

Target 2008: Global Elimination of Leaded Petrol



*A report of the
Partnership for Clean
Fuels and Vehicles
(PCFV)*

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About the PCFV

The Partnership for Clean Fuels and Vehicles (PCFV) was launched in September 2002 at the World Summit on Sustainable Development in Johannesburg, South Africa. The PCFV is helping reduce vehicular air pollution in developing and transition countries through the promotion of clean fuels and vehicles.

The PCFV is the leading global initiative to promote cleaner fuels and vehicles in developing and transition countries. It provides a range of technical, financial and networking support for governments and other stakeholders to improve urban air quality. Since its inception, the PCFV has directly supported implementation on the ground in every region of the globe, including over 20 national-level campaigns or workshops.

The Clearing-House of the PCFV is located at the United Nations Environment Programme Headquarters in Nairobi, Kenya. The Clearing-House administers the day-to-day operations of the PCFV, such as organising meetings, overseeing activities, responding to requests for information, and liaising with Partners. An Advisory Group provides guidance on strategic and financial issues and advice on general management.

While the Partnership started with only a few dozen Partners, over the past five years a diverse array of non-governmental organisations, international organisations, national governments, and private sector companies from both the fuels and vehicles industries have joined. There are currently over 100 Partners.

For more information about the PCFV, please visit our website: <http://www.unep.org/pcfV>

The views expressed in this report are not necessarily the opinion of and/or endorsed by all Partners of the Partnership for Clean Fuels and Vehicles

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Other PCFV Publications

- ***Working together to promote cleaner fuels and vehicles for life***
- ***Cleaner Motorcycles - Promoting the use of four-stroke engines***
- ***Recommended Practices for the Decommissioning, Dismantling and Disposal of lead Alkyl Compound Facilities and Equipment***
- ***Opening the Door to Cleaner Vehicles in Developing and Transition Countries: The Role of Lower Sulphur Fuels***
- ***Valve Seat Recession Working Group Report***
- ***Let's make Leaded Gasoline History Together: 2 years & 21 countries to go***
- ***Cleaner Relief – Reducing the environmental impacts of humanitarian operations***
- ***How to Clean Up your fleet, Interactive CD for Clean Fleet management***

Copies of these Publications are also available at <http://www.unep.org/pcfV>

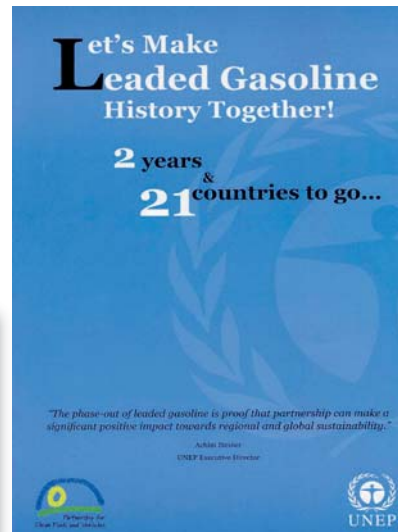
Additional information and resources

The PCFV has made available a number of resources to assist governments, civil society, and other stakeholders who are undertaking the process of phasing out leaded petrol. Resources that available may include:

- technical and policy guidance on lead phase-out
- access to international experts to assist with technical issues
- limited financial assistance for workshops, public awareness activities, etc.
- public awareness videos appropriate for television advertisements
- various posters and brochures for distribution
- case studies of other countries that have switched to unleaded

Because PCFV staff members have been working closely with a range of countries around the world, they are also able to offer guidance on best practices and site-specific issues associated with lead phase-out.

Many materials are available on the PCFV website (<http://www.unep.org/pcf>) or from the PCFV Clearing-House. If you require special materials because of the situation of your country, discuss this with the PCFV – they may be able to provide assistance in acquiring or producing these materials.



ABOUT UNLEADED PETROL

- is **better** for engines, spark plugs, and exhaust systems - means less maintenance and less visits to repair shop
- is **better** for health - lead causes high blood pressure, heart disease, respiratory problems, and impairs mental development
- will **not** cause vehicle problems - **ALL** cars (old and new) can use unleaded petrol
- cars with catalytic converters **NEED** unleaded petrol
- is the **same price** or **cheaper** than leaded petrol

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Introduction to lead phase-out

One of the most pressing air quality issues in countries around the world is air pollution in urban areas. Vehicle emissions are one of the sources of this air pollution; in cities, not only are there more vehicles, but there are more people who are affected by this pollution. There are a number of pollutants that come from vehicles; lead is one such pollutant that has proven easy for governments to eliminate.

Lead does not naturally occur in petrol; it has been added to petrol since the 1920s as a relatively inexpensive way to increase its octane rating (also known as “anti-knock performance”). Engine knocking is caused by abnormal combustion. Better anti-knock performance or a higher octane rating improves engine operation, and because of this, leaded petrol has been widely available on the international market until recently.



Photo: Thomas Harrison-Prentice

In the 1970s, studies were undertaken in the United States indicating the dangerous effects of lead on human health. It was found that lead dust from sources such as paint could be ingested, causing damage to the nervous system, kidney functioning, and intellectual development. Children were found to be especially vulnerable to lead poisoning. At the same time, new vehicle technologies – such as the catalytic converter – were developed to reduce vehicular emissions. These innovations had fewer toxic emissions, and also enhanced vehicle performance. However, they required the use of petrol that did not contain any lead.

With the realisation of the impact of lead on human health, as well as developments in new vehicle technologies, governments around the world – starting with the United States – required oil companies to reduce the amount of lead in petrol and to introduce unleaded petrol to the market.

Initially, concerns were raised in a number of countries about the impact of unleaded petrol on vehicle performance, especially older vehicles. However, no country that has switched to unleaded petrol has reported any problems with mechanical or engine problems in their fleet, regardless of its age. Unleaded petrol provides the same amount of power as leaded petrol, and in fact, improves vehicle performance and efficiency.

Why is lead phase-out an important issue?

Experience from around the world has shown that eliminating lead from petrol can result in a range of benefits – for the operation and life of the vehicle, the environment, and for human health.



Photo: Fleet Forum

One of the biggest benefits of eliminating lead from petrol is that it allows the use of advanced vehicle technologies. These technologies allow the vehicle to run more efficiently, which therefore extends the life of the vehicle. Many of these components – such as catalytic converters – are now standard equipment on all new vehicles. Leaded petrol also has some negative effects on a vehicle's engine and exhaust systems, such as the corrosion of various components, fouling of spark plugs, and contamination of engine oil by corrosive acids. It has been estimated that using unleaded petrol can extend engine life by 1.5 to 2 times.

However, not only do these technologies improve the operation of the vehicle, but more importantly, they also control and reduce emissions from the vehicle. Modern emissions control technology – which depends on unleaded petrol to work effectively – can reduce pollutants such as carbon monoxide, hydrocarbons, and nitrogen oxides by more than 90%. Even a minute amount of lead can poison a catalytic converter. It is the complete elimination of lead from petrol that allows the most benefits for vehicle operation, the environment, and therefore for human health.



As a policy-maker, what can I do?



Luckily, countries around the world have been moving to unleaded petrol for over 30 years, and there is much support available for this kind of action. As a policy-maker, this makes the switch easy. The first step is to contact the PCFV, who has been working with countries around the world and in every situation to help them switch to unleaded petrol. The PCFV will discuss with you what the current fuel supply situation is in your country, Partners you may want to work with, and various options available to you.

The PCFV is committed to working with countries to support them in their move to improve air quality, and based on each country's situation, can provide a range of technical, financial, and networking assistance.



How can the PCFV help?

The PCFV has been working with governments, civil society, and the fuels and vehicles industries since 2002 toward the phase-out of leaded petrol. All Partners to the PCFV agreed on a target for the global phase-out of leaded petrol: 31 December 2008. To this end, regional and national level meetings have been held around the world, and workshops have been convened to provide policy-makers and industry personnel with information and training. The PCFV has assisted many countries in developing national action plans to phase out leaded petrol, as well as in providing financial, technical and networking support. In addition, the PCFV has developed public awareness raising materials and supported various campaigns to inform consumers about the health and environmental impacts associated with lead emissions.

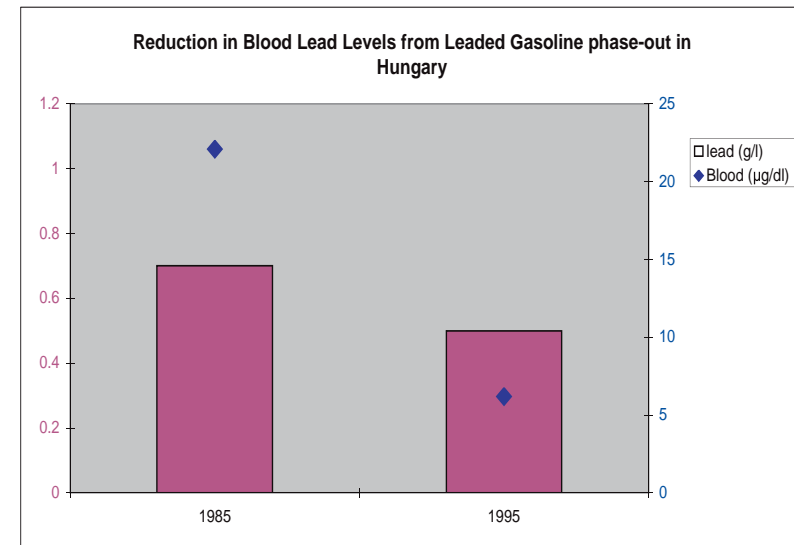
Every country's fuel supply situation is unique, and the PCFV has been assisting governments to come up with individual plans for phasing out leaded petrol.



How can phasing out lead from petrol benefit human health?

When lead is added to petrol, it also becomes part of a vehicle's emissions. Leaving the exhaust pipe, lead can have negative effects on human health and environment. There are two ways in which humans can take in lead: ingestion or inhalation.

Lead can be deposited into soil or absorbed by plants, becoming part of the food chain, and therefore ingested by humans. Many studies have shown that the concentrations of lead in plants are correlated with atmospheric lead levels. In countries that have introduced unleaded petrol, the amount of lead in plants has declined.



However, inhalation is the most significant source of lead for humans. Although humans generally ingest more lead, particles that are inhaled enter the bloodstream more readily and are therefore more dangerous. Many studies have linked high levels of lead in children's blood to negative effects on mental health development, IQ and behaviour. Studies by various US government departments have found that higher levels of lead in blood may damage the brain and nerves in young children, resulting in learning deficits and lower IQ. Exposure to lead has also been found to cause high blood pressure, increased rates of heart disease, and damage to specific organs.

Research has shown a direct correlation between changes in the levels of lead in petrol and changes in the levels of lead in human blood. Therefore, removing lead from petrol has a number of benefits for human health. Where countries have banned the use of lead in petrol, concentrations of lead found in human blood have immediately declined, resulting in instant health benefits for the human population.

What are the options available to phase out lead?

For countries that are still using leaded petrol, there are a number of options to improve the quality of their fuel and enjoy the benefits of improved air quality. In general, the options available depend on whether the country imports fuel, or if it produces or refines fuel domestically.

Does your country import fuel?

Countries that import fuel can take more immediate action; in fact, some countries have moved to unleaded petrol in just a few weeks! Most countries who import fuel have opted to stop importing leaded petrol, and switch to imports of unleaded petrol. Unleaded petrol is the cheapest and most abundantly available petrol on the international market. Indeed, as most of the market is now unleaded, finding leaded petrol is increasingly difficult and expensive. Although the petrol storage and distribution infrastructure needs to be “flushed” of leaded petrol, this process can be completed in a short period of time.

Does your country refine fuel?

If your country refines fuel, there are a number of options and alternatives available, depending on the configuration of your refinery. Numerous countries (including developing countries) have successfully phased out the use of lead in petrol without any problem. Many countries have been able to introduce unleaded petrol within weeks, by simple steps such as importing cleaner feedstock, adjusting octane standards, or making minor modification refinery equipment.



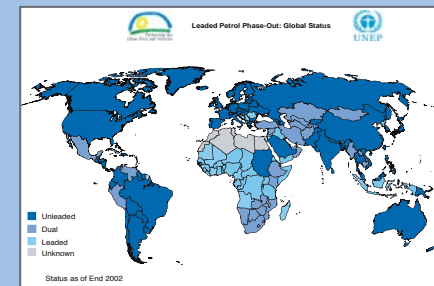
However, some refineries require upgrades that include more advanced equipment. Every refinery is different, and so every country will have a different experience. The PCFV can provide technical assistance on issues such as the use of additives, appropriate octane levels, and impacts on the nation's fleet. In addition, the PCFV and various Partners have published documents to provide guidance on these and other issues, which are available from the Clearing-House or on the PCFV website.

What have other countries done?

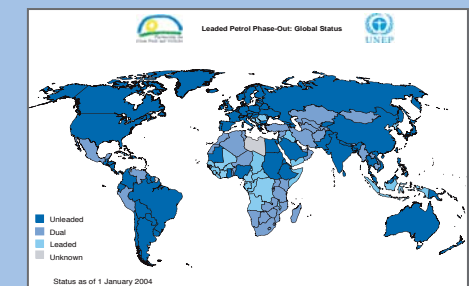
As of early 2008, all but 16 countries in the world have banned leaded petrol. The PCFV and its Partners have been working closely with governments from every continent to help them switch from leaded to unleaded petrol. Each country has taken a different course of action, depending on its unique situation. Examples of countries that were able to quickly introduce unleaded petrol include: Ethiopia, El Salvador, Panama, Tanzania, and Viet Nam. Countries that gradually switched from leaded to unleaded include: India, South Africa, and Thailand. Countries that upgraded their refineries to produce unleaded petrol include: Ghana, Indonesia, and South Africa.

These maps indicate progress made since the inception of the PCFV in 2002 until 2008, the target year for the total elimination of leaded petrol.

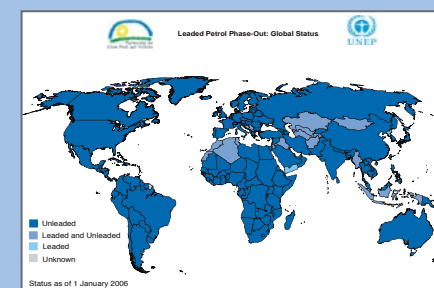
End of 2002



January 2004



January 2006



January 2008

