If no hard copy of this assignment is available, REWRITE or RETYPE the questions and answer directly underneath each question. BE SURE to do the Conclusion, below, in a short paragraph form)***

* 1. What is an alternative fuel?
	2. Give three examples of alternative fuels.
	3. What is biomass?
	4. Give three examples of biomass fuels.
	5. What are the four types of biomass that can be converted into alternative fuels?
	6. What is bioenergy?
	7. What is biodiesel fuel? What is it made from?
	8. What is ethanol? What is it made from?
	9. What is methanol? What is it made from?
	10. How is biomass converted to ethanol?

**Conclusion**

In the process of completing this WebQuest, you've become informed about alternative fuels that can be used to power vehicles. You have learned what biomass is and how it can be used to produce a wide variety of alternative fuels. You have also learned more about renewable energy resources. You have developed research skills as you explored the web sites given and identified the relevant information to answer the set of questions above. Did you know that there are many different names for alternative fuels produced from living things? Besides alternative fuels, what other types of renewable resources might be used to power vehicles? *ANSWER IN PARAGRAPH FORM*.