

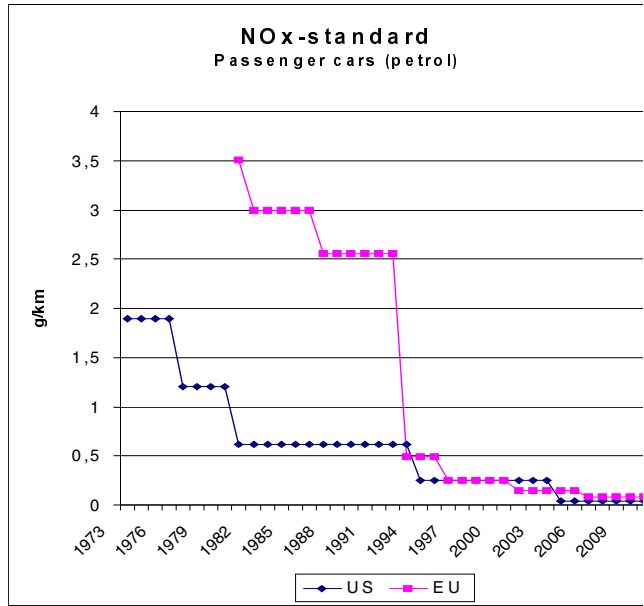
Vehicle emission standards: Values

The present document provides a comparison of some selected vehicle emission standards in the EU and the USA. Actual **values** are compared here, whereas a companion document in the current database lists **regulations** ("[Vehicle emission standards: Regulations](#)").

Vehicle emission standards is a very complicated issue. Comparisons are difficult, because an emission standard in two countries may be based on two different test cycles and may vary in other respects. Thus, the comparisons presented here should be taken with caution.

Only a few, selected standards are included in the present document, but for readers who wish to see information about other standards - and details about test cycles etc - It is highly recommended to consult and use the last section in the document - **References** .

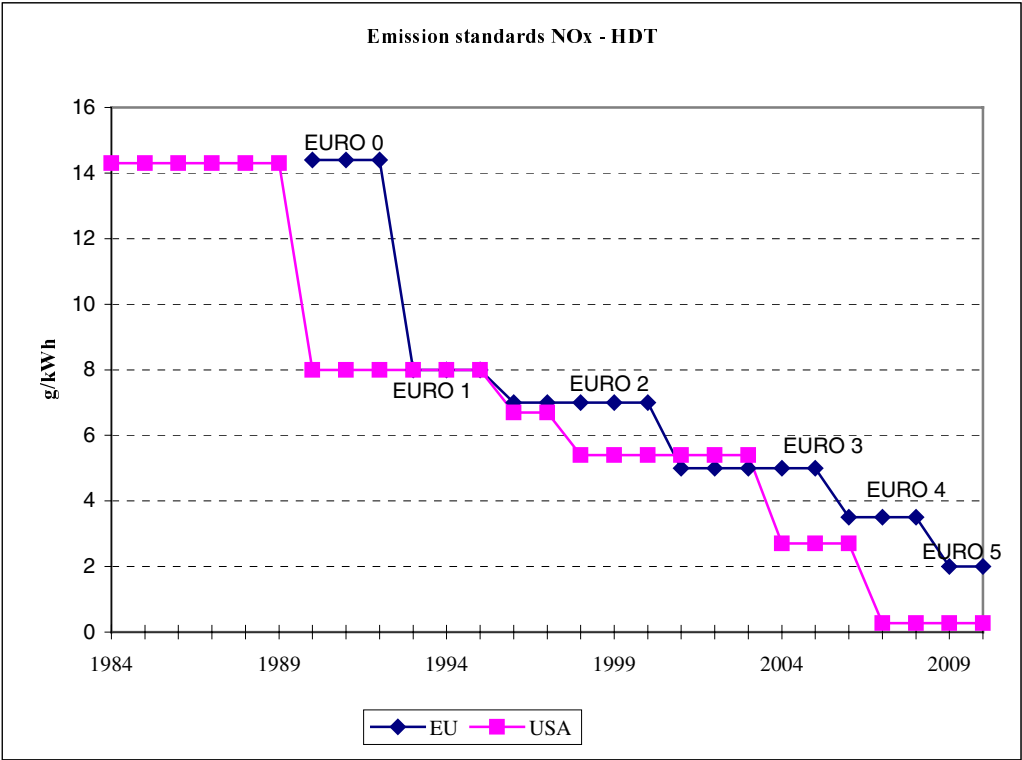
NOx - Passenger cars



Emission limit values for passenger cars		
Values from the graph above are listed for recent years		
NOx, g/km		
EU, petrol	EU, diesel	USA
2001: 0.15	2001: 0.50	1994-1996: 0.25
2006: 0.08	2006: 0.25	2004-2006: 0.04

When comparing the standards it should be considered that the US standards uses a system of "bins" where the NOx value varies between 0.0 and 0.13 g/km. The system implies that a car manufacturer can produce car models with quite different emission characteristics, while the emission limit value refers to an *average* value for each manufacturer.

NOx - Heavy-duty diesel engines



Emission limit values for heavy duty diesel engines.

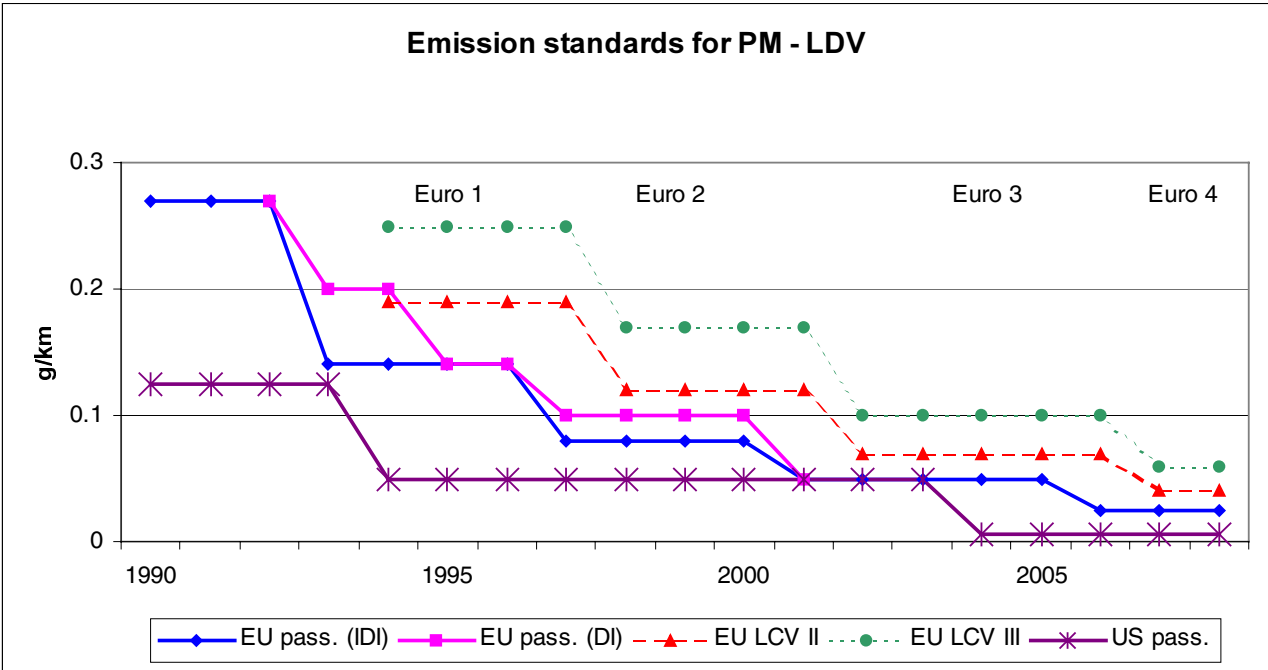
Values from the graph above are listed for recent years

NOx, g/KWh

EU	USA
2001: 5.0	
2006: 3.5	2004-2006: approx 2.7 *
2008: 2.0	2007-2010: 0.27

*) The "approximate" value is caused by the fact that the standard applies to the sum of NMHC and NOx which is set at 3.2 g/kW.

Particles - Passenger cars and Light Commercial Vehicles, diesel



Emission standards for light duty diesel vehicles. IDI refers to Indirect Injection, DI to direct.

In the EU, there are 3 classes of Light Commercial Vehicles (LCV):

I weight < 1305 kg (same limits as passenger cars)

II: weight 1305-1760 kg

III: weight > 1760 kg.

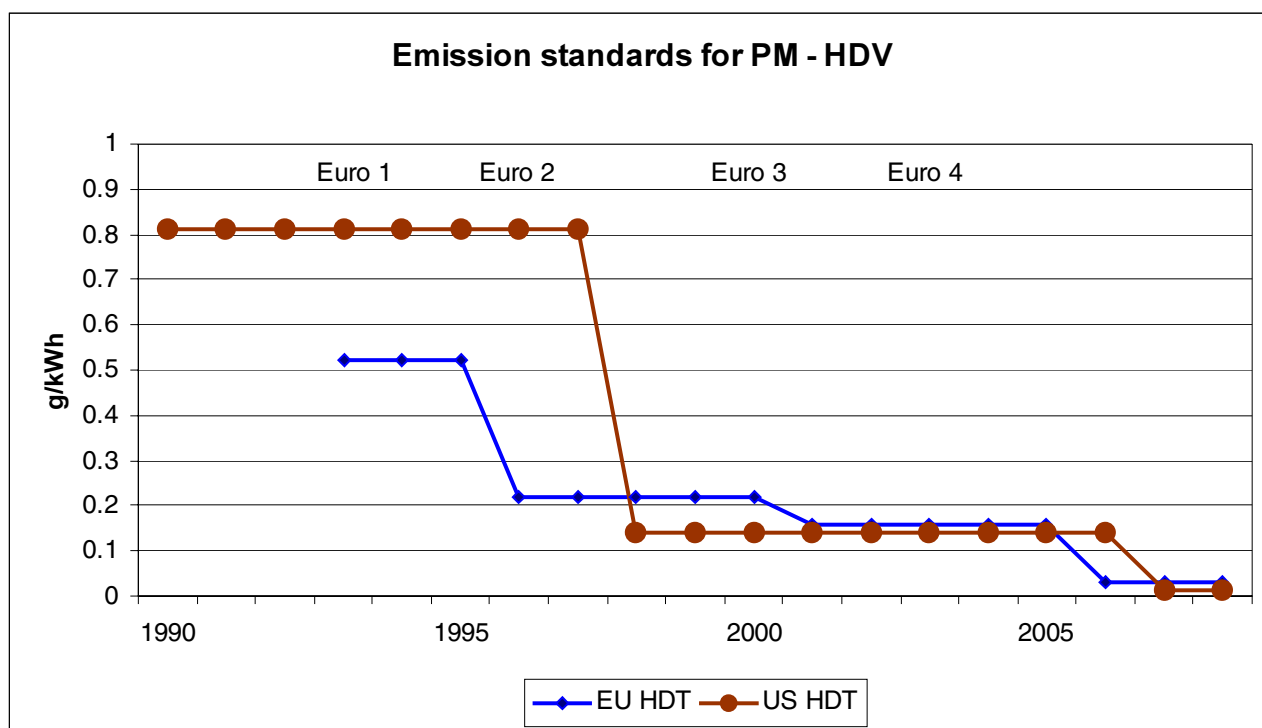
Emission limit values for passenger cars and light commercial vehicles (diesel).

Values from the graph above are listed for recent years.

PM, g/km

EU, passenger & LCV I	EU, LCV II	EU, LCV III	USA
1997: 0.080	1998: 0.120	1998: 0.170	1994: 0.050
2001: 0.050	2002: 0.070	2002: 0.100	
2006: 0.025	2007: 0.040	2007: 0.060	2004: 0.006

Particles - Heavy duty diesel engines



Emission standards for heavy duty diesel vehicles.
The values refer to a transient test cycle.
Note that the unit is g/kWh.

The details in the graph concerning the period since 2000 may be difficult to see and are therefore given below

Emission limit values for heavy duty diesel engines.	
Values from the graph above are listed for recent years.	
PM, g/KWh	
EU	USA
2001: 0.16	2004-2006: 0.13
2006: 0.03	2007: 0.013

References

- **EU legislation** on emission standards is available through <http://europa.eu.int/comm/environment/air/legis.htm>
- Details on **US regulations for On-Road vehicles** can be found in Title 40--Protection of Environment Chapter I -- Environmental Protection Agency, Part 86--Control of emissions from new and in-use highway vehicles and engines through the links http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=a03ef02f6a5a36138cb6fa9c3c58a9c8&tpl=/ecfrbrowse/Title40/40cfr86b_main_02.tpl and (a continuation of the above) http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=58bdf55c73b0ffa4277fbd9dd9e5b276&tpl=/ecfrbrowse/Title40/40cfr86c_main_02.tpl
For **US regulations for Off-Road vehicles** consult Title 40--Protection of Environment Chapter I --Environmental Protection Agency, Subchapter C - Air Programs http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?sid=a03ef02f6a5a36138cb6fa9c3c58a9c8&c=ecfr&tpl=/ecfrbrowse/Title40/40cfrv19_02.tpl
- Worldwide specifications of **emission standards for diesel vehicles** (and to some extent petrol vehicles) can be found on **Dieselnet**, <http://www.dieselnet.com/standards.html>
These pages include concise tables of values.

- The **Asian Development Bank** provides an entry page to information about **worldwide emission standards** for vehicles at <http://www.adb.org/vehicle-emissions/General/standards.asp>
- **Concawe** at <http://www.concawe.be> publishes highly relevant reports, notably Report no. 9/04 'Motor vehicle emission regulations and fuel specifications - part 1: 2002/2003 update'. There is also a companion report, part 2, no. 2/01 'Motor vehicle emission regulations and fuel specifications - part 2: detailed information and historic review (1996-2000)'. These reports are not available on the Internet, but can be bought on paper from Concawe.
- Information on **Japanese regulations** for motor vehicle exhaust emission standards can be found in <http://www.env.go.jp/en/lar/regulation/mv.html>
- In the Annexes of the case studies conducted under the current project on *Assessment of the effectiveness of European air quality policies and measures*, there are sections entitled "Legislation and Measures Implemented". These sections describe how and why standards have developed in EU, US, and to some extent Canada and Japan.