



Newsletter

November - December 2005

INTERNATIONAL REGULATORY DEVELOPMENTS

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EUROPE

Commission's Euro 5 Light-Duty Emissions Proposals published

On 21 December 2005 the European Commission adopted a proposal for new Euro 5 standards for light-duty vehicles. The proposal will now enter the co-decision process involving the Council (Ministers of the EU Member States) and the European Parliament.

As anticipated from the earlier Internet consultation draft, the proposal is for a Regulation, not a Directive. This implies immediate Community-wide application in all EU Member States after publication. The Commission is to use the 'Split Level' approach in which the current proposal contains 'political' items such as limit values and durability; technical details will be developed between the Member States and the Commission and published as a separate but complementary document.

The main elements are:

- for Diesel cars: an 80% reduction in particulate matter (PM) emissions to 5 mg/km (these new limits should lead to the introduction of particulate filters on all new diesel cars) and a 20% reduction in nitrogen oxides (NOx) emissions to 200 mg/km;

- for petrol cars: a 25% reduction in emissions of NOx and HC to 60 and 75 mg/km respectively, and a new 5 mg/km PM limit for lean-burn direct injection cars;
- for vans: a 90% reduction in PM emissions to 5 mg/km and a 20% reduction in NOx; and
- for SUVs: the removal of an exemption that enabled heavy passenger vehicles (over 2500kg) to be type approved to light commercial vehicle standards.
- 160000km durability testing for Type Approval (In-Use Compliance remains at 5 years or 100000km).
- implementation 18 months after the regulation enters force for new approvals, 36 months for all types.

The proposal foresees a review of the PM measurement procedure on completion of the UN's GRPE PMP programme and introduction of a Particle Number standard.

The explanatory memorandum says that in 2009 the Commission intends to review the issue of further improvements of emissions with a view to proposing a further significant reduction of limit values (including NOx) that reflect the development in vehicle emission technology at that point in time and cost-effectiveness.

The table below shows the proposed Euro 5 limits:

Category	Class	Reference mass (RM) (kg)	Limit values											
			Mass of carbon monoxide (CO)		Mass of hydrocarbons (HC)		Mass of oxides of nitrogen (NO _x)		Combined mass of hydrocarbons and oxides of nitrogen (HC + NO _x)		Mass of particulates (PM)		Number of particulates ⁽¹⁾ (PM)	
			L ₁ (mg/km)	L ₂ (mg/km)	L ₂ (mg/km)	L ₂ (mg/km)	L ₃ (mg/km)	L ₃ (mg/km)	L ₂ + L ₃ (mg/km)	L ₂ + L ₃ (mg/km)	L ₄ (mg/km)	L ₄ (mg/km)	L ₅ (#/km)	L ₅ (#/km)
PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI ⁽²⁾	CI	PI	CI	
M	—	All	1000	500	75	—	60	200	—	250	5.0	5.0		
N ₁	I	RM • 1305	1000	500	75	—	60	200	—	250	5.0	5.0		
	II	1305 < RM • 1760	1810	630	100	—	75	260	—	320	5.0	5.0		
	III	1760 < RM	2270	740	120	—	82	310	—	380	5.0	5.0		

Key: PI = Positive Ignition, CI = Compression Ignition

(1) A number standard is to be defined at a later stage.

(2) Positive ignition particulate mass standards apply only to vehicles with direct injection engines that operate either partially or wholly in lean burn mode.

The proposal is at: <http://europa.eu.int/comm/enterprise/automotive/directives/proposals.htm>

First reactions have come from environmental organisations and the motor industry. The European Environmental Bureau said that the proposal is very late and much too weak. The European Federation of Transport and the Environment (T&E) compared the proposed diesel NOx limits to those in the US and said that if the proposals are approved "Europe will now reserve its cleanest cars for a foreign market

while at the same time Member States are struggling to achieve their EU air quality targets".

The European automobile manufacturers association (ACEA) said that the European Commission had failed to address their concerns and claimed that the proposed 25% reduction in gasoline NOx limits is both challenging and costly. ACEA says that the proposed 18-month lead time is insufficient for the industry to

bring the new technology into full production and at least 3 years is required.

Technical part of Heavy-Duty 'Split Level' Euro IV/V Directive published

The 'technical' part of the 'split level' heavy-duty emissions directive has now been published as Commission Directive 2005/78/EC.

This Directive contains the technical annexes and information needed to complement the Directive (2005/55/EC) which set the key issues such as limit values and dates. Both Directives concern issues such as OBD (including requirements for SCR systems) and durability. The Euro IV & V limit values set by previous directives are reiterated. The new directives give a full consolidation of the previous directives, so it is now only necessary to refer to 2005/55/EC and 2005/78/EC to have a full set of current heavy-duty requirements.

Emissions-related Road Tolls agreed

The European Parliament and the Council of Ministers have reached agreement on the 'Eurovignette' Directive on road tolls for the trans-European road network. The Directive now includes a requirement that from 2010 EU states must vary charges for lorries according to their Euro emissions class. In addition, from 2012 charging will apply to vehicles over 3.5 tonnes rather than the current limit of 12 tonnes.

Commission wants to promote Clean Vehicles

The European Commission proposed new legislation (COM(2005)634) on 21 December aimed at contributing towards the creation of a market for clean vehicles in order to reduce pollutant emissions in the transport sector.

The proposed Directive will oblige public bodies to allocate a minimum quota of 25% of their annual procurement (purchasing or leasing) of heavy-duty vehicles (including buses and most utility vehicles, such as refuse trucks) to 'Enhanced Environmentally friendly Vehicles (EEV)' as defined in the new European Directive 2005/55/EC. The aim is to establish a viable market by creating sufficient demand to generate economies of scale.

For buses, public procurement represents about one third of the whole market; for other heavy-duty vehicles, public procurement represents 6% of the total market. The number of vehicle procurements covered by this Directive is about 52000 in total, split into 17000 buses, and 35000 other heavy-duty vehicles (e.g. garbage trucks). A quota of 25% clean vehicles from the total corresponds to 13000 vehicles

per year. The total extra cost arising from the obligation to buy cleaner vehicles is estimated at 1,61M€ over 15 years. The benefit for society consists in a reduction of damage from the emissions of pollutants and greenhouse gases, estimated at 1,05M€, and a reduction of overall "well-to-wheels" energy consumption of about 870M€.

Pilot Programme on Portable Emissions Measurement Systems (PEMS)

For heavy-duty vehicles it is not practical to use an in-use conformity checking scheme which requires extraction of engines for emissions testing against the legislative limits. The European Commission has therefore been running a programme with heavy-duty manufacturers and instrument suppliers to evaluate the application of Portable Emission Measurement Systems (PEMS) for this application.

One outcome has been the development of a test protocol for measuring gaseous emissions using this equipment. Work on adapting the protocol for particulate matter using PEMS is ongoing. As a next step in the development of the PEMS approach, the Commission is now considering a pilot programme to further evaluate the suitability of using PEMS for in-use compliance procedures for heavy-duty vehicles. The programme will assess the suitability of the instrumentation and of the test protocol developed by the EU's Joint Research Centre (DG JRC). The objective would be to help decide whether to include the PEMS approach in vehicle type approval legislation for Euro VI, although it may be feasible for earlier partial introduction with Euro V.

The first phase of the work, which should start in 2006, will cover gaseous emissions, with particulate emissions testing following at a later stage.

Report on Light-Duty Euro 5 Questionnaire published

The EU's Expert Panel summary of stakeholders' responses to the European Commission's light-duty Euro 5 questionnaire has now been released.

Three main tables showing the outcomes are presented. Table A, for CI engines shows the costs ranging from €98 to €2110 depending on the emissions scenario and vehicle size. Table B shows similar data for SI λ 1 engines, with costs ranging from zero to a maximum of €369 (for an engine of over 2 litres in the maximum technology column of the most stringent scenario). Table C shows the data for SI lean engines. In this case the cost range is from €3 (small engine, least stringent emissions requirement, minimum technology route) to €359 for large engine

requiring maximum technology to meet the most stringent NOx levels of 24 mg/km.

Denmark increases Diesel Filter Subsidy

DKr300m (€40.2m) in subsidies for diesel particulate filters heads the list of environmental initiatives in Denmark's 2006 budget agreed on 7 November. The Environment Minister said that the measure is intended to ensure that fitting filters will not increase costs for consumers.

Dutch Particle Filter Subsidies extended

The Dutch government has announced that it will pay up to 80% of the costs of fitting fine particle filters to all diesel cars. A subsidy of €600 was already introduced for new cars in June 2005. According to Dutch media reports, the government is extending the scheme in pursuit of a goal to have particle filters on one-third of diesel cars on Dutch roads by 2008. The Environment Ministry is also preparing legislation to enable city councils to charge lower parking fees for cleaner cars.

The Netherlands "to miss Air Quality Limits by a Decade"

According to the Dutch environmental assessment agency (MNP) the Netherlands will miss, by a margin of ten years, binding EU targets for 2010 to curb particulate and nitrogen oxide air pollution.

The prediction comes in an assessment of the national implications of the EU's CAFÉ air quality strategy. Launched last month, CAFÉ groups together existing air quality targets for 2010, sets ambition levels for further cuts by 2020 and sets out possible policies to achieve them.

Even if all measures envisaged by CAFÉ are introduced, the Netherlands will still be unable to bring ambient concentrations of particulates to levels agreed through the EU in 1999, the agency concludes. "With the ambition level in the strategy, the 2010 concentration cap is not probable until 2020," the MNP says. Concentration limits for nitrogen dioxide (NO₂) will also be exceeded until 2020 unless the European Commission tightens proposals released in July to cut emissions from cars and vans under the Euro 5 initiative, the report says.

Swiss Campaign for obligatory Diesel Particulate Filters

The Transport and Environment Association, the Swiss Lung League and the trade union 'Unia' have called for all new diesel vehicles imported into Switzerland to be fitted with particulate filters.

Diesel emissions in Switzerland account for 40% of all fine particles released by traffic. According to a study by the Federal Spatial Development Office, more than 3,700 premature deaths annually are connected to particles released by diesel engines.

Currently, an estimated 30% of diesel imports have filters. The campaigners claim that a general requirement for particulate filters could be introduced easily and rapidly. It is already obligatory for large and medium-sized construction machines to be fitted with filters in Switzerland.

Swiss Study on Motorcycles Emissions

A study from the Swiss Research laboratory EMPA indicates that both two- and four-stroke motorcycles collectively emit 16 times more hydrocarbons and three times more carbon monoxide than cars. The researchers were particularly concerned over the levels of hydrocarbons emitted by powered two-wheelers. These vehicles are claimed to produce more harmful exhaust emissions per mile than cars or even large SUVs.

The study's authors, Ana-Marija Vasic and Martin Weilenmann, note that since motorcycles are not a primary means of transport in most developed countries, their contribution to emissions has been underestimated in legislation, giving manufacturers little motivation to improve after-treatment systems. The study is to be published in the January issue of the American Chemical Society's journal 'Environmental Science & Technology'.

European Motor Industry Commercial Vehicle Environment Event

ACEA, the European vehicle manufacturers association, hosted a one-day conference devoted to commercial vehicle-related environmental issues in Brussels on 24 November 2005.

In his key-note speech Environment Commissioner Stavros Dimas said that road transport is still a major burden for health and environment in Europe. He said that the Clean Air For Europe (CAFÉ) programme indicated that existing heavy-duty Euro IV & V legislation will not be enough for 2020. National states will be confronted with NO₂ and ozone ceilings and so a Euro VI standard is needed. Mr Dimas added that real-world emissions have to be addressed by legislation. Type Approval will need to consider issues like chip-tuning. Road pricing could help stimulate demand for Clean Vehicles by differential charging based on emissions levels.

The UK Department for Transport said that UK data indicate that heavy goods vehicles are the main contributor to urban NOx now and in future. Likely

objectives for Euro VI would include a reduction of at least 50% in NO_x from Euro V; new limits for ultra-fine particles (as all vehicles operating in urban areas must have DPFs); consideration of limits on presently non-regulated emissions (e.g. NO₂); and introduction of the UN-GRPE's WHDC procedure with emissions limits correlated to existing cycles.

Dr Schulte-Braucks, Head of the Automotive Unit of DG Enterprise, said that key drivers for future HDVs emissions are the environmental and the health impact of air pollution. He stressed the importance of the relation with UN-ECE due to the future implementation of worldwide harmonised test procedures. In conclusion, Dr Schulte-Braucks said that Euro VI is likely due in 2006-2007 and Global Technical Regulations (GTRs) developed in UN-ECE could make harmonisation possible.

Launch of AdBlue Website

The leading truck and bus manufacturers in Europe with suppliers of AdBlue SCR reagent and oil companies are the sponsors of a new free AdBlue information website www.findadblue.com.

FindAdBlue.com will help drivers and fleet operators across Europe to quickly find the closest filling station offering AdBlue, or to find a suitable supplier of AdBlue for the home depot. The service will be offered in 10 languages from December 2005 and will cover the EU and neighbouring countries. It will display interactive maps and driving directions indicating suitable filling stations. The primary research is provided by Integer Research. Information will be updated monthly as AdBlue infrastructure develops.

New EU 'Urban Audit' Website provides Environment Data on 258 Cities

The European Commission has launched the EU's new Urban Audit website. The site brings together a wide range of indicators on life in 258 cities in the 25 Member States and Bulgaria and Romania.

It allows a direct comparison of factors including environmental and transport parameters for the listed cities. The site currently includes information from 1991, 1996 and 2001. The Urban Audit will be updated in 2006 with results from 300 cities and the new results will be published in 2007, and will then be updated every 3 years.

Data can be by country, by city size or for EU15, EU27 etc. The environment section of the site provides information on CO₂, CO, VOC, NO₂, methane and SO₂ emissions; smog, NO₂ and PM exceedances and CO₂ emissions per capita. The data is available at <http://www.urbanaudit.org/>.

EU launches Shipboard Air Pollution Monitoring Station

The European Commission and the Italian shipping line "Costa Crociere" have launched an automatic air pollution monitoring station on board the Ship "Costa Fortuna" which follows a regular route in the western Mediterranean basin during spring, summer and autumn. The station will provide new information on over-sea measurements and improve understanding of the effects of pollution on climate change.

NORTH AMERICA

New US Durability Test Requirements

The US Environmental Protection Agency (EPA) has issued two actions related to vehicle emissions durability testing procedures.

The first is a final rule that establishes two test methods to demonstrate that vehicles will continue to meet the emission standards throughout the required useful life period (120000 miles in most cases). This rule has been issued as a result of a court mandate following a petition from Afton Corporation (formerly Ethyl Corporation) to reconsider EPA's existing durability regulations. The two methods are a whole vehicle driving cycle and a high temperature engine dynamometer cycle for rapid aging of emission components. Manufacturers can continue to use customised, proprietary catalyst aging procedures provided they are approved in advance by EPA.

EPA has also issued a supplemental proposal giving 3 options for testing the durability of vehicle emissions-related components, such as oxygen sensors and catalytic converters. The first option retains the current EPA process of allowing manufacturers to use good engineering judgment, such as computer modelling, test data, or other established methods to demonstrate component durability. The second would also require the manufacturers to submit whole vehicle testing data for a worst-case vehicle configuration and the third option is similar but would only require the whole-vehicle worst-case data to be submitted when a new type of component or a new technology is being introduced.

California Guidance on Use of Biodiesel with Retrofit Devices

The California Air Resources Board (ARB) has issued a guidance note on use of biodiesel blends with retrofit devices. Senate Bill 975 allows solid waste collection vehicles to use diesel that contains 20% biodiesel (B20) with retrofit devices, whether or not the fuel is verified for use with those retrofit devices.

The guidance states that operators should be aware that if the retrofit is not verified as compatible with B20 the manufacturer will not be responsible for non-performance of their device on B20 and there will be no requirement for the manufacturer to carry a warranty on the device. Currently, there is only one device verified as compatible with B20.

California withdraws proposed new Regulations for Large SI Engines

The California Air Resources Board (ARB) has announced that it will not proceed with the adoption of new emission standards and test procedures for new 2007 and later off-road Large Spark-Ignition (LSI) Engines and the proposals have been withdrawn. The proposals included requirements for fleet users of such equipment, and verification procedures for retrofit. Instead, the ARB will be undertaking a new rulemaking that includes revised fleet requirements, standards and test procedures in the near future. The test procedures will be based on the Federal Regulations finalised in July 2005, but which are likely to be modified to incorporate ARB elements.

Canada proposes Amendments to On-Road Motorcycle Emissions Standards

Environment Canada has published proposed amendments to the On-Road Vehicle and Engine Emission Regulations. The proposals will set new standards, aligned with US requirements, for motorcycles with engines smaller than 50cc.

The current Canadian regulations incorporate US emissions standards by reference to the US Code of Federal Regulations, so new US standards for 2006 and later model year on-road motorcycles in classes I to III are automatically incorporated as Canadian standards. However, current Canadian regulations do not set limits to control emissions from motorcycles with engine displacement of less than 50cc. The proposed amendments will remove the exclusions for those of <50cc and for vehicles that cannot start from a dead stop using only the engine. Consistent with the new US rule, vehicles with a displacement below 50cc will be considered to be 'Class IA' motorcycles, with a useful life of five years or 6000 kilometres.

Environment Canada says that motorcycle emissions can be an important source of air pollution, given that these vehicles are often used in urban areas during periods of warm weather associated with the formation of ground-level ozone and smog.

California Adopts Port and Ship Emissions Reductions Regulations

The California Air Resources Board (ARB) has adopted two measures to reduce emissions from port-based cargo-handling equipment and auxiliary diesel engines on ocean-going vessels.

The first regulation requires cargo-handling equipment such as yard trucks and container handlers to use Best Available Control Technology (BACT) to reach 2007 or later on-road, or final Tier 4 off-road emissions standards (0.2 g/bhp-hr NO_x; 0.01 g/bhp-hr PM) either through the purchase of new equipment or through the retrofitting of existing engines.

The second regulation requires the use of marine diesel oil with a 0.5% sulfur limit from 1 January 2007, decreasing to 0.1% by 1 January 2010. This is intended to reduce emissions of diesel PM, NO_x, and sulfur oxides on ocean-going vessels within 24 nautical miles of the California coast.

US EPA proposes new ambient PM Limits

The US Environmental Protection Agency (EPA) has now proposed stricter daily limits for fine particles of 2.5µm diameter or smaller (PM_{2.5}). The current standard sets an annual exposure limit of 15µg/m³ and a daily exposure limit of 65µg/m³.

EPA proposes reducing the daily limit to 35µg/m³ whilst retaining the current annual limit. An expert panel had recommended tightening the annual limit to 14µg/m³ and the daily limit to 30µg/m³, but environmental and health groups have proposed an annual standard of 12µg/m³ which has been recommended by some Northeast states and adopted by California. EPA is also deleting the limit for PM₁₀, because they believe the rules for smaller-sized soot particles are more effective.

California Report on PM Control for On-Road Heavy-Duty Diesel-Fuelled Vehicles

California ARB has released its Staff Report on the proposed regulation to control diesel emissions from on-road heavy-duty diesel-fuelled vehicles owned or operated by public agencies or utilities. The proposed regulation would require municipal and utility vehicle owners to reduce diesel particulate matter (PM) emissions from 1960 to 2006 model year on-road, heavy-duty diesel vehicles. The regulation excludes emergency vehicles, solid waste collection vehicles, school buses, and transit buses.

The core of the proposal is a requirement to install Best Available Control Technology (BACT) to achieve diesel PM emission reductions. Compliance with this requirement could be met with four different options:

- 1) a diesel engine or power system that is certified to the 0.01 g/bhp-hr particulate emission standard;
- 2) an engine or power system that is certified to the 0.1 g/bhp-hr particulate emission standard in conjunction with the highest level verified diesel emissions control strategy (DECS);
- 3) an alternative fuel engine, heavy-duty pilot ignition engine or gasoline engine; or
- 4) use of the highest level DECS verified by ARB for a specific engine. A Level 1 DECS is acceptable only if it is the only option available for the engine.

Two implementation schedules are proposed for this regulation. The first is for all municipalities or utilities and starts its phase-in on 31 December 2006 and ends on 31 December 2011. The second is an optional schedule that a municipality or utility located in specified low population areas can follow. It starts its implementation on 31 December 2008 and is completely phased-in by 31 December 2017.

US EPA updates OBD Requirements

The US Environmental Protection Agency (EPA) has finalised rules designed to clarify and update its existing vehicle On-Board Diagnostic (OBD) programme. The OBD clarifications will allow manufacturers of passenger vehicles, trucks and heavy-duty engines to choose one OBD system to satisfy federal and California state requirements.

US Evaporative Emissions Rules updated and clarified

EPA has also finalised amendments to provisions of its evaporative emissions regulations. The final amendments will streamline the evaporative emissions test procedures for cars, trucks, pickups, minivans, SUVs and larger trucks up to 14000 pounds, and will harmonise EPA and California's evaporative emissions test procedures. In addition, the amendments will allow vehicle manufacturers and EPA to use more advanced testing equipment to test four-wheel and all-wheel drive vehicles.

Massachusetts retrofitting Construction Equipment

EPA has presented \$120000 to the Commonwealth of Massachusetts to install pollution controls on equipment used in construction projects. The grant will support the "Greater Boston Breathes Better" initiative, a new partnership of EPA, the Commonwealth of Massachusetts, the City of Boston and local businesses and organisations.

To address the problem of diesel emissions at construction sites, the Massachusetts Highway Department and the Massachusetts Bay

Transportation Authority have established requirements for the use of retrofitted equipment in all construction projects. In addition, the Division of Capital Asset Management will establish a retrofit pilot programme in an upcoming construction project.

Two-wheelers blamed for Bermuda's poorer Air Quality

Scientists participating in a forum on sustainable development in Bermuda said that although the island's air quality is still generally good, it is suffering from the high number of vehicles on the roads. East Broadway was reported to be the most polluted spot in Bermuda. Since 2000 the amount of airborne particles there has crept up and was claimed to have exceeded the safe limit, even surpassing the annual measurements of air pollution in some European cities. Much of the pollution was said to be coming from the high numbers of scooters and auxiliary cycles on Bermuda's roads. Bermuda has the second highest proportion of motorcycles in the world, exceeded only by India.

EPA Clean Diesel Grants

The US Environmental protection Agency (EPA) has announced the recipients of grants totalling over \$1 million to support clean diesel projects. As part of the National Clean Diesel Campaign, the value of the grants will increase to \$3 million with industry partners' contributions. The grants seek to reduce emissions from non-road engines, such as those used in construction and on port docks. Some of the technologies that will be implemented in the projects include the use of cleaner fuels, emission control devices (e.g. diesel oxidation catalysts and diesel particulate filters) and engine replacement.

Changes to EPA Fuel Additive Programme

EPA's gasoline deposit control programme (established in 1996 to ensure that US gasoline contains detergent additives to reduce tailpipe emissions) has been amended to improve compliance and maintain its environmental benefits. The minor revisions include clarification of maximum concentration levels of fuel deposit control additives and changes to reporting requirements.

US Renewable Fuel Regulations

The US EPA Administrator has signed the regulation on Renewable Fuel Standard Requirements for 2006. The rule will require that, overall, 2.78% by volume of gasoline sold or dispensed to consumers in the US in 2006 be renewable fuel. EPA believes that sufficient

ethanol will be available to meet this requirement. For 2007 and beyond, EPA will develop more detailed requirements with a rising volume of renewable fuel and including reporting requirements and a credit trading programme.

EPA Adopts Amendments to Aircraft Engine Emission Standards

EPA is amending its existing emission standards for nitrogen oxides (NO_x) for new commercial aircraft engines. Nearly all aircraft engines previously certified or in production already meet or exceed the new standards, which will apply to engines used on commercial aircraft for small regional jets, single-aisle aircraft, twin-aisle aircraft, and 747s and larger aircraft. This brings US standards into line with international standards that became effective in 2004.

States adopt California Greenhouse Gas Emission Regulations

Connecticut, Maine, Massachusetts, New Jersey, Rhode Island and Vermont have adopted California's light-duty greenhouse gas emission regulations.

These regulations phase in from the 2009 model year and require light-duty vehicles to meet increasingly lower emissions of carbon dioxide-equivalent emissions through to 2016. The standards will be met primarily through improved fuel economy (lower CO₂), but also through controlling other sources of GHG emissions such as those from vehicles' air conditioning systems. The average reduction of GHGs will be about 22% in 2012 and about 30% in 2016, compared to today's vehicles.

The motor industry is currently challenging California's authority to adopt these regulations in court based on the argument that these standards essentially dictate vehicle fuel economy, a parameter that can only be regulated by the federal government.

SOUTH AMERICA

Chile: Santiago initiates Project for Diesel Truck Retrofits

The commitments made under the environmental chapter of the US – Chile Free Trade Agreement include eight projects to advance sustainable development. Among the initiated projects is a pilot project to retrofit a fleet of diesel trucks in Santiago and to demonstrate the technologies and strategies to achieve significant diesel emission reductions.

Colombia: Bogotá Mayor Unveils Measures to Lower Emissions

In response to a report by the Colombian capital's Environmental Department (DAMA) the mayor of Bogotá has announced new measures to mitigate air pollution. The DAMA report found that in some districts levels of suspended particulate matter exceed standards. DAMA attributed 78% of the contamination to vehicles and 12% to industrial sources.

The mayor did not adopt DAMA's recommendation for stricter controls on rush-hour traffic, but said steps would be taken to scrap older buses and strengthen vehicle emissions inspections. The administration is also supporting DAMA recommendations to increase the number of air quality monitoring stations, step up spot checks on vehicles, provide subsidies for those who use environmentally friendly fuels, and undertake publicity campaigns. The mayor will announce further measures when the city holds its annual "No Car Day" in February 2006.

ASIA PACIFIC

Beijing adopts Tighter Vehicle Standards

The State Council of China has approved the implementation of State Phase III and IV vehicle emissions standards (similar to Euro 3 and 4) in Beijing from 30 December 2005.

From that date Beijing will apply Phase III requirements for light-duty gasoline and gas-fuelled vehicles and for heavy-duty diesel engines and heavy-duty gas fuelled engines. Light-duty diesel vehicles will have to meet Phase IV emission requirements from 1 January 2007. The requirements are defined in *Limits and Measurement methods for emissions from light-duty vehicles (III, IV); GB 18352.3-2005* and *Limits and Measurement methods for exhaust pollutants from compression ignition and gas-fuelled positive ignition engines of vehicles (III, IV, V); GB 17691-2005*.

OBD systems will be required on newly Type-Approved vehicles to be marketed in Beijing from 30 December 2005. Marketing of vehicles without OBD system is prohibited after 1 December 2006. As an encouragement measure, vehicles that are fitted with an OBD system will receive a 30% reduction in consumption tax and will be tested for emissions once per 2 years within the first 6 years of registration, and once per year after that.

Diesel Retrofit Project started in Beijing

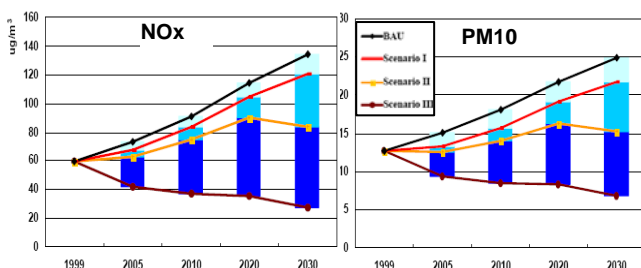
Work has begun on retrofitting 30 buses in Beijing with clean diesel technologies - including oxidation catalysts and particulate filters - under a collaboration between US EPA, China's State Environmental Protection Agency (SEPA) and industry partners. The project is managed by the Southwest Research Institute of San Antonio, Texas, USA.

Study Outlines Steps to cut Air Pollution in Beijing

Chinese researchers with support from the US Environmental Protection Agency have outlined strategies to dramatically reduce emissions of greenhouse gases and local air pollutants in Beijing. The study found that output of particulate matter could be cut by up to 40% each year.

The team examined three scenarios in addition to the 'business as usual' case. In the first, actions centred on changing power plants and coal-fired boilers to natural gas plus changes to industry structures. Scenario 2 added an energy efficiency programme including fuel economy standards for light-duty vehicles and the third scenario added a Green Transportation System, covering the development of public transport, promoting the use of CNG in buses and LPG in taxis, and setting stringent (Euro 3 and Euro 4) emissions standards.

The following charts show the effects on NOx and PM.



The report concludes that major areas of a fuel efficiency promotion should focus on industry boilers, buildings and vehicles. For NOx mitigation, the green transportation programme is very effective. The modelling result shows that, if the green transportation programmes were put into practice, NOx emissions

would drop by 55% in 2010 and 79% in 2030 compared to the Business as Usual (BAU) case. Implementation of Euro 3 emissions standards in 2005 and Euro 4 standards in 2010 is the main cause of reductions from Scenario 2.

The study, "Energy Options and Health Benefit Beijing Case Study" is available at: <http://www.epa.gov/ies>.

Chinese Policy Centre examining the Benefits of Diesel Cars

According to a report in the China Daily newspaper an official of the Development and Research Centre, (an organ of China's State Council), says that the country could reduce its oil imports by 10% if diesel engines were substituted for petrol engines in one third of China's passenger car parc by 2020. The parc - currently 33.56m units - is forecast to have more than tripled to 131.03m units by 2020.

Indian Diesel Market increases

Diesel adoption is growing rapidly in India and currently constitutes 15% of the fleet. Tata Motors is the diesel leader in the country, with more than 90% of its cars sold being diesel-powered. Hyundai, which has been importing diesels for its Accent, will begin building the CRDi engines in India. Maruti is setting up a dedicated diesel engine plant. General Motors India is planning to introduce diesel engines from GM Daewoo to make 30% of its Optra sedans diesel-based by 2007. Subsequent to their application in the Optra, GMI will adapt the diesels for other models.

India's first Euro 4-compliant Cars

The Indian press has reported that Tata Motors is the first vehicle maker in India to upgrade to Euro 4 emissions standards, as vehicles fitted with Euro 4 petrol engines roll out of its Pune facility in the first week of December and production of Euro 4 diesel vehicles will begin early in 2006.

Cars fitted with Euro 4 engines will be supplied only to the export markets to begin with. The Euro 4 norms - referred to as Bharat Stage IV in India - will be applicable in India only in 2008. In April this year, major cities in the country upgraded to Bharat Stage III, which is equivalent to Euro 3.

MIDDLE EAST

Teheran smog

Health officials in the Iranian capital Teheran said on 10 December that more than 1600 people had been taken to hospitals as smog pollution reached critical levels. Hospitals reported increased cases of heart attacks and breathing problems, while many residents complained of fatigue and headaches.

A blanket of smog was trapped over the city by the surrounding mountains, with no wind or rain to remove it. Traffic restrictions were introduced in an attempt to reduce pollution and public offices and schools were closed to reduce traffic. From 12 December cars were only allowed into the city centre on alternate days, depending on whether their number plates started with odd or even numbers. Authorities blamed the severe smog on emissions from the capital's 3 million cars, many of which lack modern emissions controls.

Iran plans a 'national engine'

The Secretary of the Iranian Automotive Part Makers Association (APMA), Mohammad Reza Najafi-Manesh has told the Mehr state news agency that its members are ready to contribute all the components required to produce a planned 'national' engine in Iran using domestically-produced components.

Fewer 'High Pollution' Days in Israel

The number of "high air pollution days" in Israel's two largest cities, Jerusalem and Tel Aviv, fell in 2004 compared to the previous year, according to annual air quality monitoring results.

Nevertheless, a clear trend of increase in ozone concentrations was recorded in three places in the country. Annual exceedances of fine respirable particles standards were found in all monitoring stations and annual exceedances of the nitrogen dioxide standard were reported in all but one of the country transportation stations. The Environment Minister said that the Ministry is developing targets for the reduction of air pollution from all sectors.

AFRICA

Leaded Petrol phased out from Sub-Saharan Africa

The United Nations Environment Programme (UNEP) has announced that from 1 January 2006 the sub-Saharan region's vehicle fuels will be lead-free, meeting commitments made at the World Summit on Sustainable Development in 2002.

In 2002, only Sudan out of the forty-nine countries in sub-Saharan Africa was fully unleaded. With South Africa to go unleaded on 1 January 2006, all of sub-Saharan Africa will have switched. In early 2006 the Partnership for Clean Fuels & Vehicles (PCFV) will launch a global leaded gasoline phase-out for the rest of the developing world and economies in transition. The goal is to eliminate leaded petrol worldwide by 2008. Currently well over 30 countries globally are still using leaded petrol. The Partnership is now also focusing its attention on the very high levels of sulfur found in fuels in some countries.

South African SCR systems plant

Fleetguard Emission Solutions, part of Cummins, has opened a manufacturing facility in Pretoria, South Africa, to produce selective catalyst reduction (SCR) systems for NOx emission reduction in Euro IV and Euro V truck and speciality vehicle applications. Initially, all SCR systems made at the plant will be exported to the European market. The plant will employ about 50 workers by mid-2006.

A small number of the SCR systems will be produced this year with full production beginning in the second quarter of 2006. Production at the plant eventually is expected to exceed 70000 units a year. The Pretoria plant will serve as a complement to a lower-volume facility in Hinckley, UK, where about 20000 units are produced each year for stationary applications.

GENERAL

New diesel particulate sensor

Researchers from the University of Göttingen have developed a new photo-acoustic soot sensor for fast, real time measurement and characterization of engine PM emissions. Prototypes of the sensor have already been tested by Volkswagen. During the measurement, a gas-filled resonance cell is illuminated with a diode laser. Soot particles absorb the laser light and warm up. As the surrounding gas expands, the difference in pressure is measured as an acoustic signal.

Researchers show link between Particle Exposure and Hardening of Arteries

Researchers at the Mount Sinai School of Medicine and the New York University School of Medicine have shown a direct cause-and-effect link between exposure to fine particle (PM) air pollution and the development of atherosclerosis, commonly known as hardening of the arteries. The results, published in the 21 December 2005 issue of the Journal of the American Medical Association, suggest that fine particle exposure accelerates the development of atherosclerosis in groups with a high-fat diet.

In the study, mice that were fed a high-fat diet and exposed to air with fine particles (PM_{2.5}) had 1.5 times more production of plaque (a fatty deposit on the inner lining of the blood vessels) than mice fed the same diet and exposed to clean filtered air. The fine particle exposure also led to increased inflammation of the artery walls and reduced function of the artery wall's inner lining. The fine particle concentrations used in the study were well within the range of concentrations found in the air around major metropolitan areas. The average particle exposure over the course of the study was 15µm/m³, well below the current US federal air quality 24-hour standard of 65µm/m³.

The researchers did not observe significant differences in plaque production and artery wall inflammation in fine particle-exposed mice given the normal diet. However, among mice given clean air, those on the high-fat diet had greater plaque production and artery wall inflammation than those given the normal diet. These results suggest that both diet and fine particle pollution contributed to the development of atherosclerosis in the mice.

Diesel Exhaust May Impair the Functioning of Blood Vessels

A new study published in *Circulation*, the Journal of the American Heart Association, finds that inhaling diesel exhaust at levels typically found in large cities may disrupt normal blood vessel and clotting activity. This may prove to be a mechanism linking air pollution to the pathogenesis of heart attack and stroke.

In the study, researchers found that exposure to diluted diesel exhaust (300 µg/m³ particulate concentration, comparable to kerbside exposure on a busy street) from an idling diesel engine for one hour during exercise caused a significant decrease in blood vessels' natural ability to dilate. Exposure to air pollution also decreased levels of an enzyme that helps prevent clots from forming.

New Study on Air Pollution

"Males shielding their female companions from traffic hazards by walking on the outside of pavements are also protecting them from harmful fumes", scientists have discovered. Walking close to the edge of the kerb exposes pedestrians to up to a tenth more pollutants than on the building side.

The study, published in the journal *Atmospheric Environment* involved volunteers taking 20-minute walks along Marylebone Road, in London whilst kitted out with air sampling pumps. They walked on either side of the road, in both directions and at different

times of the day. The samples were examined to establish the level of inhaled pollutants.

Heavy-Duty Vehicle and Engines Manufacturers Meeting

Chief executives of the world's leading manufacturers of heavy-duty vehicles and engines from Europe, Japan and the US held the 3rd Global Commercial Vehicle Industry Meeting on 1 November 2005 to discuss policies and actions needed to continue progress in reducing emissions from heavy-duty vehicles worldwide into the next decade and to explore opportunities to further improve vehicle safety.

Participants agreed there is a need to better inform the public and government authorities about the significant improvements that have been achieved in commercial vehicle emissions reduction over the past 20 years. They also noted the importance of internationally harmonised regulations and test procedures as a means to promote the rapid introduction and deployment of cost-effective new technologies to reduce emissions.

Audi reveals Le Mans Car will be Diesel with Particulate Filters

Audi has unveiled its new R10 racecar with which it will attempt to become the first manufacturer to win the Le Mans 24-hour race with a diesel engined car. The car is equipped with a new bi-turbo 5.5-litre V12 TDI engine, produces over 650hp and 1100Nm torque and is fitted with two diesel particulate filters.

Forthcoming Conferences

4th International CTI Forum Exhaust Systems - Experience based on using present-day low-emission systems

1-2 February 2006, Ludwigsburg, Germany

Details at www.abgastechnik-forum.com

Main topics include future prospects for minimising the emissions of spark ignition and diesel engines; emissions legislation in 2010; particulate filter solutions for active exhaust aftertreatment; the influence of fuel on emissions; challenges of HC/CI; and NOx storage catalysts.

Première journée consacrée aux poids lourds propres à Paris - Organised by ADEME

2 February 2006, Paris, France

More at www.ademe.fr under "manifestations"

Biofuels markets: from the Fields to the Forecourts

16-17 February 2006, Brussels, Belgium

More from www.biofuelsmarkets.com

Includes case studies on biodiesel, bioethanol and section on next generation biofuels.

4th International Forum for Exhaust Gas and Particle Emissions 2006

14-15 March 2006, Ludwigsburg, Germany

More at <http://www.forum-emissions.com/>

At the focus will be an overview of the current state of the art, particularly regarding concepts for fulfilling the high requirements for the reduction of NO and NO₂ to trace levels and the outlook regarding future concepts for systems of exhaust gas aftertreatment.

Another focus of the Forum will be future exhaust gas instrumentation. For measuring extremely low emissions, new instruments will be required to serve as development tools having the highest standards with regard to confidence, precision, accuracy and robustness when measuring limited and non-limited exhaust gas components. Future trends and developments in the field of exhaust gas and particle instrumentation will be presented.

7th European Fuels Conference

14-15 March 2006, Paris, France

Details at:

<http://www.wraconferences.com/wra107overview.html>

Sessions include impacts of European fuel and vehicle legislation, off-road markets, auto fuels, biofuels and alternative fuels.

VDA Technical Congress 2006

22-23 March 2006, Munich, Germany

More from www.vda.de

Parallel sessions in the form of lectures and an exhibition on 'Environment and Energy' and 'vehicle safety and Electronics'.

Green Ship Technology 2006

29-30 March 2006, Hamburg, Germany

The conference will examine the impact that protecting the environment is having on the industry and how new market opportunities are emerging as a result of the emphasis on 'green issues' including propulsion systems with clean engines.

CITEAIR 2nd Workshop

31 March 2006, Brussels, Belgium

More at <http://citeair.rec.org/>

Common Information to European Air (CITEAIR) is a project co-funded by the European Union's INTERREG IIIC Programme. The CITEAIR project is in operation since March 2004 and this 2nd workshop will concentrate on the developed Common Air Quality Index and the Common Operational Website.

2006 SAE World Congress

3-7 April 2006, Detroit, Michigan, USA

More at <http://www.sae.org/congress/>

27th International Vienna Motor Symposium

27-28 April 2006, Vienna, Austria

Engine Expo 2006

9-11 May 2006, Stuttgart, Germany

World Hydrogen Energy Forum & Exhibition (HyTech 2006)

16-18 May 2006, Beijing, China

Covers both hydrogen fuel cells and Hydrogen ICes.

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 CO₂ et Réduction des Émissions

Diesel Engines: The Low CO₂ 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, the oil industry, research laboratories and universities to exchange opinions and information on the potential of the diesel engine as a low CO₂-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 emission vehicles, the need for combustion systems including advanced emission 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.

10th ETH Conference on Combustion Generated Nanoparticles

21-23 August 2006, Zurich, Switzerland

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 emission control; NOx emission control under lean conditions; modelling of aftertreatment systems; unregulated pollutants; integrated emission control systems, on-board diagnostics; alternative fuel technologies and innovative technologies (new materials, recovery of precious metals, sensors).

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 [AVECC](#)

As with previous AVECCs in 2001 (Thailand) and 2004 (Beijing, 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 emission 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>