Manual of European Environmental Policy

The following pages are a section from the Manual of European Environmental Policy written by the Institute for European Environmental Policy.

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This section is the text of the Manual as published in 2012. It is therefore important to note the following:

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The Manual should be cited as follows:

Farmer, A.M. (2012) (Editor). Manual of European Environmental Policy. 1043pp. Routledge, London.

Emissions from vehicles

Passenger cars and light commercial vehicles

Formal references	
Regulation (EC) No 715/2007 (OJ L171 29.06.2007)	Regulation of the European Parliament and of the Council on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information
Legal base	Article 114 TFEU (originally Article 100a EEC Treaty)
Binding dates	
Entry into force	2 July 2007
Regulation applies from	3 January 2009
Provisions under Article 10(1) and 12 apply from	2 July 2007
Amendments and implementing measures in Article 5(3) and Article 14(6) to be adopted by	2 July 2008
Commission to report on implementation	2 July 2011
Member States to report on penalty mechanisms established	2 January 2009

Heavy duty commercial vehicles

Formal references	
Regulation (EC) No 595/2009 (OJ L 188 18.7.2009)	Regulation on type approval of motor vehicles and engines with respect to emissions from heavy duty vehicles (Euro VI) and on access to vehicle repair and maintenance information amending Regulation (EC) No 715/2007 and Directive 80/1269/EEC, 2005/55/EC and 2005/78/EC
Legal base	Article 114 TFEU (originally Article 100a EEC Treaty)
2005/55/EC (OJ L275 20.10.2005)	Directive on the approximation of the laws of the Member States relating to measures to be taken against the emission of gaseous and particulate pollutants from compression ignition engines for use in vehicles, and the emission of gaseous pollutants from positive ignition engines fuelled with natural gas or liquefied petroleum gas for use in vehicles
Legal base	Article 114 TFEU (originally Article 100a EEC Treaty)
2005/78/EC (OJ L 313 29.11.2005)	Directive implementing Directive 2005/55/EC of the European Parliament and of the Council on the approximation of the laws of the Member States relating to the measures to be taken against the emission of gaseous and particulate pollutants from

	compression ignition engines for use in vehicles, and the emission of gaseous pollutants from positive ignition engines fuelled with natural gas or liquefied petroleum gas for use in vehicles and amending Annexes I, II, III, IV and VI thereto
2008/74/EC (OJ L 192 19.7.2008)	Commission Directive 2008/74/EC of 18 July 2008 amending, as regards the type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and access to vehicle repair and maintenance information, Directive 2005/55/EC of the European Parliament and of the Council and Directive 2005/78/ECNote: Regulation (EC) No 595/2009 repealed Commission Directive 2008/74/EC, Directive 2005/55/EC and Directive 2005/78/EC.

Two- or three-wheel motor vehicles

Formal references	
97/24/EC (OJ L226 18.8.97)	Directive on certain components and characteristics of two- or three-wheel motor vehicles
Legal base	Article 114 TFEU (originally Article 100a EEC Treaty)
2002/51/EC (OJ L252 20.9.2002)	Directive on the reduction of the level of pollutant emissions from two- and three-wheel motor vehicles and amending 97/24
Proposed 22.6.2000 – COM(2000)314	
Legal base	Article 114 TFEU (originally Article 100a EEC Treaty)
2003/77/EC (OJ L211 21.8.2003)	Commission Directive amending Directive 97/24/EC

Diesel engines for tractors

Formal references	
77/537/EEC (OJ L220 29.8.77)	Council Directive on the approximation of the laws of the Member States relating to the measures to be taken against the emission of pollutants from diesel engines for use in wheeled agricultural or forestry tractors
Proposed 1975 – COM(75)621	
Legal base	Article 91 TFEU (originally Article 75 EEC Treaty)
2000/25/EC (OJ L173 12.7.2000)	Directive of the European Parliament and of the Council on action to be taken against the emission of gaseous and particulate pollutants by engines intended to power agricultural or forestry tractors and amending Council Directive 74/150/EEC
Proposed 02.10.98 – COM(98)472	
Legal base	Article 91 TFEU (originally Article 75 EEC Treaty)
2005/13/EC (OJ L55 1.3.05)	Amendment to Directive 2000/25/EC

Engines in non-road mobile machinery

Formal references	
97/68/EC (OJ L59 27.2.98)	Directive on the approximation of the laws of the Member States relating to measures against the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery
Proposed 7.12.95 – COM(95)350	
Legal base	Article 91 TFEU (originally Article 75 EEC Treaty)
2001/63/EC (OJ L227 23.8.2001)	Commission Directive adapting Directive 97/68/EC to technical progress
2002/88/EC (OJ L35 11.2.2003) proposed 18.12.2000 – COM(2000)840	Amendment
2004/26/EC (OJ L146 30.04.2004) (Corrigenda: OJ L225 25.06.2004)	Amendment
Proposed 27.12.2002 – COM(2002)765	

Vehicle emission tests

Formal references	
77/143/EEC (OJ L47 18.02.77)	Directive on the approximation of the laws of the Member States relating to roadworthiness tests for motor vehicles and their trailers
Legal base	Article 91 TFEU (originally Article 75 EEC Treaty)
92/55/EEC (OJ L225 10.8.92)	Directive amending Directive 77/143/EC on the approximation of the laws of the Member States relating to roadworthiness tests for motor vehicles and their trailers (exhaust emissions)
96/96/EC (OJ L46 17.02.97)	Directive on the approximation of the laws of the Member States relating to roadworthiness tests for motor vehicles and their trailers
1999/52/EC (OJ L142 05.06.99)	Commission Directive adapting to technical progress Council Directive 96/96/EC
2000/30/EC (OJ L203 10.8.2000)	Directive of the European Parliament and of the Council on the technical roadside inspection of the roadworthiness of commercial vehicles circulating in the Community
Proposed 18.06.98 – COM(98)117	
Legal base	Article 91 TFEU (originally Article 75 EEC Treaty)
2001/9/EC (OJ L48 17.2.2001)	Commission Directive adapting to technical progress Council Directive 96/96/EC
2003/27/EC (OJ	Commission Directive adapting to technical progress Council

L90 8.4.2003)	Directive 96/96/EC
Regulation (EC) 692/2008	Commission Regulation implementing and amending Regulation (EC) No 715/2007 of the European Parliament and of the Council on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information
Legal base	Article 91 TFEU (originally Article 75 EEC Treaty)

Purpose of the Regulations and Directives

Air pollution from vehicles can be regulated both by specifying the composition of the fuel and by specifying the characteristics of the vehicle itself. Some Directives regulate the content of sulphur and lead in fuels while another Directive sets limits for a much broader range of fuel quality parameters. The Regulations and many Directives listed above regulate the emissions of the vehicle or engine directly. They were introduced primarily to prevent the Member States creating barriers to trade by setting more stringent standards than those specified, but environmental considerations are now being given greater prominence in their own right.

Summary of the Regulations and Directives

Regulation (EC) No 715/2007 was a watershed in the Regulation of vehicle emissions in the EU for several reasons. First, it consolidated a very large number of separate Directives and amending Directives covering emissions test procedures for both regulated pollutants and fuel consumption and CO_2, and for all cars and vans, into one single piece of legislation. The second advance was that it marked the switch from Directives to a Regulation, as a result of which it became directly applicable in all of the Member States and ended the need for complex implementing legislation in each one.

Also, responding to a request from the European Parliament, the Regulation adopts a new approach by laying down the fundamental requirements of the Regulation (such as the actual levels of emissions to be achieved) while allowing technical details to be added through implementing measures agreed under comitology procedures.

As such the main provisions of Regulation (EC) No 715/2007 are as follows:

Chapter I covers the usual subject matter, scope and other definitions for the Regulation.

Chapter II sets out the manufacturers' obligations in relation to type approval, testing and other requirements. However, detailed specification of the test procedures to be used is to be developed separately under comitology procedures.

Chapter III includes a raft of new procedures and requirements covering access to vehicle maintenance and repair information. These have arisen because vehicles have become far more sophisticated and incorporate increasingly complex electronic controls including on-board diagnostics (OBD). Without access to detailed information on how these things work, it is increasingly difficult for small and medium sized enterprises and other third-party repair and maintenance operators to do their work effectively, while conferring on the original manufacturer a natural advantage in these areas of activity. The Commission

is therefore increasingly keen to force manufacturers into full and open access in order to prevent the erection of technical barriers within the repair and maintenance markets.

Chapter IV covers the obligations on Member States, in particular the central obligations to exclude from their markets vehicles that do not meet the specified emission levels, and to allow those that do.

Chapter V includes a range of 'final provisions' including requirements on the Commission regarding review and future progress; the comitology procedure to be used; and the repeal and amendment of various other pieces of legislation.

Regulation (EC) No 715/2007 also incorporates minor amendments to Directives 70/156/EC and 2005/55/EC.

Commission Regulation (EC) No 692/2008 sets out the detailed technical requirements, in particular for vehicle testing procedures, as required to implement Regulation (EC) No 715/2007, and as set out in Article 5 therein.

Commission Directive 2008/74/EC amended Directives 2005/55/EC and 2005/78/EC in minor ways to align their scope and coverage better with that of Regulation (EC) No 715/2007, and to amend certain technical requirements. For other types of vehicles the Directives covered in this Section are only those directly related to emissions. Those relating more generally to the complex technical provisions of type approval are omitted. Here is a summary of the Directives:

97/24/EC This Directive establishes equivalence between EC requirements and existing United Nations Economic Commission for Europe (UNECE) standards for a range of non-environmental aspects of two- and three-wheeled vehicles. It also sets out testing and type approval procedures and emission limits for CO, HC and NO_x emissions. Table 10 sets out these limits and corresponding implementation dates.

2002/51/EC Sets stricter emission limits for 2003 and 2006 for two-wheeled vehicles and for 2003 only for tricycles and quadricycles (see Table 11).

2003/77/EC updates the test cycle to be used for measuring future emissions from two- or three-wheeled vehicles.

77/537/EEC sets limits on the opacity of emissions from diesel-engined tractors.

2000/25/EC sets limits on emissions of CO, HC, NO_x and particulates from engines to be used in agricultural and forestry tractors. This is an advance on Directive 77/537/EC as the earlier Directive only set limits on the opacity of emissions. The Directive aligns emission limits for tractors with those of other non-road mobile machinery, as set out in Directive 97/68/EC (see Table 7).

2005/13/EC aligns 2000/25/EC with emission limit values for other non-road mobile machinery, as set out in 97/68, as amended by 2004/26/EC.

97/68/EC sets limits on emissions of CO, HC, NO_x and particulates from all diesel engines with an engine power of between 18 and 560 kW to be used in non-road mobile machinery (see Table 7).

2001/63/EC aligns the technical requirements of Directive 97/68/EC with the corresponding requirements of ECE Regulation No 96.

2002/88/EC extends the scope of Directive 97/68/EC to include smaller petrol engines that is those with a power of 19 kW or below (see Table 8).

2004/26/EC introduces further stages of emission limit values for non-road mobile machinery, better aligns EU legislation with that of the United States, and extends the scope of Directive 97/68/EC to engines used in inland waterway vessels and railway locomotives.

77/143/EEC requires that a number of categories of vehicle be subject to regular roadworthiness testing.

92/55/EEC lays down requirements for testing vehicle emissions in regular roadworthiness tests.

96/96/EC consolidates and replaces 77/143/EC and its amendments, including 92/55/EC on exhaust emissions, into one single Directive.

1999/52/EC amends 96/96/EC in relation to testing diesel vehicles, in order to account for technical progress.

2000/30/EC establishes certain conditions for roadside inspections of commercial vehicles operating in the Community. It was considered that it would be more effective to provide for roadside inspections throughout the year than to tighten the standards set out in Directive 96/96/EC with respect to the annual roadworthiness test.

2001/9/EC amends Directive 96/96/EC in relation to the measurement of CO emissions when a vehicle is idling to account for technical progress.

2003/27/EC amends Directives 96/96/EC and 2000/30/EC by tightening the limits for roadworthiness testing in respect of roadside inspections of commercial vehicles.

80/1268/EEC establishes a method of measuring the fuel consumption of motor vehicles in order that such measurements could be included in Community type approval requirements. This Directive was intended as a harmonization measure for the internal market, rather than an environmental one and, therefore, did not initially address carbon dioxide (CO_2) emissions.

93/116/EC amends Directive 80/1268/EC on methods for determining fuel consumption by requiring new procedures that enable CO_2 emissions to be determined. CO_2 emissions are to be recorded in a document supplied to the vehicle owner at the time of purchase.

1999/100/EC amends the test cycle for the measurement of fuel consumption and CO_2 emissions in Directive 80/1268/EC and introduces new technical requirements for the

measurement of fuel consumption and CO_2 emissions for EC-type approval of vehicles fuelled by natural gas and liquefied petroleum gas.

2004/3/EC extends the scope of Directive 80/1268/EC to cover N 1 vehicles, or those vehicles designed and constructed for the transport of goods, and weighing less than 3.5 tonnes.

Regulation (EC) No 715/2007 establishes common technical requirements for the type approval of motor vehicles, engines and replacement parts with regard to their emissions. This Regulation also lays down rules for in-service conformity of vehicles and engines, durability of pollution control devices, OBD systems, measurement of fuel consumption and CO_2 emissions and accessibility of vehicle OBD and vehicle repair and maintenance information. It applies to vehicles categories M 1, M 2, N 1 and N 2 and to all motor vehicles of categories M 3 and N 3. Manufacturers will be responsible for ensuring that all new vehicles sold, registered or put into service within the Community, all new engines sold or put into service within the Community and all new replacement pollution control devices requiring type approval which are sold or put into service within the Community, are type approved. Technical specifications relating to the components will be laid down through a comitology procedure. From 31 December 2012, national authorities will have to comply with the EC type approval and refuse type approval to vehicles, engines and pollution control devices that do no comply with the Regulation. Member States are allowed to deliver financial incentives to new vehicles applying the Regulation and for retrofitting before but not after 31 December 2013. The financial incentives will have to be capped to the additional cost of technical devices used to ensure compliance. Member States are responsible for putting in place a system of penalties for infringements.

Commission Regulation (EU) No 566/2011 amends Regulation (EC) No 715/2007 and includes a vehicle repair and maintenance information requirement.

Commission Regulation (EU) No 582/2011 implements and amends Regulation (EC) No 595/2009. It updates emissions levels from heavy duty vehicles for the type-approval of Euro VI and amends Annexes I and III to Directive 2007/46/EC.

Development of the Regulations and Directives

Passenger cars and light commercial vehicles

The Community's approach to the Regulation of vehicle emissions was transformed during the early 1980s by mounting concern at the effects of acid rain on the health of northern European forests, and later by unrelated changes introduced to the EC's decision-making process through the Single European Act. Until 1983, EC policy in this area was based on regulations developed by a UNECE working group which were potentially applicable to all European countries. ECE regulations are not binding, but amendments can only be made by unanimity among those countries that have adopted the original Regulation. Early EC Directives followed ECE regulations, ensuring that Member States did not set more stringent limits, thus avoiding the development of barriers to trade. The standards set were optional in Member States, and applied uniformly to all cars, regardless of engine capacity.

This relatively uncontroversial approach ended in 1983 when anxiety about damage to its forests and gathering domestic support for the Green Party led the West German government to threaten unilaterally to require all cars on its roads to be fitted with three-way catalytic converters from 1986, and in the interim to offer tax concessions for cleaner cars. The German position, which threatened to fragment the unity of the European car market, was supported by Denmark and the Netherlands, but strongly opposed by France, Italy and the United Kingdom. The car industries in these latter countries produced smaller vehicles whose competitiveness was thought to be disproportionately threatened by a requirement to fit expensive catalytic converters. Instead, the development of the so-called 'lean-burn' engine was favoured as an alternative route to pollution control.

In June 1984 the Commission put forward a proposal (COM(84)226) for further reductions in vehicle emissions aimed at forestalling a unilateral German move. It was linked to another proposal relating to the introduction of unleaded petrol that was agreed as Directive 85/210/EEC. The emission standards proposed were fiercely fought over, but during 1985 Environment Ministers reached a compromise setting limits of varying stringency for large, medium and small cars, with three-way catalysts being necessary to achieve compliance only in the case of large cars, thus enabling the continuing development of lean-burn technology for medium and small vehicles. Formal agreement to a Directive, however, was blocked by Denmark and Greece. Denmark wanted more stringent limits comparable with full United States' standards (surprisingly, since at that time it had not yet made mandatory the standards of the earlier Directive 83/351/EEC), while Greece put on a reserve pending the receipt of greater EC financial support for environmental protection schemes in Athens[1].

Negotiations over the draft Directive were transformed by the ratification in July 1987 of the Single European Act, which introduced qualified majority voting under the former Article 100A (now Article 114 TFEU) for measures relating to the completion of the single market. In what was the first time that an environmental Directive had been agreed by majority voting, the opponents of the compromise were overruled in the Council and Directive 88/76/EEC was formally adopted in December 1987.

Proposals for second-stage reductions for small cars (COM(87)706) (OJ C56 27.2.88) proved equally contentious and the outcome was dramatically influenced by the European Parliament's use of the cooperation procedure, also introduced by the Single European Act. The Council had adopted a common position in 1988 on standards which would not have made catalytic converters obligatory. In April 1989, the Parliament amended the proposal at second reading, and, based on this amendment, the Commission revised its proposal effectively to make regulated three-way catalytic converters obligatory. This could only be changed back to the common position by unanimity in the Council, which was not forthcoming. Rather than have no Directive at all, in June the Council accepted the more stringent standards (19 g/test for CO, 5 g/test for HC and NO_x) in Directive 89/458/EEC. It was a dramatic illustration of how, following the Single European Act, the Commission and the Parliament acting together could put considerable pressure on the Council, since it could only change a revised proposal by unanimity. Moreover, under the Directive, Member States no longer had the option of whether or when to introduce the new standards: they were compulsory from 1992. Member States were also allowed to give financial inducements until the compliance dates for consumers who buy cars meeting the emission limits ahead of time, provided the incentives were 'substantially less' than the full cost of the new emission control technology.

Agreement to stringent standards for smaller cars in Directive 89/458/EEC opened the door to a considerable further tightening of emission limits for medium and large cars. A Commission proposal along these lines (COM(89)662), requiring all new-model cars to meet what were effectively current US standards by 31 July 1992, was agreed by the Council in December 1991 as Directive 91/441/EEC. All sizes of passenger car were required to meet a broader range of emission limits. The Directive was once again influenced by the European Parliament, although proposals by MEPs for even more stringent standards on this occasion failed to secure an absolute majority.

The Environment Committee of the Parliament also called for far more stringent limits for 1996 than those eventually adopted in Directive 91/441/EEC. Its proposed amendments were largely rejected by the Council, and there was speculation that the Parliament would as a result reject the common position adopted by the Council, taking advantage of its greater powers under the Maastricht Treaty to initiate the new conciliation procedure. In the event, the required majority failed to materialize after intense lobbying, and the common position was approved.

After the introduction of catalytic converters on all petrol cars, resulting from Directives 91/441/EEC and 94/12/EC, the motor industry in particular argued that the costs of these measures were becoming excessive. It was further suggested that the policy attention paid to improving vehicle technology was greater than that to cleaner fuels; that the 'best available technology' approach was imposing costs which would outweigh the additional benefits to be gained; and that other measures (such as improved inspection and maintenance) were being overlooked. In response to this the Commission, partly following from an earlier US programme, established the so-called European Auto-Oil Programme. This represented an important new departure in its approach to standard setting. New proposals on cars and fuel quality emerged through the Auto Oil Programme in 1996. In spite of the improved analytical approach to determining the proposed limit values, their adoption was still a protracted and contentious process. The Auto Oil Programme resulted in the requirement that all positive ignition engines should be fitted with OBD systems, as well as the development of Directive on the Quality of Petrol and Diesel (Directive 98/69/EC) In the course of the development of the Directive this was taken to mean those fuelled by petrol, but it also includes engines fuelled by LPG and NG. As such technology was not as well developed for these two fuels as it was for petrol engines, Directive 2001/1/EC amended Directive 70/220/EEC to delay the OBD requirement for LPG- and NG-powered vehicles until 2003.

As well as introducing standard operational emission limits for light vehicles (Table 1), Directive 98/69/EC included limits for cold starts, that is emissions allowed in the early stages of a journey while the catalytic converter is not yet sufficiently warmed up to operate efficiently. However, this test only applied to lighter passenger cars and light vans, but the Commission was committed to bringing forward a proposal to address heavier vans by the end of 1999. This proposal (COM(2000)487) finally appeared in September 2000 and addressed larger cars (not exceeding 2.5 tonnes), as well as heavier vans (not exceeding 3.5 tonnes). The proposal was relatively uncontentious, as Parliament made no amendments to the Council's Common Position in the course of its second reading and only the United Kingdom did not support the final version of the text arguing that final version, which had slightly tougher emission limits, was not as cost-effective as the original proposal had been. Directive 2001/100/EC was approved on 7 December 2001.

Table 1. Euro 5 standards

Engine type	Emissions (g/km)						Implementation date
	CO	**HC**	**NO_X**	**HC+NO**	**PM**	**NMHC**	
Petrol (M)	1	0.1	0.060	–	0.005	0.068	2 July 2007
Diesel (M)	0.5	–	–	0.23	0.005	–	2 July 2007
Petrol (N1) I	1	0.1	0.060	–	0.005	0.068	1 January 2011
Diesel (N1) I	0.5	–	–	0.23	0.005	–	1 January 2011
Petrol (N1) II	1.81	0.13	0.090	–	0.005	0.090	1 January 2012
Diesel (N1) II	0.63	–	–	0.295	0.005	–	1 January 2012
Petrol (N1) III	2.27	0.16	0.108	–	0.005	0.108	1 January 2012
Diesel (N1) III	0.74	–	–	0.35	0.005	–	1 January 2012
Petrol (N2)	2.27	0.16	0.108	–	0.005	0.108	1 January 2012
Diesel (N2)	0.74	–	–	0.35	0.005	–	1 January 2012

Regulation (EC) No 715/2007

In the summer of 2002, the Commission consulted on whether the NO_x limits for heavy commercial vehicles set out in Directive 1999/96/EC should be tightened for new type approvals from 2008 and for engines from 2009. A reduction to 2 g/kWh was already previewed in the Directive – the consultation was simply to confirm that this limit should be applied. At an Environment Council in early 2003, the French and German delegations stressed the importance of tightening NO_x emission limits for passenger cars and heavy vehicles with diesel engines and the Commission was asked to report back on the issue. The publication of Directive 2005/55/EC in September 2005 reconfirmed the emission limit values stated in Directive 1999/96/EC and provided a consolidation of the previous Directives, with a view to further amendments being made in the future.

Discussions have continued and there was talk of agreeing common standards for petrol and diesel cars at the Euro 5 stage (See Table 2). Agreement on the standards was the subject of severe political pressure in the face of concerns over competitiveness. In the summer of 2005, the Commission launched a public consultation on proposed standards, which is unusual for such a technical proposal, and arguably superfluous given that the proposals arose from the CAFE process, which itself included, and was supposed to include, all relevant stakeholder representatives. The Commission supported a proposal for a particulate limit of 5 mg/km, claiming that this would effectively mandate particulate filters on all cars. This was despite growing evidence that much tighter limits are achievable, which ran the risk that filters would not in fact be required. The proposal also included requirements for improved PM measuring equipment and protocols to reflect technical progress, which would include measurements to help regulate the number of particles in future once more information became available. This would have made it impossible at some stage for manufacturers to comply without a filter. The proposed limit for diesel NO_x was 200 mg, representing only a 25 per cent reduction on previous standards, and still not sufficient to meet US requirements. The proposed limits for petrol were: NO_x 50 mg/km (reduced by 37.5 per cent from Euro IV) and HC 75 mg/km (down 25 per cent). This would bring some convergence of petrol and diesel

standards, but was much below what is already achievable with best available technology. The proposed Directive (COM(2005)683) for these standards was finally published in late December 2005 after further discussion within the CARS21 high-level group.

Table 2. Euro 6 standards

Engine type	Emissions (g/km)						Implementation date
	CO	HC	NO_X	HC+NO	PM	NMHC	
Petrol (M)	1	0.1	0.060	–	0.005	0.068	2 July 2007
Diesel (M)	0.5	–	0.080	0.170	0.005	–	2 July 2007
Petrol (N1) I	1	0.1	0.060	–	0.005	0.068	1 September 2015
Diesel (N1) I	0.5	–	0.080	0.170	0.005	–	1 September 2015
Petrol (N1) II	1.81	0.13	0.75	–	0.005	0.090	1 September 2016
Diesel (N1) II	0.63	–	0.105	0.195	0.005	–	1 September 2016
Petrol (N1) III	2.27	0.16	0.082	–	0.005	0.108	1 September 2016
Diesel (N1) III	0.74	–	0.125	0.215	0.005	–	1 September 2016
Petrol (N2)	2.27	0.16	0.082	–	0.005	0.108	1 September 2016
Diesel (N2)	0.74	–	0.125	0.215	0.005	–	1 September 2016

Despite the fact that standards had been set for cars, light and heavy commercial vehicles for 2005, the second phase of the Auto Oil programme, which began in 1997, continued until the end of 1999. In a review of this phase of the programme (COM(2000)626), the Commission concluded that there was still a need for more action to reduce emissions from transport, despite the improvements that would result from existing legislation. The report estimated that as a result of the more stringent fuel and emission standards, transport's share of overall emissions in 2010 would be significantly lower than in 1990 for all pollutants, with the exception of CO_2. Even so, the review concluded that there would still be a number of major challenges for the sector as particulate emissions would still be too high, and there would still be problems with ozone and some localized exceedances of air quality standards for NO_2. However, the review concluded that CO_2 emissions would carry on increasing until 2005 before stabilizing, rather than declining. This is in spite of the voluntary agreement that the Commission had concluded with car manufacturers to reduce emissions from new passenger cars.

Community standards were initially developed in a rather *ad hoc* manner for different vehicle types and pollutants, but under the Auto Oil framework, a more coherent system emerged. Reflecting this, the more recent mandatory standards were increasingly often referred to as 'Euro I', 'Euro II', etc., although this terminology did not feature in early Directives. As a guide, Table 3 sets out the main legislation and implementation dates for each vehicle and 'Euro' class.

The establishment of the Clean Air for Europe initiative in 2001 led in turn to the Thematic Strategy on air pollution in 2005 under the Sixth Environmental Action Programme. This concluded that further emissions reductions were required, inter alia in vehicle emissions. From this conclusion arose impact assessment work on Euro 5 and 6 standards for cars and vans, and Euro V and VI standards for trucks (See Table 1 & Table

4). Euro 5 standard applied from 1 September 2009 for the approval of vehicles, and will apply from 1 January 2011 for the registration and sale of new types of cars and vans sold in the EU market. The Euro 6 standard will apply from 1 September 2014 for type approval of vehicles and from 1 September 2015 for the registration and sale of new types of cars and vans. It is expected to set up lower emissions limits than Euro 5.

Table 3. Emission limit values for passenger cars and light commercial vehicles for 2000 and 2016 (Directive 98/69/EC) and Regulation (EC) No 715/2007

Engine type	**Emissions (g/km)**					**Implementation date**
	CO	**HC**	**NO_x**	**HC + NO_x**	**PM**	
Petrol	2.30	0.20	0.15	_	_	
Diesel	0.64	_	0.50	0.56	0.05	2000
Petrol	1.00	0.10	0.08	_	_	
Diesel	0.50	_	0.25	0.30	0.025	2005

Note: Cars and Class I light commercial vehicles (up to 1,305 kg reference mass) are subject to the above limits. Higher limits are set for larger vans.

Table 4. Legislation and implementation dates by 'Euro' class for different types of vehicle

Euro class	**Cars**	**Light commercial**	**HGVs**
Euro I	91/441/EEC (1992)	93/59/EEC (1993/4)	(1992/3)
Euro II	94/12/EC (1996/7)	96/69/EC] (1996/7/8)	91/542/EEC (1995/6)
Euro III	98/69/EC (2000)	98/69/EC (2000)	1999/96/EC (2000)
Euro IV	98/69/EC (2005)	98/69/EC (2005)	1999/96/EC (2005)
Euro V	715/2007/EC (2007)	715/2007/EC (2011)	1999/96/EC (2008)
Euro VI	715/2007/EC (2007)	715/2007/EC (2015)	N1(II–III): 715/2007/EC (2016) N2: 715/2007/EC (2016)

The earlier Directives were of the kind known as 'permissive' or 'optional', or as providing 'optional harmonization' – that is to say, Member States were not obliged to make mandatory the standards in the Directives but they could not refuse national or EC type approval of a vehicle on grounds relating to air pollution if the requirements of the Directive were met ('Type approval' shows that a vehicle type conforms to certain standards of design and construction). However later Directives, from Directive 89/458/EEC, were mandatory in that they did not allow Member States to grant EC or national type approval, on grounds relating to gaseous or particulate emissions, if a vehicle or engine did not comply with limit values as set out in the respective Directives. Table 5 illustrates the path that led to Regulation (EC) No 175/2007, which regulates emissions for passenger cars and light vehicles in Europe.

Table 5. Summary of the most significant Directives leading to Regulation (EC) No 715/2007, 692/2008 and to Directive 2008/74/EC

70/220/EEC	Set limit values for emissions of carbon monoxide (CO) and unburnt hydrocarbons (HC) from petrol.
89/458/EEC	This Directive introduced considerably stricter 'second-stage' emission limits for smaller cars, that is, those with an engine size of less than 1.4 l, in line with the then US and Japanese standards, effectively requiring the use of controlled three-way catalytic converters. Unlike earlier Directives in this series, the implementation was mandatory, not optional.
91/441/EEC	This Directive extended the emission limits for small cars in Directive 89/458/EEC to all new model cars, which as a consequence had to be fitted with regulated three-way catalytic converters by 1 July 1992, and from 1 December 1992 for all new registrations. In addition to limits on emissions of CO and HC/NO_x, further requirements were introduced covering CO emissions at idling speed, crankcase gases, emissions of volatile organic compounds (VOCs) and the durability of antipollution devices. An improved test procedure was introduced, including an extra-urban driving cycle. The Directive also introduced second-stage reductions for emissions of particulates from diesel cars beyond those set out in Directive 88/436/EC. The Directive committed the Council to adopt before the end of 1992 new limits on carbon dioxide emissions from vehicles; and by the end of 1993 further more stringent limits on CO, HC/NO_x, VOCs and particulates, to come into effect on 1 January 1996.
94/12/EC	This Directive imposed a set of tighter second-stage limits on emissions from cars, as required in Directive 91/441/EEC. Separate limits were established for diesel engines, reflecting their advantages and weaknesses in emissions relative to petrol engines. Less stringent limits were set (up to 30 September 1999) for direct injection diesels, in order to encourage this promising but less well-developed technology. Production vehicles selected at random were now required to meet the same limits as those tested for type approval, whereas previously the production standard was less stringent. A new sampling method for conformity of production was specified. The conditions under which Member States could offer tax incentives for cleaner vehicles were also clarified. The Directive also introduced a framework for the use of fiscal incentives by Member States to encourage the early introduction of cars meeting stricter emissions standards.
98/69/EC	This Directive further tightened the limits set by Directive 94/12/EC, for the years 2000 and 2005. Although the proposals were initially developed separately, the final Directive covered light commercial vehicles as well as petrol and diesel passenger cars. The Directive contained a number of other important elements, many of which were new. From the year 2000, Member States were allowed to offer tax incentives for vehicles and fuels meeting 2005 standards in advance. Cold start test requirements had been tightened; failures under in-use compliance testing of vehicles could result in vehicle recall programmes

	or even withdrawal of the type approval; OBD was required for diesel as well as petrol-engined vehicles; and durability requirements for emissions control equipment were to become more stringent over time. The principal emission limits are set out in Table 5.

Table 6. Directives repealed by Regulation (EC) No 715/2007

70/220/EEC proposed 1969 – COM(69)939	Council Directive on the approximation of the laws of the Member States on measures to be taken against air pollution by emissions from motor vehicles
72/306/EEC proposed 1971 – COM(71)1484	Council Directive on the approximation of the laws of the Member States relating to the measures to be taken against the emission of pollutants from diesel engines for use in vehicles
74/290/EEC	Amendment to Directive 70/220/EEC
77/102/EEC	Commission Directive adapting Directive 70/220/EEC to technical progress
78/665/EEC	Commission Directive adapting Directive 70/220/EEC to technical progress
83/351/EEC proposed 5.4.82 – COM(82)170	Amendment to Directive 70/220/EEC
88/76/EEC	Amendment to Directive 70/220/EEC
88/436/EEC proposed 1986 – COM(86)261	Amendment to Directive 70/220/EEC
89/458/EEC proposed 10.2.88 – COM(87)706	Amendment to Directive 70/220/EEC
89/491/EEC	Amendment to Directives 70/220/EEC, 72/306/EEC and others
91/441/EEC proposed 5.1.90 – COM(89)662 amended 19.10.90 – COM(90)493	Amendment to Directive 70/220/EEC
93/59/EEC Amendment to	Directive relating to light commercial vehicles

70/220/EEC – Council proposed 19.3.92 – COM(92)64	
94/12/EC proposed 23.12.92 – COM(92)572	Amendment to Directive 70/220/EEC
96/44/EC (OJ L210 20.8.96)	Commission Directive adapting Directive 70/220/EEC to technical progress
96/69/EC proposed 16.12.94 – COM(94)558 amended 10.11.95 – COM(95)540	Amendment to Directive 70/220/EEC relating to light commercial vehicles
97/20/EC	Commission Directive adapting Directive 72/306/EEC to technical progress
98/69/EC proposed 18.6.96 – COM(96)248	Amendment – Parliament and Council Directive relating to passenger cars and light commercial vehicles
98/77/EC	
1999/102/EC	Commission Directive adapting Directive 70/220/EEC to technical progress
2001/1/EC proposed 14.2.2000 – COM(2000)42	Amendment – Parliament and Council Directive relating to passenger cars and light commercial vehicles
2001/100/EC proposed 6.9.2000 – COM(2000)487	Amendment – Parliament and Council Directive relating to passenger cars and light commercial vehicles
2002/80/EC	Commission Directive adapting Directive 70/220/EEC to technical progress
2003/76/EC	Commission Directive adapting Directive 70/220/EEC
2005/21/EC	Commission Directive adapting Directive 72/306/EEC to technical progress

Engines for non-road mobile machinery and tractors

As emission limits for road vehicles were being progressively tightened, studies indicated that other types of engine were beginning to contribute a significant and increasing share of total emissions. Directive 97/68/EC was therefore introduced to tackle the main types of engine which contributed to this problem. The Directive covers only most engines used in land-based equipment, with an engine power of between 18 and 560 kW, but excludes railway locomotives and generators. These limits were subsequently extended to cover agricultural and forestry tractors by Directive 2000/25/EC, as these had not been addressed since Directive 77/537/EC (Table 7).

Table 7. Emission limit values for engines used in non-road mobile machinery (Directive 97/68/EC) and agricultural and forestry tractors (Directive 2000/25/EC)

Power output of engine (P)	**Date (Directive)**	**CO (g/kWh)**	**HC (g/kWh)**	**NO*x*** **(g/kWh)**	**Particulates (g/kWh)**
Stage 1 130 kW<= P 31<=560 kW	December 1998 (97/68/EC) 30 June 2001 (2000/25/EC)	5.0	1.3	9.2	0.54
75 kW<= P <130 kW	31 December 1998 (97/68/EC) 30 June 2001 (2000/25/EC)	5.0	1.3	9.2	0.70
37 kW<= P <75 kW	31 March 1999(97/68/EC) 30 June 2001(2000/25)	6.5	1.3	9.2	0.85
Stage 2 130 kW<= P <= 560 kW	31 December 2001 (both)	3.5	1.0	6.0	0.20
75 kW <= P <130 kW	31 December 2002(both)	5.0	1.0	6.0	0.30
37 kW <= P<75 kW	31 December 2003(both)	5.0	1.3	7.0	0.40
18 kW<= P <37 kW	31 December 2000 (97/68/EC) 31 December 2001(2000/25/EC)	5.5	1.5	8.0	0.80

Recital 5 of Directive 97/68/EC, which was developed in close cooperation with the US Environmental Protection Agency in order to achieve global alignment of limit values, states that the scope of the Directive could be extended to cover petrol engines. In December 2000, the Commission published a proposal to extend Directive 97/68/EC to cover small petrol engines used in non-road mobile machinery, such as pumps, compressors, snow-blowers, chain saws and a range of horticultural machines. The proposal was justified from an environmental perspective, as emissions from such machines were then unregulated and, as such, disproportionately contributed to emissions of HC and particulates, both of which were predicted to continue to cause air quality problems in some Member States. While no cost-effectiveness studies were undertaken for the EU situation, the Commission proposed that the costs would be less in the EU than they had been in the United States, as manufacturers would merely be aligning standards in two markets. As a result, the Commission claimed that the majority of industry and Member States supported its proposal.

The principal innovation of the Commission's proposal was the inclusion of the US system of averaging and banking whereby emissions in exceedance of standards for some machines can be offset against emissions lower than standards from other machines. The proposal's Parliamentary rapporteur Bernd Lange objected to the system on the basis that it favoured manufacturers with a broad range of products and was confusing for consumers. In an attempt to hasten the passage of the proposal through the decision-making process, Lange opened negotiations with the Council prior to the Parliament's first reading in order to agree a compromise text. The text deleted all reference to the averaging and banking system, which, it turned out, Council also opposed. The majority of the compromise text was approved by Parliament in its first reading of October 2001. However, Lange's attempt to pass the legislation with only one reading failed as Parliament made a number of amendments. One of these included a proposal from centre-right MEPs to address concerns that the deletion of the averaging and banking system would make it difficult for some engines to comply with the standards by exempting from the proposal's requirements, a list of machines, including chainsaws and other cutting machines.

In its Common Position of March 2002, the Council accepted the majority of Parliament's amendments, but chose to reincorporate some flexibility back into the proposal that had been lost through the deletion of the averaging and banking system. Instead of Parliament's blanket exemptions for certain machines, Council called on the Commission to report on the technical feasibility of meeting the Stage II requirements for all these machines by the end of 2003. In its second reading, Parliament accepted this approach, but chose to push for time-limited exemptions for chainsaws and other cutting machines, among others, all of which the Council accepted thus avoiding the need for conciliation negotiations. Directive 2002/88/EC entered into force in February 2003. The emission limits are set out Table 8.

While Directive 2002/88/EC was being agreed, the Commission was already working on a proposal to introduce stricter emissions standards for those engines covered in the original Directive 97/68/EC. The proposal, which was published in December 2002, set stricter emission limit standards in two stages – for 2005–2007 (depending on engine power) and 2010–2011 – to be known as Stage IIIA and IIIB, respectively, which would align EU standards with those of the United States. The proposal also changed the lower power limit covered by Directive 97/68/EC to 19 kW to align it with the equivalent US legislation. In addition, the scope of Directive 97/68/EC was expanded to cover ‘small’ engines (i.e. those below 560 kW) used in railway locomotives and engines used in inland waterway vessels. Separate emission limit values, which were to be met in August 2006, were proposed for the latter.

The passage of the proposal through the legislative process turned out to be a painless exercise. Council discussions prior to the Parliament's first reading agreed a general approach to the legislation, including an extension of the scope to cover large (i.e. greater than 560 kW) engines used in railway locomotives. In its first reading, Parliament's proposed approach was broadly similar to that of the Commission. The final text of the Directive was agreed in discussions between the two institutions, which meant that the final text was approved at Parliament's first, and only, reading of the proposal. The final text introduced three stages (IIIA, IIIB and IV) of emission limits to be introduced in 2005–2006, 2009–2011 and 2012–2013, depending on engine type and power, for the type approval process, although smaller engines are not all addressed by the later

emission limit standards. For engines used in inland waterway vessels, the one stage (IIIA) is applied in Directive 2005–2007, while most of the two standards for the two stages (IIIa and IIIB) of standards for railcars and railway locomotives apply from 2005 and 2010. Directive 2004/26/EC came into force on 15 July 2004.

On 21 February, the Commission published Directive 2005/13/EC, which aligned Directive 2000/25/EC on emissions from engines used in tractors to the new standards with that of other non-road mobile machinery, as amended by Directive 2004/26/EC. Hence, it introduced three stages of emission limit standards for engines used in such vehicles, which apply from 2005, 2009 and 2012.

Table 8. Emission limit values for petrol engines used in small non-road mobile machinery (Directive 2002/88/EC)

Class/category* (displacement)	CO (g/kWh)	HC (g/kWh)	NO_x (g/kWh)	HC + NO_x (g/kWh)	Implementation date
Stage 1					
SH:1 (< 20)	805	295	5.36		11 August 2004
SH:2 (=> 20, < 50)	805	241	5.36		11 August 2004
SH:3 (=> 50)	603	161	5.36		11 August 2004
SN:1 (< 66)	519			50.0	11 August 2004
SN:2 (=> 66, < 100)	519			40.0	11 August 2004
SN:3(=> 100, <225)	519			16.1	11 August 2004
SN:4 (=> 225)	519			12.1	11 August 2004
Stage II					
SH:1	805			50	1 August 2007
SH:2	805			50	1 August 2007
SH:3	603			72	1 August 2008
SN:1	610			50.0	1 August 2004
SN:2	610			40.0	1 August 2004
SN:3	610			16.1	1 August 2007
SN:4	610			12.1	1 August 2006

*SH indicates a class of hand-held engine, while SN signifies that the class of engine is not hand-held.

Heavy duty commercial vehicles

Directive 1999/96/EC was the final piece of legislation to result from the first stage of the Auto Oil programmes and sets stricter emission standards for heavy duty vehicles. As with Directive 98/69/EC, emission limit values were set for 2000 and 2005. The Commission had again only proposed emission limit values for 2000 (COM(97)627) as it had wanted to wait for the results of further research (under Auto Oil II) before proposing standards for 2005. Despite the Commission's objections Parliament pushed for mandatory standards to be set for 2005, and the proposal appeared to be headed for conciliation. However, in a surprise move, the Environment Council of December 1998 reached a political agreement on the proposal, which set mandatory limit values for 2005, as Parliament had wanted, but went further and set a more stringent particulate limit for 2005 and a tighter NO_x limit for 2008 as well. The Commission accepted the common position, but in its second reading Parliament's Environment Committee wanted to make

the proposal more stringent still by bringing forward this final date to 2006. However, the full Parliament rejected this proposal in order to avoid the need for conciliation. Directive 2005/55/EC consolidated the various heavy duty vehicle Directives and represented the recasting of the original Directive 88/77/EEC in the interests of clarity and legal certainty, as further amendments to the pollutant emission limits are to be made. The Directive has now been repealed by Regulation (EC) No 595/2009 (see Table 9), which establishes common technical requirements for the type approval of motor vehicles, engines and replacement parts with regard to their emissions. The Euro V and Euro VI standards have been adopted in June 2009 and will be applied in 2012.Commission Regulation (EU) No 64/2012 amended Regulations (EC) No 595/2009 and (EU) No 582/2011 in January 2012, in order to provide standards and guidelines related to motor vehicles and replacement parts "with regard to their emissions." It details specific technical details to consider in terms of servicing parts, pollution control devices and diagnostic equipment, all of which can be used to measure fuel consumption. Information related to on-going maintenance and repair should be accessible.

Table 9. Emission limit values for heavy commercial vehicles (Directive 2005/55/EC, as originally set out in Directive 1999/96/EC, and now repealed)

Date	CO	HC	NO_x	Particulates	Smoke
1 October 2000	2.1	0.66	5.0	0.10,0.13*	0.80
1 October 2005	1.5	0.46	3.5	0.02	0.50
1 October 2008	1.5	0.46	2.0	0.02	0.50
EEVs	1.5	0.25	2.0	0.02	0.15

Regulation (EC) No 595/2009 EURO VI Emissions Limits								
	Limit values							
	CO (mg/kW)	**THC (mg/kWh)**	**NMHC (mg/kWh)**	**CH_4 (mg/kWh)**	**NO_x[(1)] (mg/kWh)**	**NH_3 (ppm)**	**PM mass (mg/kWh)**	**PM number[(2)]**
ESC (CI)	1,500	130			400	10	10	
ETC (CI)	4,000	160			400	10	10	
ETC (PI)	4,000		160	500	400	10	10	
WHSC ([3])								
WHTC ([3])								

Note:
PI= positive ignition. CI= compression ignition.
(1) = The admissible level of NO_2 component in the NO_x limit value may be defined at a later stage.
(2) = A number standard is to be defined at a later stage and no later than 1 April 2010.

(3)= The limit value relating to WHSC and WHTC replacing the limit value relating to ESC and ETC will be introduced at a later stage once correlation factors with respect to the current cycles have been established, no later than 1 April 2010.
*For engines with a swept volume of less than 0.75 dm^3 per cylinder and a rated power speed of more than 3,000 per minute.
Note: Figures, as determined on ESC and ELR tests, are in grams per kilowatt-hour except smoke which is in per cubic metre of exhaust gases.

Two- or three-wheel motor vehicles

Directive 97/24/EC was the first piece of EC legislation that set emission limits for two- and three-wheeled vehicles. Motorcycles were, however, not addressed in the first Phase of the Auto-Oil Programme and were therefore an obvious omission. This was underlined when modelling for the second phase of the Programme predicted that motorcycles' share of road transport emissions, particularly of CO and HC, was increasing rapidly and would reach between 16 and 20 per cent of emissions by 2010, even though motorcycles' modal share would be between 2 and 3 per cent. This was due to the fact that significant improvements to the emission standards for other vehicles were in the pipeline (see above).

The Commission, therefore, published a proposal to amend the emission limits set out in Directive 97/24/EC in June 2000, which proposed new mandatory limits to be applied from 2003 and optional limits to be applied from 2006. The Commission chose not to make the latter mandatory as it wished to confirm these at a later date based on a global test cycle that was then being developed by the UNECE, but still give manufacturers an idea as to the future direction of Commission policy. In its first reading of the proposal, Parliament rejected this approach and called for the second stage of limits to be mandatory as well. It also introduced a slightly stricter first stage limit for HC emissions from two-wheeled motorcycles (reducing this from 1.2 to 1.0 g/km); called for financial incentives to be allowed to encourage retrofitting as well as the faster introduction of cleaner vehicles; and the introduction of a mandatory OBD system for larger motorcycles from 2006. Parliament also included a commitment on the Commission to contribute to the development of a harmonized measure for CO_2 emissions from motorcycles. The emission limits are set out in Table 10.

Table 10. Emission limit values for two- and three-wheel vehicles (and light quadricycles) for 1999 and 2000 (Directive 97/24/EC)

	Emissions (g/km)				Implementation date
	CO	**HC**	**NO_X**	**HC+NO**	
Mopeds					
Two wheels	6.0	N/a	N/a	3.0	17 June 1999
Three wheels and light quadricycles	12.0	N/a	N/a	6.0	
Two-stroke motorcycles					
Two wheels	8.0	4.0	0.10	N/a	17 June 1999
Three wheels and light quadricycles	12.0	6.0	0.15	N/a	
Four-stroke motorcycles					
Two wheels	13.0	3.0	0.30	N/a	17 June 1999
Three wheels and light quadricycles	19.5	4.5	0.45	N/a	
Mopeds					
Two wheels	1.0	N/a	N/a	1.2	17 June 2000
Three wheels and light quadricycles	3.5	N/a	N/a	1.2	

In an amended proposal published in May 2001, the Commission did not accept Parliament's mandatory limits for 2006 or its call for mandatory OBD systems, but did recognize the utility of developing a common measurement for motorcycles' CO_2 emissions, so accepted those amendments. In its Common Position of July that year, the Council also rejected Parliament's proposals for a mandatory second stage of limits, although it did accept Parliament's stricter limit value for 2006 for HC emissions from larger motorcycles. It also supported the Parliament's desire to see a harmonized measurement for a motorcycle's CO_2 emissions and called on the Commission to develop such a methodology. In December, Parliament gave the proposal its second reading and again called for mandatory limits for 2006 making conciliation negotiations between the two institutions inevitable. These began in February 2002 and concluded the following month with an agreement on mandatory limits from 2006 with a compromise of using two test cycles in parallel for a transition period. Both institutions also agreed that motorcycles should be included in the Community's strategy to reduce CO_2 emissions from cars as soon as possible. Directive 2002/51/EC entered into force in September 2002, and Directive 2003/77/EC subsequently realigned the test cycle to be used for measuring future emissions. The emission limits are set out in Table 11.

Table 11. Emission limit values for two- and three-wheel vehicles (and light quadricycles) for 2003 and 2006 (Directive 2002/51/EC)

Vehicle	Class	CO (g/km)	HC (g/km)	NO_X (g/km)
By 2003				
Two-wheel motorcycles	I (< 150cc)	5.5	1.2	0.3
	II (> 150cc)	5.5	1.0	0.3
Tricycles and quadricycles (positive ignition)	All	7.0	1.5	0.4
Tricycles and quadricycles (compression ignition)	All	2.0	1.0	0.65
By 2006				
Two-wheel motorcycles*	I (< 150cc)	2.0	0.8	0.15
	II (> 150cc)	2.0	0.3	0.15

*Results from different combinations of test cycles will be used for the two classes.

Directive 97/24/EC has been successively amended by a series of Directives focusing on type approval. Directive 2005/30/EC introduced technical measures for type approval, as separate technical units, of replacement catalytic converters to regulate emissions performance. Following this Directives 2006/27/EC, 2006/72/EC and 2006/120/EC adapted the Annexes of Directive 97/24/EC and 2005/30/EC to technical changes.

Implementation of the Regulations and Directive

Information on the measures taken by the Member States to transpose Directive 77/143/EEC can be found in their national execution measures.

Information on the measures taken by the Member States to transpose Directive 77/537/EEC can be found in their national execution measures.

Information on the measures taken by the Member States to transpose Directive 92/55/EEC can be found in their national execution measures.

Information on the measures taken by the Member States to transpose Directive 96/96/EC can be found in their national execution measures.

Information on the measures taken by the Member States to transpose Directive 97/24/EC can be found in their national execution measures.

Information on the measures taken by the Member States to transpose Directive 97/68/EC can be found in their national execution measures.

Information on the measures taken by the Member States to transpose Directive 2000/25/EC can be found in their national execution measures.

Information on the measures taken by the Member States to transpose Directive 2000/30/EC can be found in their national execution measures.

Information on the measures taken by the Member States to transpose Directive 2002/51/EC can be found in their national execution measures.

Information on the measures taken by the Member States to transpose Directive 2005/55/EC can be found in their national execution measures.

The Commission published a communication on the implementation of Directive 2000/30/EC for the period 2003–2004. It concluded that the data transmission was qualitatively and quantitatively poor. Member States failed to inform the Commission regularly and found it difficult to collect, compile and transmit the data. The Commission suggested the intervention of a technical adaptation committee to find a common exchange format.

Enforcement and court cases

Two cases have been concluded by the European Court of Justice concerning the wrong transposition of Directive 97/68/EC:

C-320/99 23.11.2000. The Court ruled against France for failing to adopt within the prescribed time limit the laws, regulations and administrative provisions necessary to comply with Directive 97/68/EC.

C-313/06 19.04.2007. The Court ruled against Italy for failing to adopt within the prescribed time limit the laws, regulations and administrative provisions necessary to comply with Directive 97/68/EC.

One case has been concluded by the European Court of Justice concerning Directive 2002/88/EC:

E-3/07 14.12.2007. This case was brought by the European Free Trade Association upon Iceland's failure to implement Directive 2002/88/EC as adapted to the EEA agreement. The Court found that Iceland failed to fulfill its obligations.

Three cases have been concluded by the European Court of Justice concerning Directive 96/96/EC. They are mainly concerned with national requirements from Member States that restrict the freedom of movement of goods:

C-279/05 20.09.2007. The Court found that the Netherlands was in breach of Articles 28 EC and 30 EC prohibiting quantitative restrictions. The Netherlands required that motor vehicles already registered in another Member State undergo a technical examination prior to their registration in the Netherlands.

C-170/07 05.06.2008. In this Case Poland was found to be failing to apply Directive 96/96/EC adequately. Its national legislation required that imported second-hand vehicles undergo a roadworthiness test prior to their registration, whereas domestic vehicles with the same characteristics were not subject to such a requirement. The Court found that Poland was in breach with the principle of prohibition of quantitative restrictions.

C-438/08 22.09.2009. Portugal had introduced some restrictions for the vehicle inspection activity linked with Directive 96/96/EC, that is, inter alia, the making of the grant of authorizations subject to the public interest, the requirement of a minimum share capital of €100,000 and the imposition of incompatibility rules on members, managers and directors. The Court found that it constituted an infringement of the freedom of establishment.

One case was concluded by the European Court of Justice concerning the transposition of Directive 2000/30/EC:

C-375/03 01.04.2004. The Court ruled against Luxembourg for failing to adopt within the prescribed time limit the laws, regulations and administrative provisions necessary to comply with Directive 2000/30/EC.

Further developments

The Commission and Member States have discussed a draft proposal for recasting Article 5 of Directive 97/24/EC. Potential changes include: introduction of durability requirements; introduction of CO2 emissions and fuel consumption labelling; new emission limits (CO, NOx, PM) for diesel and gasoline vehicles; introduction of a cold-start phase for mopeds in measurement cycle and requirements on evaporative emissions.

The Commission has been considering a Framework Regulation on type approval of two or three-wheel motor vehicles and quadricycles since 2008. A consultation was held on this topic from 22.12.2008 to 28.02.2009. The Commission published a report in November 2009 presenting the results of the consultation. In total, 57 responses were received. The majority of respondents were in favour of simplification, but there were some doubts on the potential for actual simplification. The respondents broadly agreed on the need for more transparency, better harmonization and the reduction of administrative costs. Concerning emission limits, half of the respondents were in favour of the introduction of new emission limits (equivalent to Euro 5 for petrol cars). Concerns were raised on the increase of prices for customer that more stringent limits would create. Following this, a proposal was published in October 2010 (COM(2010)542).The draft Regulation aims at simplifying the existing legal framework, decreasing the share of two or three-wheel vehicles emissions in the overall transport emissions and improving the vehicle functional safety aspects. It introduces stricter Euro standards at three years intervals: Euro 3, 4 and 5 would apply respectively in 2014, 2017 and 2020. This gradation aims at reducing the share of emissions from L- category vehicles. The simplification is generated by replacing various existing instruments by five Regulations. The proposal was presented to the Economic and Social Committee in early 2011. It welcomed the draft Regulation and stricter air emissions standards. However it recommended that attention is given to limiting the overall increase in consumer costs, citing the economic crisis as an aggravating factor for the motorcycle sector. In May

2011, the draft Regulation was transferred to the European Parliament; it was discussed during a committee session in December 2011. The first reading is expected in July 2012.

Related legislation

The legislation controlling emissions from vehicles contributes significantly to the improvement of air quality. It, therefore, has a strong interaction with the following Directive:

- Air Quality Framework Directive 2008/50/EC.

The development of emission standards has also taken place alongside measures to address fuel quality. Therefore, the following legislation is relevant:

- Directive 94/63/EC on volatile organic compounds from petrol.
- Directive 93/12/EEC relating to the sulphur content of certain liquid fuels.

The measures on pollutant emissions from vehicles addressed in this section also strongly interact with measures to control carbon dioxide emissions from vehicles:

- CO_2 from passenger cars (Regulation (EC) No 443/209).

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