

# CAR POLLUTION



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Road transport is one of the biggest sources of pollution in the UK, contributing to poor air quality, climate change, congestion and noise disturbance. Of the 33 million vehicles on our roads, 27 million are cars. Whilst travel by car is often the only practicable option, there are simple steps we can all take to reduce the number of journeys we take and their impact on the environment. This leaflet outlines ways in which we can work towards reducing pollution from road transport at home and at work.

## Impacts of Car Pollution

### Climate Change

Road transport accounts for 22% of total UK emissions of carbon dioxide (CO<sub>2</sub>) - the major contributor to climate change. The EU has voluntary agreements with motor manufacturers that aim to reduce average CO<sub>2</sub> emissions from new cars. Colour-coded labels, similar to those used on washing machines and fridges, are now displayed in car showrooms showing how much CO<sub>2</sub> new models emit per kilometre. However, as traffic levels are predicted to increase, road transport will continue to be a significant contributor to greenhouse gas emissions.

### Air Quality

Air pollutants from transport include nitrogen oxides, particles, carbon monoxide and hydrocarbons. All have a damaging impact on the health of people, animals and vegetation locally. Air quality in the UK is slowly improving, but many areas still fail to meet the health based national air quality objectives and European limit values - particularly for particles and nitrogen dioxide. In town centres and alongside busy roads, vehicles are responsible for most local pollution. Vehicles tend to emit more pollution during the first few miles of journey when their engines are warming up. Although new technology and cleaner fuel formulations will continue to cut emissions of pollutants, the increasing number of vehicles on the road and miles driven is eroding these benefits.

### Noise

Noise from road traffic affects 30% of people in the UK. Sources include engine noise, tyre noise, car horns, car stereos, door slamming, and squeaking brakes. Vehicles have been subject to noise standards for many years through EU legislation. The sound of engines is a problem in towns and cities, while in more rural areas tyre noise on busy roads, which increases with speed, is the main source. Low-noise road surfaces, effective noise barriers in sensitive locations, and low noise tyres can all help reduce noise levels. Meanwhile, encouraging people to close car windows when playing loud music, and discouraging the use of 'boom box' car stereos would significantly reduce noise impact. (See our leaflet on Noise Pollution for more).

## Resource Use

Vehicles have a major impact on the environment through their construction, use and eventual disposal. It is estimated that of the CO<sub>2</sub> emissions produced over a car's lifespan 10% come from its manufacture and 5% from its disposal, with the remaining 85% coming from fuel use and servicing operations. In addition to these emissions of carbon dioxide and other air pollutants, the vehicle and related industries (e.g. fuels) consume large amounts of raw materials, and produce significant quantities of waste.

## Local Impacts

Vehicle use affects our whole quality of local life. Traffic can be dangerous and intimidating, dividing communities and making street life unpleasant. Abandoned vehicles cause nuisance, whilst air pollution and traffic noise can make urban living uncomfortable.

## What is the Government Doing to Reduce Car Pollution?

### Climate Change

In addition to the EU's voluntary agreements with motor manufacturers and the introduction of colour-coded CO<sub>2</sub> labels in showrooms, the UK Government has introduced financial measures to favour cars with lower CO<sub>2</sub> emissions.

Since March 2001 the annual Vehicle Excise Duty (VED) rate for new cars has been determined by their CO<sub>2</sub> emission figure and the type of fuel used. This banding is linked to the voluntary colour coded CO<sub>2</sub> A - G labelling scheme. Band 'G' was recently introduced but only applies to new cars registered on or after 23 March 2006. VED discounts are available for alternatively fuelled cars, e.g. hybrids, gas and biofuels.

Since 2002 company car drivers have been taxed according to their vehicle's CO<sub>2</sub> emissions and fuel type, again with diesel vehicles paying a tax penalty over petrol vehicles with similar CO<sub>2</sub> emissions. Tax discounts are available for drivers choosing bio-fuel and hybrid electric vehicles.

On the fuels side, a Renewable Transport Fuels Obligation has been introduced which requires 5% of road fuels to come from a renewable source by 2010. This may be sold as a separate fuel (e.g. 'E85') or blended into normal diesel and petrol at low percentages (5% or less).

In July 2002 the Government launched its Powering Future Vehicles Strategy, which aims to promote new vehicle technologies and fuels, and ensure the involvement of the UK automotive industry in the development of new technologies. As a result the Low Carbon Vehicle Partnership was formed in 2003 to help Government deliver the Strategy by engaging industry, Government and environmental NGOs.

## Air Quality

The Government set out targets for improving air quality standards, based on health implications, in the UK Air Quality Strategy in 2007. In areas where national objectives for air quality are likely to be exceeded, local authorities must declare an Air Quality Management Area (AQMA) and an action plan must be drawn up and implemented. Your local authority environmental health department should be able to advise you on air quality in your area and any plans for improvement. More information is available at [www.airquality.co.uk](http://www.airquality.co.uk)

In some areas authorised officers of the local authority can check that emissions from road vehicles comply with Construction and Use Regulations and issue fixed penalty notices to those failing the test. In England and Wales, only those local authorities that have declared an AQMA may apply to use this power, but Scottish Regulations enable all local authorities to apply to use them. Drivers who leave their engines running unnecessarily, e.g. while waiting at a level crossing, can also be issued with a fixed penalty notice if they do not turn off their engine when asked by an authorised officer.

## What are the Laws on Car Pollution?

### Emission Standards

All new cars must comply with strict EU vehicle emission standards, known as Euro standards. Four pollutants are covered: carbon monoxide, hydrocarbons, nitrogen oxides, and particulate matter (diesel vehicles only at present). These maximum permitted emissions are gradually being tightened up - Euro IV came in on 1 January 2006 and will be followed by Euro V (2009) and Euro VI (2014). Second-hand cars will meet earlier standards and the older your car, the more polluting it is likely to be.

As part of the annual MoT test vehicles have to pass an exhaust emissions test, with the standards based on the vehicle's age and type of engine.

## What Can I Do to Reduce Car Pollution?

Follow the checklist to ensure you minimise your impact:

- Avoid using cars for short journeys - combine trips or, alternatively, walk, cycle, or take a bus.
- Care for your vehicle - check tuning, tyre pressure, brakes and fuel consumption - regular servicing helps keep your car efficient and saves fuel.
- Lighten up - roof racks add drag and other unnecessary weight increases fuel consumption.
- When your tyres need replacing consider low rolling resistance replacements - ask your tyre fitter for advice.

- Drive gently - racing starts and sudden stops increase fuel consumption. Use higher gears when traffic conditions allow.
- Steady your speed - at around 50mph (80 kph) emissions will be lowest, rising dramatically above 70mph (110 kph).
- Switch off when stationary - if stuck in traffic or stopping more than a minute. Idling engines make sitting in jams even more unpleasant. Do not run the engine unnecessarily - drive off soon after starting (in some areas it may be an offence to leave the engine running).
- Be considerate of those around you - reduce the volume of your car stereo or close your car window in residential areas, and avoid sounding your horn or revving your engine.
- Air conditioning and on board electrical devices increase fuel consumption - only use them when really necessary.
- Share your journeys - go shopping with friends or neighbours, take a colleague to work, or join a car share club [www.carplus.org.uk](http://www.carplus.org.uk) or [liftshare www.liftshare.org](http://liftshare.com)
- Investigate alternatives - If you're looking for a new car there are a number of different technologies and fuels available; existing cars can also be adapted to give off lower emissions. See "Choosing a Cleaner Vehicle" below.

## What Can I Do to Reduce Car Pollution at Work?

### Travel Plans

A travel plan is a range of practical measures to reduce car use for journeys to and from work and for business travel. Measures can include encouraging colleagues to use public transport or providing a dedicated bus service, improving cycling facilities, or car sharing clubs. By setting up a travel plan, your company, school or university can help reduce its impact on the environment, save money and improve its relationship with the neighbouring community. A plan can also help improve accessibility for everyone, not just car drivers.

Department for Transport – [www.dft.gov.uk](http://www.dft.gov.uk)  
- setting up travel plans at work.

Association for Commuter Transport (ACT) – [www.act-uk.com](http://www.act-uk.com)  
- setting up travel plans.

Energy Saving Trust – [www.est.org.uk](http://www.est.org.uk)  
- free advice to companies in Scotland with over 50 employees.

### Green Fleets

If your company has a fleet of vehicles it makes environmental and financial sense to ensure these are adequately maintained, and that drivers are given guidance on how to reduce their environmental impact. Cleaner fuels and technologies can also be

considered, as well as working to reduce overall mileage of the fleet and improving fuel efficiency, in order to reduce emissions. The Energy Saving Trust gives free green fleet reviews to companies with fleets of over 50 vehicles, or over 20 in Scotland.

## **Taxation**

In addition to the Company Car Tax rules there are several other tax breaks available. If a company offers free or subsidised work buses, subsidies to public bus services, cycles and safety equipment for employees, or workplace parking for cycles and motorcycles, employees are not required to pay tax for the benefit.

## **Choosing a Greener Car**

In the UK 2.2 million new cars and 8 million used cars are sold annually. 1.2 million of the new cars sold are to company fleets. When buying a car for use at home or work consider choosing the option with the lowest environmental impact.

## **New Cars**

Diesel and petrol cars dominate new car sales, but gas (e.g. LPG), biofuel and hybrid vehicles are also available. Diesels emit less CO<sub>2</sub> than petrol vehicles, but more local pollutants harmful to health. Hybrids give maximum benefit if your journeys involve lots of urban driving. You can check the carbon dioxide emissions and fuel consumption of new cars in the VCA guide [www.vcacarfueldata.org.uk](http://www.vcacarfueldata.org.uk). Advertisements for new cars give the CO<sub>2</sub> emissions and this information is available at the showroom.

Vehicles that run on alternative fuels include LPG (liquid petroleum gas), electric or hybrid vehicles. Cleaner fuels are becoming more widely available and they may save you money and reduce pollution.

## **Used Cars**

When buying a used car you have similar choices on size, fuel type, etc than you do when buying a new one. Remember that the newer the vehicle is, the cleaner it is likely to be, however regular maintenance is also important and a full service history will help to ensure the vehicle is running clean and well. For vehicles produced after March 2001 you'll be able to find CO<sub>2</sub> and fuel economy figures in the VCA guide [www.vcacarfueldata.org.uk](http://www.vcacarfueldata.org.uk).

## **Cleaner Car Tips**

- Downsize - a smaller car will save you money and reduce pollution. Many small cars now have 'big car' features and levels of comfort.
- Think fuel - if most of your driving is on motorways and trunk roads a diesel car could offer the lowest CO<sub>2</sub> emissions. If most of your driving is urban a petrol, or better still a hybrid, has lower emissions of local pollutants harmful to health.

- Check the figures - if you're after a new car, or a used one produced after March 2001, check the VED database for its CO<sub>2</sub> emissions and Euro standard. Aim for a low CO<sub>2</sub> figure and a Euro IV rating.
- Look at the history - when shopping for a used car look for one with a good service history to ensure it has been well maintained.
- Turn it off - remember that air conditioning and electrical gadgets can increase fuel use significantly.
- Look to the future - cars that meet the Euro V standard will start appearing in the new market during 2008 and 2009, ask the dealers if the model you're interested in complies.

## Which Fuel?

Different fuels have different environmental advantages.

### Diesel

Diesel vehicles generally have significantly lower CO<sub>2</sub> emissions compared to petrol, because of the higher efficiency of diesel engines. However they emit higher levels of NO<sub>x</sub> and particulates than new petrol vehicles. Diesel is therefore generally better for global warming, but worse for local pollutants harmful to health.

### Petrol

Petrol vehicles produce less local air pollution with their lower NO<sub>x</sub> and particulate emissions. Some new petrol technologies now coming onto the market offer significant improvements in fuel efficiency. Compare fuel economy and CO<sub>2</sub> figures for petrol and diesel models to see what the differences are.

### Biofuels

Biofuels are produced from oil of crops such as oilseed rape, sunflowers and soybeans, and from waste cooking oils. They are usually sold in blends of up to 5% with petrol or diesel and although they are not completely carbon neutral (because of the energy used to grow and process them) they offer significant carbon savings over petrol and diesel and are compatible with most vehicles. You should check with your vehicle's manufacturer to be sure.

Biodiesel is more widely available than bioethanol and some higher blends of biodiesel can also be used in some vehicles. Some vehicles, known as "flex fuel vehicles" can run on a blend of up to 85% bioethanol and 15% petrol, known as E85, as well as just petrol. Availability of these vehicles is currently limited but improving.



## **LPG and CNG**

LPG (Liquid Petroleum Gas) has proved popular thanks to Government tax incentives that makes fuel relatively cheap. However, the Government has started to reduce the tax differential between LPG and conventional fuels and will continue to do so over coming years. Vehicles using LPG tend to be dual-fuel and can run on either petrol or LPG. On local emissions LPG vehicles tend to have cleaner exhausts than petrol vehicles, and sit between diesel and petrol vehicles CO<sub>2</sub> emissions.

CNG (Compressed Natural Gas) offers even lower CO<sub>2</sub> emissions than LPG, nearly as low as diesel, and with very low particulate emissions. However, at present there are few CNG cars available on the UK market. CNG vehicles can also run on biomethane, offering even lower CO<sub>2</sub> emissions.

LPG and CNG cars are generally converted from petrol fuelled cars, either by the original manufacturer or by a specialist converter. Some manufacturers now offer 'dedicated' cars, which have been specially designed to run on gaseous fuels. These are likely to give the best performance.

## **Electric Vehicles**

A number of Electric Vehicles (EVs) are available. They are cheap to run and have virtually no emissions at the point of use, although when the batteries are charged emissions are created at power stations. The drawbacks are that battery technology, although improving, remains heavy and expensive. EVs have a limited range - typically 50 miles - and can take several hours to recharge, but are worth considering as an urban runabout suitable for shorter journeys.

## **Hybrid Vehicles**

Hybrid vehicles use a conventional petrol engine in conjunction with an electric motor and a battery. The extra power of the electric motor allows a smaller petrol engine to be used and for it to be loaded more efficiently. This can reduce CO<sub>2</sub> and local pollutant emissions. Some hybrids operate on their electric motor alone for short periods of time at low speeds.

At least 3 hybrid models are available in the UK. The hybrid drive can be used to reduce emissions or alternatively to improve performance over models with a similar sized petrol engine. In addition to 'full' hybrids, 'micro' hybrids are also available. In these models the electric motor does not provide power to propel the vehicle, but allows the petrol engine to stop when the vehicle comes to a halt. These cars are usually cheaper than 'full' hybrids, and in urban areas produce significantly less CO<sub>2</sub>, local air pollution and noise.

## Fuel Cell and Other Vehicles

Fuel cell vehicles combine hydrogen fuel with oxygen from the air to produce electricity. This is then used to propel the vehicle, the only exhaust emissions being water. Emissions are produced in the production of the hydrogen fuel; at present most hydrogen comes from reforming natural gas. Although fuel cell vehicles are clean and quiet they are currently in the early stages of development, and it will be some years before they become common on our roads.

### Further Information

#### Department for Transport

Tel: 0207 944 3000

Email: [sustainable.travel@dft.gsi.gov.uk](mailto:sustainable.travel@dft.gsi.gov.uk)

[www.dft.gov.uk](http://www.dft.gov.uk)

#### Energy Saving Trust

Tel: 020 7222 0101

Transport Helpline: 0845 602 1425

[www.est.org.uk](http://www.est.org.uk)

#### Campaign for Better Transport

Tel: 020 7613 0743

Email: [info@bettertransport.org.uk](mailto:info@bettertransport.org.uk)

[www.bettertransport.org.uk](http://www.bettertransport.org.uk)

#### Vehicle Certification Agency

Tel: 0117 9515151

Email: [fuel@vca.gov.uk](mailto:fuel@vca.gov.uk)

[www.vca.gov.uk](http://www.vca.gov.uk)

#### Low Carbon Vehicle Partnership

Tel: 020 7222 8000

E-mail: [secretariat@lowcvp.org.uk](mailto:secretariat@lowcvp.org.uk)

[www.lowcvp.org.uk](http://www.lowcvp.org.uk)

#### Environmental Transport Association

Tel: 0845 389 1010

Email: [eta@eta.co.uk](mailto:eta@eta.co.uk)

[www.eta.co.uk](http://www.eta.co.uk)

#### Liftshare

Tel: 08700 780225

E-mail: [info@liftshare.com](mailto:info@liftshare.com)

[www.liftshare.org](http://www.liftshare.org)

#### Carplus

Tel: 0113 234 9299

Email: [info@carplus.org.uk](mailto:info@carplus.org.uk)

[www.carplus.org.uk](http://www.carplus.org.uk)





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- Air Pollution
- Domestic Smoke
- Garden Bonfires
- Noise Pollution

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