AECC

Newsletter

March - April 2006

INTERNATIONAL REGULATORY DEVELOPMENTS

Table of Contents

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EUROPE

German Proposal on Euro 5 NOx Limits

The reported developing consensus among EU states that a further stage (beyond Euro 5) for nitrogen oxide emissions targets for diesel cars should be set now, has been formally brought to the attention of the European Competitiveness Council by a German proposal on light-duty Euro 5/6 emissions limits. The main details of the proposal were reported to be:

- a further reduction in the Euro 5 diesel NOx limit value from 200mg/km to 180mg/km
- leaving the petrol NOx figure at 80mg/km instead of reducing it to 60mg/km
- decisions on future NOx limit values for Euro 6 to be taken now, with a limit value of 80 mg/km suggested for all types of vehicle
- a firm defined date of application.

Particulate Filters feature in European Commission Mobility Plan

The European Commission has launched a new mobility plan covering all journeys by its staff. As part of the plan, the Commission will encourage the use of low-polluting, low-fuel-consumption cars and its fleet of service cars will gradually be replaced with diesel cars equipped with particulate filters, as they become available on the market.

Motorcycles Directive Amendment on Catalyst Marking

Commission Directive 2006/27/EC on two- or three-wheel vehicles has been published. It primarily amends requirements on braking, design speed, torque and engine power, but it also amends Directive 97/24/EC in relation to the requirements for marking of original catalytic converters and original silencers. The new requirements are effective from 1 July 2007.

The amended text simply aligns the marking requirements for OE catalytic converters and OE units supplied as replacements. It now requires that both are marked with the 'e' mark followed by type-approving country's identification plus the vehicle manufacturer's name or trade mark and the make and identifying part number. The marks must be "legible and indelible and also visible, in the position at which it is to be fitted".

Emissions-related Road Charging agreed

The EU's Council of Ministers has approved the European Parliament's amendments on the 'Eurovignette' Directive. The new Directive will enter into force following publication in the Official Journal.

The new road charging Directive lays down rules for tolls or user charges on the trans-European network, whereas the existing Directive limited tolls and charges to motorways. It allows Member States to levy tolls and user charges on all other roads as well. The Directive applies to vehicles over 3.5 tonnes, rather than only to vehicles over 12 tonnes as at present. The new Directive will allow a greater variation in tolls to reflect congestion. Toll variations to reflect the pollution caused by vehicles will be mandatory from 2010. It also makes provision for Member States to be able to increase tolls with a 'mark-up' on roads in particularly sensitive mountainous regions. The income from these mark-ups must be used to fund alternative transport infrastructure.

DG Environment Retrofit Questionnaire

In March 2006, DG Environment launched a questionnaire intended to identify the options for emissions reduction for existing vehicles. The closing date for responses was 17 April 2006. Responses will be analysed, together with a literature survey, by an external consultant. A workshop will be organised by DG Environment in Brussels in June 2006, where representatives of the industry and experts will discuss the preliminary findings.

DG Environment says "road vehicles are among the most important sources of air pollution… the Thematic Strategy on Air Pollution has identified as a follow-up measure the retrofit of exhaust treatment devices on existing vehicles, or other technology that would not require a substantial modification of the engine and could deliver substantial environmental benefits in the short term".

The objective of the questionnaire is to collect technical evidence from the relevant industries on the available technologies for the reduction of air pollutant emissions from existing vehicles. This covers information on the cost and the impact on emissions of the retrofitting of exhaust emissions control technologies, the introduction of alternative fuels or additives, low viscosity oil and low friction tyres or any other measure on existing vehicles, focusing on heavy-duty vehicles.

Dutch Subsidies for new Vans and Taxis with DPF

From 1 April onwards, the Dutch Environment Ministry (VROM) will subsidise companies that procure new delivery vans and taxis equipped with a Diesel Particulate Filter. Applicants can ask for a €400 subsidy per vehicle and VROM has some €3 million available for this operation. The subsidy scheme will

run until 31 December 2010. The measure is an integral part of measures to improve the air quality in the Netherlands for which the Cabinet has some €900 million available until 2015.

Since June 2005, VROM has a system in place that reduces the buying tax for a diesel car with DPF by €600. From 1 October 2006, there will also be subsidies for retrofitting existing trucks, heavy delivery vans and buses with a DPF.

German Particulate Car Label Scheme

Germany's Bundesrat has given final approval to a new scheme requiring cars and trucks to be labelled according to their emissions of fine particles. The measure is intended to help Germany meet EU air quality standards by allowing local authorities to ban dirtier vehicles during high-pollution episodes.

The upper house of parliament gave the measure a first reading last autumn. In a more recent vote it has now confirmed its backing for the colour-coded scheme, but with a crucial change to the original proposal - future vehicles conforming to the forthcoming Euro 5 particulates standard will now not be distinguished from those meeting existing Euro 4 standards. In a reaction to the vote the Greens criticised the Bundesrat's move, arguing it would discourage the development of cleaner vehicles.

UK Assessment of Further Emissions Control Measures

The UK Department of Environment, Food & Rural Affairs' (DEFRA) report on the country's Air Quality Strategy, includes an assessment of additional policy measures to reduce emissions.

The report concludes that a number of measures would show positive results. These are: new EU level vehicle emissions standards; incentives for their early uptake; incentives for low-emission vehicles; national road pricing; reducing small combustion plant emissions; and reducing ship emissions. The report says that a cost effective package of some of these additional measures can generate additional benefit to society (net of additional cost) of up to £1437million (€2072million) per year. At the same time it can reduce PM10 exceedances in 2010 by about 55% at background locations and exceedances of the NO_2 objective by about 60% near urban roads.

European Environment Agency Report on Transport & Environmental Indicators

The European Environment Agency has issued a new report summarising selected issues from their set of Transport and Environment Reporting Mechanism (TERM) indicators.

The report "Transport and environment: facing a dilemma - TERM 2005" (EEA Report No 3/2006) says that transport, especially road transport, is becoming cleaner because of increasingly strict emissions standards. However, measurements show that many cities are not on track to meet the air quality limit values set for particulate matter for 2005 or for NO_2 for 2010. Ozone incidents are frequent, and the air quality limit values set for ozone in 2010 are widely exceeded already. Traffic is not the only source of the emissions behind these figures, but traffic does play an important role in the exposure of people to high concentrations of pollutants. This is due to emissions at street level which are in close proximity to the general public. Moreover, traffic is a significant source of emissions of fine and ultrafine particles in cities and there is growing evidence which shows that the effect that fine particles has on health has been underestimated. The increasing share of diesel vehicles is a significant problem within this context.

Report on Air Pollution at Street Level in European Cities

The European Environment Agency has also issued a report (EEA Report No. 01/2006) on street-level air pollution. EEA says that evidence of the adverse health effects of fine particulate matter is continuously emerging and it is alarming that most of the traffic-related emissions are in the fine particulates range (below the PM2.5 scale).

The report studies the air pollution levels at traffic hotspots in 20 European cities compared to the urban background concentrations for NO_2, NOx, PM10 and PM2.5. Street level concentrations were calculated for three hypothetical street canyon configurations - wide, square and narrow, considered to represent a reasonable range of street canyon types across Europe. The exceedance days calculated for PM10 in 2000 (daily average of 50 $\mu g/m^3$ not to be exceeded more than 35 days a year) are higher than permitted in almost all cities in the narrow canyon, in 14 cities in the square canyon and in half the cities in the wide canyon case. For the 2030 air quality projection, the results imply that at street level and for a narrow canyon the annual limit value for NO_2 will be met, at worst, in only very few cases and, at best, in most cases. However, the indicative limit value for PM10 is not expected to be met in any scenario. For PM2.5 the reduction is in line with the significant reductions in the urban and in the street scale PM emissions attributed to the introduction of Euro V and VI compliant vehicles.

Impact of Urban Structure on Air Quality

In another report relating air quality to the structure of cities, Portuguese research has evaluated the impact of urban structure on air quality[1] for three imaginary cities of 3 million inhabitants:

- the Disperse City; low density and distinct zones for residential, industrial and commercial uses;
- the Corridor City, a "network city" with a dense centre and several nodes connected by highways and offering unmixed and partly mixed land uses;
- the Compact City, a highly dense structure with mixed land use and complementary functions located close together.

The authors estimated emissions from traffic, energy production and forests. The air quality was quantified by the predicted relative concentrations of ozone and NO_2. In all cities, the ozone concentration appears lower in the city centre than in the periphery, whereas, it is the opposite in the case of NO_2. The Disperse City presents the highest population affected by O_3, whereas the Corridor City exhibits the highest exposure for NO_2. On the whole, the obtained results suggest that the Compact City is the best organisation structure to limit inhabitant exposure.

[1] Borrego C. et al. (2006) "How urban structure can affect city sustainability from an air quality perspective", Environmental Modelling & Software 21(4): 461-467

Call for Low-Emission Zone in Edinburgh

Environmental researchers from Edinburgh's School of GeoSciences and Napier University's Transport Research Institute have warned that the city is unlikely to meet 2010 targets on air quality and have urged the council to set up low-emission zones to prevent vehicles entering certain areas of the city unless they meet environmentally friendly standards.

There are seven pollution 'hotspots' in the city that fail to meet the 2010 EU targets on NO_2. Vehicles, especially diesel buses and taxis, are claimed to be the main cause. Although the capital's pollution hotspots are gradually improving - because more vehicles have cleaner engines - some areas will still need more than a 30% reduction in nitrogen dioxide levels before 2010.

German Urban Pollution Aid

The European Commission has authorised an extension until 2008 of the German state of Saxony's programme to reduce urban pollution caused by exhaust gases from buses. The programme provides financial support for municipalities and businesses responsible for public transport services. It is aimed at reducing emissions through the procurement of new, more environmentally-efficient public transport vehicles and better traffic management. The government of Saxony plans to spend €15.9 million on the programme between now and 2008.

Recalculation reduces the Dutch Particulates Problem

A report published by MNP (Milieu en Natuur Planbureau) - the Netherlands Environmental Assessment Agency - says that fine particle air pollution in the Netherlands is 10-15% less than previously thought. It concludes that as a result, EU targets for PM10 should now be achievable by 2015.

The reduction is based on observations made in 2004-5 from an expanded and upgraded measurement network. They are considered more reliable than those made previously and better match comparable figures in Germany and the UK. The recalculation more than halves the number of locations where exceedances of EU PM10 targets are expected in 2010, and halves it again between 2010 and 2015. The number of problem areas is disproportionately reduced because many of them only just exceeded EU targets in previous estimates.

German Warning on Particulate Pollution from Wood-burning Stoves

UBA, the German environment agency, has called on the government to impose stronger fine particle (PM10) emission controls on small wood-burning stoves when it revises regulations on small combustion plants to be proposed next year. The agency says that PM10 from small wood fires roughly equals those from all road vehicles in Germany.

It proposes stricter, more widely applicable limit values and greater communication with end users to "drastically" reduce emissions. It is also researching the possible use of filters. UBA says that Germany's current regulations on wood as fuel, which has not been amended since 1988, is inadequate to cope with increased wood burning as the government encourages greater use of biomass energy.

Poland plans green shift in Vehicle Tax

Poland's finance ministry has issued a draft law introducing an "ecological tax" for cars up to 3.5-tonnes in place of current excise duties. The tax will be payable on the first registration of the vehicle. Rates will vary by engine capacity and the EU emissions standard that the vehicle meets.

The ministry predicts the tax will reduce imports of second-hand vehicles to 200000 annually, compared with more than 700000 last year. Cars over ten years old will pay ten times as much as under current rules.

Transport for London on Target to meet Environmental Objectives

Transport for London (TfL) has published its Environment Report for 2005, showing significant progress in reducing pollution. In the period 2004/05, TfL made progress on seven of its ten environmental objectives including a reduction in measured air emissions of fine particles by 28% since 2003/04 - primarily due to the fitting of particulate traps on all buses. The report also highlighted TfL's trials of low emissions vehicles through six diesel hybrid buses and three zero emissions hydrogen fuel cell vehicles.

Half Germany's Diesel Cars are available with Particulate Filters

A study by JATO Dynamics indicates that 1067 of the 2155 diesel car models offered on the German market now come equipped as standard with a particulate filter, while a further 48 models feature filters as priced options. A year ago, only 16.9% of new cars on the German market were so equipped.

Austrian Study says '2 in 3 Diesel Cars will have Filters by end of 2006'

Up to two thirds of new diesel-powered cars will have fine-particle filters by the end of 2006, according to a study by Austrian Automobile Club (OeAMTC).

NORTH AMERICA

New Compliance Options for Clean Diesel Passenger Vehicles

The US Environmental Protection Agency (EPA) has announced two voluntary interim compliance options for Tier 2 emissions standards, designed to ease the transition to cleaner, light-duty diesel vehicles.

The two options apply to nitrogen oxide requirements for diesels during compliance testing at high altitudes and high speed/high acceleration conditions. Manufacturers choosing these options will be required to meet more stringent requirements in other aspects of the Tier 2 program, including tighter particulate matter standards and longer useful life of the vehicle. These voluntary options are available for three years - model years 2007 to 2009.

Revised California Proposals on Large Spark-Ignited Off-Road Engines

The California Air Resources Board (ARB) has issued revised proposals for emissions standards for large spark-ignited (LSI) off-road engines.

The proposals cover fleet average emissions and lower emissions standards for new engines used in off-road applications such as forklifts, sweepers, portable generators and airport ground support equipment. The regulation will cover engines of 25 hp and above with displacements of one litre or more.

The fleet average part of the proposed regulation would only apply to forklifts, sweepers/scrubbers, tow tractors, and airport ground support equipment (only forklifts for smaller fleets). It would begin in 2009 and require progressively more stringent HC+NOx fleet emissions standards in 2011 and 2013. Options to meet the requirement include fitting verified retrofit technology. There is an alternative compliance option for forklifts used in agricultural activities which would require 20% of uncontrolled forklifts to be controlled to 3.0 g/bhp-hr HC+NOx by 1 January 2009 and the remaining 80% to meet this level by 1 January 2012.

Table 1. ARB Proposed Fleet Averages for Off-Road Large Spark-Ignited Engines (25 hp or larger with engine displacement of one liter or larger)

LSI Fleet Type	Number of Units in CA	HC+NOx (g/bhp-hr) by Jan. 2009	HC+NOx (g/bhp-hr) by Jan. 2011	HC+NOx (g/bhp-hr) by Jan. 2013
Large fleet – forklift component	26+	2.4	1.7	1.1
Mid-size fleet – forklift component	4-25	2.6	2.0	1.4
Mid-size or Large non-forklift fleet	4+	3.0	2.3	1.7
Small fleet	1-3	Exempt	Exempt	Exempt

Emissions standards for new spark-ignited engines would be harmonised with EPA's 2007 requirements and require manufacturers to certify to a 0.6g/bhp-hr HC+NOx level and 15.4g/bhp-hr CO limit from 2010.

Maintenance Schedule for DPFs

The US Environmental Protection Agency (EPA) has approved a new schedule of maintenance for Diesel Particulate Filters. This sets a minimum interval of 80000 miles or 2400 hours for the scheduled maintenance of DPFs used in some 2007-2009 model year medium and heavy heavy-duty diesel engine truck applications with severe space constraints. Applications outside these special classes will be required to provide DPF systems with a minimum 150000-mile maintenance interval.

California approves Revised NO_2 Limits for Verified Diesel Retrofit Technologies

The California Air Resources Board (ARB) has approved changes to their diesel retrofit verification protocols that establish revised limits on NO_2 emissions from verified diesel retrofit technologies.

The changes redefine the NO_2 emissions for retrofit technologies as the incremental increase associated with the device relative to the baseline, engine-out NO_2 emission levels (i.e. the increase in NO_2 emissions from engine-out to tailpipe after fitting the

device). They set a 30% maximum incremental NO_2 increase from 1 January 2007, falling to 20% on 1 January 2009. Verified technologies must meet these NO_2 emission limits to keep their verified status. There is also a new, more representative conditioning procedure for manufacturers to use prior to measuring NO_2 emissions.

California proposes revised Ambient NO_2 Standard

Based on a review and analyses of the health effects studies of exposure to NO_2, the California Air Resources Board (ARB) and the California EPA Office of Environmental Health Hazard Assessment have recommended revising California's one hour average ambient air quality standard for NO_2 downwards from the current 0.25ppm to 0.18ppm. The draft report also recommends the addition of an annual average standard of 0.03ppm. The current EPA ambient annual average NO_2 standard is 0.053ppm.

Updated Diesel Retrofit White Paper

MECA, AECC's sister organisation in the US, has released an updated 'white paper' outlining the types of technologies available to control emissions from in-use diesel engines and a report detailing case studies of construction equipment diesel retrofit projects. The documents can be downloaded from MECA's web site at: www.meca.org (under "Resources" >> "Publications") or on MECA's diesel retrofit web site at: www.dieselretrofit.org (under "Useful Documents").

Diesel Retrofit Cost-Effectiveness

The US Environmental Protection Agency (EPA) has released a report evaluating the cost-effectiveness of retrofitting diesel oxidation catalysts (DOCs) and catalysed diesel particulate filters (C-DPFs) on buses, trucks and non-road equipment so as to reduce particulate matter. The document: "Diesel Retrofit Technology: An Analysis of the Cost-Effectiveness of Reducing Particulate Matter Emissions from Heavy-Duty Diesel Engines through Retrofits" concluded that retrofits can be a cost-effective method to reduce air pollution. It is available at:
http://www.epa.gov/cleandiesel/publications.htm

Texas Funding for SCR Validation

The Texas Environmental Research Consortium (TERC) has announced a request for funding applications for the development, verification and testing of technologies to reduce NOx emissions from diesel engines, including engine upgrade or retrofit kits and selective catalytic reduction (SCR) technologies. 20 to 30 awards are expected to be made from a total fund of $7 500 000.

Light Truck Fuel Economy for 2008-2011

The US has adopted regulations that establish light-truck fuel economy standards for the 2008-11 model years. By the end of that period, trucks must average about 24mpg (miles per gallon), an increase of over 10%. The standards for 2006 and 2007 remain at 21.6 and 22.2 mpg respectively. The car standard remains at 27.5 mpg. The rules include provision to vary the standards according to the sizes of vehicles, with bigger trucks having less stringent standards. It also means that by 2011, each car company will have its own fuel economy standard based on its product mix.

Cleaner Small Engines are Safe, EPA Study Concludes

In a report that clears the way for less-polluting gas-powered lawn equipment and watercraft, EPA has concluded that the technology needed to meet potential tougher standards for gasoline engines below 50 horsepower will not increase the risk of fire or burns to consumers. Mandated by Congress, the study was peer-reviewed and developed in coordination with the Consumer Product Safety Commission. Other federal agencies and more than twenty outside experts, including fire marshals and engine manufacturers, were consulted during the study. EPA plans to propose new standards for this class of engines this year.

California Emissions Reduction Plan for Ports and Goods Movement

The California Air Resources Board (ARB) has approved an emissions reduction plan for ports and goods movement. The plan includes an assessment of state-wide health impacts from emissions related to ports and goods movement, and specific actions necessary to reduce those emissions and protect public health. The strategic goals are a reduction in diesel PM from goods movement sources by 85%; reducing South Coast region NOx emissions by 50% by 2020; and extending the strategies state-wide.

SOUTH AMERICA

Colombia sets stricter Air Quality Standards

Colombia's Environment Ministry has issued Decree 979 reducing, by 20 to 50%, the maximum permissible levels for SO_2, NO_2, ozone, and CO in ambient air. It also, for the first time, sets limits for small particles (PM10), with a 24-hour average limit of 150µg/m^3 and

an annual average of 70µg/m^3. In 2009, the annual average limit for particulate matter is to drop to 60µg/m^3 and in 2011 to 50µg/m^3. The new decree specifies that local authorities may set stricter standards if they desire and may impose restrictions on vehicle circulation and industrial processes.

The decree was implemented by Resolution 601, of April 4, which also defines alert thresholds for high pollution levels, stipulates measures to be taken in response, and requires local authorities to measure pollution and "periodically" inform citizens. According to the decree's text, air pollution causes 6040 deaths annually and costs the nation 1.5 trillion pesos (€525 million) annually in medical attention and lost economic productivity.

Peru to reduce Diesel Sulfur by 2010

Peru has published Law 28694 requiring the sulfur content of diesel fuel to fall to 50ppm by 1 January 2010. The law requires the Finance Ministry to begin increasing the excise taxes on diesel fuel from 1 January 2008, with rates based on the sulfur content. The National Environmental Council (CONAM) will determine the "harm level" caused by the varying sulfur contents. Peru currently allows the use of diesel with 5000ppm sulfur.

ASIA-PACIFIC

Beijing Measures to reduce Emissions

Beijing is to introduce vehicle-exhaust monitoring devices to strengthen controls on emissions from the capital's 2.6 million vehicles, which are believed to contribute to around half of the city's ozone pollution, according to the Beijing Municipal Bureau of Environmental Protection. The exhaust-gas monitors will be placed at several key sections in urban areas, mainly along the second and third ring roads. Vehicles exceeding emissions standards will be fined. The monitors will also provide valuable information on the overall situation of exhaust-gas pollution in Beijing, which the Bureau says is fundamental to the study of the city's ozone pollution.

The city is also considering offering financial assistance to owners of private cars which produce heavy pollution for them to purchase new cars whose emissions meet the upgraded standards introduced in late 2005. Meanwhile, around 8000 of the city's old taxis and 2000 buses will be required to have new technology installed that helps cut their emissions.

Korea's Air Pollution at "Serious Level"

Korean air pollution is four times worse than that of other major cities in the world, according to the National Institute of Environmental Research.

The Institute says that the average annual concentration of air pollutants is four times higher than that of London. The annual average concentration of nitrogen dioxide was also found to be nearly twice that of the standard recommended by the World Health Organization. The Institute has urged strong measures to improve air conditions and the establishment of a new standard for allowable benzene levels by 2010.

NO_2 concerns in Australian Road Tunnel

Tests in the M5 East tunnel in Sydney show that pollution inside the tunnel regularly peaks at dangerous levels, 50% higher than when last measured in 2003. The study found that the worst levels are in the middle of the day, when more trucks use the tunnel. Experts say that the problem arises because the tunnel's ventilation system is not designed to cope with the number of vehicles that the tunnel now carries. The State Government has recently admitted it manages pollution by deliberately slowing down traffic to minimise pollution at peak times, often by closing lanes, but the Roads Minister has rejected the study, saying that regular monitoring of air in the M5 East tunnel found it to be safe and within strict air quality standards.

Singapore revises 'Green Plan' to include new Air Quality Targets

Singapore's Ministry of Environment and Water Resources has announced that a review of the national environmental plan has resulted in new targets for the improvement of the city-state's air quality. New goals include reducing atmospheric levels of particulate matter measuring 2.5 micrometers or less (PM 2.5) to an average of 15 micrograms per cubic meter of air by 2014. Current PM 2.5 levels average about 20µg/m^3.

The plan states that authorities will evaluate the need for more stringent emissions standards for vehicles and businesses and will also implement a self-monitoring scheme for heavily polluting industries.

Indonesian Activists seek Phase-out of Leaded Petrol

Representatives of the 'Joint Committee to Phase Out Leaded Gasoline' say that the Indonesian government should immediately end the distribution of leaded gasoline throughout the country to reduce hazardous

air pollution or children will continue to show dangerously high levels of lead in their blood.

Two studies - in Bandung, and Makassar in South Sulawesi - conducted by joint research among KPBB/LIC, Institute Technology of Bandung (ITB), University of Indonesia, Indonesian Moslem University (UMI) Makassar, and YHLI found that lead levels in the blood of school children had reached critical levels of over 10 micrograms per decilitre. 90% of street children aged between 3 and 12 years old in Makassar and 65.5% of elementary students in Bandung had blood lead levels above this figure.

Vietnam to reduce Fuel Sulfur Content

Vietnam plans to cut the sulfur content of diesel and gasoline from 0.5% to 0.05%. The directive takes effect 15 days after publication in the Official Gazette, which went into print on 23 March 2006.

Vietnam plans to adopt more stringent requirements for the emissions of vehicles, starting with Euro 2 emissions standards, from 1 July, 2007. Euro 2 requires 0.05% sulfur and also puts limits on benzene and aromatics content in fuel.

China announces new Car Taxes based on Engine Capacity

China's finance ministry has announced new adjustments to tariffs on cars and motorcycles to motivate buyers towards lower consumption vehicles.

From 1 April 2006 cars will be grouped into seven categories based on engine size instead of the three. Cars with engines over 2 litres will attract a 20% tax in place of the current 8%, while tariffs on cars with engines up to 1.5 litres will be cut from 5% to the 3% rate applicable to sub-1 litre cars. Over 50% of cars in use in China have engines of 1.6- 2.0 litres, while sub-1.5 litre models account for about 30% of the parc. Taxes for small motorcycles with engines smaller than 250cc will also be reduced, from 10% to 3%. There will also be offer tax breaks for owners of hybrids.

Domestic carmakers will pay the fees as soon as the vehicle rolls off the assembly line, and imports will be taxed when they are picked up from customs.

Beijing lifts Bans on Small Cars

The Beijing Traffic Management Bureau has issued a decree scrapping the rule that forbade cars with an engine displacement of less than 1 litre from travelling on Chang'an Avenue and the inside lanes of the Second Ring Road and the Third Ring Road. The only remaining restriction is that the small cars cannot use the inside lane of Chang'an Avenue from 7 am to 8 pm as the bureau hopes to avert overcrowding on the busy road which already has an average traffic flow of 7000 vehicles per hour. Beijing's policy shift follows the central government's requirement to foster small cars that consume less oil and meet environment-protection standards (see AECC Newsletter January-February 2006).

Tokyo to use Sawdust to filter NO_2

The Tokyo metropolitan government is to test a novel system of filtering air in the Metropolitan Expressway's Tokyo Port Tunnel in order to reduce NO_2 and other pollutants. The filters will use sawdust made from cedar trees as the Osaka Environmental Pollution Control Center found that the density of NO_2 and other atmospheric pollutants in karabitsu cedar is lower than that in the air by between 77 and 89%.

Since September 2003, operators of diesel-powered commercial vehicles in Tokyo and Chiba, Kanagawa and Saitama prefectures have been required to install particulate matter reduction devices on vehicles or trade them in for regulation-compliant ones. This has resulted in levels of suspended particulate matter, meeting environmental standards at most exhaust emissions checkpoints along highways in Tokyo in 2004. However, the regulation has made little change to NO_2 pollution, which exceeded standards at 18 out of 34 checkpoints.

Effects of MTBE on Emissions

Two papers from China on the effect of MTBE on emissions were published in the April issues of the journal 'Atmospheric Environment'.

Comparative effects of MTBE and ethanol additions into gasoline on exhaust emissions[2] looks at the effects on catalyst efficiencies and on regulated and unregulated emissions of the addition of ethanol and MTBE in various blend ratios using an EFI (electronic fuel injection) gasoline engine. Their results show that ethanol generally resulted in lower regulated engine-out emissions and formaldehyde than did MTBE, but the effect of ethanol on benzene emissions was worse than that of MTBE. *The investigation of emission characteristics and carbon deposition over motorcycle monolith catalytic converter using different fuels*[3] examines the effects of MTBE-blended gasoline and 10% (v/v) ethanol–gasoline blended fuel (E10) on HC, CO and NOx conversions over three-way catalytic converters using two 4-stroke motorcycle engines over the ECE-40 test cycle. The results show that the influence of E10 on the catalytic conversion is less significant than MTBE-blended gasoline.

[2] Chong-Lin Song et al, State Key Laboratory of Engines, Tianjin University

[3] Li-Wei Jia et al, Key Laboratory for Green Chemical Technology with State Key Laboratory of Engines, both at Tianjin University and Motorcycle Technical Center, Tianjin, PR China

AFRICA

South Africa issues Draft Policy Paper on Environmental Taxes

South Africa is considering the introduction of taxes and other measures to encourage environmental sustainability. A draft policy paper, "A Framework for Considering Market-Based Instruments to Support Environmental Fiscal Reform in South Africa" has been released for public comment by the Treasury.

The report says that "In combination with other measures, such as regulation and voluntary approaches, these [tax] instruments can play a role in meeting current and future environmental challenges."

The document proposes reviewing the existing structures for vehicle licensing fees, fuel taxes, vehicle customs, and excise duties. Customs and excise duties, for example, could be reworked to give incentives for the purchase of more efficient cars and to encourage the use of cleaner fuels.

GENERAL

New WHO Air Quality Guidelines issued

The World Health organisation (WHO) has agreed on updated Air Quality Guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide. The table below summarises the updated guideline levels.

Pollutant	Averaging time	AQG value
Particulate matter PM2.5	1 year	10 µg/m^3
	24 hour (99th percentile)	25 µg/m^3
PM10	1 year	20 µg/m^3
	24 hour (99th percentile)	50 µg/m^3
Ozone, O_3	8 hour, daily maximum	100 µg/m^3
Nitrogen dioxide, NO_2	1 year	40 µg/m^3
	1 hour	200 µg/m^3
Sulfur dioxide, SO_2	24 hour	20 µg/m^3
	10 minute	500 µg/m^3

Effects of Particulate Air Pollution on Blood Pressure

A new paper to be published in Environmental Research[4] assesses the effect of daily concentrations of air pollution on blood pressure in 2612 elderly subjects in the urban area of Bordeaux, France.

Linear regression was used to model the association between concentrations of particles (PM10) measured by local monitoring stations and systolic blood pressure. The authors observed associations between the fifth lag hour and systolic blood pressure for an increase of 10 µg/m^3 of PM10. They say that, fine particles must be considered as a major component of atmospheric air pollution "in which everything must be put into practice in terms of public health actions in order to protect the general population and particularly the elderly group".

[4] Imed Harrabia et al; Université Bordeaux, INSERM, IFR and Institut de Veille Sanitaire, Bordeaux

Study shows that exposure to Ozone may affect Human Reproduction

Recent studies have indicated that exposure to air pollution could have adverse effects on the male reproductive system. To investigate the hypothesis that exposure to fluctuating air pollutants affects sperm parameters, a study of men in Los Angeles by a team of American scientists[5] have analysed semen samples in relationship to temporal exposure to the main air pollutants: ozone, NO_2, CO, and PM10.

The study included semen analysis data from 48 men between 1996 and 1998. Air quality data was collected for ten-kilometre grid areas during the same two-year period and donors were assigned a grid location based on their address at the time of their first donation. The researchers examined the relationship between each semen sample and the air quality at 0-9, 10-14, and 70-90 days prior to its collection.

The results show significant decline in sperm quality with exposure to ozone air pollution. The researchers found negative correlations between ambient ozone levels and sperm concentrations at all biological time periods studied, suggesting that spermatozoa are susceptible to this pollutant throughout their whole period of formation and development. Ozone was the only pollutant linked to decrease in sperm concentrations, implicating ozone as a reproductive toxicant. No similar associations were found for the other air pollutants considered. Although the mechanisms behind the reproductive toxicity of ozone remain unknown, the authors argue that ozone exposure may trigger an inflammatory reaction in male genital tract or the formation of circulating toxic species which could disrupt testicular function and cause decline in sperm concentration.

[5] Sokol et al, Exposure to Environmental Ozone Alters Semen Quality; Environmental Health Perspectives 114 (3):360-365

Drop in Fine Particulate Air Pollution is linked to reduced Mortality

Reductions in fine particulate air pollution do seem to translate into a survival benefit on a population level, researchers have shown. The drop in mortality was observed specifically for deaths due to cardiovascular and respiratory disease and not from lung cancer.

A direct link between death rates and small airborne particles of 2.5 microns in diameter or less (PM2.5) has been noted in numerous epidemiological studies, but it was unclear if improvements in particle exposure would actually lead to better survival. Dr. Francine Laden and her team from Harvard Medical School in Boston have analysed data for 8 additional years of follow-up from the Harvard Six Cities study, during a period when air pollution was declining in many of the cities studied. Consistent with previous findings, the overall mortality in those cities rose steadily with each increase in PM2.5 of 10µg/m^3. As PM2.5 levels fell during follow-up, so did overall mortality. The results suggest that increases in mortality related to PM2.5 are "at least in part reversible," the researchers conclude in a report in the American Journal of Respiratory and Critical Care Medicine.

The follow-up study found that an average of 3% fewer people died for every reduction of 1µg/m^3 in the average levels of PM2.5, equivalent to saving 75 000 people per year in the US. The largest drops in mortality rates were in cities with the greatest reduction in fine particulate air pollution. The findings remained valid after controlling for the general increase in adult life expectancy in the US during both the original and follow-up study periods.

Report on Interaction of Fine Particles and Nanoparticles with Red Blood Cells

A new report on 'Interaction of Fine Particles and Nanoparticles with Red Blood Cells Visualized with Advanced Microscopic Techniques' has been published in Environmental Science and Technology by co-authors from the Institute of Anatomy, University of Bern, Switzerland; the Department of Physiology and Biophysics, University of Calgary, Canada; and the Department of Veterinary Anatomy, University of Bern, Switzerland.

The entering and localisation of different nanoparticles consisting of differing materials and of different charges were studied in human red blood cells, chosen as a model for nonphagocytic cells to study how nanoparticles penetrate cell membranes. By using differing microscopic techniques, the researchers were able to visualise and detect particles ≤0.2µm and nanoparticles in red blood cells. They found that the surface charge and the material of the particles did not influence their entering. The results suggest that particles may penetrate the red blood cell membrane by a still unknown mechanism different from phagocytosis and endocytosis.

FORTHCOMING CONFERENCES

Engine Expo 2006

9-11 May 2006, Stuttgart, Germany

NEW Diesel Particulates and NOx Emissions (Leeds University Short Course)

15-19 May 2006, Leeds, UK

Details at:
http://www.engineering.leeds.ac.uk/cpd/AutoDieselParticulatesUK.shtml

This course concentrates on the engine technology for low emissions, their fuel requirements and after-treatment techniques. It does not cover the details of the particulate measurement and analysis techniques, which are fully covered in the companion short course on Engine Emissions Measurement. It does, however, cover particle size analysis and problems with the US heavy-duty transient test with very low emission diesel engines.

3. Emission Control in Dresden

18-19 May 2006, Dresden, Germany

Hart World Refining & Fuels: Clean Energy & Fuels Conference

30 May - 1 June 2006, Brussels, Belgium

Topics will include Energy Trends & Developments in Asia, Russia, Africa/Middle East, New EU 25 Fuel Policy Developments, Progress on Central & Eastern European Regional Implementation of Fuel Quality Policy, Options to Meet the EU's Diesel Shortage, The Latest on Automotive Emissions Policy & Technology Trends, and Euro 5, CARS 21 & Predicted Fuel Policy Outcomes.

Le Moteur Diesel: Challenge faible CO_2 et Réduction des Emissions
Diesel Engines: The Low CO_2 and Emissions Reduction Challenge

31 May - 1 June, Lyon, France

This event is intended to provide the opportunity for experts from the automotive, heavy-duty and industrial vehicles industries, parts manufacturers, oil industry and research laboratories to exchange opinions and information on the potential of the diesel engine as a low CO_2-emissions engine of the future.

Euro Oil & Fuel 2006: Euro IV – Influence of Emission Limits on Demands Modification made for Engines, Fuels and Oils

7-8 June 2006, Cracow, Poland

Details at: http://www.itn.com.pl/pages/oil_fuel_ang.php

Planned thematic sessions cover fuels and additives, engine oils, engine development and exhaust aftertreatment systems – technical solutions and future requirements.

8th Highway and Urban Environment Symposium

11-14 June 2006, Nicosia, Cyprus

Details at: http://www.ags.chalmers.se/hues/

The aim of the symposium is to provide a forum for recent research and development on all aspects of the highway and/or urban environment. Organisers: Chalmers University of Technology, Sweden; the Cyprus Institute, Cyprus.

Transport Research Arena Europe 2006

12-16 June 2006, Gothenburg, Sweden

Details at: http://www.traconference.com/

The objective of this conference is to establish an event for the alignment of the road transport research and development stakeholders. Parallel sessions include one on energy, environment and resources covering low-emissions vehicles, the need for combustion systems including advanced emissions control systems and further development of nanotechnologies that have the potential to deliver more effective catalyst materials.

2nd International Symposium 'Environment & Transport' including 15th Conference on Transport and Air Pollution

12-14 June 2006, Reims, France

Details at:
http://www.inrets.fr/services/manif/env-trp2006/index.e.html

The themes will be evolution of transport systems, perception of the environment, the impact of transport on populations and ecosystems, the place of the environment in the concept of sustainable development, methods of evaluation, control methodologies and political scenarios for transport.

Particles in Europe

13-14 June 2006, Antwerp, Belgium

More info at www.aamg-rsc.org or e-mail conference@aamg-rsc.org

Conference with Posters and Exhibition arranged by the Automation and Analytical Management Group - Royal Society of Chemistry, UK and sponsored by the Flemish Environment Agency VMM, Belgium.

The conference will create an opportunity to present recent developments in monitoring strategies, requirements and analytical techniques to industry, the scientific community and public authorities. Delegates can expect papers covering the monitoring of the major particulates involved and their effects on air quality in the rural and urban environment will be discussed.

NEW ENGINE EMISSIONS MEASUREMENT (Short course)

26-30 June 2006, Leeds, UK

The short course covers regulated emissions measurement procedures and transient emissions; diesel particulate measurement and non-regulated emissions; diesel particulate analysis; and advanced analytical techniques for emissions measurement.

Euro 5&6 Conference & Exhibition – Global Diesel Emissions Strategies

28-29 June 2006, Amsterdam, the Netherlands

More from http://www.integer-research.com/

NEW Diesel Partikel Filter/Diesel Particulate Filter

11-12 July 2006, Munich, Germany

Details at: http://www.car-training-institute.com

The main topics will be: The legal framework - what future ceilings can be expected?; Expectations of diesel particulate filters - how to guarantee reliability; Innovative filter materials - properties, uses and behaviour; Retrofitting particulate filters - experience, test results and developments; Experience with diesel particulate filter as a standard equipment in passenger cars.

10th ETH Conference on Combustion Generated Nanoparticles

21-23 August 2006, Zurich, Switzerland

Details at: www.nanoparticles.ethz.ch

The conference will again provide a forum for the discussion of new scientific findings on combustion-generated nanoparticles, and new methods to characterise such particles for research, automobile type-approval and engine diagnostics. Moreover, it is intended to discuss emissions control of IC-engines and progress in particle filtration from exhaust gases, as well as health effects and effects on climate.

Abstracts for papers and posters by 29 May 2006.

CAPoC 7 – 7th International Congress on Catalysis and Automotive Pollution Control

30 August - 1 September 2006, Brussels, Belgium

Details at:
http://www.ulb.ac.be/sciences/cpmct/capoc7/index.html

All topics related to applications and requirements of catalysis in automotive emissions control will be considered: catalyst technologies (TWC, lean-burn of gasoline and diesel, cold start emissions); fuel cell catalysis; materials for catalysts, washcoats and fuel-borne catalysts; particulate emissions control; NOx emissions control under lean conditions; modelling of aftertreatment systems; unregulated pollutants; integrated emissions control systems, on-board diagnostics; alternative fuel technologies and innovative technologies (new materials, recovery of precious metals, sensors).

AVL Kongress: Motor und Umwelt

7-8 September 2006, Graz, Austria

European KONES 2006: International Scientific Congress on Powertrain and Transport Means

10-13 September 2006, Nalezow, Poland

The latest achievements in engine research, development and design with special attention to biofuels, ecology, injection and spray, combustion processes, exhaust aftertreatment, particulate filters, durability and reliability, and catalysis.

Global Powertrain Congress 2006 World Powertrain Expo

19-21 September 2006, Novi, Michigan, USA

Technical programmes include Combustion, Emissions and Performance; Hybrids; and Natural Gas and Biofuels.

AVECC 2006 Asian Vehicle Emissions Controls Conference

20-23 September 2006, Goa, India

'On invitation only' Conference jointly organised by ECMA, MECA and AECC

As with previous AVECCs in 2001 (Thailand) and 2004 (China), AVECC 2006 is a technical symposium that will bring together experts from regulatory agencies, industry, and academia in Asia and around the world to share information and ideas on motor vehicle emissions control technology developments and experience.

2nd Advanced Powertrain Control Symposium

September 2006, Birmingham, UK

Details from: enquiries@tic.ac.uk

FISITA World Automotive Congress 2006

22-27 October 2006, Yokohama, Japan

Details at: http://www.fisita2006.com

World Refining & Fuels Conference Asia 2006

7-9 November 2006, Beijing, China

Details at:

http://www.worldfuelsconferences.com/2006eventas.html

Small Engine Technology Conference

13-16 November 2006, San Antonio, Texas, USA

The conference theme is "Future Trends in Small Engine Technology to Satisfy Long-Term Demands" and topics include advanced combustion, environmental impacts and HCCI (Homogeneous Charge Compression Ignition).

IFQC Technology & Policy Briefing

16 November 2006, Paris, France

NEW Spark Ignition Engine Emissions (short course)

20-24 November 2006, Leeds, UK

Details at: http://www.engineering.leeds.ac.uk/cpd

The course covers emissions and combustion fundamentals; sources of emissions in SI engines; catalytic control of emissions; fuel composition effects; and future engine design for low emissions.

Symposium on International Automotive Technology (SIAT2007)

17-20 January 2007, Pune, India

Details at: http://www.araiindia.com/html/SIAT2007.jsp

Topics include engine and powertrain, emissions (Euro 3 and beyond), emissions inventory and ambient air quality, inspection and maintenance programmes and global harmonisation of standards.

5th International CTI Forum Exhaust Systems

29-31 January 2007, Nürtingen, Germany

Details at www.abgastechnik-forum.com

The forum will cover exhaust aftertreatment for diesel engines and spark ignition, future emissions legislation, liquid and solid urea SCR-systems, diesel particulate filters, in-engine emissions reduction and particulate and soot measurement technology.