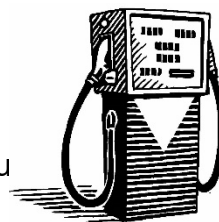


Organic Chemistry 2 – Fuels



The key areas of study in this topic are:

- How hydrocarbons from crude oil can be processed to give more useful products
- The environmental implications of burning fossil fuels

By the end of this topic I should be able to:

	Start	End
8.2 Describe crude oil as: <ul style="list-style-type: none"> • a complex mixture of hydrocarbons • containing molecules in which carbon atoms are in chains or rings • an important source of useful substances (fuels and feedstock for the petrochemical industry) • a finite resource 		
8.3 Describe and explain the separation of crude oil into simpler, more useful mixtures by the process of fractional distillation		
8.4 Recall the names and uses of the following fractions: gases, petrol, kerosene, diesel oil, fuel oil, bitumen		
8.5 Explain how hydrocarbons in different fractions are mostly members of the alkane homologous series and differ from each other in: the number of carbon and hydrogen atoms their molecules contain, boiling points, ease of ignition, viscosity		
8.7 Describe the complete combustion of hydrocarbon fuels as a reaction in which carbon dioxide and water are produced and energy is given out		
8.8 Explain why the incomplete combustion of hydrocarbons can produce carbon and carbon monoxide		
8.9 Explain how carbon monoxide behaves as a toxic gas		
8.10 Describe the problems caused by incomplete combustion producing carbon monoxide and soot in appliances that use carbon compounds as fuels		
8.11 Explain how impurities in some hydrocarbon fuels result in the production of sulfur dioxide		
8.12 Explain some problems associated with acid rain caused when sulfur dioxide dissolves in rain water		
8.13 Explain why, when fuels are burned in engines, oxygen and nitrogen can react together at high temperatures to produce oxides of nitrogen, which are pollutants		
8.14 Evaluate the advantages and disadvantages of using hydrogen, rather than petrol, as a fuel in cars		
8.15 Recall that petrol, kerosene and diesel oil are non-renewable fossil fuels obtained from crude oil and methane is a non-renewable fossil fuel found in natural gas		
8.16 Explain how cracking involves the breaking down of larger, saturated hydrocarbon molecules (alkanes) into smaller, more useful ones, some of which are unsaturated (alkenes)		
8.17 Explain why cracking is necessary		