AECC

Newsletter

September - October 2009

INTERNATIONAL REGULATORY DEVELOPMENTS

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EUROPE

Euro 5 starts for new Homologations and Euro V for all Registrations

On 1 September 2009, the light-duty Euro 5 standard entered force for new Type Approvals of M1, M2 and N1 Class I vehicles. It will apply for all registrations from 1 January 2011. The Euro 5 requirements for N1 Classes II and III will follow 1 year behind these dates.

From 1 October 2009, Euro V is required for all registrations of heavy-duty vehicles.

European Commission Proposal on CO_2 Limits for Light Commercial Vehicles

On 29 October 2009, the European Commission proposed legislation to reduce the average CO_2 emissions of light commercial vehicles to 175 g/km.

The format of the proposed legislation is similar to that for passenger cars agreed at the end of 2008. Emissions limits are set according to the weight of the vehicle, using a limit value curve to achieve an average of 175 g/km. From 2014, 75% of each manufacturer's vehicles registered in the EU must have average emissions that are below the limit value curve. For 2015, this rises to 80% and from 2016, 100% of the fleet has to comply on average. The proposal also contains a long-term emissions reduction target of 135 g/km by 2020.

There will be a penalty system for manufacturers failing to meet the target. Until 2018, this will be €5 for the first g/km above the curve, €15 for the second g/km, €25 for the third and €120 for every further g/km. From 2019, the figure from the first g/km will be €120 per vehicle. There will be credits for vehicles fitted with innovations not measured by the standard CO_2 test and additional incentives for vehicles with emissions below 50 g/km up to 2018.

Responses to the Consultation on the Recreational Craft Directive

The European Commission has published a summary of the results of their public consultation on revision of the Recreational Craft Directive, 94/25/EC.

About 65% of respondents agreed with the approach of further restricting the exhaust emissions limits of recreational marine engines providing there were sufficient mitigating measures for small and medium-sized enterprises (SMEs). A slight majority of respondents voted for derogation (postponement) as the most acceptable option. However, there was also strong support to exempt SME's from compliance with new limits, especially in responses from industry and citizens. But 19% of respondents from institutions did not agree with the mitigating measures for SMEs.

Regarding the scope of the Directive, it was suggested that amphibious vehicles should be exempted but there were objections against exempting racing boats. Both governmental and business respondents considered that market surveillance activities are not sufficient.

EU expected to miss 2010 Air Pollutant Limits

The latest report from the European Environment Agency says that updated emissions estimates for 2010 show that only 14 Member States expect to meet the 2010 air pollutant limits set under the EU National Emission Ceilings Directive (NEC Directive).

NOx remains by far the most difficult for many Member States to achieve - 12 estimate that they will miss this ceiling. Three Member States (France, Germany and the Netherlands) each anticipate missing two of their four emission ceilings. Only Spain expects to miss 3 targets. As last year, some Member States including Germany, the Netherlands & Sweden expect to emit only slightly more NOx than their ceilings. Others, such as Ireland, Austria and Belgium, are projected to miss their limits by up to 60%.

NOx emissions for the EU-27 as a whole are now projected to be 6% above the aggregated Member State ceilings and 16% above the stricter ceiling for the European Community as a whole. A proposal from the European Commission - not yet published - is expected to include stricter emission ceilings for 2020, and for the first time, national limits on the emissions of fine particulate matter $PM_{2.5}$. The report is at www.eea.europa.eu/publications/nec-directive-status-report-2008.

Commission Action Plan on Urban Mobility

The European Commission's Urban Mobility Action Plan was adopted on 30 September 2009. The Action Plan is intended to help local and national authorities make urban travel "easier, greener and better organised". The Action Plan proposes some 20 actions, covering issues such as rules for access to environmental zones, research and demonstration projects on lower- and zero-emission vehicles for urban public transport, energy-efficient driving, and better co-ordination of travel information. The plan will now go to the Parliament and Council for adoption.

Legal Action on MMT Restriction

Afton, the manufacturers of the manganese-based fuel additive MMT, has lodged a case in the High Court of England and Wales for judicial review of the

requirements relating to the restriction of MMT in the EU's Fuel Quality Directive (2009/30/EC). Afton is contesting both the limit values and the pump labelling requirement in the Directive.

The UK court immediately referred the case to the European Court of Justice (ECJ) and requested that a judgement be arrived at relatively quickly as Member States need to transpose the Directive into national law by the end of 2010. The Council of the European Union says it will respond to the court proceedings.

Danish Developments on Retrofits, Taxation and Low Emission Zones

Denmark has issued a new Regulation requiring that retrofitted particulate filters on diesel-powered private and commercial vehicles must be approved in accordance with the regulations in the German Straßenverkehrs-Zulassungs-Ordnung (StVZO). Alternatively, documentation must be provided to Denmark's Road Safety and Transport Agency to show that after fitting the filter, the vehicle satisfies the EC Type Approval requirements for a vehicle of the same model and type with a factory fitted filter.

In a second move, the Danish government has also advised the EU of a bill amending the law on the 'green reorganisation of vehicle taxation' for cars and light commercial vehicles registered on or after 18 March 2009. An annual 'particle emissions charge' of DKK 1000 (€134) will be introduced for diesel-powered private cars and diesel-powered commercial vehicles without a particulate filter. In addition, the taxation basis for commercial vehicles will be changed from weight to fuel consumption and the registration tax for taxis will be reorganised to accelerate the use of smaller and therefore, the document says, more environmentally friendly, taxis.

Earlier, the Danish Environment Ministry had announced that local authorities judged to suffer from poor air quality are to be given the power to introduce more stringent environmental zones. Local authorities would be able to require the fitting of catalytic converters on pre-1995 petrol-fuelled commercial vehicles and particulate filters on diesel vans built before 2000. Environment Minister Troels Lund Poulsen estimated that 14 000 vehicles would be affected in the Copenhagen area alone and "overall... particulate pollution from traffic would be more than halved in the main urban areas from 2006 to 2011".

London Mayor proposes Air Quality Action Plan

On 5 October 2009, the Mayor of London published a draft air quality strategy outlining the key sources of London's airborne pollutants and proposing an action plan to reduce emissions. The strategy projects a 20-25% reduction in PM_{10} in central London by 2012 and a 35-40% reduction in NO_2 by 2015.

Measures to be taken by 2012 are:

- Phase 3 of the Low Emission Zone covering larger vans and minibuses will be delayed to 2012;
- Phase 4 of the Low Emission Zone scheme (Euro IV PM standards for lorries, buses and coaches) will be introduced as planned in January 2012;
- Introduction of a 15-year age limit for taxis and minicabs in 2012, tightened to 10 years in 2015;
- Taxis and minicabs being licensed for the first time from 2012 must be Euro 4 compliant;
- Tailored action plans for air quality hotspots and special measures on the highest pollution days.

Further improvements proposed by 2015 are:

- All London's buses to meet at least Euro IV standards for both PM and NOx by 2015 - this will involve retrofitting around 2800 buses;
- From 2015 a "phase 5" of the Low Emission Zone will be introduced for NOx covering Heavy Goods Vehicles, buses and coaches. The Mayor says that this will need support from central government in establishing a suitable certification and testing regime for the required retrofitting equipment;
- A commitment to procuring 1000 electric vehicles in the Greater London Authority public fleet by 2015.

'*Clearing the Air*', is being issued for consultation with other London authorities. The document is available at www.london.gov.uk/mayor/environment/air_quality/index.jsp.

UK Parliament launches Enquiry on Air Quality

The UK Parliament's Environmental Audit Committee has launched a major enquiry into whether the Government is developing an effective strategy to meet its obligations under the EU Air Quality Directives. The Committee will also examine whether the strategy is enough to ensure that air pollution is reduced to acceptable levels across all the UK.

In preparation, the Committee has commissioned a briefing on air quality by the National Audit Office. This will provide an overview of the UK's performance to date in meeting the various targets and limits for each air pollutant. It will consider the adverse health and environmental effects for each air pollutant and will map them against their target values and the current performance of the UK in meeting these values. The briefing will summarise the various plans and programmes in place to meet the EU targets and limits, particularly those in place to ensure that EU limits are achieved by 2015. Details are at www.parliament.uk/parliamentary_committees/environmental_audit_committee/eacpn211009.cfm.

French Report raises Concerns on NO_2

Afsset, the French agency for environmental and occupational health safety, has reported concerns about the levels of NO_2 emitted by diesel vehicles. Afsset asks in particular for strengthening of controls on diesel emissions and to retain only Diesel Particle Filter systems that are lower emitters of NO_2.

According to Afsset, European standards on vehicle emissions have fallen behind on controlling emissions of NO_2. Afsset believes that the Euro 5 Regulation will be effective for diesel particulate, but has neglected NO_2. If nothing is done, Afsset says, the standards will have no significant effect on NO_2 by 2014, the year in which Euro 6 and VI enter force.

Afsset says that NO_2 emissions should be systematically tested during the Type Approval, not just total NOx. In addition, it should be included as a selection criterion for engine technologies and aftertreatment systems. Afsset also recommends that only particulate filters that are lower emitters of NO_2 should be selected by manufacturers, particularly when retrofits are installed on buses, commercial vehicles and taxis. The Afsset report is at www.afsset.fr/upload/bibliotheque/561629415138122661534136019483/NO2_diesel_avis_et_rapport_afsset_2009.pdf.

Paris Commuters' Exposure to NO_2 and Particulates in their Cars

Supported by the French agency for environmental and occupational health safety Afsset, Airparif measured the quality of air that commuting motorists breathe in the Paris region.

For NO_2, 7% of trips exceeded the WHO guidance levels after adjustment to account for exposure times. The highest levels were found on routes between Paris and the suburbs, because of traffic density. Airparif also quantified the number of ultrafine particles (diameter <1 µm). They found that motorists breathe the most particles on journeys between the outer suburbs and Paris and between the inner-suburbs and Paris, with respectively 88 000 and 91 000 particles/cc. A previous study showed that air breathed by Paris cyclists contained, on average, 40 000 particles/cc.

The study was carried aboard a vehicle that repeatedly drove 88 different commuting routes, with an average distance of 16 km for a duration of 31 minutes. It also highlighted greater pollution in tunnels and in cars when following a heavy-duty truck. A trip behind a vehicle with a particulate filter resulted in one quarter the number of particles in the interior of the car, but doubled the concentration of NO_2.

For full details of the report by Airparif see http://www.airparif.asso.fr/airparif/pdf/Rexpovoituredomtra.pdf

French Budget proposes Changes to 'Bonus-Malus' System

The French government's budget proposal for 2010 includes a tightening of the 'bonus-malus' tax and subsidy scheme for encouraging low-carbon emission cars. Buyers of cars emitting more than 160 g/km CO_2 currently have to pay a premium of up to €2 600. This threshold will be lowered to 156 g/km from 2010 and 151 g/km from 2011. At the same time the emissions cut-off to receive a bonus would be reduced from 130 g/km to 125 g/km. In addition, the bonus for cars emitting between 116 and 125 g/km CO_2 would drop from €200 to €100 and those for cars that emit 96 to 115 g/km would be reduced from €700 to €500. A 'super bonus' of €5 000 for cars emitting under 60 g/km CO_2 will be maintained until 2012.

Commission agrees Italian Proposal to subsidise Euro 6 Components

The European Commission has agreed an Italian Government proposal to grant interest rate subsidies to companies producing 'green' auto parts.

The Commission said the scheme, which has a budget of €300 million, would promote a move towards more environmentally friendly products without unduly distorting competition. The scheme will focus on financing investments related to early adoption of the Euro 6 emissions standard for light passenger and commercial vehicles. Subsidised loans may be granted until December 2010 and the reduced rate will apply for up to two years. The reduction will not exceed 50% for small and medium-sized enterprises and 25% for large businesses.

Netherlands extends Subsidies for Particulate Filters

The Netherlands has announced that it is to extend its subsidies for particulate filters and clean engines for a further year, to 31 December 2010.

SenterNovem, the agency of the Dutch Ministry of Economic Affairs says that since the beginning of the scheme in October 2006, almost 25 000 new Euro V and EEV vehicles have been subsidised. From 1 October 2009, the subsidy for new Euro V trucks, buses and vans ceases as Euro V is now a legal requirement. However, funding is still available for new vehicles meeting the EEV standards.

The subsidy budget for 2010 will cover
- fitment of cars with retrofit particulate filters
- fitment of trucks with retrofit particulate filters
- fitment of particulate filters on mobile equipment
- new trucks and buses with EEV engines
- new taxis and vans original equipment particle filters

Changes to Slovenian Vehicle Tax

Slovenia's Parliamentary Finance and Monetary Policy Committee has modified proposed amendments to the motor vehicles tax act. In June this year the government had proposed a slightly higher taxation of diesel engines compared to petrol engines except for those meeting the Euro 6 emissions standards, but the committee approved a proposal to include Euro 5 in the provision. Diesel engines failing to meet the Euro 5 or 6 standards will still be taxed at a higher rate than their petrol counterparts in the same emissions class.

The new tax rates are to be introduced gradually by 1 January 2011. The expected tax rates are between 0.5% and 28% for petrol and gas powered vehicles and between 1% and 31% for diesel vehicles.

Dutch and Irish Air Quality Reports

In its annual review, the Dutch Environmental Assessment Agency PBL says the Netherlands will miss all its environmental objectives for 2020, including goals on climate change and air pollution.

Targets on climate change and air pollution will probably be on track until 2015. But the financial crisis and economic slowdown have put the Netherlands' long-term environmental goals further out of reach, the agency says. Dutch environment policies must be "significantly intensified" or "fundamentally revised" to bring the long-term goals within reach, the agency said. Current and planned policies will not be sufficient, the report says.

PBL says that the introduction of Euro 5 emissions requirements for passenger cars will lead to a decrease of 20% of the health effects attributed to particulate matter when Euro 5 vehicles are "largely represented" in the fleet. Similar health benefits can be expected from the Euro IV emissions directive for trucks, the report says. A more limited but still substantial additional contribution is expected from the Euro VI Regulation for trucks and the requirements for mobile machinery and inland waterways.

Source: Netherlands Environmental Assessment Agency Report no. 500081015, 9 September 2009 (in Dutch); www.rivm.nl/bibliotheek/rapporten/500081015.pdf.

The report by the Irish environment agency says that Ireland complied with all EU air concentration limits in 2008, based on data from 30 monitoring stations.

Levels of NO_2, PM_{10}, lead, CO and ozone all complied with EU standards, according to the agency. Benzene levels were also below an EU limit value of 5 µg/m^3 that will be mandatory from 2010. The Irish report notes the main pollutants recorded in 2008 were NO_2 and PM_{10}. Levels of NO_2 were highest in the most urbanised areas, mainly due to traffic density. Particulates were highest in cities and smaller towns, most probably due to traffic density in cities and use of smoky fuel in smaller towns. The report is on the Irish EPA website at Air Quality in Ireland 2008 – Key Indicators of Ambient Air Quality.

German Environment Agency provides new Website on Air Pollution since 2001

Germany's Umweltbundesamt (UBA; Federal Environment Agency) has launched a 'geographic information system' http://gis.uba.de/Website/luft/index.htm to provide information on the regional distribution of air pollution in Germany, dating back to 2001.

At the same time UBA has published facts and figures on air quality in Germany since 1995. UBA says that "human stress loads of air pollutants have fortunately been on the decline since the early 1990s. Since early 2000, however, there has been no clear downward trend as air quality has tended to fluctuate from year to year. Despite the successes of clean air policy, the limit values for PM_{10} which have been valid since 2005 and the caps on NO_2 which will apply as of 2010 are already being exceeded in many locations throughout Germany."

UBA says that the median imission loads for PM_{10} and NO_2 are highest in metropolitan areas, particularly in the vicinity of emissions sources such as high-traffic roads. Pollution loads generally decrease further out in the countryside but this does not apply for ozone. Peak loads are often found outside of metropolitan areas at some distance from the sources of its precursors nitrogen dioxide and volatile hydrocarbons.

Entwicklung der Luftqualität in Deutschland (Development of air quality in Germany) can be downloaded from www.umweltdaten.de/publikationen/fpdf-l/3760.pdf.

New Czech Air Quality Law will permit Low Emission Zones

The Czech Environment Ministry has launched an internal consultation on a draft law to transpose the revised EU Air Quality Directive into national law.

The Ministry statement comments that a significant share of the country's PM_{10} and $PM_{2.5}$ emissions is from domestic heating (30% of the total emissions of fine dust and 70% of emissions of carcinogenic polycyclic aromatic hydrocarbons in 2007) and from road transport (30% of the total emission of fine dust).

The draft law will allow Czech cities to set up Low Emission Zones (LEZs). It will simplify national air quality rules and introduce a sector-specific approach to air pollution regulation. The Ministry says that the Czech LEZ system should be fully compatible with the German system so that a Czech driver could use his emissions label to travel to both Czech and German

cities with LEZs. Municipalities can designate LEZs only where air pollution levels are exceeded and where there is a suitable bypass route along a road of the same or higher type outside the zone.

The proposed act also establishes emissions and technical requirements for small sources of pollution with input from 15 to 300 kW. Heating systems not meeting the standards would be subject to a charge to be used to finance investments in clean technologies.

Ozone Levels rising in Italian Cities

According to a report by environmental lobby group Legambiente, ground-level ozone concentrations have risen in many of Italy's 50 largest cities.

The number of days with ozone concentrations of 120 µg/m^3 or above nearly doubled. The number of large cities with at least 25 days of dangerous levels of ground-level ozone concentration increased to 16 from 10, according to Legambiente. Most of these were in the flatlands of the Italian north, led by Novara with 67 such days, Lecco with 62, and Mantua with 60. Legambiente said unusually high temperatures since June were a culprit in the higher ozone levels, but it called for the government to toughen pollution standards to prevent similar problems in the future.

Swiss Emissions Monitoring and Emissions Reduction Plans

Air Pollution Report

The Swiss Federal Environment Office has issued a new report on air pollution in 2008, based on measurements from the Swiss National Network for Air Pollution Monitoring (NABEL).

The report highlights the developments since the early 1980s and details the results of measurements made in 2008. For 2008, the limit values for NO_2, PM_{10} and ozone have been exceeded whilst those for SO_2, CO, dust and heavy metals have been respected everywhere. Exceedances of the limits for PM_{10} and NO_2 are worst in towns, whilst exceedances for ozone are worst in suburban and rural areas. There are, nevertheless, exceedances of both the NO_2 and PM_{10} targets in suburban areas and of the PM_{10} target even in rural areas. Nevertheless, the report says that the evolution of the pollution load of the air over the past 20 years indicates a marked improvement.

The document includes reports on measurements of PM_{10}, $PM_{2.5}$ and PM_1, plus some data on particle numbers. The latter highlight the importance of location and, especially the nearness to roads.

NABEL - La pollution de l'air 2008 ; Mesures exécutées à l'aide du Réseau national d'observation des polluants atmosphériques: www.bafu.admin.ch/publikationen/publikation/01054/index.html?lang=fr#nsb.

Emissions Reduction Plans

On 11 September 2009, the Swiss government outlined its intention to further reduce emissions of particulate matter, nitrogen dioxide, ammonia, and volatile organic compounds (VOCs).

In a written statement, the Swiss Federal Office for the Environment (FOEN) said that measures introduced in the 1980s have led to satisfactory progress in reducing most air pollutants, but more progress needs to be made regarding particulates, nitrogen oxide, ammonia, and VOC (Volatile Organic Carbon) emissions. The Swiss parliament has called on the government to address the problem.

As a result, government agencies have been instructed to examine and to prepare measures to tackle emissions of the four pollutants. Possible measures include new limits, incentives to promote cleaner technology, and greater international cooperation, FOEN said. The Federal Council said Switzerland should aim for a 50% reduction of nitrogen oxide emissions, a 45% reduction in PM emissions, a 40% reduction in ammonia emissions, and a 20 to 30% reduction in VOC emissions from 2005 levels by 2020. Financial incentives may also be introduced to encourage the use of less-polluting vehicles, such as instituting environmental labelling or offering reduced road toll rates for trucks equipped with particulate filters.

Emissions Monitoring

The recent *Monitoring of Supporting Measures - Environment* report by the Swiss Federal Office for the Environment noted that emissions of nitrogen oxide declined by 1% to 5%, while emissions of particulates fell between 3% and 6% along the A2 and A13 motorways, both major routes for north-south movement of Europeans and goods. Checks of individual trucks at monitoring stations indicated that truck emissions of NO_2 and particulates declined by 40% and 50% respectively between 2000 and 2007. The report attributed the decline to technological improvements in truck engines.

NORTH AMERICA

US publishes CO_2 and Greenhouse Gas Targets and Reporting Systems

The US Department of Transportation and Environmental Protection Agency have jointly proposed the rule establishing a national programme to improve vehicle fuel economy and reduce greenhouse gases.

Under the proposed programme, which covers model years 2012 to 2016, automobile manufacturers would be able to build a single, light-duty national fleet that

satisfies all Federal requirements as well as the standards of California and other states. The standards proposed would apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles. The proposed programme includes 'miles per gallon' requirements under the NHTSA's Corporate Average Fuel Economy Standards (CAFE) programme and national emissions standards under EPA's greenhouse gas programme.

The programme will increase fuel economy by approximately 5% per annum. It would require model year 2016 vehicles to meet an estimated combined average emission level of 250 g/mile CO_2 (156 g/km). The standards are based on CO_2 emissions - footprint curves, where each vehicle has a different CO_2 emissions compliance target depending on its footprint value. If all reductions were made through fuel economy improvements, the overall light-duty vehicle fleet would reach 35.5 miles per gallon (mpg) - approximately 6.6 litres/100km - in model year 2016. This would surpass the CAFE law passed by Congress in 2007, which required an average fuel economy of 35 mpg in 2020.

EPA is also proposing standards that will cap tailpipe N_2O emissions at 0.010 g/mile (6.25 mg/km) and methane emissions at 0.030 g/mile (18.75 mg/km). EPA says that even after adjusting for the higher relative global warming potencies of these two compounds, nitrous oxide and methane emissions represent less than 1% of overall vehicle greenhouse gas emissions from new vehicles.

There will be a system of averaging, banking and trading of credits, and credits for improvements to air conditioning systems and flex-fuel vehicles. The proposal is at www.epa.gov/otaq/climate/regulations.htm.

From 1 January next year, EPA will also require the collection of data on greenhouse gas emissions by engine and vehicle manufacturers other than those covered by the light- and medium-duty vehicle regulations described above and by about 10 000 large stationary-source emitters.

The requirements cover heavy-duty engines and vehicles, non-road, marine and rail applications, large and small spark ignition engines, motorcycles and all-terrain vehicles, snowmobiles and aircraft. Reporting of CO_2 levels is required from 2011 and methane from 2012. Reporting of N_2O is required from 2013 or from when the manufacturer introduces NOx aftertreatment technology, whichever is later. Neither the methane nor the N_2O reporting apply to C3 marine engines and aircraft. Details of the reporting requirements are at www.epa.gov/climatechange/emissions/ghgrulemaking.html.

EPA announces it will reconsider Ozone Standards

The US Environmental Protection Agency (EPA) has announced that it will reconsider the 2008 national ozone standards to ensure they are scientifically sound and protective of human health. EPA will propose any revisions by December 2009 and will issue a final decision by August 2010.

The reconsideration covers both the primary and secondary ozone standards. EPA sets primary air quality standards to protect public health, including the health of sensitive groups such as children and people with asthma. The secondary standard is set to protect public welfare and the environment, including protection against visibility impairment, damage to animals, crops, vegetation and buildings.

EPA says it will conduct a thorough review of the science that guided the 2008 decision, including more than 1700 scientific studies and any public comments from that rulemaking process. The Agency will also review the findings of EPA's independent Clean Air Scientific Advisory Committee, which recommended stronger smog standards.

California Report on reducing Locomotive Emissions

The California Air Resources Board (CARB) has released a revised report evaluating options for the reduction of emissions from locomotives and railyards.

The technical feasibility of nearly 40 technologies and operational measures were evaluated by CARB staff. The mid-term options (those which can be implemented within 10 years), include retrofitting Diesel Particulate Filters (DPF) and Selective Catalytic Reduction (SCR) systems to switcher (shunter) locomotives and diesel-electric generating-set locomotives. CARB estimated the cost of retrofitting a DPF+SCR system to be some $200 000 (€137 000) for an ultra-low emissions switcher locomotive and $500 000 (€343 000) for larger medium-horsepower, low emissions generating-set locomotives.

Ports take Action on Older Engines and Clean Air Incentives

Commissioners for the Port Authority of New York and New Jersey have authorised nearly $9 million (€6 million) for two initiatives to improve air quality around its port. Under one initiative, port tenants replacing cargo-handling equipment with new units that meet federal on-road emissions standards will be reimbursed for 20% of the cost. Under the second programme, the Port Authority will reimburse ocean

vessel operators for up to 50% of the cost differential between high-sulfur and low-sulfur fuel. The vessels must also take part in a speed reduction programme.

From 1 January 2010, the Port of Oakland will ban drayage (delivery) trucks with older engines. Trucks with engines older than 1994 model year will be banned and those made between 1994 and 2003 will have to be retrofitted with Diesel Particulate Filters to enter the port.

California Interim Policy on Retrofit Visibility for Off-Road Vehicles

California's Air Resources Board (CARB), Division of Occupational Safety and Health and Occupational Safety and Health Standards Board, have agreed an interim policy to address visibility concerns when retrofitting emissions systems to off-road vehicles.

The interim policy will exempt from large fleet retrofit requirements, any vehicles that cannot be retrofitted without impairing the operator's vision to the front, sides, or rear of the vehicle. The retrofit requirements for large fleets of off-road diesel vehicles are due to come into force on 1 March 2010. CARB says that only large fleets without adequate credits will need to pursue this exemption. The safety exemption will only reduce a fleet's total retrofit requirement if its target cannot be satisfied without using a vehicle that cannot be retrofitted without impairing operator visibility.

The interim policy is available online at www.arb.ca.gov/msprog/ordiesel/documents/retrofitvisibility.pdf.

US EPA considering extending Roadside Monitoring

The US Environmental Protection Agency (EPA) is reported to be evaluating whether to require, for the first time, near-road monitoring for multiple pollutants including air toxics, fine particulate matter ($PM_{2.5}$), black carbon and ammonia, in addition to its recently proposed roadside monitoring network to ensure compliance with its NO_2 air quality standard.

On 6 October 2009, the lead EPA official working on the NO_2 monitoring proposal told the agency's Clean Air Act Advisory Committee's mobile source panel that EPA thinks it may be "appropriate" to establish guidance on the positioning of monitors for other pollutants beyond the NO_2 national ambient air quality standard (NAAQS). He said that CO and $PM_{2.5}$ monitors were candidates for such sites and that PM speciation and other measurements are also candidates for near-road measurement. In a related development, EPA in its recent final rule designating areas in attainment with the agency's 2006 24-hour $PM_{2.5}$ NAAQS says it will actively review near-road monitoring requirements for the standard.

Construction Group agrees Retrofit Funding Proposal

The Associated General Contractors of America and the environmental group Clean Air Task Force have jointly published "Clean Construction Principles" which call on Congress to give State officials the authority and funding to require the use of clean construction equipment at federally-funded transportation projects.

The principles propose that US States should be authorised to require diesel emissions reductions and to cover the cost of retrofitting or repowering equipment that was built to meet earlier emissions standards. States would give priority to projects located in areas with poor air quality. They would require successful bidders for federally-funded transportation construction projects to identify the off-road diesel equipment they plan to use and would then issue change orders requiring contractors to follow the best EPA-approved options for reducing diesel emissions. The change orders would entitle contractors to recover 100% of their costs.

EPA says its Clean Diesel Programme saves up to $1.4 Billion

The US Environmental protection Agency (EPA) has released a report to Congress detailing the health, environmental and economic benefits of the agency's Diesel Emission Reduction programme. Last year this programme allowed EPA to fund the purchase or retrofitting of 14 000 diesel-powered vehicles and pieces of equipment.

The report says that the resulting benefits include reductions of 46 000 tons of nitrogen oxide and 2 200 tons of particulate matter over the lifetime of diesel vehicles and public health benefits between $500 million and $1400 million (€334 million to €936 million).

31 Areas do not meet US $PM_{2.5}$ Standards

The US Environmental Protection Agency is designating 31 areas, comprising all or part of some 120 counties in 18 states, as 'non-attainment' areas for fine particle air pollution ($PM_{2.5}$), because their air quality monitoring data showed that they did not meet the agency's health-based standards.

In 2006, EPA strengthened the 24-hour fine particle standards from 65 $\mu g/m^3$ to 35 $\mu g/m^3$. Nationwide, monitored levels of fine particle pollution fell by 19% from 2000 to 2008. 91 counties that were identified as 'non-attainment' in December 2008 are now meeting the standards.

California launches Diesel Regulation Overview

The California Air Resources Board (CARB) has launched a new free Diesel Regulation Overview course on its new 'Truck Stop' website (www.arb.ca.gov/truckstop). The site also contains a 'Clean Truck, Bus, and Trailer Requirements Brochure' which includes details of deadlines, and information on clean air requirements for transport refrigeration units.

SOUTH AMERICA

Brazil tightens Car Emissions Limits, develops Rating and Inspection

Car Emissions Standards

On 2 September 2009, CONAMA, Brazil's National Environmental Council, issued a resolution that will reduce emissions limits for CO, NOx and particulate matter compared to the current standards that went into effect in January 2009.

The new limits will reduce emissions by as much as 35% for gasoline- and ethanol-fuelled cars and vans produced after 1 January 2014, and for diesel-fuelled pick-ups and four-wheel-drive vehicles produced after 1 January 2013. CONAMA did not reduce limits for hydrocarbons because the existing ones were already considered to be low.

Rating System for Vehicle Emissions

The Brazilian Ministério do Meio Ambiente (Environment Ministry) has launched a system ranking vehicle emissions using a 0-10 scale of 'green grades' based on CO, HC and NOx emissions.

The 'green grade' number is calculated by dividing the emissions test result for each pollutant by the corresponding limit specified by the standard; for example for a limit value of 4.00 g/km and a measured value of 0.15 g/km, the index is 0.15/4.00 = 0.0375. The indices for CO, HC and NOx are then averaged and that figure is subtracted from 1 (so that the cleanest cars give the lowest result) and multiplied by 10. Thus a car with an average index for the three pollutants of 0.091 gives a score of 1-0.091 = 0.909 which, when multiplied by 10 gives a 'green grade' of 9.1 (rounded to one decimal point).

The ranking is available (in Portuguese) at: http://servicos.ibama.gov.br/ctf/publico/sel_marca_modelo_rvep.php.

Draft Resolution to require Emissions Inspections

Brazil's National Environmental Council (CONAMA) has approved a resolution that would make car emissions inspections mandatory nationwide. Vehicles will be required to pass the inspection before licence renewal. States and municipalities with fleets of more than three million vehicles must, within 12 months, develop inspection programmes aimed at identifying malfunctions that result in high vehicle emissions for in-use cars, trucks, and motorcycles. Currently only the state of Rio de Janeiro and the city of São Paulo have mandatory vehicular emissions inspections and use 2005 CONAMA emissions limits.

Brazil increases Biodiesel Blend Limit

Brazilian President Luiz Da Silva has announced that from January 2010, the limit for biodiesel in Brazilian diesel fuel will be increased to 5%, rather than the current 4% biodiesel requirement. That level was itself raised from 3% to 4% at the start of 2009.

Brazilian Drivers reported to be switching back to Gasoline

Some Brazilian motorists who fuel their cars solely on ethanol are reported to be switching back to gasoline as high sugar prices now make the biofuel, made from cane sugar, more costly in some states.

Brazil is a pioneer in biofuel with its millions of flex-fuel cars that can run on ethanol or gasoline, or any mixture of both. Ethanol prices, though, have risen by up to 50% in places in just a few months, due to demand for cane sugar. As a result, demand for ethanol fuel in the centre-south region fell to about 1.6 billion litres a month from 2 billion earlier this year. Ethanol has only become more expensive compared to gasoline in states with higher levels of sales tax.

ASIA PACIFIC

Japan proposes tougher Standards on Diesel Emissions from Off-Road Vehicles

On 9 September 2009, Japan's Ministry of the Environment announced a proposal that would tighten diesel emissions standards for non-road mobile machinery and specialty off-road vehicles used for construction, farming, and other purposes. The proposed standards, which would be introduced in phases beginning in 2011, were released for a one-month public comment period. Final standards are expected to be issued in January 2010, with enforcement starting in early 2011.

The standards call for particulate matter emissions to be reduced by 88 to 92%, with reductions varying by the vehicles' power output. Emissions of nitrogen oxides would be cut by 8 to 44% and hydrocarbons by 30 to 73%. Carbon monoxide limits would not change. The reductions would be measured against current standards and be phased in between 2011 and 2013.

Based on data from a ministry study conducted in 2006, specialty vehicles account for 18% of Japan's total particulate emissions and 31% percent of NOx in the year to March 2007, the latest available figures.

The Ministry said the standards are compatible with those issued by the United Nations Economic Commission for Europe (UN-ECE) working party on pollution and energy, released in August 2009.

Chinese Government preparing National Emissions Standard V

At the 2009 International Forum on Chinese Automotive Industry Development, the Ministry of Environmental Protection's divisional Director of Air Pollution and Noise Control, Ren Hongyan, said that China is setting up National Emissions Standard V on new cars and on petrol and diesel fuels. He added that the State Administration of Taxation and the Finance Ministry are also considering levying a car emissions tax in future. The National Emissions Standard V is expected to be published by 2015, according to Mr. Hongyan.

Japan sets Standards for Fine Particulate Matter

On 9 September 2009, Japan's Ministry of the Environment set the country's first atmospheric tolerance standards for fine particulate matter ($PM_{2.5}$) to protect public health.

Japan's new standards set a 24-hour limit of 35 $\mu g/m^3$ and an annual average limit of 15 $\mu g/m^3$, the Ministry said. Levels must be measured at locations other than industrial areas or along major traffic arteries where people do not live. The Ministry did not set a deadline for meeting the standard but said only that levels should be lowered as soon as possible.

Emissions Test Lab opens in Singapore

Singapore's first state-of-the-art vehicle emissions and fuel efficiency test laboratory opened in Bukit Batok on 8 October 2009. The Vicom Emission Test Laboratory, set up by ComfortDelgro and co-funded by the Singapore Land Transport Authority is equipped to test vehicles to the Euro 5 exhaust emissions standards or better. It is able to test passenger cars, light goods vehicles and motorcycles running on diesel, petrol and compressed natural gas. It is also able to test hybrid and electric vehicles.

Hong Kong Airport and Ferries take action on Fuels

Hong Kong Airport Authority is to impose stricter rules on the 2700-strong fleet of vehicles on the airport island in an effort to reduce emissions.

It hopes that within 10 years all vehicles operating within the airport will be powered by clean diesel, LPG or electricity or be hybrid-petrol. To take the lead, the authority is expanding the use of bio-diesel fuel for about 50 vehicles such as passenger buses and operations marshalling cars. According to the Environment Bureau's air quality objectives consultation review, if 700 units of ground support equipment at the airport were electrified, it could save 85 tonnes of sulfur dioxide and 759 tonnes of nitrogen oxide.

Meanwhile the Hong Kong Environmental Protection Department has launched a nine-month trial of ultra-low sulfur diesel on five local ferries to reduce sulfur dioxide and particulate emissions. A 90% reduction in sulfur dioxide emissions and 10% lowering of particulate emissions are expected. Domestic ferries are a major source of local maritime air pollution emissions, accounting for 40 to 70% of the air pollutants emitted from all local vessels, according to the department.

India to make Fuel Efficiency Mandatory from 2011

The Indian government has announced that it will make fuel efficiency standards mandatory for the transport sector from 2011. Environment Minister Jairam Ramesh announced the development, part of a growing suite of measures to fight climate change, on 9 September 2009. He said the transport sector contributed about 15% to total national CO_2 emissions, a figure likely to rise to 25% by 2030 if steps such as fuel efficiency were not taken.

New Zealand Sea Fleet to use Biofuel

The marine fleet of Explore New Zealand based in Auckland and the Bay of Islands is to use locally-made biodiesel fuel supplied by Environ Fuels Ltd. New fuelling facilities will allow the product to be made available to the general boating public at a later date.

Environ Fuels was one of the first companies to sign up to a grants scheme set up by the Government in July 2009 to encourage biodiesel production in New Zealand and is the first to make a large-scale supply arrangement. The company will supply B20 - a 20% biodiesel blend with mineral diesel - manufactured predominantly from waste vegetable oil products. The companies say no engine modifications are required.

China's Car Output reaches 10 Million

China's automobile production this year has already exceeded 10 million vehicles, the China Association of Automobile Manufacturers has announced.

The 10 million car figure indicates that China's car production is already up 32% year-on-year. *Nikkei* news service suggests that China's output will reach 12.5 million to 13 million units by the end of the year, surpassing production in both Japan and the US.

AFRICA

South African Air Quality report

The 'South African State of the Air Report 2005', launched recently by Water and Environmental Affairs Deputy-Minister Rejoice Mabudafhasi, says that the integration of air quality considerations into the transport, energy and spatial development planning sectors, as well as the cost optimisation of air quality monitoring systems, are just some of the areas South Africa has to do more work on.

Elevated fine particulate concentrations occurred across the country, frequently exceeding health thresholds. The close proximity of heavy industries and communities of people presented persistent health risks, exacerbated by increased pressure to build residential areas within former industrial and mining buffer zones.

The department also highlighted that emerging air pollution issues are closely associated with the transport sector, and in particular, road use. Questions also remain regarding potential environmental impacts and the transboundary transportation of pollution generated by medium and elevated stack emissions from petrochemicals, metallurgical and mineral-processing operations, and coal-fired power stations.

MIDDLE EAST

Air Quality Assessment in Mecca

An air quality assessment of the emissions from power plants and traffic in the Al-Taneem area in the Holy City of Makkah (Mecca), Saudi Arabia, is investigated in a new paper. The results indicated that nitrogen oxides and carbon monoxide concentrations increase at the starting hours of the day. SO_2 concentrations were relatively low and constant. Ozone concentration trends showed the changes of the rate of the photochemical reactions.

Source: Al-Jeelani, Air quality assessment at Al-Taneem area in the Holy Makkah City, Saudi Arabia. *Environmental Monitoring and Assessment,* 2009; 156(1-4) pp.211-222, doi: 10.1007/s10661-008-0475-3

INTERNATIONAL

UNEP focuses on Black Carbon and Climate Change

Faster action on climate change may be possible if nations combine substantial cuts of CO_2 emissions with accelerated action on a suite of other greenhouse gases and pollutants including black carbon.

Achim Steiner, Director of the UN Environment Programme (UNEP), speaking on the margins of the 3rd World Climate Conference, cited black carbon from the inefficient burning of biomass and dung for cooking and from diesel engines and coal-fired power stations. Mr. Steiner said: "While carbon dioxide can remain in the atmosphere for centuries, some of these other pollutants such as black carbon and ozone have relatively short lives, in terms of days, weeks, months or years…Fast action across a broad front could thus deliver some quick wins on health, food security and wider environmental concerns while also making important contributions to advancing the climate change challenge and the achievement of the poverty-related Millennium Development Goals".

The UNEP's web page on this report says that "Fitting or retrofitting particle traps to diesel vehicles, ideally in combination with the introduction of ultra-low sulfur fuels, can also reduce black carbon emissions while improving air quality and public health." A paper in August 2009 in '*Foreign Affairs'* estimates that fitting particle traps to one million semi-trailer trucks would, over 20 years, yield climate benefits equal to taking over 160 000 trucks or 5.7 million cars off the road.

UNEP has just launched an Integrated Assessment of Black Carbon and Tropospheric Ozone to evaluate their role in air pollution and climate change.

Source: http://hqweb.unep.org/Documents.Multilingual/Default.asp?DocumentID=596&ArticleID=6299&l=en&t=long.

Protocol on Pollutant Release Registers enters Force

An international protocol for recording and reporting emissions of 86 pollutants from industrial facilities and other sources, such as traffic, entered force on 8 October 2009 following France's ratification of the law. The protocol was originally agreed in 2003.

Under the Kiev Protocol, firms must report annually on the amounts of certain pollutants they release to the environment or transfer to other facilities. In the EU, the first inventory of the new European Pollutant Release and Transfer Register (PRTR) will be published this autumn, based on 2007 data. The PRTR register is wider than its predecessor (EPER). It covers releases from diffuse sources and off-site waste transfers, in line with the Kiev protocol.

GENERAL

New Report updates Climate Change Science

In anticipation of the UN Climate Change Conference in Copenhagen, the International Alliance of Research Universities has presented an update of a broad range of research relating to climate change.

The report says that recent observations indicate that many aspects of the climate are changing according to the more severe IPCC (Intergovernmental Panel on Climate Change) projections. Sea level rise is changing at even greater rates than IPCC projections and new modelling methods suggest a rise of around one metre by 2100.

Although a 2ºC rise is the quoted threshold above which climate change is deemed dangerous, this level still has significant risks for society and the environment. For example, modelling studies indicate that a 2ºC temperature rise would double the death rate caused by heat-waves. If the peak and subsequent decline of greenhouse gases does not occur until after 2020, emissions reduction rates will have to exceed 5% per year to meet the 2ºC threshold. Immediate reductions are needed with a long-term expectation that carbon prices will rise, the report says.

Source: University of Copenhagen Synthesis Report (2009). Climate Change: Global Risks, Challenges & Decisions. www.pik-potsdam.de/news/press-releases/files/synthesis-report-web.pdf.

Euro 6 Cars at the Frankfurt Motor Show

The international motor show in Frankfurt, which started on 15 September 2009, included a number of diesel vehicles meeting Euro 6 emissions requirements. Mercedes displayed E, GL, ML and R class vehicles with BlueTec® Euro 6 urea-SCR (Selective Catalytic Reduction) systems and Volkswagen showed a Passat with their BlueTDI® equivalent.

Both companies displayed exhaust systems for the vehicles.

RESEARCH SUMMARY

Health Effects of Emissions

Diesel Exhaust and Cancer Development

Scientists at Ohio State University say they have demonstrated that the link between exposure to diesel exhaust particles and cancer lies in the ability of diesel exhaust to induce the growth of new blood vessels.

Source: Xiaohua Xu et al, Diesel exhaust exposure induces angiogenesis; *Toxicology Letters*, doi:10.1016/j.toxlet.2009.08.006.

The Role of Ultrafine Particles in Atherosclerosis

The authors of this study found that ultrafine particles (<0.18 µm) enhance early atherosclerosis, partly due to their involvement in the promotion of tissue oxidative stress. Exposure to ultrafine particles also results in alterations of an anti-inflammatory function.

Source: Araujo and Nel; Particulate matter and atherosclerosis: role of particle size, composition and oxidative stress; *Particle and Fibre Toxicology* 2009, 6:24, doi:10.1186/1743-8977-6-24.

Ultrafine Particles and Lung Deposition of PAHs

A paper from Saitama University indicates that ultrafine particles are significant contributors to the deposition of PAHs into the lung alveolar region.

Source: Kawanaka et al., Size distributions of polycyclic aromatic hydrocarbons in the atmosphere and estimation of the contribution of ultrafine particles to their lung deposition; *Environmental Science & Technology* 43 (17) 6851-6856, doi: 10.1021/es900033u

Effects of Air Pollution on the Elderly

A study from Korea investigates the short-term association between air pollution and mortality and estimates the health benefits of attaining the World Health Organization's (WHO) air quality guidelines.

Source: Hyun Joo Bae and Jeongim Park, Health benefits of improving air quality in the rapidly aging Korean society, *Science of the Total Environment,* doi: 10.1016/j.scitotenv.2009.08.022.

Effect on Cognitive Function of Particulate Exposure

A study from Germany investigating the association between exposure to fine particulate and mild cognitive impairment (MCI) which is associated with a high risk of progression to Alzheimer's disease, found a dose–response relation.

Source: Ranft et al., Long-term exposure to traffic-related particulate matter impairs cognitive function in the elderly; *Environmental Research,* doi: 10.1016/j.envres.2009.08.003.

Air Pollution and Chronic Pulmonary Disease

This paper reports an investigation of the association between short-term changes in blood markers of inflammation and coagulation for patients with chronic pulmonary disease and daily changes in air pollution.

Source: Hildebrandt et al, Short-term effects of air pollution: a panel study of blood markers in patients with chronic pulmonary disease, *Particle and Fibre Toxicology,* 2009, 6:25, doi: 10.1186/1743-8977-6-25.

Effect of Particulate Matter in Lung Cells

This paper investigates if exposure to diesel exhaust particles can affect three cell types that play a key role in maintaining epithelial integrity following exposure to particulate antigens in lung cells.

Source: Lehmann et al, Diesel exhaust particles modulate the tight junction protein occludin in lung cells in vitro; *Particle and Fibre Toxicology* 2009, 6:26, doi:10.1186/1743-8977-6-26.

Air Pollution and Rheumatoid Arthritis

According to this study, people who live close to major roads may have a greater risk of developing rheumatoid arthritis. The researchers suggest that inhaled particulate matter can cause inflammation in the lungs leading to a general inflammatory response.

Source: Hart, et al. Exposure to Traffic Pollution and Increased Risk of Rheumatoid Arthritis. *Environmental Health Perspectives* 117(7):1065-1069.

No link between Black Smoke and Stillbirth Risk

A new paper analyses health and environmental data to examine the potential for an association between black smoke air pollution and stillbirth risk. No association was found.

Source: Pearce et al, No association between ambient particulate matter exposure during pregnancy and stillbirth risk in the north of England, 1962–1992; *Environmental Research,* doi: 10.1016/j.envres.2009.10.003.

Link between Air Pollution and Migraine

A study from Santiago province, Chile, has found increased hospital admissions for migraines and other headaches on days of elevated air pollution.

Source: Dales, Cakmak and Vidal, Air Pollution and Hospitalization for Headache in Chile; *American Journal of Epidemiology,* 2009 170(8), 1057-1066, doi:10.1093/aje/kwp217.

Air Quality

Evaluation of Retrofit on Cabin Air Particulate

This study evaluates the effect of retrofit closed crankcase ventilation filters and diesel oxidation catalysts on the in-cabin air quality in diesel school buses. Ultrafine particle number concentrations were 33 to 41% lower after the devices were installed.

Source: Trenbath, Hannigan & Milford, Evaluation of retrofit crankcase ventilation controls and diesel oxidation catalysts for reducing air pollution in school buses; *Atmospheric Environment,* doi:10.1016/j.atmosenv.2009.08.012.

Measurement of Air Toxics in Source Regimes

In this study, measurements of hourly concentrations of 18 gas-phase organic air toxics and 6 volatile organic compounds were made at three sites; one with substantial mobile-source emissions; one residential site adjacent to a heavily industrialised zone; and an urban background site.

Source: Logue et al, High time-resolved measurements of organic air toxics in different source regimes; *Atmospheric Environment,* doi: 10.1016/j.atmosenv.2009.08.041.

Prediction of Austrian NOx, NO_2 and PM

A paper from Graz University predicts Austrian vehicle emissions levels until 2020. It says that exceedances of the NO_2 air quality limits at roadside locations have to be expected for the beginning of the next decade, but the issue of diesel particle emissions "can be regarded as being technically solved due to the extensive introduction of Diesel Particle Filters".

Source: Rexeis and Hausberger, Trend of vehicle emission levels until 2020 – Prognosis based on current vehicle measurements and future emission legislation; *Atmospheric Environment* Vol.43, No.31, pp 4689-4698, doi:10.1016/j.atmosenv.2008.09.034.

Importance of Ozone/NOx Equilibrium

Trend analysis of monitoring data from the industrial and harbour area near Rotterdam reveals that the ozone/NOx equilibrium is a more important factor in ambient NO_2 concentrations than increasing direct NO_2 emissions by traffic.

Source: Keuken et al, Trend analysis of urban NO_2 concentrations and the importance of direct NO_2 emissions versus ozone/NOx equilibrium; *Atmospheric Environment* Vol.43 No.31 pp 4780-4783 (October 2009), doi: 10.1016/j.atmosenv.2008.07.043.

Air Quality Impacts of use of Ethanol Fuel in Brazil

This paper reviews Brazilian air quality and vehicle emissions data, focusing on pollutants (including aldehydes, single ring aromatic compounds and small carboxylic acids) that may be impacted by the use of large quantities of ethanol in the fuel.

Source: Larry G. Anderson, Ethanol fuel use in Brazil: air quality impacts; *Energy & Environmental Science*, 2009, 2, 1015 - 1037, doi: 10.1039/b906057j

Home Heating and Air Quality

This study shows how household stoves and furnaces can, in certain areas in sufficient numbers, be the primary source of surface air pollution, exceeding that of traffic, industry and coal-fired power plants.

Source: Junninen et al, Quantifying the Impact of Residential Heating on the Urban Air Quality in a Typical European Coal Combustion Region; *Environmental Science and Technology*, Vol. 43 Issue 20 pp.7964-7970, doi: 10.1021/es8032082.

Characterisation of Particulate

Size Distribution and Composition of Metal Content

The size distribution and composition of metals in diesel exhaust particulates emitting from four driving conditions are characterised in this study. The authors say that a decrease in engine loads can reduce amounts and toxicity of ultrafine particulates.

Source: Jaehyun Lim, Cheolsoo Lim and Liya E. Yu, Composition and size distribution of metals in diesel exhaust particulates; *J. Environ. Monit.*, 2009, 11, 1614 - 1621, doi: 10.1039/b822514a.

Distribution of Organics in Fine Particulate

The distribution of the solvent-extractable organic components in the fine (PM_1) and coarse ($PM_{1–10}$) fractions of airborne particulate was studied in Algeria.

Samples were taken in three areas with different transport, industrial and residency characteristics.

Source: Ladji et al, Distribution of the solvent-extractable organic compounds in fine (PM_1) and coarse (PM_{1-10}) particles in urban, industrial and forest atmospheres of Northern Algeria; *Science of the Total Environment,* doi: 10.1016/j.scitotenv.2009.09.033.

Emissions Measurement

Nanoparticle Characteristics of Light-duty Vehicles

A study from South Korea compares the effects of various vehicle certification cycles on the particle emission characteristics of light-duty vehicles with gasoline, diesel, LPG, and low-carbon fuels such as bio-diesel, bio-ethanol, and compressed natural gas.

Source: Myung et al, Effects of gasoline, diesel, LPG, and low-carbon fuels and various certification modes on nanoparticle emission characteristics in light-duty vehicles. *International Journal of Automotive Technology*, Vol. 10 No.5, pp. 537-544. doi: 10.1007/s12239-009-0062-9.

Supercritical Fluid for Reduction of Diesel Emissions

Researchers at Syracuse University say that raising the temperature of diesel beyond its thermodynamic critical point could eventually yield near-complete combustion of diesel fuel with potential elimination of around 80% of criteria pollutants.

Sources: Anitescu, Lin and Tavlarides, Preparation, Injection and Combustion of Supercritical Fuels; (DEER 2009) and
Anitescu, Tavlarides and Geana; Phase Transitions and Thermal Behavior of Fuel-Diluent Mixtures; *Energy & Fuels* 23, 3068–3077 (2009), doi: 10.1021/ef900141j.

Effects of Filters on Particles in Mine Air

Uncatalysed diesel particulate filters (DPF), high-temperature disposable filter elements (DFEs), and a diesel oxidation catalyst (DOC) were evaluated in underground mine conditions for their effects on the concentrations and size distributions of diesel aerosols. The DPF systems reduced the total mass of aerosols 10- to 20-fold.

Source: Bugarski et al, Effects of Diesel Exhaust Aftertreatment Devices on Concentrations and Size Distribution of Aerosols in Underground Mine Air; *Environ. Sci. Technol.*, 2009, 43 (17), pp 6737–6743, doi: 10.1021/es9006355.

Effect of Biodiesel on Emissions

Experiments were carried out on a diesel engine operating on Euro V diesel fuel, pure biodiesel and biodiesel blends with methanol. Results are presented for both regulated and non-regulated emissions.

Source: Cheung et al, Regulated and unregulated emissions from a diesel engine fueled with biodiesel and biodiesel blended with methanol; Atmospheric *Environment* Vol.43 No.32 pp 4865-4872 (October 2009), doi:10.1016/j.atmosenv.2009.07.021.

Particle Emissions from District Heating Boilers

Finland's University of Kuopio and VTT have produced a paper on the flue gas emissions of 4 to 15 MW wood and heavy fuel oil (HFO) fired district heating units. Measurements included analyses of particle mass, number and size distributions, particle composition and gaseous emissions.

Source: Sippula et al, Comparison of particle emissions from small heavy fuel oil and wood-fired boilers; *Atmospheric Environment* Vol.43 No.32 pp 4855-4864, doi: 10.1016/j.atmosenv.2009.07.022.

Nanoparticles used to detect Oil Ring Failure

A cyclic variation in total particle numbers during routine exhaust emissions measurements enabled a fractured oil control ring to be identified as a cause.

Source: Swanson et al, Nanoparticle measurements used to detect an engine oil control ring failure; Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering, Vol. 223, No.8 (2009) pp.1071-1076,
doi: 10.1243/09544070JAUTO1164

Particle Numbers on Biodiesel with and without EGR

A study from South Korea investigates the characteristics of emissions and the nanoparticle size distribution of particulate emitted from diesel engines fuelled with 20% biodiesel-diesel blended fuel.

Source: Park et al, Emission characteristics of exhaust gases and nanoparticles from a diesel engine with biodiesel-diesel blended fuel (BD20); *Journal of Mechanical Science and Technology*, 2009;23(9):2555-2564.

Interactions of Emissions

The Climate Change Effect of Black Carbon

This paper suggests that estimates of the climate effect of Black Carbon do not consider that the share of black carbon particles has increased at a faster rate than the total number of particles. The author suggests that this can explain the main discrepancy between estimates from observations and models.

Source: Gunnar Myhre, Consistency Between Satellite-Derived and Modeled Estimates of the Direct Aerosol Effect; *Science,* Vol. 325. No. 5937, pp. 187 – 190, doi: 10.1126/science.1174461.

Integrating Pollution and Climate Change Strategies

This paper investigates possible efficiency gains from integrating the climate impacts of air pollutants into EU air quality strategies. The authors say that their results indicate that air pollution policies should be supplemented with climate damage considerations.

Source: Tollefsen, Rypdal, Torvanger and Rive, Air pollution policies in Europe: efficiency gains from integrating climate effects with damage costs to health and crops; *Environmental Science & Policy,* doi: 10.1016/j.envsci.2009.08.006.

Black Carbon and non-CO_2 Global Warming Gases

A paper by Nobel Laureate Dr. Mario Molina and co-authors discusses the potential for the rapid reduction of climate change emissions including Black Carbon (BC). The authors say that reducing BC emissions (for example by particulate filters) can provide fast climate response, because it has a short atmospheric lifetime.

Source: Molina et al, Reducing abrupt climate change risk using the Montreal Protocol and other regulatory actions to complement cuts in CO_2 emissions; *Proceedings of the National Academy of Sciences of the United States of America;* 12 October 2009,
doi: 10.1073/pnas.0902568106.

FORTHCOMING CONFERENCES

3rd International Symposium on Development Methodology: Challenges in the field of new Powertrain Concepts

10-11 November 2009, Wiesbaden, Germany

Details at www.symposium-development-methodology.com

The overall theme of this symposium is the application of development methodology in order to overcome current and future application and development tasks in the field of engine and powertrain development.

Reduction of Vehicles Particulates Emission – Experiences and Challenges

18-19 November 2009, Cracow, Poland

Details at www.inig.pl/DEXFIL/index.asp?P=1&L=E

Planned thematic sessions cover the role of alternative fuels in PM reduction; exhaust aftertreatment systems - technical solutions and future requirements; PM filtration systems for biofuels and alternative fuels application; the development of DPF regeneration methods and field experiences.

Grundlagen der Abgasnachbehandlung im Verbrennungsmotor

1-2 December 2009, Köln, Germany

Details at www.vdi-wissensforum.de

The Spark Ignition Engine of the Future

2-3 December 2009, Strasbourg, France

Details at www.sia.fr/evenement_detail_international_conference_1005.htm

This conference is intended to provide the opportunity for experts from OEMs and their suppliers, the oil industry, research laboratories and universities to exchange views and information on the potential of the future SI engine to respond to the combined low CO_2 and electrification challenges of the future.

ACEA Transport Policy Event – A Global Approach to Sustainable Freight Transport

3 December 2009, Brussels, Belgium

Details at www.acea.be

This year's event will focus on global trends and international cooperation, in particular in the field of road freight transport and energy efficiency. Speakers include Karl Falkenberg, Director General of DG-Environment, Masahiko Naitou of the Japanese Land, Infrastructure and Transport Ministry, the Secretary General of the International Transport Forum, the chairman of ACEA's CV Board, and the chairman of JAMA's Heavy Vehicle Committee.

Air Quality – The Major Challenges

9-10 December 2009, London, UK

Details at http://rsc-aamg.org/Pages/Meetings/MAA2009.html

The conference will focus on issues around compliance with air quality legislation generally and around specific cases such as airports and shipping. It will cover how technology and regulation should be adapting to address the challenges of the future.

16th Annual Fuels & Lubes Asia Conference

3-5 March 2010, Singapore

Details at www.fuelsandlubes.asia

The theme of the conference is "Fuel Economy and Emissions: Exploring beyond Today's Limitations".

6th International Exhaust Gas and Particulate Emissions Forum

9-10 March 2010, Ludwigsburg, Germany

Details at www.forum-emissions.com

Experts from vehicle and engine manufacturers, suppliers, development suppliers and science will report on the most recent status and the forthcoming concepts regarding exhaust gas emission reduction. Further discussion topics will evolve particularly around particle counters, sensor technology and OBD. The presentations will concentrate on air purification economy, health risks and legislation.

International Advanced Mobility Forum 2010

9-10 March 2010, Geneva, Switzerland

Details at www.iamf.ch/en/

Topics to be covered include advanced powertrain technologies; alternative powertrain systems in motorsport; energy storage in the vehicle and its fuelling/charging infrastructure; advanced vehicle technologies; introduction of new technologies into the market and safety of new energy carriers.

7th Green Ship Technology Conference

16-18 March 2010, Copenhagen, Denmark

Details at www.lloydslistevents.com

The conference will highlight the crucial developments in technology aimed at reducing the environmental impact of shipping, curbing air emissions and discharges to sea, and helping ship owners and operators achieve greater efficiencies and energy savings.

Diesel Emissions Conference & AdBlue Forum Asia

23-25 March 2010, Beijing, China

Details at www.integer-research.com/decasia/

Key regulators, Asian vehicle manufacturers and leading emissions reduction technology suppliers will

explore the most successful strategies to meet Asian diesel emissions legislation now and in the future.

SAE 2010 World Congress

12-15 April 2010, Detroit, Michigan, USA

Details at www.sae.org/congress/techprogram/cfp.htm

31st International Vienna Motorsymposium

29-30 April 2010, Vienna, Austria

Details at www.övk.at/index_en.htm

Latest results in worldwide engine and powertrain development, future legislation, new engines, fuels and powertrain components, drive train electrification, hybrid technology, CO_2-reduction and exhaust emissions control.

Busworld Asia

6-8 May 2010, Shanghai, China

Details at www.vnuea.com/bw/en/news1.asp

18th International Symposium on Transport and Air Pollution

18-19 May 2010, Dübendorf, Switzerland

Details at www.empa.ch/plugin/template/empa/*/86139/---/l=2

The aim of the symposium will be to bring together scientists, users and policy makers to assess the current scientific knowledge of air pollution due to emissions from transportation systems.

Deadline for abstracts: 20 November 2009

33rd FISITA World Automotive Congress

30 May - 4 June 2010, Budapest, Hungary

Details at www.fisita2010.com

Top experts from the automotive community around the world will review the latest technical breakthroughs and innovations and show the world that our future mobility depends on engineers.

CIMAC (International Council on Combustion Engines) Congress 2010

14-17 June 1010, Bergen, Norway

Details at www.cimac.com/congress_2010/congress_2010.htm

12 technical sessions include product development – diesel engines and environment, fuel & combustions – diesel engines.

Busworld Russia

30 June – 2 July 2010, Nizhny Novogorod, Russia

Details at www.busworldrussia.ru

14th ETH Conference on Combustion Generated Nanoparticles

2-4 August 2010, Zurich, Switzerland

Details at www.lav.ethz.ch/nanoparticle_conf

VPPC 2010: Vehicle Power and Propulsion Conference

1-3 September 2010, Lille, France

Details at http://vppc2010.univ-lille1.fr

The 2010 Vehicle Power and Propulsion Conference will be held in the framework of the French network on hybrid electric vehicles (HEVs). The conference aims to provide a forum for sharing knowledge, experience and creative ideas in vehicle power and propulsion in order to develop and promote "clean technology" for future transportation systems.

19th Aachen Colloquium "Automobile and Engine Technology"

4-6 October 2010, Aachen, Germany

Details at www.aachener-kolloquium.de/index_e.htm

The congress will provide a wide range of technical presentations addressing current challenges of the vehicle and powertrain industry. Program-related test vehicles, prototypes and aggregates from participating companies and institutions will be presented on the ika test track.