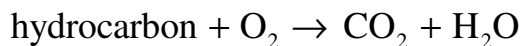


Fuels

Fuels are substances that can be used to provide energy. The most common fuels in current use are carbon-based, since the energy can be produced easily by combustion.

The products of *complete* combustion of compounds containing carbon and hydrogen are water and carbon dioxide.



Complete combustion is almost impossible to achieve.

The products of *incomplete* combustion include:

Product	Undesirable effects
soot (carbon)	creates visual pollution restricts light to leaves of plants damages the respiratory system
carbon monoxide (CO)	can deprive the body of oxygen leading to adverse health effects
unburnt hydrocarbons	react with other molecules in the atmosphere to produce secondary pollutants

Both biofuels and fossil fuels are carbon-based fuels.

Fossil fuels (such as coal, petrol, and natural gas) are formed from the remains of dead plants and animals exposed to heat and pressure while buried in the Earth's crust. They can be easily obtained for example by mining or drilling, but are not renewable since their formation takes such a long time.

Biofuels (such as biodiesel and bioethanol) are produced from biomass (living or recently living plant or animal matter), and so are renewable. Fossil fuels are currently much more commonly used than biofuels as sources of energy because biofuels are much more expensive to produce.

Carbon-based fuels are not only important for energy production, but are also important as feedstock (raw materials) for chemical industries producing plastics, detergents, etc.

Use of carbon-based fuels for energy results in less available as feedstock for chemical industries. The use of biofuels for energy production may free up more fossil fuels as feedstock for chemical industries.