

N **AECC** Newsletter

Association for Emissions Control by Catalyst

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Affiliated to CEFIC

November – December 2001

INTERNATIONAL REGULATORY DEVELOPMENTS

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EUROPE

1. European Parliament agrees Emission Limits for Motorcycles

The European Parliament has adopted with unanimity MEP Bernd Lange's report, and one amendment to it, at the second reading of the motorcycle emissions directive in Strasbourg on 13 December.

As a result the Parliament's common position is confirmed and sets mandatory limit values for all motorcycles from 2006, with mandatory but less stringent limits from 2003.

The limit values agreed are:

	Class (cc)	Mass of carbon monoxide (CO)	Mass of hydrocarbons (HC)	Mass of oxides of nitrogen (NOx)
		L ₁ (g/km)	L ₂ (g/km)	L ₃ (g/km)
Limit values for motorcycles (two-wheel) for type approval and conformity of production				
A (2003)	I (<150)	5,5	1,2	0,3
	II (≥150)	5,5	1,0	0,3
B (2006)	I (<150) UDC cold ¹	2,0	0,8	0,15
	II (≥150) ^{2,3}	2,0	0,3	0,15

1. Test cycle: ECE R40 test cycle with emissions measured from all 6 modes (sampling starts at T=0)
2. Test cycle: ECE R40+EUDC (emissions measured from all modes – sampling starts at T=0), with the maximum speed of 120 km/h
3. For two-wheel vehicles (≥150 cc) with a permitted maximum speed of 110 km/h, the maximum speed for the extra-urban driving cycle will be restricted to 90 km/h.

The adopted report clarifies the proposed new test cycle. The present ECE R40 cycle

is made on 6 modes (up to 50km/h) but the measurement of emissions starts on the 3rd mode (i.e. there is a warming up phase on the first 2 modes). The amended test is now a cold start and the emissions are measured over 6 modes instead of 4.

Larger motorcycles (≥150 cc) are in addition tested under extra urban conditions and the adopted report introduces the EUDC (Extra Urban Driving cycle up to 120 km/h) after 6 cold start UDC cycles. For specific vehicles, particularly scooters, with a maximum speed of less than 120 km/h, the maximum speed for the EUDC test cycle is lowered to 90 km/h.

The European Council of Ministers is expected to consider their common position in early 2002, under the Spanish presidency.

2. European Parliament tightens Sulphur-free Fuel requirements

The European Parliament, meeting in Brussels on 29 November, voted in the first reading on amendments that would introduce tougher provisions than those proposed by the European Commission for introducing <10 ppm sulphur fuels.

The key amendments adopted include:

- Member states would be required to make <10 ppm sulphur petrol and diesel fuels available for road and non-road applications from 2005
- The ban on the sale in member states of sulphur-containing fuels (>10 ppm) would be brought forward from 2011 to 2008 for both road and non-road applications
- The current derogation allowing high sulphur fuels (>50 ppm) to be sold in some member states until 2007 would be cancelled from 2005

- The Commissions' review clause to confirm the ban on the sale in member states of sulphur-containing diesel fuel (>10 ppm) is removed and only other fuel properties can be reviewed. The review date is brought forward from end 2006 to end 2005.
- 91 RON unleaded petrol could still be marketed
- Clauses encouraging fiscal incentives were all adopted
- Member states would be required to ensure a balanced geographic distribution of <10 ppm sulphur fuels in the 2005 to 2008 period and the Commission would be required to report on and monitor the situation.

3. Environment Council reaches Common Position on Sulphur-free fuels

The Environment Council met in Brussels on 12 and 13 December and reached a political agreement on a common position on the proposal to amend the "Fuels" Directive 98/70/EC.

The Council agreed:

- The date for the gradual introduction of <10 ppm sulphur diesel and petrol fuels to be in line with the Commission proposal of 1st January 2005 but they advanced the date to 1st January 2009 for the ban on fuels with >10 ppm sulphur. It agreed with the Commission proposal to make the mandatory introduction of sulphur-free diesel across the EU subject to a review by the European Commission, to be completed by December 2005
- The Council decided against extending these new specifications in full to non-

road engines and tractors (as proposed by the Parliament) and put the issue back to the Commission to be reviewed together with new, tighter emission limit values (as suggested in the Commission proposal).

Environment Commissioner Margot Wallström welcomed ministers' unanimous backing for the proposal saying, "Sulphur-free fuels will speed the introduction of the latest fuel-efficient technologies in cars and other vehicles. This will significantly reduce emissions of carbon dioxide - the most important greenhouse gas....in addition, these fuels will help clean up the emissions of older more polluting vehicles and improve air quality for people throughout the European Union."

4. European Summer Smog Levels exceeded Critical Threshold on 2 days in 3

Concentrations of potentially harmful ground-level ozone pollution, the main component of summer smog, exceeded a critical threshold somewhere in Europe on two out of every three days this spring and summer, according to preliminary information compiled by the European Environment Agency. The report was submitted to EU environment ministers for their meeting on 29 October.

An EU air pollution directive requires governments to inform the public whenever monitoring stations detect ozone concentrations above a critical threshold, set at 180 micrograms of ozone per cubic meter ($\mu\text{g}/\text{m}^3$) of air averaged over one hour.

A preliminary evaluation of the April-August 2001 period conducted for the European Commission shows that the public information threshold was exceeded in 11 of

the 15 EU member states and in five out of 10 other European countries that supplied data at the EEA's request. An exceedance occurred in at least one of these 25 countries on 101 of the 153 days covered.

The average maximum ozone concentration during exceedances of the public information threshold this year was 200 µg/m³. Exceedances lasted on average between 1.2 hours in April and 3.0 hours in June and August.

Italy recorded 80 days with exceedances, followed by France (58) and Spain (48). Of those countries reporting exceedances, Poland had the fewest exceedance days, with two. However, these numbers do not necessarily give a fair comparison because of wide variations in the extent of different countries' ozone monitoring networks. Belgium and France both had the highest proportion of stations reporting exceedances at 73%.

Agreement was reached among the EU institutions in November, pending final approval by the European Parliament, on a new ozone directive that will include the introduction of an "alert" threshold at 240 µg/m³. When ozone concentrations exceed this threshold, governments will have to set in train action plans aimed at achieving an immediate reduction of ozone pollution where feasible.

The conciliation negotiations between the European Parliament and the Council resulted in an agreement, on 22 November, for a new directive on air-quality standards with respect of ground-level ozone. According to that agreement, the maximum number of days on which ozone levels may be allowed to exceed the World Health Organisation's recommended guide value of 120 µg/m³ has been set at 25, with 2010 as

the final date for implementation.

5. Swedish Cities include NO_x in requirements for Environmental Zones

For several years, Sweden's major cities have required older heavy-duty vehicles to be fitted with emission controls to reduce both hydrocarbons and particulate matter. From 1 January 2002, the requirements will be modified to require the addition of NO_x controls.

The basic requirement for entering the Environmental Zone is that all Heavy Duty Vehicles equipped with a diesel engine must not be more than 8 years old. The age of the vehicle is calculated from the first date of registration.

However, vehicles more than 8 years old and equipped with an approved aftertreatment device in the form of a catalytic converter and a particulate filter fulfilling the requirements for "Level B", and equipment for reduction of NO_x meeting "Level C", may apply for a permission to enter the Zone.

Requirements for reduction of emissions (valid from 1 January 2002):

Emissions	Level B	Level C
Particulates	- 80 %	-
Hydrocarbons	- 80 %	-
Oxides of Nitrogen	No increase	- 35 %
Noise	No increase	

6. Traffic linked to Ultra-fine PM in Children's lung tissues

Small particles found in vehicle exhaust can penetrate into the lungs of children, according to a new study. The study shows evidence that particles from vehicle exhaust

reach, and are taken up by, cells that reside in the deepest part of the lung.

Dr Jonathan Grigg and his team at the Institute for Lung Health at the University of Leicester looked for particles in cells sampled from the lungs of 22 healthy children and found evidence of ultra-fine vehicle particles in them all. The level of particles was significantly higher in children living on a main road, although there was no difference in the proportion of these particles in children of different ages.

The UK government has estimated that there are 24,000 deaths of adults a year, which can be attributed to the inhalation of PM10.

The research was published in the British Thoracic Society journal "Thorax".¹

This study presents the first conclusive evidence that carbonaceous particles are deposited in the lower airway of normal children. Since all of the particles in paediatric alveolar macrophages (AM) were composed of ultra-fine elements, these data are consistent with the selective penetration of smaller size fractions of PM10 into the distal airway, and the hypothesis that ultra-fine particles are a major determinant of the adverse health effects associated with PM10. The researchers found that the percentage of particle-containing AM was higher in children living on a main road, a finding compatible with the epidemiological association between increased road traffic density near homes and respiratory symptoms in children.

7. Clean Diesel spreading in Europe

Belgium has become the latest European

country to move to ultra low sulphur diesel (ULSD - 50 ppm) in November, with Luxembourg following a few days later. Germany, one of Europe's biggest diesel markets, moved over to ULSD on 1 November, joining the UK, the Netherlands, Sweden, Finland, Denmark and Ireland, well ahead of a mandatory EU shift to ULSD (and ultra low sulphur petrol) in 2005.

In order to make ULSD cheaper, Belgium and Luxembourg are raising excise duties on regular <350 ppm sulphur diesel, although for petrol the tax shift will only apply to the high octane 98 RON grade, rather than the premium unleaded (95 RON) grade. The Belgian government has raised the tax on <350 ppm sulphur diesel by 60 centimes (0.015 €) to 12.30 Belgian francs (0.305 €) per litre, as from 9 November, while the 50 ppm tax stays at 11.70 Belgian francs (0.29 €).

In Luxembourg the duty increase on regular diesel and the switch to ULSD was due to take effect from early December.

In Germany, the switch to clean fuels had been signalled by an additional three pfennigs per litre tax on higher sulphur content diesel and petrol.

8. UK Greenhouse gas emissions and Acid Rain down

Britain's emissions of greenhouse gases have fallen by 14% since 1990, according to the latest government report. British lakes and rivers are also on the road to recovery from acid rain poisoning, following successful curbs to air pollution from cars and heavy industry.

The report by the National Atmospheric Emissions Inventory attributed the drop in greenhouse gas emissions to several factors including the introduction of catalytic

¹ Ultrafine particles in alveolar macrophages from normal children, H J Bunn, D Dinsdale, T Smith, J Grigg, (*Thorax* 2001;56:932-934)

converters on cars, a move towards low sulphur and lead-free petrol and a switch to gas from coal and oil in power generation.

Environment Minister Michael Meacher said the downward trend was welcome, but warned of complacency. “Even though these figures are encouraging, we must not be complacent. There are still significant problems where we need to do more, for example, to further reduce greenhouse gases and harmful pollutants such as ammonia and particulate matter,” he said.

9. Commission report on the CO₂ reductions from Cars

The implementation of the Community strategy on reducing CO₂ emissions from cars has made “substantial progress” according to the European Commission. In its second report adopted on 8 November all 3 vehicle manufacturers’ associations have reduced the average figure of CO₂ emissions in cars that have been sold in the EU market. By 2000, ACEA had already reached the upper limit of the intermediate target range of 165 to 170 g CO₂/km and JAMA had decreased its figure to an average of 183g CO₂/km, a reduction of 6.6% since 1995. During the 1995-2000 period, the KAMA figures only moderately decreased, from 197g to 191g CO₂/km.

NORTH AMERICA

10. EPA releases Non-road Staff Paper

In 1998, EPA adopted more stringent emissions standards for non-road diesel engines. In that rulemaking, EPA indicated that in 2001 it would review the upcoming Tier 3 portion of those standards (and the Tier 2 emission standards for engines under 50 horsepower) to assess whether or not the

new standards were technologically feasible.

The emission standards for Tier 3, in grams per horsepower-hour (g/hp-hr), are shown below:

Non-road Tier 3 Emission Standards (g/hp-hr)

Engine Power hp	Model Year	NMHC + NOx	Carbon Monoxide (CO)	PM *
>50<100	2008	3.5	3.7	0.30
100<175	2007	3.0	3.7	0.22
175<300	2006	3.0	2.6	0.15
300<600	2006	3.0	2.6	0.15
600<750	2006	3.0	2.6	0.15

* Tier 2 standards carry over into Tier 3

The Tier 3 emission standards set in 1998 were based on information available to EPA indicating that the cooled exhaust gas recirculation (EGR) technology developed for highway diesel engines would be the primary means of compliance with the standards. In conducting its technology review, EPA has surveyed the recent engineering and scientific literature on advances in diesel emissions control and information provided by engine manufacturers, showing the considerable progress they have made in the design of robust EGR systems for use in highway engines. This information shows that cooled EGR is but one of several technologies available to diesel engine manufacturers to meet the Tier 3 emission standards, as a result of the progress of technology development since 1998. In addition EPA envisioned a Tier 3 programme more closely aligned with future highway standards, in particular, achieving comparable control of particulate matter (PM) for non-road engines. EPA reaffirms that:

- Tier 3 standards are feasible in the

timeframe established in the rule

- Tier 2 standards for engines under 50 horsepower are feasible
- Certification test data from Tier 1 engines in this power range show that many of these engines are already meeting Tier 2 standards.

Since the 1998 final rule, growing evidence that diesel engine exhaust emissions can cause serious health problems has reinforced the belief that further action is warranted. EPA has recently issued regulations that will dramatically reduce emissions from highway diesel vehicles. As a result, non-road diesel engines, already a major source of harmful particulate matter and ozone-forming compounds, will become a dominant mobile source of these emissions in the future.

EPA has already taken some steps toward dealing with non-road diesel PM and in-use emissions concerns (such as developing a transient test cycle to better characterise in-use PM emissions). However, it believes separate rulemaking is the best approach because it is increasingly clear that the most effective means of further reducing emissions of PM (and oxides of nitrogen, if warranted) is through a “systems” approach that regulates non-road diesel engines and fuel in a single coordinated programme, similar to the approach recently taken to control highway vehicle emissions. This approach would continue the pattern followed successfully in the past, in which non-road emissions reduction programmes are modelled after highway programmes, with some additional lead-time provided for adaptation of highway technologies to non-road diesel applications. EPA plans to initiate such a rulemaking with a proposal next year.

ASIA PACIFIC REGION

11. Tokyo Diesel Retrofit Programme Proceeding

The Tokyo Metropolitan Government (TMG) retrofit programme is proceeding rapidly. The criteria for approval have been finalised based on the performance of Particulate Matter (PM) reduction devices.

Retrofit devices are divided according to the following classification scheme:

1. Diesel Particulate Filter (DPF)

Devices that are installed in the exhaust pipe of a diesel-fuelled vehicle to collect particulate matter. Such devices are divided as follows according to the ways in which the collected particulate matter is treated for removal and regeneration of the filter capacity:

- 1.1. The collected particulate matter is burnt using external energy, such as heating wires, to regenerate the filter (active regeneration system)
- 1.2. The collected particulate matter is oxidised and removed using the heat of the exhaust gas from the vehicle or from catalytic activity to successfully regenerate the filter (continuous regeneration system)
- 1.3. The filter is treated when the vehicle is not in service to remove the collected particulate matter (non-regeneration system)

2. Oxidation catalysts and other systems

2.1. Oxidation catalyst system

In addition to the systems mentioned in 1.1 to 1.3, the system in which particulate matter emitted from a vehicle is oxidised and removed by the action of the catalyst installed in the

exhaust pipe of the vehicle.

2.2. Other systems

Systems other than those mentioned in 1 and 2.1 for removing particulate matter.

A variety of systems have already received approval from the TMG.

12. China gives Tax Rebates for Clean Cars

China has approved tax rebates for three automobile manufacturers whose vehicles meet Euro II emissions standards as part of a scheme to bring all cars up to that standard by 2004. The move will refund 30% of China's 5% consumption tax on domestically manufactured light duty vehicles effective from last September. This will amount to a rebate of about \$181 million. Shanghai GM, Shanghai VW and Aeolus-Citroen became the first three manufacturing plants to win approval. Other joint venture plants are set to receive approval soon.

13. Australia introduces Low Sulphur Diesel

The Australian Federal Government has announced it will regulate the quality of diesel fuel from 31 December 2002, with much stricter guidelines on sulphur levels.

Currently, diesel fuels contain an average of 1440 ppm sulphur. The new standard will reduce the level of sulphur to 500 ppm in 2003 and then a maximum of 50 ppm from 2006.

FORTHCOMING CONFERENCES

“PZEV Emissions Technology TOPTEC”

24-25 January 2002, Hilton San Diego, CA

Details from:

<http://www.sae.org/calendar/toptecs.htm>

Event co-sponsored with MECA.

“8th Annual Fuels and Lubes Asia Conference and Exhibition”

29 January – 1 February 2002, Singapore

Details from: <http://www.flasia.info/>

Latest developments in Asia's fuels, lubricants and additives industry.

“Global Alternative Fuels Forum 2002”

12-13 February 2002, Stuttgart

Details from:

<http://www.theenergyexchange.co.uk/>

Includes presentations on fuel cells.

23rd Vienna Engine Symposium

25-26 April 2002, Vienna

Details from:

<http://ivkwww.tuwien.ac.at/oevk.html>

“FISITA 2002” – World Automotive Congress

2-7 June 2002, Helsinki

Details from FISITA on:

www.fisita2002.com

Congress themes include The Environment, New Generation of Vehicles and Policy & Regulation.

11th International Conference “Verkehr und Umwelt”

19-21 June 2002, Graz, Austria

Details on: <http://fkma.tu-graz.ac.at>

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