

What are biofuels made from?

- Corn
- Algae
- Waste cooking oil
- Sugar cane
- All of the above

Biofuels are made from renewable, biological ingredients of any type instead of fossil fuels.



Which of the following is not a greenhouse gas?

- Carbon dioxide
- Carbon monoxide
- Methane
- Water vapour

Carbon monoxide is a poisonous temporary pollutant, but not a greenhouse gas. Greenhouse gases absorb infrared radiation and trap heat in the atmosphere. Without greenhouse gases, the average temperature of Earth's surface would be about 15 °C colder, the problem is that it is rising.....



What is the present level of Carbon dioxide in the atmosphere?

- 40%
- 4%
- 0.4%
- 0.04%

This may seem a small amount, but it is almost double what it was before the Industrial Revolution (1750) and it is continuing to increase and has a big effect on global warming.



Which country is the leading producer of biofuel?

- Indonesia
- Brazil
- The United States
- China

The United States leads world production with 40 billion litres, followed by Brazil at 25 billion litres, Europe: 10 billion litres, Australia/Asia: 4 billion litres, Africa: 2 billion litres.



The European Union agreement states that renewables will make up what portion of energy consumption by 2020?

- 5 percent
- 10 percent
- 20 percent
- 25 percent

All EU Member States agreed to 20-20-20 by 2020:-
20% reduction in EU greenhouse gas emissions
20% energy consumption from renewable resources
20% improvement in the EU's energy efficiency.



Biofuels are often described as carbon-neutral.

What does this mean?

- They do not release CO₂ at all.
- They recycle CO₂ already in the air
- They do not contain carbon
- They do not produce greenhouse gases

Biofuels are made from plants which use atmospheric CO₂ and “fix” it by photosynthesis to make “biomass” (e.g. sugars). The biomass is then converted into a biofuel, which when burned releases the carbon dioxide back into the air.



Compared to fossil fuels, which of the following is the most significant advantage of using biofuels as a source of energy?

- Renewable
- Low price
- Energy efficiency
- Less toxic

Biofuel use has many benefits over fossil fuels, such as being less harmful and toxic to the environment. Although fossil fuels are cheaper to buy, biofuels rule because they come from homegrown crops that are renewable and secure.



How do fossil fuels contribute to global warming?

- Fossil fuels create heat-trapping gases.
- Fossil fuels are efficient.
- Fossil fuels reduce CO₂ in the air.
- Fossil fuels are not sustainable.

Although fossil fuels contain high amounts of energy, they produce tons of heat-trapping gases, such as carbon dioxide, into the atmosphere. These gases keep the sun's radiation close to the ground, heating Earth's surface.



How do biofuels impact human health?

- Biofuels do not produce any toxins.
- Biofuels clean the atmosphere, which reduces health risks.
- Biofuels reduce smog, which reduces asthma.
- Biofuels cause an increase in lung cancer.

While many biofuels do create pollution, they don't create as much as fossil fuels. They release less "black carbon" or soot and so they help reduce smog, which can improve health conditions such as asthma.



The petrol sold at UK petrol stations is:

- 100% petrol from fossil fuel
- 100% Bioethanol
- A 5% blend of bioethanol in petrol
- A 10% blend of bioethanol in petrol

Bioethanol is commonly mixed with gasoline (petrol) to produce gasohol. A blend which contains 10% ethanol is called E10 and is standard in the USA. In the UK E5 is standard.



When is the first record of the first biofuel car?

- 1893
- 1953
- 1993
- 2003

In 1893 Rudolph Diesel built the first biofuel car engine which ran on a fuel made from peanut oil and Henry Ford designed his original 1908 Model T to run on ethanol made from corn. But in the 1920's engines were redesigned to run on cheaper fossil fuels. In the 1980s concerns over the environment once again brought the use of biofuels back to the forefront.



In Brazil, what is the main source of ethanol?

- Corn
- Sugar beet
- Sugar cane
- Brazil nuts

Brazil has been producing ethanol from sugarcane since the mid 1970s. It has received a lot of bad press, because rain forests and farms have been lost to sugar cane production. However, a new variety called “Energy cane” should help put things right. Energy cane is giant cane has twice the yield of traditional cane and it can be grown on poor land unsuitable for food crops.



Which form of energy does not ultimately come from the sun?

- Biofuels
- Fossil fuels
- Wind energy
- Nuclear energy

Biofuels derive energy from the sun by photosynthesis. Fossil fuels are really "paleo-biofuels" and are a form of stored solar energy. Wind energy is created by the uneven heating of the earth's surface by the sun., Nuclear energy does not come from the sun, it is the energy released when atoms are split apart.



Which biofuel is produced by the fermentation of corn or sugar cane?

- Bioethanol
- Biobutanol
- Methanol
- Biodiesel

Refineries can turn starchy plants, such as corn, sugar beet and sugar cane into ethanol. Methanol is made from wood; biobutanol is usually made from farm waste



Which process allows green plants to convert sunlight into chemical energy?

- Metabolism
- Respiration
- Photosynthesis
- Digestion

Photosynthesis is the process by which green plants turn carbon dioxide and water into carbohydrates and oxygen, using light energy trapped by chlorophyll.



Which of the following are needed to break down the sugar in a plant to make ethanol?

- Carbon dioxide and water
- Sunlight and rain
- Microbes
- Sodium and chloride

Bacteria or yeast break down long strings of sugar molecules into ethanol.



Which form of transportation gives the best mileage per unit fuel per passenger?

- Motorbike
- Aeroplane
- Train
- Bus

A train is the best, then motorbike, aeroplane and finally bus.



Which of the following is the biggest emitter of Carbon dioxide?

- India
- China
- USA
- UK

China is the world's biggest emitter, but a report in 2014, showed that when you look at the average emissions per person, the UK beats all of them!



What is meant by GHG?

- Generated Hot Gases
- Greenhouse Gases
- Generally Harmful Gases
- Good Household Gases

Greenhouse gases are produced by burning fossil fuels. They absorb infrared radiation and trap heat in the atmosphere. They cause global warming and are linked with climate change.



Which of these microbes is not used in making a type of biofuel?

- Bacteria
- Yeast
- Viruses
- Algae

Viruses are very small microbes. They cause disease in plants, animals and humans. They are not used to make biofuels.



Which is not true about enzymes?

- Enzymes are alive
- Enzymes speed up chemical reactions
- Enzymes are produced by living cells
- Enzymes are damaged by heat

Enzymes are chemicals made by living cells but they are not alive. They are said to be catalysts which means they help speed up chemical reactions, but are not used up so can be reused over and over again, unless they get damaged e.g. by heat.



Which of the following is not true about fermentation?

- It occurs in yeast and bacteria
- It converts sugars into gases and alcohol
- It is used to make to make some types of biofuel
- It produces smoke

Fermentation is a biological process that converts sugar to gases or alcohol. It occurs in yeast and bacteria, and is used to make some types of biofuel.



What is the process of breaking down chemical bonds using water called?

- Hydrolysis
- Photosynthesis
- Burning
- Fermentation

The process of breaking down chemical bonds using water is called hydrolysis. Hydrolysis can be achieved using acid at high temperature or enzymes at lower temperatures.



Which of these molecules is made from one carbon atom and two oxygen atoms..

- Water
- Carbon dioxide
- Carbon monoxide
- Methane

Water is H_2O (two hydrogen atoms and one oxygen atom),
Carbon monoxide is CO (one carbon atom and one oxygen atom)
and methane is CH_4 (one carbon atom and four hydrogen atoms).



An uninterrupted supply of energy at an affordable price is known as

- Energy security
- Energy safety
- Energy sufficient
- Energy source

Many factors affect our energy supply including politics, war, natural disasters and accidents. Alternative fuels allow countries to be more self-sufficient and gives them greater energy security.



Which of the following is not true about fracking?

- It is the drilling of shale rocks to release natural gas and oil
- It provides cheap, plentiful natural gas
- It has been linked to earth tremors
- It is not a fossil fuel

Shale oil produced from fracking is still a fossil fuel which produces GHGs when burned.

