

N AECC Newsletter

Association for Emissions Control by Catalyst

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Affiliated to CEFIC

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EUROPE

1. New Study finds significant Morbidity and Mortality impacts from vehicle-related Air Pollution in Europe

While it has been well known for many years that air pollution contributes to mortality and morbidity, this newly released study has reinforced the significant public health risk associated with particulate air pollution¹. The authors have estimated the impact of outdoor (total) and traffic-related air pollution on public health in Austria, France, and Switzerland.

Their findings are that air pollution caused 6% of total mortality or more than 40,000 attributable cases per year. About half of all mortality caused by air pollution was attributed to motorised traffic, accounting also for: more than 25,000 new cases of chronic bronchitis (adults), more than 290,000 episodes of bronchitis (children), more than 0.5 million asthma attacks and more than 16 million person-days of restricted activities.

2. EU reaches agreement on Ozone

European Union governments have agreed to set strict limits on ground-level ozone pollution. The draft law, agreed by environment ministers from all 15 EU countries, sets out pollution levels when the public authorities must inform the population that ozone concentrations are posing a threat to health.

It also sets a voluntary target that ozone

concentrations must not be breached more than 25 times a year from 2010.

The draft law now returns to the European Parliament, which has called for the limits to be made binding, a proposal dismissed by governments who say it is impossible to have complete control over ozone levels that can be caused by pollution generated in other countries.

Ground-level ozone is formed by the reaction of nitrogen oxides and volatile organic compounds, mostly from traffic emissions and industry. The EU agreed a law earlier this year to set binding ceilings on these emissions.

3. The Auto Oil II Process and Conclusions

The European Commission has presented the results of the 4-year Auto-Oil II programme, aimed at finding the most cost-effective ways to reduce emissions from road transport. Emissions from road transport of the traditional, regulated pollutants are expected to have fallen to 20% of their 1995 levels by 2020, leading to a marked improvement in air quality. On the other hand, some air quality problems such as particulate matter and ozone are a long way from being solved, so the report identifies particulate matter from diesel engines, dangerously high levels of localised nitrogen oxides and ozone as the major challenges for future policy.

During 1998 it became clear that Council and Parliament would in fact settle many of the 2005 standards. As a result, the Auto-Oil II Programme was redirected in order to fulfil the following objectives:

- Specifications for petrol and diesel fuels

¹Public-health impact of outdoor and traffic-related air pollution: a European assessment, *Lancet* 2000; **356**: 795 - 801

complementing the mandatory specifications for sulphur and aromatics

- Environmental specifications for two- and three-wheeled vehicles
- Provisions for improved roadworthiness testing of vehicles
- Specifications for fuels used by captive fleets
- Specifications for liquid petroleum gas, natural gas and bio fuels.

In view of the agreement reached between Council and Parliament on mandatory standards applicable from 2005, vehicle technology measures studied within Auto-Oil II were limited to the selected application of “advanced after-treatment systems” for certain categories of vehicles and to motorcycles. The introduction of “advanced after-treatment systems such as PM (particulate matter) traps and DeNOx catalysts” was assumed to form part of the reference scenario after 2005 for passenger cars and light-duty vehicles. In the case of heavy-duty vehicles, it was assumed that PM traps would be introduced from 2005 whilst “DeNOx traps” would be fitted from around 2008. Possible measures relating to motorcycle technology distinguished between the different types and sizes of engines and included engine modifications, oxidation catalysts, direct injection, secondary air injection and three-way catalysts.

The Communication gives the current status of their further work and this is summarised below:

a. Light-duty vehicles

Cold start emissions from N1 Class II and III vehicles

A proposal has been discussed and agreed in

principle within the Commission’s Motor Vehicle Emissions Group (MVEG) and it is expected to be adopted by the Commission during the coming weeks.

Improved roadworthiness testing

Commission work has been channelled towards the further development of on-board diagnostics (OBD) as an Inspection & Maintenance tool to aid roadworthiness testing rather than improving roadworthiness emission testing procedures.

OBD thresholds for 2005/6

A technical study on behalf of the Commission is ongoing, and the Commission expects to adopt any necessary proposal on this issue during the first half of 2001.

Examination of the Type V test and the in-service conformity check

The “type V” test is an ageing test designed to verify the durability of anti-pollution devices. The Commission is waiting for experience on the effectiveness of the in-service conformity check system before taking a decision on the future role of the type V test.

Reference fuels

This issue is closely linked with the revision of Fuels Directive 98/70/EC, and in particular the question of whether further provisions relating to sulphur content will be made. A proposal is expected at the beginning of 2001, at the same time as the amendment of Directive 98/70/EC.

Enhanced durability testing

The emissions directive contains a list of measures that could be contained in legislation to come into force after 2005. One of these is the modification of the

durability requirements, including an extension of the existing durability test. An extension in both time and distance of the durability requirements could constitute an important part of future environmental improvements.

b. Heavy-duty vehicles

The heavy-duty directive 1999/96/EC envisages the adoption of further measures to take effect from 2005/6. These are:

- Provisions relating to the development of OBD and on-board measurement (OBM) systems to monitor in-service exhaust emissions
- Durability requirements and in-service control
- Limits for non-regulated pollutants that “may become important as a result of the widespread introduction of new alternative fuels.”

In addition the Commission is to report by 31 December 2002 on the current status of technology needed to meet the mandatory NOx standard for 2008. The Commission says it will start work on this in the near future, in order to give appropriate positive signals to industry concerning the prompt implementation of this standard.

c. Two- and three-wheeled vehicles

After a technical feasibility study the Commission has recently adopted Proposal COM (2000) 314 final to amend Directive 97/24/EC.

The proposal determines a unique set of emission limits (for 2-stroke and 4-stroke motorcycles) for CO, HC and NOx to be applied for type approval of motorcycles from 1 January 2003 for new vehicle types and from 1 January 2004 for all new

vehicles. The new limits represent important reductions with respect to present-day limits for HC and CO. New limit values for tricycles and quadricycles are also introduced.

Furthermore, the proposal sets out permissive limit values to be applied in order to provide an option for Member States that would like to stimulate more advanced environmental technology through the granting of fiscal incentives. The proposal envisages a second stage of emission limits to further reduce motorcycle emissions from the year 2006 on a revised test currently under development in the UN-ECE Working Party on Pollution and Energy (GRPE).

It is anticipated to bring forward a new proposal before the end of 2002, introducing the new test cycle, as well as mandatory emission limits to be applied from 2006.

d. Non-road mobile machinery

Consultations with Member States on a possible extension of the scope have been carried out, and the Commission intends to come forward with a proposal before the end of the year.

The Commission intends to launch at the beginning of 2001 a new, integrated Clean Air for Europe (CAFÉ) programme leading to a comprehensive air quality strategy covering all the relevant emission sources by 2004.

4. CO₂ Emissions from New Cars down 5.6 % between 1995 and 1999

The European Commission has published its first annual report on the effectiveness of its strategy to reduce CO₂ emissions from passenger cars and improve fuel economy.

The strategy aims at achieving an average CO₂ emission figure for new passenger cars of 120 g CO₂/km by 2005, and 2010 at the latest. This has resulted in a reduction of CO₂ emissions from new passenger cars sold in the EU of 5.6% between 1995 and 1999.

The agreements with the European, Japanese and Korean car industry associations (ACEA, JAMA and KAMA) have delivered reductions in CO₂ emissions from cars sold by their members on the EU market of ACEA 6.0%, JAMA 4.6% and KAMA 1.5%. However, the Commission says in order to meet the final target all three associations must increase their efforts but remains confident that they will live up to their commitment.

NORTH AMERICA

5. California retains ZEV Mandate

At their September Board meeting, California regulators voted to keep a rule requiring that 10 percent of cars offered for sale in the state starting in 2003 emit little or no pollution, a goal that the industry has said is unreachable. The unanimous decision by the California Air Resources Board, which regulates air pollution in the state, could increase the number of electric cars on the road by a huge amount, not only in California but also in New York, Maine, Massachusetts and Vermont, which have opted to follow California pollution rules.

In the previous two reviews in 1996 and 1998, the board removed the deadlines for 1998 and 2001, saying they were impractical. It also relaxed the rule for 2003. For the six largest manufacturers, only 4% of the cars offered for sale in 2003 have to have truly zero emissions, a standard that can only be met at present by battery-powered electric cars. The rest of the 10

percent goal can be met by near-zero-emission vehicles, such as extremely clean burning petrol engines, natural gas engines or combined petrol-electric hybrid vehicles.

6. Diesel Risk Reduction Plan adopted by CARB

A comprehensive plan to reduce particulate matter (PM) emissions from diesel equipment was unanimously approved in late September by the California Air Resources Board (CARB). Once CARB had ruled that particulate emissions from diesel-fuelled engines were toxic air contaminants the board was required to determine if there is a need for further control.

The Diesel Risk Reduction Plan proposes a three-pronged approach that would require use of low sulphur diesel fuel, retrofitting existing engines with PM filters and nearly a 90 percent reduction of PM emissions from all new diesel engines and vehicles.

While the plan is non-regulatory, its approval means CARB staff, over the next few years, will develop and bring to the board for action up to 14 regulatory items related to diesel fuel and diesel engines. These would include four measures reducing emissions from on-road equipment, four measures reducing emissions from off-road equipment and five measures reducing emissions from stationary and portable engines. There will also be a regulation requiring Phase 2 (low sulphur) diesel fuel.

In the report CARB says "diesel PM filter control technology is now available and has been demonstrated in over 20,000 applications worldwide...CARB's vision is that well before the end of this decade these filters will become as commonplace on diesel-fuelled engines as catalysts are now on gasoline-fuelled vehicles".

7. US EPA Advisory Board agrees that Diesel "Soot" is a Carcinogen

A US Environmental Protection Agency science advisory board has agreed with the agency's characterisation that diesel fuel exhaust is a "likely human carcinogen". The decision by the Clean Air Science Advisory Committee comes a few months before an expected decision by the EPA to make a final rule drastically cutting diesel pollution.

8. Study links Slow Lung Growth Rate in Children with Pollution

A study funded by the California Air Resources Board (CARB) has revealed that exposure to high air pollution levels can slow down the lung function growth rate of children by up to 10 percent. The 10-year study is the first large-scale effort in the US to explore the effects of long-term exposure to outdoor air pollution.

ASIA-PACIFIC

9. Recent Developments in Hong Kong

Hong Kong continues to move aggressively to address its motor vehicle related air pollution problem, especially as it relates to particulate matter (PM). It has set emission reduction targets (from a 1997 base year) of 80% for PM and 30% for NO_x by 2005.

The programme has four primary elements - conversions of diesel taxis to LPG, introduction by means of tax incentives of low sulphur diesel fuel, retrofits of existing diesel vehicles, and in the longer term, introduction of fuel cells for buses.

Low Sulphur Fuel

Through a shift in tax policy, so called ultra low sulphur diesel (ULSD) fuel (maximum 50 ppm) has been made cheaper than higher

sulphur fuel. As a result, almost overnight all 160 retail filling stations in Hong Kong are now offering ULSD and it has captured virtually all of the retail market. However the fuel used in buses is exempt from tax and therefore most of this fuel remains high sulphur.

Retrofits

All pre-Euro 1 buses in Hong Kong are being retrofitted with diesel oxidation catalysts. Approximately 2000 buses have been fitted or will be fitted in the next few months.

Apart from franchised buses there are about 40,000 diesel vehicles less than 4 tons in size (including taxis). All of these vehicles are eligible for a subsidy of 1300 HK\$ to retrofit a diesel particulate filter.

Pilot projects are underway to assess the feasibility of catalytic converters and diesel particulate filters in a variety of applications. Depending on the results from this work, significant additional retrofits could be mandated or encouraged.

10. Beijing plans Major Effort for 2008 Olympics

Beijing is reported to be planning to spend \$17.8 billion to tackle traffic congestion and pollution in an effort to capture the 2008 Olympics. The Chinese capital will start 50 environmental and transportation projects before the end of the year, the China Daily quoted city government sources as saying.

Beijing has already said it will increase the number of smog-free days by replacing diesel buses with vehicles that run on clean-burning fuel and by implementing strict emissions tests.

11. Developments in Japan

While details are still being worked out including the introduction of a new transient test procedure, general agreement appears to have been reached that tighter standards for new diesel vehicles will be introduced in 2005. They will be sufficiently stringent so as to require the mandatory use of particulate filters. Low sulphur fuel (<50 ppm) will also be made available before that time.

12. Recent Developments in India

Fuel quality

The Supreme Court has directed that the Region of Delhi (which includes the national capital Delhi and bordering districts of adjoining states) be supplied with:

- petrol with a maximum sulphur content of 0.05 % by 31 May 2000
- petrol with a maximum benzene content of 1% by 31 March 2001
- diesel with a maximum sulphur content of 0.05% by 30 June 2001

Emission standards

The Indian Government has extended the “Bharat Stage II” emission standards (equivalent to EU Stage 2) for passenger cars to other major cities. EU Stage 2 equivalent emission standards for passenger cars were enforced in Delhi under an order of the Supreme Court from 1 April 2000. The dates for enforcement are:

- Mumbai from 1 January 2001
- Calcutta from 1 July 2001
- Chennai from 1 July 2001

However the West Bengal Government has issued an order advancing the date of implementation of the “Bharat Stage II”

standard to 1 November 2000 for the Calcutta Metropolitan Area. Petrol and diesel with a maximum sulphur content of 0.05% will be available in Calcutta from 1 November 2000.

GENERAL

13. AECC new Web Site “Working in partnership for cleaner air” is operational

AECC’s new web site went on line in October.

The address is <http://www.aecc.be/> and the site is in English, French and German. The site includes information on the role of emissions control technology in limiting pollution from current and future engines. It also includes AECC position papers on important topics including emissions legislation and fuel quality - including the AECC submission to the European Commission mini-review on fuel quality - and back issues of the AECC Newsletter. There are links to AECC member companies and other organisations. New material will be added in future and suggestions for the future development of the site will be welcomed.

14. Forthcoming Conferences

“Combustion Pollution Control” symposium

19-21 November 2000, Antwerp, Belgium
Details from Catholic University Leuven on
<http://www.agr.kuleuven.ac.be/ifc/sbtl.htm>

*Controlling pollution from combustion with
catalysts and traps for NO_x, SO_x, VOC,
dioxins and particulates.*

“21st Century Emissions Technology”

4-6 December 2000, IMechE, London
Details from: IMechE, Tel. +44 20 7975
1312, Fax. +44 20 7222 9881, Email
s_love@imeche.org.uk

*Includes fuels and emission control
technology.*

“SAE 2001 World Congress”

5-8 March 2001, Detroit, Michigan
Details from www.sae.org
*4 days on diesel emissions control and
advanced catalytic converters & substrates,
Pd and Pt technology and global legislation.*

“Additives 2001”

20-22 March 2001, Keble College, Oxford,
UK

Details from: Dr Mario Moustras, RSC,
Email: moustrasm@rsc.org

*International conference on chemistry of
automotive fuel and lubricant additives.*

“3rd International Conference on Health Effects of Vehicle Emissions”

26-28 March 2001, Hilton Birmingham
Metropole, NEC Birmingham, UK

Information from Energy Logistics, Tel: +44
1628 671717, Fax: +44 1628 671720,
Email: enquiries@energylogistics.co.uk

*Programme details not yet finalised but will
include a one-day noise seminar.*

“22nd International Vienna Motor Symposium”

26-27 April 2001, Vienna

Details from ÖMV, Tel: +431 588 01-
31503, Fax: +431 586 6294,
<http://ivkwww.tuwien.ac.at/oevk.html>

“Hart’s World Fuels Conference”

14-16 May 2001, Brussels

No details yet.

“2001 SAE International Fuels and Lubricants Conference”

7-9 May 2001, Orlando, Florida

Details from SAE, Email mjena@sae.org

“EAEC European Automotive Congress – Europe & the Second Century of Auto- Mobility”

18-20 June 2001, Bratislava, Slovakia

Details from: SIA, Tel: +33 1 41 93 70, Fax:
+33 1 41 93 79.

<http://www.saits.sjf.stuba.sk/>

6th Italian Seminar on Catalysts “Fundamentals and Application to Environmental Problems”

18-23 June 2001, Grado, Italy

Details on <http://www.dsch.univ.trieste.it/>

“Engine Expo 2001”

20-22 June 2001, Messe Stuttgart

Details from:

<http://www.ukintpress.com/engine/expo>

*Sessions include the future of engine design
and emissions.*

“Environmental Sustainability Conference”

12-14 November 2001, Graz, Austria

Details from: <http://www.sae.org/>