



European Federation for Transport and Environment

Secretariat Bd De Waterloo 34, 1000 Brussels Tel + 32 / 2 / 502 9909 Fax: + 32 / 2 / 502 9908 home-
page: www.te.eu e-mail: info@t-e.eu

Waiting for Euro 5 and Euro 6 New Emission Standards for Passenger Cars, Vans and Lorries

Introduction

Road transport contributes considerably to Europe's continuing air quality problems. These problems include premature mortality, aggravation of respiratory and cardiovascular disease, aggravation of existing asthma, acute respiratory symptoms, chronic bronchitis, and decreased lung function. Numerous studies also link exhaust gases to increased incidence of lung cancer.

The EU context

Since the early 1990s, the EURO emission standards for passenger cars and other vehicles have initiated a significant reduction in air pollution per driven kilometre. They describe the maximum tailpipe emissions for all new cars sold in the European Union. Nevertheless, the overall traffic growth and the lax standards for diesel engines have limited the environmental success of the EURO standards. Further improvements of combustion technologies are possible but limited.

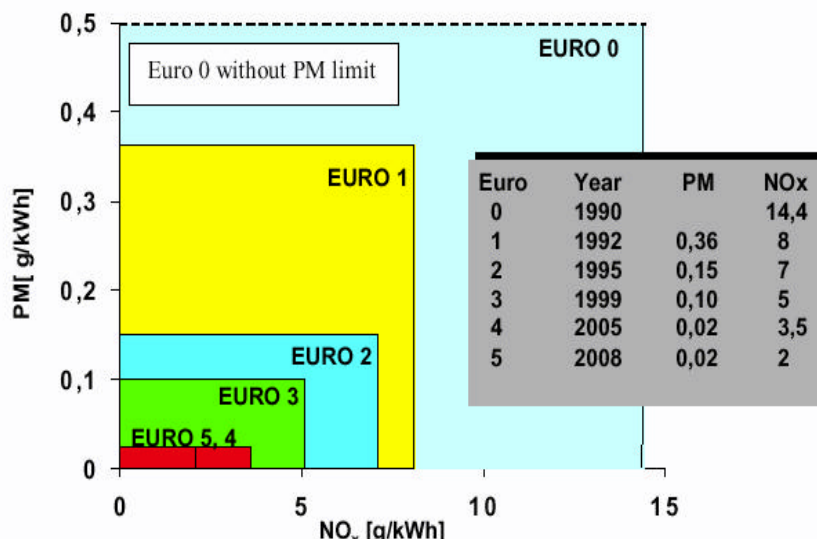
In 2003 the discussion of new EURO standards began, which might enter into force by 2010. Diesel emissions are the crucial elements. Emission control technologies (particle filters, catalytic converters) are available but expensive.

Regulatory Framework

Motor vehicle emissions are regulated by Directive 70/220/EEC (passenger cars, light vehicles) and 88/77/EC (heavy vehicles). Amendments to those directives tightened the EURO limit values stepwise.

The Auto-Oil Programme focuses on the emissions of carbon monoxide (CO), Volatile

EU Emission Standards for Heavy Vehicles (1990 to 2008)



Source: ACEA

tile Organic Compounds (VOC), nitrogen oxides (NOx) and particles. According to this programme stricter limit values will be implemented for light vehicles in 2005 (Directive 98/69/EC) and for heavy duty vehicles in 2005 and 2008 (Directive 1999/96/EC). Additional legislation has been implemented on periodic inspections and on the use of on-board diagnostic systems (OBD), which tell vehicle owners if emissions are too high and indicate when a repair is needed.

Timeframe for EURO 5 and EURO 6

The European Commission will propose a new emission standard in Spring 2005. It is likely to enter into force in 2010. The agreement on a standard is important for the EU Member States to create an incentive for clean vehicles, i.e. through differentiated vehicle taxation or road tolls.

In September 2003, the European Commission (DG Enterprise) invited Member States and stakeholders to the first meeting of a subgroup of the Motor Vehicle Emission Group (MVEG), with the purpose to prepare the base for a consultation document. Key issues for this group are:

- emission control technologies and other technical measures
- the performance and characteristics of such options
- investment and operation costs
- their environmental impact to reduce particulates

Furthermore, the MVEG subgroup will provide up to date information for the Clean Air for Europe programme (CAFÉ). The output of CAFÉ modelling and cost-benefit studies will be published in November 2004.

A detailed questionnaire has been send-out to Member States, manufactures and other stakeholders in early 2004. Based on the results, the consultation on EURO 5/6 will continue in Spring 2004.

UBA Proposals for EURO 5 and EURO 6

In 2003, the German Environment Agency (UBA) published a proposal for new emission standards for motor vehicles. They are environmentally effective and technically feasible. A number of civil society organisations support this UBA position or use it as a reference.

For passenger cars and light-duty commercial vehicles (EURO 5) the key points are:

- limit values should be fuel neutral.
- particulate limit value (mass-based) must be defined at the level of the particulate trap.¹

Cleaning-up Diesel Emissions

Particulate traps and catalytic converters are standard technologies that could be available for all diesel engines. The additional costs to apply EURO 5 (UBA) to diesel cars might range between €200 and €400. For heavy duty vehicles the cost estimations vary between €1,500 and €3,000, depending on the engine. Some concepts will reduce the fuel consumption and in effect cover their costs.

¹ For example, the Peugeot 607 has a particulate emission of 0.0010 g/km. A limit value of 0.0025 g/km would offer a considerable safety margin in that regard and would correspond to a 90% reduction from the Euro 4 limit value.

- ✍️✍️reduction of the mass-based particulate limit values by a factor of ten is sufficient in principle to achieve the objective of protecting health, if effective particulate traps or equivalent technologies with a high reduction rate over the entire size range of particulate matter, including nanoparticles, are used.²
- ✍️✍️NOx limit values for diesel cars should be set at the level for Euro 4 petrol cars, i.e. 0.08 g/km. The summation limit value HC + NOx for diesel passenger cars is omitted.
- ✍️✍️HC limit value of 0.05 g/km for both petrol and diesel passenger cars.

According to UBA studies, the implementation of these limits can be technically realised by 2005.

Proposed EURO 5 for passenger cars and light-duty commercial vehicles

Valid from*	Vehicle class/ group		Reference weight RW (kg)	CO (g/km)	HC (g/km)	NOx (g/km)	Particulate mass (g/km)
	Class	Group		Petrol Diesel	Petrol Diesel	Petrol Diesel	
01.01.2010	Passenger cars	-	All	1.0	0.050	0.08	0.0025
01.01.2010	Light-duty commercial vehicles	I	RW ≤ 1305	1.0	0.08	0.08	0.0025
		II	1305 < RW ≤ 1760	1.0		0.08	0.0025
		III	1760 < RW	1.25		0.10	0.0032

* The implementation of these limit values is technically realisable by 2005. Germany is of the opinion that according to political agreements with France standards for the further reduction of NOx and particulate emissions for diesel passenger cars should be implemented in due time and should be made obligatory starting 2010.

For heavy duty vehicles, further reduction in particulate emissions and stricter NOx limit values are necessary. The following aspects are to some extent similar to those for passenger cars.

- ✍️✍️The limit values should be fuel neutral.
- ✍️✍️It is necessary to cut the NOx limit value for Euro V in half to 1.0 g/kWh in order to comply with NEC Directive 2001/81/EC and to further reduce the NOx limit value to 0.5 g/kWh as Euro VI from 2010.
- ✍️✍️A stricter limit value for particulates should be introduced as from 2008 onwards in order to adapt the Euro V standard.
- ✍️✍️A reduction in the mass-based particulate limit values by a factor of ten is sufficient to achieve the objective of protecting health, if effective particulate traps or equivalent technologies are used.

² Defined measurement procedures for gravimetric determination of particulate emissions at a low level are available in the United States for use from 2007.

Proposed limit values for emissions from heavy-duty engines
(limit values for series production)

	EURO V 1999/96/EG from 2008/09		EURO VI from 2010	
	ESC	ETC ^{1), 2)}	ESC	ETC ^{1), 2)}
	g/kWh	g/kWh	g/kWh	g/kWh
CO	1.5	4.0	1.5	4.0
HC	0.46		0.46	
NMHC		0.55		0.55
Methane		1.1 ³⁾		1.1 ³⁾
NOx	1.0	1.0	0.5	0.5
Particulates	0.002	0.003	0.002	0.003

1) Additional transient test for diesel engines with exhaust aftertreatment systems
For gas engines transient test only 3) For natural gas engines only

ESC = European Steady State Cycle
ETC = European Transient Cycle

A fast track for Clean Diesel?

Economic incentives are important to boost the sale of particle filters and catalytic converters. Most of the existing schemes are linked to the vehicle taxes in the Member States. But incentives could also be created without waiting for a final agreement on a new EURO standard. Some ideas that could be realised instantly on a national or on a local level are:

- ~~•~~ differentiated parking fees
- ~~•~~ preferential parking admission for residential areas
- ~~•~~ direct subsidy for buying a clean car

In urban areas the health benefit of avoided air pollution will compensate some of the extra costs. The reduction of one ton of particulate matter in some urban areas in Europe would prevent health costs up to €19,000. Another option is road pricing to internalise the health effect and other external costs for road users. Positive examples are the London Congestion Charge or the Austria truck toll system.

Further Information on EURO 5 and EURO 6

Motor Vehicle Emission Group

http://www.europa.eu.int/comm/enterprise/automotive/mveg_meetings/index.htm

European Commission (DG Environment)

<http://www.europa.eu.int/comm/environment/air/transport.htm>

Umweltbundesamt (German Environment Agency)

http://www.umweltdaten.de/uba-info-presse/hintergrund/FutureDiesel_e.pdf