**Natural gas**

*Natural gas* is an alternative energy source because is *combusts* completely with few *harmful* emissions. Since it is also a *fossil* energy source, its *supply* is limited. However, our natural gas reservoirs are larger than those of petroleum which means that we will still be able to *power* our vehicles with natural gas when petroleum is already used up. Therefore, natural gas is often called the *short-term* solution to a petroleum *shortage* until a *long-term* solution can be found. Germans get *approximately* 22% of their primary energy from natural gas and Americans ¼ of their energy. Overall, only about 1% of natural gas used is currently being used to power vehicles.

Natural gas is a *mixture* of alkanes with over 80% methane (CH4 (g)). The exact *percentages* are different *depending* on where (America vs. Russia) the natural gas is *mined*. Natural gas builds up in *porous* *layers* of sediments which are covered by *impermeable* sediment *layers*. In these layers, natural gas as well as fossil oils were produced through the *decomposition* of microorganisms and plants by bacteria under high pressure, high temperature, and low levels of oxygen millions of years ago. These layers are up to 5000 m under the *surface* of the earth and are *released* through *drilling*. The natural gas is then transported to the surface under high pressure, *refined* and transported in natural gas pipelines which mostly lie below the surface.

Natural gas is highly *flammable* which is why accidents involving natural gas, mostly gas explosions, continue to happen. In order to use natural gas as a *fuel*, it has to be *compressed* at 200 kPa or liquified at -160°C and 2kPa. Since it is explosive upon reaction with air it can be used in *spark ignition motors*.

Another alternative to natural gas is biogas, which mostly is methane gas (CH4 (g)), won from *decaying* organic materials such as animals, plants, *landfills* and *wastewater*. This biogas could replace natural gas but it only contains about 60% of the energy that natural gas has. While this energy source is renewable, the costs of building biogas *generating plants* are so high, that few have been built.

**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?