**Ethanol**

Ethanol (CH3CH2OH), also known as drinking alcohol or ethyl alcohol, can be won through *alcohol fermentation* (the reaction of glucose with *yeast* to produce ethanol and carbon dioxide) of *corn*, *sugar cane* or any other plant material (known as “biomass”) with a high sugar *content.*

Ethanol is a clear, colourless and *volatile* liquid that can be explosive upon contact with air. Therefore it can be used to power *spark ignition motors*.

Most *fuels* available in the United States contain at least a small percentage (%) of ethanol. Ethanol increases the amount of oxygen in the fuel which *reduces* *air pollution* during *combustion*. Therefore, in low level *blends* such as E10 (10% ethanol, 90% *gasoline*) ethanol can reduce *greenhouse gas emissions*. Ethanol is also available in a high level blend E85 (85% ethanol, 15 % gasoline) or E100 (100% ethanol) which can only be used in flexible fuel *vehicles* that can run on *gasoline*, ethanol or any combination of these. However, one molecule of ethanol contains approximately 30% less energy than one molecule of gasoline. Therefore, ethanol is mostly blended with gasoline to combine the high energy content of gasoline with the lower emissions of ethanol into an optimal blend.

For the environment, the amount of carbon dioxide (CO2) *released* when ethanol is burned in *engines* is equal to the amount of carbon dioxide *captured* by the *crops* that have to be grown for alcohol fermentation in order to make ethanol. Therefore, the CO2 produced by the burning of ethanol is then again removed from our atmosphere by the plants that have to be grown to produce it in the first place. This makes ethanol a “green” and *sustainable* alternative to gasoline because it is an energy source that can be *renewed*.

**Assignment**

*Read your article carefully and make a poster to present the information to your classmates.*

On the poster you should answer the following questions:

1. What is the alternative fuel presented in your article?
2. How can the alternative fuel be produced?
3. What are the fuels’ characteristics?
4. What are the environmental *advantages/disadvantages* of using this fuel?
5. Is the alternative fuel currently being used and how?