



Newsletter

March-April 2008

INTERNATIONAL REGULATORY DEVELOPMENTS

Table of Contents

EUROPE	2
Latest Draft of Euro 5 & Euro 6 Comitology published.....	2
EEA Report on Emissions from Transport.....	2
EU Air Quality Directive is Finalised.....	2
Consultations on Refuelling Emissions and Car CO ₂ Reduction Measures.....	3
European Parliament supports Incentives for Emissions Reduction.....	3
Maritime Safety and Climate Change to Top Agenda for France's EU Presidency.....	3
EEA Report on Environmental Success Stories for Road Transport.....	3
EEA calls for Suspension of Biofuels Target.....	4
Health Experts support EU MMT Ban.....	4
Austria to introduce Euro 6 Incentives with CO ₂ Bonus/Malus System.....	4
Austrian Ambient Particulate Levels have already exceeded Annual Limits.....	4
UK Incentive for Euro 5 Vans.....	4
Belgian Reports on Ultrafine Particles.....	4
Lyon sets Environmental priorities for Vehicle Purchase.....	5
Report on Environment in Italian Cities.....	5
Dutch Retrofit Subsidy reaches Ceiling for Heaviest Vehicles.....	5
Romania to introduce Emissions-based Car Taxes.....	5
Germany cancels Plans for E10.....	5
Eurotunnel asks for Retrofit Emissions Systems for Shunting Locomotives.....	5
NORTH AMERICA	5
US EPA announces new Locomotive and Marine Diesel Emissions Rules.....	5
US EPA Ports Strategy.....	6
Aftermarket Emissions Parts for California Motorcycles.....	6
California modifies ZEV requirements.....	7
CARB tightens Ambient Air Quality Standard for NO ₂	7
US EPA revises Ozone Standard.....	7
US EPA announces Grants for Clean Diesel Projects.....	7
US EPA will issue Greenhouse Gas Emissions Proposal.....	7
California Study on Diesel PM Exposure.....	7
US Court rules against California on Ship Auxiliary Engine Emissions.....	8
New York Ferries to use Ultra-low Sulfur Diesel Fuel.....	8
SOUTH-AMERICA	8
Colombia's State Oil Company agrees to provide Cleaner Diesel for Capital City.....	8
ASIA-PACIFIC	8
Shanghai and Guangdong province to implement China IV Emissions Standard.....	8
China Environmental Protection hopes to get Boost with New Ministry.....	9
Hong Kong orders Particulate Filters and Emissions Analysers.....	9
Hong Kong Financial Secretary proposes Clean Vehicle Incentives.....	9
Kazakhstan sets Timetable for Emissions and Fuel Standards.....	9
10ppm Diesel in Singapore by 2011.....	9
Japan seeks Stronger Programme on Emissions to Meet Kyoto Deadline.....	9
South Korea to introduce Fuel Efficiency Ratings on New Vehicles.....	9
Thailand approves 'Eco-car' Projects.....	10
INTERNATIONAL	10
IMO Action on Ship Emissions.....	10
RESEARCH SUMMARY	10
New Reaction in Smog Formation.....	10
Effect of Biodiesel Quality on Emissions.....	10
Black Carbon and Global Warming.....	11
Pollution and Health.....	11
Properties of Particulate Matter.....	11
PM1 gives more useful Air Quality Data.....	12
Analysis of Emissions related to Driving Characteristics and Test Cycles.....	12
FORTHCOMING CONFERENCES	12

EUROPE

Latest Draft of Euro 5 & Euro 6 Comitology published

Although the final version of the 'comitology' (technical Regulation) for light-duty Euro 5 and Euro 6 has yet to be formally published, the latest draft has been published by the Commission as a document for a meeting with the Member States.

There are no changes to the previously-proposed implementation dates, limit values, deterioration factors or OBD threshold limit values. However, the nomenclature used in the table for the Type-Approval certificate numbering system has been changed. This table defines a letter (A to Y) to indicate the exact status of the approval, covering the combinations of variations in the emissions standards (e.g. with or without particle number measurement), variations in OBD requirements and vehicle class. This previously used terms such as Euro 5, Euro 5+, Euro 6- to describe both the OBD standard and the emissions standards. This has now been clarified by limiting these terms to the OBD standard and using Euro 5a, 5b, 6a and 6b for the emissions standards. Euro 5a and Euro 6a are the standards excluding the revised PM method, particle number limits and the testing of flex-fuelled vehicles at -7°C with biofuel. Euro 5b and Euro 6b include these issues. Euro 5b applies from 1 September 2011 for new Type Approvals. Euro 5a and 6a will cease on 31 December 2012 for all registrations. This applies for all classes of vehicles - there is no delay for heavier N1s and N2 vehicles.

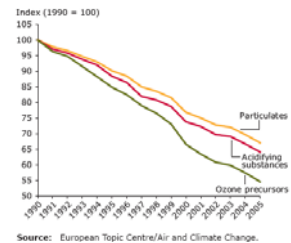
Other clarifications show that particle number measurements are not required for in-service testing for Euro 6a vehicles. There is a clarification in the wording of the 'driver inducement' requirements for systems using reagents such as Adblue® and a change to the 'in-use performance ratio' (IUPR) part of OBD performance monitoring. The draft is at http://ec.europa.eu/enterprise/automotive/tcmv_meetings/written_procedures.htm.

EEA Report on Emissions from Transport

The European Environment Agency's annual report on Transport and Environment, published on 3 March 2008, says that EU transport policy must act on rising greenhouse gas emissions from the sector if it wants to achieve its climate and energy objectives for 2020.

The EEA report says that existing and proposed EU measures such as the car CO₂ targets will not deliver sufficient reductions. Had transport sector emissions followed the same trend as in society as a whole, total EU-27 greenhouse gas emissions during the period 1990–2005 would have fallen by 14% instead of 7.9%.

However, on air pollutant emissions and air quality, the report says that transport, in particular road transport, is "generally becoming less polluting due to increasingly strict air pollutant emissions standards. Nevertheless, people in European cities continue to be exposed to significant health threats due to air pollution". Between 1990 and 2005, emissions of acidifying substances decreased by 36%, ozone precursors by 45% and particulates by 33%. The increasing importance of ship emissions is noted.



Source: European Topic Centre/Air and Climate Change.

The reductions can, says the report, "largely be attributed to advances in exhaust gas aftertreatment devices together with improved fuel quality introduced since the early 1990s....Developments include advanced three-way catalytic converters and particulate filters. These technologies are steadily improving both in terms of their performance and cost. Selective Catalytic Reduction (SCR), a system that uses urea to reduce NO_x emissions, is more commonly fitted to heavy road vehicles. The implementation of these technologies is being driven by stepwise tightening of on- and off-road vehicle emissions standards. These emissions standards, the so-called EURO standards, have been the most powerful tool for reducing transport emissions".

Source: Climate for a transport change. TERM 2007: indicators tracking transport and environment in the European Union; EEA Report No 1/2008, 3 March 2008, http://reports.eea.europa.eu/eea_report_2008_1/en/EEA_report_1_2008_TERM.PDF.

EU Air Quality Directive is Finalised

The European Commission and the Council of Ministers have accepted the European Parliament's 2nd reading amendments to the EU Air Quality Directive. The outcome includes a statement on plans for future work on emissions reductions at source.

The Directive introduces limits on ambient levels of PM_{2.5} to be met by 2015. It sets a cap of 25µg/m³ at national level and an average exposure level of 20µg/m³ for urban areas. Exposure levels in these areas must be reduced by 20% by 2020 relative to 2010 data. The revised directive also gives Member States greater flexibility in complying with certain existing air quality standards. EU States are allowed to postpone implementation of concentration limits until mid-2011 for PM₁₀ and until 2015 for NO₂.

The declaration by the Commission on the measures necessary for reducing emissions at source was an agreed part of the compromise package. The declaration recognises the need to reduce emissions at source and says that "significant progress" already

made includes the adoption of light-duty Euro 5 and 6, a Commission proposal on industrial emissions legislation including intensive agricultural installations and smaller scale industrial combustion (i.e. the proposed revisions to IPPC), and the heavy-duty Euro VI proposal. In 2008 the Commission foresees new legislative proposals to reduce Member States' National Emissions Ceilings, to reduce refuelling emissions, and to address the sulfur content of fuels including marine fuels. Preparatory work is also underway to investigate reducing the emissions of domestic boilers and water heaters and reducing the exhaust emissions of non-road mobile machinery.

Consultations on Refuelling Emissions and Car CO₂ Reduction Measures

The European Commission has issued a consultation on the mandatory introduction of 'Stage 2' Petrol Vapour recovery systems to reduce emissions of volatile organic compounds (VOCs) during vehicle refuelling. Stage 1 covered VOC emissions during fuel storage and delivery to service stations. The consultation notes that ethanol in petrol may lead to increased fuel vapour pressure and VOC emissions.

The Commission has also launched a consultation on some of the ancillary measures that are intended to contribute a further 10g/km to the EU's target of 130g/km average CO₂ from light-duty vehicles by 2012. The consultation covers possible requirements for gear shift indicators to guide drivers as to the most efficient points to change gear, and possible test requirements to assess the efficiency of air conditioning systems. Options for the latter include the use of air-conditioning in the normal emissions test cycle, an additional test cycle with solar loading or assessment based on technical features.

European Parliament supports Incentives for Emissions Reduction

On 11 March 2008 the European Parliament adopted a resolution on sustainable transport policy. The resolution notes that "the noxious emissions produced by road transport have lessened as a result of technological innovations and the extensive efforts of the motor industry...this outcome has been achieved specifically through the introduction of catalytic converters, fine particle filters, and other technologies which have helped to cut NO_x and polluting particulate emissions by between 30% and 40% over the past 15 years". But it also notes that urban traffic generates 40% of CO₂ emissions and 70% of other pollutant emissions from vehicles and stresses that the transport sector must meet the goal of reducing greenhouse gas emissions by at least 20% by 2020. The resolution urges the Council and Member States

to link car-related taxation to pollutant emissions and fuel consumption efficiency and to reform their tax systems to "provide more substantial incentives in favour of cleaner vehicles".

Maritime Safety and Climate Change to Top Agenda for France's EU Presidency

France announced that maritime safety and climate change initiatives would figure prominently on the transportation agenda it plans to support during its presidency of the European Union, which begins 1 July 2008. France also announced that it will lobby its EU partners to approve a proposal to include the aviation sector in the EU's carbon trading scheme.

The ministry presented France's transportation sector agenda following a preparatory meeting between the French Transport Minister, Transport Commissioner Barrot, the Swedish Infrastructure Minister and the Czech Deputy Minister for Transportation. The transport summit was arranged to plan a harmonised approach for legislative and policy reforms expected to be presented during the French presidency and to be acted upon during the ensuing Swedish and Czech presidencies in 2009. Topping the environmental initiatives is a new "green transport" initiative that would allow EU member states to crack down on pollution from pan-European truck traffic and to offer new incentives for "intelligent" transport projects. France will also seek to walk a tightrope between boosting air traffic, through a wider "open skies" legislative agreement and curbing the climate change impacts of the aviation sector, by including plane emissions in the EU Emission Trading Scheme.

EEA Report on Environmental Success Stories for Road Transport

A new report from the European Environment Agency (EEA) reviews '*Success stories within the road transport sector on reducing greenhouse gas emission and producing ancillary benefits*'. The report explores six projects in the Netherlands, Czech Republic and United Kingdom that have helped to reduce greenhouse gas emissions and therefore contribute to the EU's targets on climate change. These projects have also helped improve air quality and reduce noise. The projects reviewed are speed control in Rotterdam, the London Congestion charging zone, an Environmental zone in Prague, a Freight Construction Consolidation Centre in London and teleconferencing in the United Kingdom. The full report is available as a free download at http://reports.eea.europa.eu/technical_report_2008_2/en/Success-stories-Tech_2_2008_final.pdf.

EEA calls for Suspension of Biofuels Target

The European Environment Agency (EEA) Scientific Committee has called for the suspension of the EU target of 10% biofuels use in transportation by 2020, and is recommending a new, comprehensive scientific study on the environmental risks and benefits of biofuels. The EEA Scientific Committee expressed concerns on the benefits of 1st generation biofuels, the amount of available arable land for bioenergy production without harming the environment and the potential need for large amounts of additional imports of biofuels resulting in destruction of rain forests.

Health Experts support EU MMT Ban

On 24 April 2008, 12 European health experts sent letters to Ministers of Environment and Health in the EU member states in support of the ban on Methylcyclopentadienyl Manganese Tricarbonyl (MMT) proposed by MEP Corbey in the revised Fuels Directive. The letter notes that "Manganese is a well recognized neurotoxicant. Evidence strongly suggests that manganese exposure through inhalation and drinking water can damage brain development in children and permanently impair motor control and behaviour in adults. In Italy and Canada, environmental exposure to manganese through industrial and traffic emissions has been linked to an increased risk of Parkinsonism among exposed populations". They further highlighted the Brescia Declaration which concluded that "results presented at this scientific meeting raised grave concerns about the likelihood that manganese-based additives in petrol could cause widespread developmental and neurological toxicity similar to that caused by lead-based additives now banned nearly worldwide".

Austria to introduce Euro 6 Incentives with CO₂ Bonus/Malus System

From 1 July 2008 Austria will give an incentive of €300 for new cars emitting less than 120g/km CO₂ and €200 if Euro 6 NO_x standards are also met. There will also be a general incentive of €500 for hybrids and vehicles powered by E85, methane, biogas, hydrogen or LPG. For new cars with CO₂ emissions over 180g/km there will, from the same date, be a penalty, levied at a rate of €25 per gram CO₂ above the limit. From 1 January 2010, the threshold will be lowered to 160g/km. Austria says that the system is expected to steer the market in the same way as the support for cars with diesel particulate filters has since July 2005. The proportion of newly registered cars with DPFs has risen from 8% to over 85% by December 2007.

The announcement follows the publication of the Austrian Umweltbundesamt's annual report on new car CO₂. This showed that in 2006, on average, new cars in Austria emitted 164g/km CO₂, an increase on the previous year. Diesels are 62% of the market and for the first time the average CO₂ emissions of diesels were slightly higher than other vehicles, due to a trend to larger, higher performance vehicles.

Austrian Ambient Particulate Levels have already exceeded Annual Limits

Particulate matter emission records for the first 100 days of 2008 are looking very poor, according to an investigation by the Austrian Auto Club. The annual limit of 30 days in which PM₁₀ levels exceed 50µg/m³ has already been exceeded in Graz and Leibnitz. Emissions are also high in Klagenfurt, Innsbruck, Linz, Salzburg and Vienna. Since the start of the year, Graz already had 41 days where the limit was exceeded.

UK Incentive for Euro 5 Vans

The UK Chancellor made "an environmentally sustainable world" a key part of his 2008 Budget on 12 March 2008. The measures include a reform of car taxation to encourage consumers and businesses to use more efficient vehicles, changes to fuel duties and a proposal to give an incentive on annual circulation tax for Euro 5 vans. The budget statement says that a measure will be introduced with effect from 1 January 2009, giving an incentive on Vehicle Excise Duty for early take-up of Euro 5 technology diesel vans ahead of mandatory introduction in 2011. The incentive will remain for the lifetime of the vans.

Belgian Reports on Ultrafine Particles

New measurements from the Flemish Institute for Technological Research (VITO) show that mopeds emit more ultrafine particles than trucks. VITO made measurements on a bicycle path along a quiet road in Geel, enabling them to measure the quantities of ultrafine particles which cyclists inhaled when a moped or truck passed. The VITO measurements showed that a truck emitted 300 000 ultrafine particles per cc but a two-stroke moped emitted no less than 350 000. The measured values are ten times higher than those from Dutch research published at the end of February. This is possibly because in the Netherlands cycle lanes are much more separated from the regular traffic; the closer a cyclist rides to the source of pollution, the more he is exposed to ultrafine particles.

A second report, commissioned from Transport & Mobility Leuven (TML) by the Flemish Institute for Scientific and Technological Assessment, which is

linked to the Flemish Parliament, discusses the link between fine particles, cars, traffic and health. The report is to serve as input for a public consultation on the topic. Some key points from the report are that:

- fine particles diminish life expectancy by 3 years
- traffic causes one third of fine particles emissions
- if all European diesel cars were replaced by diesel cars with a particulate filter, Flemish air would contain 10% less fine particles.

Lyon sets Environmental priorities for Vehicle Purchase

The Communauté urbaine de Lyon, France, has set environmental targets as a key part of its latest tender for vans and light trucks for use in local communities. The tender document sets 3 criteria for supplier selection. Environmental performance counts for 50%, technical considerations (including capacity, comfort and power supply system) for 25% and overall 3-year cost for 25%. Under the environmental criterion, minimisation of CO₂, PM and NO_x emissions each counts for 15% of the total and waste minimisation/recyclability for 5%.

Report on Environment in Italian Cities

The Italian Environmental Protection Agency's (APAT) annual study of the environment in cities of over 150000 inhabitants says that cars were the chief culprits for poor air quality in 19 of the 24 Italian cities it looked at. In 11 cities, cars were to blame for over 50% of emissions dangerous to human health, rising to over 60% in Rome, Turin and Messina. The report says that levels of NO_x, benzene, and CO have all risen. Levels of PM₁₀, thought to cause over 8000 deaths in Italy each year, have fallen in recent years nationwide but are still dangerously high, said the report. APAT also reports that over 10% of cars on the road now meet Euro 4 standards, rising to nearly a quarter of all vehicles in Rome.

Dutch Retrofit Subsidy reaches Ceiling for Heaviest Vehicles

The Dutch subsidy scheme for retrofitting soot filters to trucks and buses has reached its ceiling of 1000 vehicles for the heaviest power category. The subsidy Regulation, which has a total budget of €34 million, set a limit of up to 1000 vehicles with a power capacity over 225 kW in 2008. At 7 February 2008, 1000 vehicles in this heaviest power category have already been equipped with a retrofit soot filter. As a result, vehicles with a power capacity over 225kW are no longer entitled to a subsidy. Trucks and buses below 225kW can, however, still apply for a subsidy for retrofitting a soot filter in 2008.

Romania to introduce Emissions-based Car Taxes

Romania has announced that a revised, pollution-based annual tax will be introduced from 1 July 2008. The new tax is to be based 30% on CO₂ emissions and 70% on pollutant emissions for the Euro 3 and Euro 4 cars. There will also be rates for Euro 5, hybrid and electric cars. For Euro 1, Euro 2 and non-Euro cars the present formula will continue.

Germany cancels Plans for E10

Germany's Federal Environment Minister has announced that the country will not proceed with plans for the mandatory introduction of petrol containing up to 10% ethanol (E10). The current European Standard EN228 allows only up to 5% ethanol as a blending component. The introduction of B7 (Diesel with 7% biodiesel), though, remains a target.

The German motor industry association, VDA, had originally said that 189 000 of its members' vehicles would not be compatible with E10, and had assumed that this scaled up to some 360 000 vehicles for the whole market. But discussions with the importers association, the Verband der Internationalen Kraftfahrzeughersteller (VDIK), raised this figure to over three million vehicles. Motorists whose vehicles are not compatible with E10 would be forced to use the more expensive, higher octane Super Plus grade, which is not blended.

Eurotunnel asks for Retrofit Emissions Systems for Shunting Locomotives

Eurotunnel, operator of the channel tunnel rail link between France and the UK, has issued a tender notice for the installation of Exhaust Gas Emissions Control Systems on 9 diesel shunting locomotives to replace the current exhaust systems so as to meet European Stage IIIB/IV specifications. The new system must be installed on the locomotive in the space currently taken by the existing exhaust. The engines will be fuelled by ultra-low sulfur diesel to the European diesel fuel standard EN590.

NORTH AMERICA

US EPA announces new Locomotive and Marine Diesel Emissions Rules

The US Environmental Protection Agency (EPA) has announced the final version of its new emissions standards for locomotive and for marine diesel engines, which EPA says will reduce their PM and NO_x emissions by up to 90%. The new rules set near-term Tier 3 standards and longer-term (2014/2015)

Tier 4 standards for new locomotives and marine diesel engines. The Tier 4 standards reflect the application of high-efficiency aftertreatment technology. The new rules also tighten emissions standards for existing locomotives and large marine diesel engines when they are remanufactured.

With some limited exceptions, the locomotive regulations apply to all diesel locomotives including new units and remanufactured locomotives that were originally manufactured after 1972.

	PM g/bhp-hr	NOx g/bhp-hr	HC g/bhp-hr	Application date
Tier 3				
Line-Haul Locomotives	0.10	5.5	0.30	2012
Switch (shunting) locomotives	0.10	5.0	0.60	2011
Tier 4				
Line-Haul Locomotives	0.03	1.3	0.14	2015
Switch (shunting) locomotives	0.03	1.3	0.14	2015

There are separate standards applicable to Tier 0, 1 and 2 remanufactured units. The regulation also requires an automatic engine stop-start system on all new Tier 3 and Tier 4 locomotives to reduce idle emissions. A similar system must also be installed on all existing locomotives that are subject to the new remanufactured engine standards.

The Marine Diesel Engines regulations apply to both newly manufactured marine diesel engines and remanufactured commercial marine diesel engines above 600 kilowatt (kW) or 800 horsepower (hp) with displacement less than 30 litres per cylinder.

Category 1 represents engines up to 7 litres per cylinder displacement. Separate emissions standards are set for 3 power bands (<19kW, 19 to <75kW and 75 to 3700kW), subdivided into up to 5 cylinder capacity bands. The application dates for Tier 3 vary by power and displacement band, and the standards and/or application dates differ between commercial 'standard power' marine diesels and 'recreational and commercial high power density' applications. The Tier 3 standards range from 0.08 to 0.30g/bhp-hr PM and 4.0 to 5.6g/bhp-hr HC+NOx.

Category 2 includes engines from 7 to 30 litres per cylinder. For Tier 3, these are divided into 4 classes (7 to <15, 15 to <20, 20 to <25 and 25 to <30 litres/cylinder) with separate limits and application dates. PM limits are 0.10g/bhp-hr for the smallest category and 0.20g/bhp-hr for the others. HC+NOx limits range from 4.6 to 8.2g/bhp-hr.

Category 3 engines (>30 litres/cylinder), mainly used in ocean-going ships, will be addressed separately.

The Tier 4 requirements do not apply to recreational marine diesels, unlike Tier 3. For commercial marine diesels at Tier 4, the requirements are the same for both Category 1 and Category 2 engines and are sub-

divided only on power, although there are some variations and options for the largest capacity engines and options for the other categories.

US EPA Ports Strategy

The US Environmental Protection Agency has unveiled a new Strategic plan for Sustainable Ports. EPA's Strategy focuses on six themes including clean air and the global environment. EPA suggests working with the port authorities, their business partners and other sectors of the transportation industry to quantify and reduce air emissions from all sources along the shipping supply chain. The strategy document suggests developing a tiered set of emissions reductions goals for major ports. It is also suggested that States set up innovative financing funds to help small owner-operators of diesel equipment finance the upgrading or replacement of older, dirtier engines. EPA's strategy complements the guidance on port sustainability issued by the American Association of Port Authorities. EPA says its regional offices will work with individual ports to address the unique environmental impacts and opportunities for ports in different parts of the country. Details are at www.epa.gov/sectors/ports.

Aftermarket Emissions Parts for California Motorcycles

The California Air Resources Board (CARB) is proposing new rules for aftermarket emissions components for motorcycles. Currently, manufacturers of aftermarket parts that may affect emissions must conduct emissions testing to show that vehicle emissions remain below the applicable emissions standards. With more stringent emissions standards, control technologies such as catalyst systems have become more common on highway motorcycles. As a result, aftermarket exhaust systems – particularly customising systems - for use on motorcycles with a catalyst may no longer be legal for sale in California because they would require the removal of a critical emissions component. The proposed procedures will be based on the existing CARB certification protocol. They are intended to ensure that, although critical emissions components such as catalytic converters and oxygen sensors will be replaced when the motorcycle is relatively new, the aftermarket parts will be as reliable and durable as those certified by the motorcycle manufacturer.

For the emissions testing, the manufacturer must choose a 'worst-case' motorcycle for each engine family (heaviest loaded motorcycle, highest engine speed to vehicle speed ratio and highest projected sales for the replacement system). The aftermarket part must be fitted to this motorcycle and subjected to

mileage accumulation to determine the deterioration factors and compliance with the emissions standards.

California modifies ZEV requirements

The California Air Resources Board has reduced the State's requirements for the number of pure Zero Emissions Vehicles (ZEVs) by 70% for three years from 2012, but set a separate mandate for hybrids.

CARB voted to reduce the number of pure ZEVs the industry is required to produce to 7500 for the three years from 2012 to 2014. The previous requirement, from 2003, called for 25000 such vehicles during that period. CARB staff had proposed a figure of only 2500. Nearly 60000 'advanced technology partial zero emissions vehicles' (AT-PZEVs), including plug-in hybrids and compressed natural gas vehicles, will make up for the cutback in the pure ZEV requirement, the Board said.

CARB also announced that it will, over the next year, re-organise and simplify the State's Low Emission Vehicle, Zero-Emissions Vehicle and Greenhouse Gas Emissions programmes.

CARB tightens Ambient Air Quality Standard for NO₂

On 20 March 2008, the new Ambient Air Quality Standard for nitrogen dioxide became effective in California. The Air Resources Board (CARB) had approved recommendations from staff of CARB and the Office of Environmental Health Hazard Assessment to lower the existing 1-hour-average standard for NO₂ from 0.25ppm to 0.18ppm, not to be exceeded, and it has established a new annual-average standard of 0.03ppm, not to be exceeded.

US EPA revises Ozone Standard

The US Environmental Protection Agency has announced that the ambient air quality 8-hour ozone standard is to be reduced to 0.075ppm (75 parts per billion (ppb)). The standard was previously 80ppb, but because of rounding this effectively allowed levels up to 84ppb. EPA's Clean Air Scientific Advisory Committee had recommended a level of 60 to 70 ppb for the new standard, with the lower level suggested for children who are more vulnerable to ozone pollution. They had also urged EPA to set a separate ozone standard to protect vegetation. In announcing the new standard, EPA Chief Stephen Johnson urged a modernisation of the Clean Air Act to take account of costs, benefits and feasibility; the law currently cannot consider these factors, only the science.

US EPA announces Grants for Clean Diesel Projects

The US Environmental Protection Agency has announced that grants of almost \$50 million (€32 million) will be available for clean diesel projects aimed at reducing emissions from the nation's existing fleet of 11 million diesel engines. The funds will be administered by EPA's National Clean Diesel Campaign (NCDC) and its network of seven "collaboratives", made up of EPA regional offices with public and private sector partners.

The main target for the grants is school and transit buses, medium and heavy-duty trucks, marine engines, locomotives and non-road engines. Grant recipients can use EPA-verified retrofit and idle-reduction technologies, EPA-certified engine upgrades, vehicle or equipment replacements, and cleaner fuels. Grants can be awarded to state, local, regional and tribal governments, non-profit organisations and institutions with transportation, educational services and air quality responsibilities.

US EPA will issue Greenhouse Gas Emissions Proposal

On 27 March 2008, the US Environmental Protection Agency announced that during the spring it will issue an Advanced Notice of Proposed Rulemaking with the aim of seeking public input on whether greenhouse gas (GHG) emissions from mobile and stationary sources should be regulated. EPA will present its scientific evidence and ask for comments on the quantifiable effects of GHG emissions. The US had previously blocked California's plans for its own system to reduce greenhouse gas emissions. The California law would have forced manufacturers to make more fuel-efficient cars from 2009.

California Study on Diesel PM Exposure

A comprehensive health risk assessment study released by the California Air Resources Board (CARB) says that residents of the West Oakland, California area are exposed to diesel PM ambient concentrations that are almost three times the average background diesel PM ambient concentrations in the Bay Area Air Quality Management District. The diesel particulate matter emissions from trucks travelling on nearby freeways and marine vessel traffic in the San Francisco Bay Area are causing an increased potential cancer risk to the West Oakland community, the report says.

While diesel trucks account for a majority of the risk in West Oakland resulting in about 850 potential cancer cases per million or 70%, port operations account for

an estimated lifetime potential cancer risk of 200 excess cancer cases per million, or about 15% of the total. Rail yard emissions amount to a potential cancer risk of about 40 excess cancer cases per million, or less than 5% and the remaining 10% of risk comes from a variety of diesel sources such as passenger trains and construction projects.

Source: Diesel Particulate Matter Health Risk Assessment Study for the West Oakland Community: Preliminary Summary of Results.

US Court rules against California on Ship Auxiliary Engine Emissions

The US Court of Appeals has upheld a ruling that California does not have the authority to issue regulations limiting emissions from auxiliary ship engines operating within 24 nautical miles of the California coast. The ruling means that California would need approval from the US Environmental Protection Agency to implement such a regulation. The California regulation, which had come into effect on 1 January 2007, required ocean-going ships to use low sulfur fuel for their auxiliary engines when near the California coast.

New York Ferries to use Ultra-low Sulfur Diesel Fuel

The New York City Council has issued a local law requiring all city-run ferries owned or operated by the city, or operated on their behalf, to use ultra-low sulfur diesel fuel (ULSD) by 1 July 2008. The new law also sets a rolling programme for the upgrading of ferry engines to 'best available technology (BAT)'. The programme requires 2 ferries to use BAT by 1 July 2008 and all ferries to be so fitted by 1 January 2011.

Best available exhaust retrofits are also required. This will be based on a schedule to be submitted to the Council by 1 July 2009. If a successful retrofit demonstration is completed on a city ferry, then this retrofit schedule will be revised to require retrofit of all ferries as soon as possible.

New diesel fuel-powered ferries will have to meet current EPA air quality standards, with a minimum of the Tier 2 marine standards. Ferries that are still in use thirty years after being placed into service or seven years after the installation of best available technology and which cannot be retrofitted, upgraded or repowered to meet Tier 2 will have to be replaced.

SOUTH-AMERICA

Colombia's State Oil Company agrees to provide Cleaner Diesel for Capital City

Colombia's Environment Minister, the president of state petroleum company EcoPetrol, and the mayor of

Bogota signed the new clean diesel agreement on the capital's annual car-free day. The agreement requires EcoPetrol to reduce the concentration of sulfur in diesel fuel sold in Bogota to less than 500ppm by 1 July 2008 and to 50ppm or less by 1 January 2010. Currently, diesel fuel sold in the capital contains sulfur levels of 1000ppm. In the rest of the country, diesel contains sulfur levels as high as 4000ppm. Because plans to modernize refineries are expected to take years, EcoPetrol initially plans to import low-sulfur diesel fuel to mix with that produced in Colombia. For its part, Bogota's municipal government agreed to accelerate the removal from circulation of aged vehicles and to increase enforcement of pollution limits on industries. Bogota experiences chronic smog, which environmental officials blame on both diesel vehicles and fixed sources such as coal-burning factories. Many of the city's trucks and buses are decades old and have less efficient engines, especially in the capital's higher altitude of 2640m above sea level.

The federal environment ministry and EcoPetrol are also working to provide cleaner diesel fuel for other cities, beginning with Medellin, the nation's second-largest city. In addition, the environment ministry said it is also improving its air-quality monitoring network and that, as of January 2008 motorcycles became subject to new pollution limits. The first National Report on the Quality of Air in Colombia, published in February, says that improving air quality is "a priority" for the ministry. The report, produced by the government's Institute for Hydrology, Meteorology and Environmental Studies, found that micro particles are the pollutants most damaging to Colombians' health. Of the 10 sites in the nation with the worst particulate pollution, eight are in Bogota and two are in Medellin, the report said.

ASIA-PACIFIC

Shanghai and Guangdong province to implement China IV Emissions Standard

Shanghai is reported to be accelerating its implementation of Chinese emissions requirements for the 2010 Shanghai Expo. New vehicles on sale in the Shanghai area will now have to meet the China IV emissions standard - based on the Euro 4 emissions standards - from the end of 2009. Guangdong province will stop licensing vehicles that fail to meet the nation's stage III emissions standards from 1 July 2008 and aims to introduce the stage IV for vehicle licensing in the highly developed and more polluted Pearl River Delta region. China IV is due to go into effect nationwide in July 2010 for light-duty vehicles and in January 2010 for heavy-duty vehicles. Beijing

has been on an accelerated implementation path, requiring China IV for light-duty diesels in January 2007; for light-duty gasoline vehicles in March 2008; and for heavy-duty in January 2008.

China Environmental Protection hopes to get Boost with New Ministry

China's Environment Protection Bureau has been promoted to a ministerial-level agency, giving it greater authority and emphasizing that the central government sees environmental protection as key to the country's continued success, government officials said. The Agency tasked with the broad national challenges involved in environmental protection and repairing environmental damage, has not had the same authority in policy or planning powers as a top-level ministry.

Hong Kong orders Particulate Filters and Emissions Analysers

Hong Kong is fitting diesel particulate filters to more than 2500 buses as part of the first large-scale diesel retrofit programme in the city. Beginning this spring, filters will be installed on vehicles from the four major bus operators - Kowloon Motor Bus, Citybus, New World First Bus Services and New Lantao Bus.

In a separate move, the Hong Kong Environmental Protection Department has ordered Portable Emissions Measurement Systems for gaseous emissions and particulate matter. The equipment will be used to develop an in-use emissions database for gasoline- and diesel-powered light-duty and heavy-duty vehicles. The objective is to model vehicle emissions for the compilation of vehicle inventories and to conduct environmental impact assessments.

Hong Kong Financial Secretary proposes Clean Vehicle Incentives

In his budget speech to the Legislative Council of the Hong Kong Special Administrative Region, Financial Secretary John Tsang proposed concessions on the registration tax of commercial vehicles meeting Euro V emissions standards, with a reduction of 30%, 50% or 100% in the tax depending on the vehicle category. There would also be a two-year concessionary duty rate on Euro V diesel fuel and a 100% profits tax deduction for capital expenditure on environmentally-friendly industrial machinery and equipment in the first year of purchase.

Kazakhstan sets Timetable for Emissions and Fuel Standards

Kazakhstan has set a timetable for upgrading its emissions and fuel requirements. Euro 2 will be introduced on 1 January 2009, following completion of upgrades for all the major refineries. Euro 3 will follow on 1 January 2011 and Euro 4 in 2014.

10ppm Diesel in Singapore by 2011

Singapore newspaper *The Straits Times* reports that the country is preparing to introduce Euro 5 diesel fuel (10ppm sulfur) by the end of 2011. Currently Singapore's three major oil refiners - Singapore Refining Corporation, Shell and ExxonMobil - produce fuel with 50ppm sulfur. Around 20% of the nation's approximately 1 million cars are thought to run on diesel, the majority of them taxis. Singapore currently imposes heavy taxes on diesel cars to minimise their use, but in his first budget on 15 February 2008, Finance Minister Tharman Shanmugaratnam reduced the special taxes on cars using current Euro 4 (50ppm sulfur) diesel, to recognize improved emissions. The report suggests that the tax could be dropped altogether when Euro 5 is introduced.

Japan seeks Stronger Programme on Emissions to Meet Kyoto Deadline

The Prime Minister's Cabinet has approved plans to strengthen Japan's voluntary greenhouse gas reduction efforts to help the country achieve its Kyoto Protocol commitment by the 2012 deadline (6% reduction compared with 1990 levels) and pave the way for a post-Kyoto regime. The plans call for, among other things, enhancing automobile fuel efficiency and reducing public transportation emissions. In addition, the plans urge the government and businesses to consider domestic emissions trading systems and environmental taxation. It would be the first time that Japan has revised its Kyoto Protocol greenhouse gas reduction programme, which it implemented in 2005 but, under the current plan, emissions are estimated to exceed the 2012 target by 22 to 38 million tons.

South Korea to introduce Fuel Efficiency Ratings on New Vehicles

Beginning in August 2008, South Korea will impose a fuel-efficiency rating scheme on new vehicles as part of efforts to improve fuel economy and reduce greenhouse gas emissions. A vehicle's fuel efficiency will be graded on a scale of one to five, five being the highest, to provide car buyers with more information on fuel consumption.

Thailand approves 'Eco-car' Projects

Thailand has approved three projects by Mitsubishi, Toyota and Tata to build 'eco-cars' in the kingdom. The cars produced will meet "the most stringent European emissions standards" and run on fuel with a 20% ethanol component. Mitsubishi will produce 107000 cars a year, starting in 2010. Toyota Motors will produce 100 000 cars a year, with production beginning in 2012. Tata Motors will also manufacture 100 000 cars annually, starting in 2010. Thailand has offered automakers generous tax breaks and other incentives to produce 'green' cars. The country is already the world's biggest producer of light pickups, turning out 900 000 trucks per year.

INTERNATIONAL

IMO Action on Ship Emissions

On 4 April 2008 the Marine Environment Protection Committee (MEPC) of the UN's International Maritime Organisation (IMO) agreed controls on NOx emissions as well as new sulfur limits for ship fuels to reduce air pollutant emissions. The regulations will be formally adopted in the autumn.

Progressive reductions in NOx emissions from marine engines were agreed. The current limit would be reduced in 2011 for new ships, with further limitation for ships constructed on or after 1 January 2016, but only when operating in Emission Control Areas. The revisions will allow for an Emission Control Area to be designated for SOx and particulate matter, or NOx, or all three types of emissions from ships. Proposals for consideration by the IMO would need to demonstrate the need to prevent, reduce and control one or all three of those emissions from ships. Currently, Emission Control Areas are only designated for sulfur control (SECAs).

Tier I NOx requirements of 17g/kWh apply to diesel engines which are installed on a ship constructed on or after 1 January 2000 and before 1 January 2011. This represents the standard in the existing MARPOL Annex VI. For Tier II, NOx emissions levels for a diesel engine which is installed on a ship constructed on or after 1 January 2011 would be reduced to 14.4g/kWh. For Tier III, NOx emissions levels for a diesel engine which is installed on a ship constructed on or after 1 January 2016 would be reduced to 3.4g/kWh, when the ship is operating in a designated Emission Control Area. Outside a designated Emission Control Area, Tier II limits would apply. A NOx emissions limit of 17.0g/kWh was agreed for existing diesel engines of more than 5000kW and ≥ 90 litres/cylinder installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000.

Amendments to the NOx Technical Code were also agreed. These include a new Chapter 7 based on the agreed approach for NOx regulation of existing (pre-2000) engines, provisions for direct measurement and monitoring methods, a certification procedure for existing engines, and test cycles to be applied to Tier II and Tier III engines.

The sulfur revisions will mean that in Sulfur Emission Control Areas (SECAs) - currently the Baltic and North Seas - the fuel sulfur limit will be reduced to 1% from current 1.5% from 1 March 2010 and to 0.1% from 1 January 2015. It is envisioned that further SECAs will be declared in coastal areas in the future. Some two-thirds of the world's 50000-strong fleet operate in coastal areas. From 1 January 2012 the global sulfur limit will be reduced to 3.5% on all ship fuels from the current 4.5%. By 2020 this will be reduced further to 0.5%. There will be a feasibility review to be completed no later than 2018. Should the 2018 review reach a negative conclusion, the effective date would default to 1 January 2025. The changes to fuel will mean an increasing use of middle-distillate in place of heavier, high sulfur fuels.

RESEARCH SUMMARY

New Reaction in Smog Formation

Researchers at the University of California, San Diego have discovered that a chemical reaction in the atmosphere above major cities that has been assumed to be unimportant in urban air pollution is in fact a significant contributor to urban ozone, the main component of smog. The team found in laboratory experiments that a chemical reaction previously thought to be unimportant can play a significant role in urban OH radical production. Their measurements suggest that this rate of OH radical production occurs ten times faster than previously estimated.

Sources:

Li et al, Atmospheric Hydroxyl Radical Production from Electronically Excited NO₂ and H₂O, *Science* 319 (5870), 1657, doi: [10.1126/science.1151443](https://doi.org/10.1126/science.1151443)

Wennberg and Dabdub, Rethinking Ozone Production, *Science* 319 (5870), 1624, doi: [10.1126/science.1155747](https://doi.org/10.1126/science.1155747)

Effect of Biodiesel Quality on Emissions

A new research report from the Desert Research Institute, Nevada, USA says that studies that show an advantage for biofuels do not simulate real driving conditions. The researchers monitored the on-the-road performance of 200 school buses using normal diesel and then a 20% biodiesel blend. The results, they say, show that the quality of the biodiesel has a significant impact on emissions, but it is not possible to predict levels of pollution solely from laboratory

studies. The authors stress the importance of using good quality fuel and call for more stringent testing.

Source: Mazzoleni et al., A case study of real-world tailpipe emissions for school buses using a 20% biodiesel blend. *Science of the Total Environment*. 385 (1-3): 146-159 (2007).

In a separate report, researchers at the Woods Hole Oceanographic Institution in the US found that many local biodiesel blends do not contain the advertised amount of biofuel. The researchers found that the actual biodiesel content of B20 fuels was between 10 and 74% biofuel.

Source: Reddy et al, Determination of Biodiesel Blending Percentages Using Natural Abundance Radiocarbon Analysis: Testing the Accuracy of Retail Biodiesel Blends; *Environmental Science and Technology*, doi: [10.1021/es071814j](https://doi.org/10.1021/es071814j)

Black Carbon and Global Warming

Black carbon has a warming effect in the atmosphere that is three to four times greater than prevailing estimates, according to a new study published online in the journal *Nature Geoscience*. According to the researchers soot and other forms of black carbon could have as much as 60% of the current global warming effect of carbon dioxide. The researchers also noted that mitigation would have immediate societal benefits in addition to the long term effect of reducing greenhouse gas emissions.

Elimination of black carbon offers a nearly instant return on investment, the researchers said. Black carbon particles only remain airborne for weeks at most compared to carbon dioxide, which remains in the atmosphere for more than a century. In addition, technology that could substantially reduce black carbon emissions already exists in the form of commercially available products.

Source: Ramanathan & Carmichael, Global and regional climate changes due to black carbon; *Nature Geoscience*, March 2008.

Pollution and Health

Inhaling diesel exhaust triggers a stress response in the brain, according to a paper from Zuyd University in the Netherlands, Sweden's University of Umeå and The University of Edinburgh in Scotland. The researchers exposed 10 volunteers to dilute diesel exhaust at levels typical of that found on a busy road and compared the results of monitored brain activity with those during exposure to filtered air. The researchers say that further research is needed to determine whether nanoparticles in the diesel exhaust play a direct part in the effect and to define the precise pathways involved.

Source: Cruts et al, Exposure to diesel exhaust induces changes in EEG in human volunteers; *Particle and Fibre Toxicology* 2008, 5:4, doi: [10.1186/1743-8977-5-4](https://doi.org/10.1186/1743-8977-5-4).

Pregnant mice were exposed to 19mg/m³ of diesel exhaust particulate on gestational days 9-19, for 1

hour per day. The researchers found that shortly after birth, body weights of particulate-exposed offspring were slightly lower than in the controls. This difference increased during lactation, so by weaning the particulate-exposed offspring weighed significantly less than the control progeny. The researchers conclude that particle size and chemical composition of the particulate may play a significant role on the biological effects observed.

Source: Hougaard et al, Effects of prenatal exposure to diesel exhaust particles on postnatal development, behavior, genotoxicity, and inflammation in mice; *Particle and Fibre Toxicology* 2008, 5:3, doi: [10.1186/1743-8977-5-3](https://doi.org/10.1186/1743-8977-5-3).

A new study reports that inner-city children with asthma may be particularly vulnerable to air pollution at levels below current air quality standards. The short-term effects of outdoor pollution levels on asthma symptoms and lung function in children were studied with support from the National Institutes of Health and the EPA.

Source: O'Connor et al., Acute respiratory health effects of air pollution on asthmatic children in US inner cities, *Journal of Allergy and Clinical Immunology* 2008, doi: [10.1016/j.jaci.2008.02.020](https://doi.org/10.1016/j.jaci.2008.02.020).

A study from Taiwan investigates the relationship between traffic air pollution and the development of childhood leukaemia. The results showed that there was a significant relationship between exposure to traffic exhaust pollutants and the risk of leukaemia among young children after controlling for possible confounders. The researchers concluded that further investigation of the role of traffic air pollution in the etiology of childhood leukaemia is needed.

Source: Weng et al, Childhood leukaemia development and correlation with traffic air pollution in Taiwan using nitrogen dioxide as an air pollutant marker; *Journal of Toxicology and Environmental Health Part A*, 2008; 71(7):434-8.

Properties of Particulate Matter

A paper from the California Air Resources Board and the University of Southern California examines the physical properties of particulate matter from heavy-duty diesel vehicles with advanced PM and NO_x emissions control technologies.

Source: Biswas et al, Physical properties of particulate matter (PM) from late model heavy-duty diesel vehicles operating with advanced PM and NO_x emission control technologies, *Atmospheric Environment*, doi: [10.1016/j.atmosenv.2008.03.007](https://doi.org/10.1016/j.atmosenv.2008.03.007).

A new study compares the DNA oxidising effects of particles collected at a traffic intensive road in Copenhagen, Denmark with the effect of standard reference materials (SRMs). The results showed that authentic street particles and SRMs differ in their ability to oxidise DNA in a cell-free environment, whereas cell culture experiments indicate that the particle preparations gave a similar alteration of the level of DNA damage and small differences in cytotoxicity. The authors say that although it cannot

be ruled out that SRMs and authentic street particles might elicit different effects in animal experimental models, their study indicates that on the cellular level, the reference materials are suitable surrogates for the study of street particles.

Source: Danielsen Loft & Moller DNA damage and cytotoxicity in type II lung epithelial (A549) cell cultures after exposure to diesel exhaust and urban street particles, *Particle and Fibre Toxicology* 2008, 5:6, doi: [10.1186/1743-8977-5-6](https://doi.org/10.1186/1743-8977-5-6).

PM1 gives more useful Air Quality Data

Research using data on over 6000 particle samples from a range of environments explored whether measuring PM1 and PM10 levels would lead to a better distinction between the different types of pollution source. The research found that PM2.5 data were hard to interpret, because they included particles from both mechanical processes and from combustion. PM1 measurements, however, could be used to distinguish between particles from combustion processes distinct from mechanically generated particles. Data from many environments around the world showed a clear cut off point around the PM1 mark, with particles below this size being derived almost exclusively from combustion. This suggests that PM1 and PM10 would be more useful measures of air quality than the current system. The measurement technology for PM1 is already available and monitoring technologies are now available that can measure ultrafine particles.

Source: Morawska et al, Modality in ambient particle size distributions and its potential as a basis for developing air quality regulation, *Atmospheric Environment*. 42 (7): 1617-1628. (2008)

Analysis of Emissions related to Driving Characteristics and Test Cycles

A paper from INRETS in France and Istituto Motori in Italy, to be published in *Atmospheric Environment* examines the analysis and modelling of emissions with regard to driving characteristics and test cycles.

Source: M. André and M. Rapone, Analysis and modelling of the pollutant emissions from European cars as regards the driving characteristics and test cycles, *Atmospheric Environment*, doi: [10.1016/j.atmosenv.2008.03.013](https://doi.org/10.1016/j.atmosenv.2008.03.013).

FORTHCOMING CONFERENCES

Vehicle Inspections “Win/Win Approaches”

6-8 May 2008, Porto, Portugal

The conference is organised by CITA, the worldwide association of organisations involved in in-service vehicle roadworthiness inspections. Workshops will cover environment, operation and strategy.

Materialien in der Abgastechnik / Materials in Exhaust Gas Technology

7-8 May 2008, Stuttgart, Germany

Details at www.iir.de/materials

Papers cover materials for exhaust systems, the markets of platinum group metals, materials and technologies for diesel particulate control, bionanomaterials for the reduction of precious metals in autocatalysts, converter mounting mats.

Air Analysis: out of the laboratory and into the field

15 May 2008, Teddington, UK

Includes a paper from Leeds University on real-time mobile monitoring of vehicle emissions and papers on portable FTIR and miniature mass spectrometers.

Im Spannungsfeld zwischen CO₂-Einsparung und Abgasemissionsabsenkung / Tension between CO₂ savings and exhaust emission reduction

15-16 May 2008, Herrsching (Munich), Germany

Details at www.hdt-automotive.de

Diesel Particulates and NOx Emissions (Short Course)

19-23 May 2008, Leeds, UK

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

The course covers diesel combustion and emissions, engine design and lube oil influences on NOx and PM, particulate and NOx aftertreatment and fuel injection and engine design trends.

Hart's World Refining & Fuels Conference

27-28 May 2008, Brussels, Belgium

The theme for this year's conference is Low-Carbon Fuels: A Life-Cycle Analysis. Speakers include Dorette Corbey MEP, rapporteur on the Fuel Quality Directive, and Claude Turmes MEP, rapporteur on the Renewables Directive.

AVL Large Engines Tech Day

28-29 May 2008, Graz, Austria

Details at www.avl.com/conferences

The conference includes papers on the MAN Diesel contribution to clean ships, future emissions regulations and compliance, and emissions reduction technologies for large industrial engines.

Diesel Engines / Le Moteur Diesel

28-29 May 2008, Rouen, France

Details at: www.sia.fr/evenement_detail_diesel_engines_moteur_diesel_920.htm

Topics to be addressed include diesel combustion and new combustion processes, injection systems, pollution control, engine design and performance, and specific features of industrial engines.

International Liquefied Petroleum Gas Exhibition and Congress

28-30 May 2008, Milan, Italy

Details at www.aegpl-expo.com

The main theme for 2008 is "LPG, the clean, immediately available alternative energy form".

International Congress of Heavy Vehicles, Roadtrains and Urban Transport

28-31 May 2008, Minsk, Belarus

Details at www.tsae.or.th/truck2008_en%5B1%5D.pdf

The congress is organized by Academic Automotive Association under FISITA patronage, and by the support of the Government of the Republic of Belarus, the Belarusian National Technical University, and the Belarusian automotive industry.

4th Emission Control 2008

29-30 May 2008, Dresden, Germany

The main emphasis of this conference will be on measures to reduce emissions and energy and heat management. The emissions topics will include engine internal methods, alternative combustion, new technologies of aftertreatment, and exhaust emissions test methods and equipment.

Diesel Engine Technology Engineering Academy

2-6 June 2008, Troy, Michigan, USA

Details at www.sae.org/events/training/academies

This covers the diesel engine engineering principles and practice necessary to effectively understand modern light-duty and heavy-duty diesel engines. It is an intensive learning experience comprising lectures and structured practical sessions.

Partikelfilter-Nachrüstung von Dieselmotoren / Particle Filter Retrofitting of Diesel Engines

5-6 June 2008, München, Germany

The lectures will focus on practical experience of particle filter design, sizing, regeneration options, and retrofit applications to a variety of existing on- and off-road diesel-powered vehicles and equipment. The fundamental theory of solids filtration, health impacts of nanoparticles, and recent world trends in particle emissions control are essential part of this course.

World Powertrain

10-11 June 2008, Vaals, Netherlands

Details at www.gpc-icpem.org/pdfs/vaals_gpc.pdf

The programme covers advanced engine design and performance, advanced powerplants and vehicles, and emissions and enabling Technology.

Diesel Emissions Europe 08

11-13 June 2008, Brussels, Belgium

Details at www.integer-research.com/Products/Services/?ServiceID=182&ckIndustryID=3

One of the main themes of the conference will be the commercial impact of the latest emissions standards on diesel truck manufacturers and emissions control equipment suppliers. The conference will combine top-level strategy presentations with case studies and panel discussions from the businesses and authorities that will continue to shape the future of diesel emissions reduction.

Benefits and Risks of Inhaled Engineered Nanoparticles

11-14 June 2008, Hannover, Germany

Details at www.inis-symposium.com

The symposium will cover the main areas of current concern and active research in the context of inhaled engineered nanoparticles, including physicochemical characteristics, measuring methods, bioavailability and potential sources of human exposure.

MinNOx: 2nd International IAV Conference on NOx Aftertreatment

19-20 June 2008, Berlin, Germany

Topics covered will include NOx aftertreatment solutions for Diesel cars, gasoline DI cars and heavy-duty applications, engine measures to reduce NOx emissions, OBD, catalyst and component development, urea infrastructure, and health effects.

ETH Conference on Combustion-generated Nanoparticles

23-25 June 2008, Zurich, Switzerland

Details at www.lav.ethz.ch/nanoparticle_conf/

Sessions will focus on areas including the formation of nanoparticles in IC-engines and in biomass combustion, exhaust aftertreatment technologies to eliminate nanoparticles and their possible secondary emissions, the impact of black carbon nanoparticles on global warming, legislation and health effects.

SAE International 2008 Powertrains, Fuels and Lubricants Congress

23-25 June 2008, Shanghai, China

Details at www.sae.org/events/pfl/

Offers of papers are being solicited in the following technology areas: Advanced Power Systems, Combustion and Fuels, Control and Calibration, Exhaust Aftertreatment and Emissions, Lubricants and Powertrain Systems.

3rd European Road Congress: Making Roads Ready for the Future

25 June 2008, Brussels, Belgium

Details at www.europeanroadcongress.com/

The programme will have thematic sessions on safer roads, smarter roads, greener & cleaner roads, and fairer roads.

Diesel Particulate Filter

1-2 July 2008, Stuttgart, Germany

Details at www.iir.de/dpf

The conference will cover worldwide emissions standards, DPF trends and the global market situation; the robustness, applications and costs of various DPF materials; particle measurement and online soot; regeneration strategies; and system integration of DPF-SCR systems.

SAE Bio-fuels: Specifications and Performance Symposium

7-9 July 2008, Paris, France

Details at www.sae.org/events/training/symposia/biofuels/

This symposium will be organised in support of the needs of the motor industry and its alliances with representation from the US, Europe and Asia. All will address the question, "how will rapid growth in global biofuels affect the global specifications and performance of future fuels?"

Diesel Engine Efficiency & Emissions Research Conference (DEER2008)

4-7 August 2008, Dearborn, Michigan, USA

Details at www1.eere.energy.gov/vehiclesandfuels/resources/conferences/deer/index.html

The US Department of Energy will showcase its cooperatively funded R&D with its partners, national laboratories, automotive transportation industry, universities, and other national and international organisations.

5th International Conference on Environmental Catalysis

31 August - 3 September 2008, Belfast, N. Ireland

Details at www.qub.ac.uk/centacat/5icec/

Sessions cover automotive emissions control, catalysis for the production of clean fuels, catalysis for sustainable energy conversion and greener process intensification.

Materials Science and Engineering

1-4 September 2008, Nürnberg, Germany

Details at www.mse-congress.de/index.php?lg=en

Topic areas include nanostructured materials, functional and structural ceramics, functional microporous materials, advanced surface engineering, characterisation and processing,

Ricardo seminar: Diesel particulates and NOx control

2 September 2008, Shoreham-by-Sea, UK

Details at www.ricardo.com/seminars

The agenda covers legislative requirements, fundamentals of NOx and PM formation, engine and aftertreatment systems, particle measurement and the formation and control of non-regulated NOx species.

European KONES 2008: International Scientific Congress on Powertrain and Transport Means

7-10 September 2008, Warsaw, Poland

Details at www.ilot.edu.pl/STRANG/kones2008.html

The conference will cover the latest achievements in research, development and design of both compression-ignition and spark-ignition as well as other combustion engines (hybrids) with special attention to issues such as biofuels, combustion processes, exhaust aftertreatment, particulates filters, and durability and reliability.

SAE Small Engine Technology Conference

9-11 September 2008, Milwaukee, WI, USA

Details at www.sae.org/events/set/

20th International AVL Conference "Engine & Environment"

11-12 September 2008, Graz, Austria

The theme for this year's conference is "120g CO₂/km – what about driving fun and costs? Engine & Environment 2008 will invite authorities from industry, academia and the political world to discuss solutions and strategies.

FISITA 2008 World Automotive Congress

14-19 September 2008, Munich Germany

Details at www.fisita2008.com

The topic area on future powertrain solutions includes strategies for future ultra-low exhaust emissions limits and strategies and engines for future fuels. The simulation and testing topic includes harmonisation of international legislation.

SIMEA: Automotive Engineering International Symposium

17-18 September 2008 (to be confirmed), Brazil

17th Aachen Colloquium "Automobile and Engine Technology"

6-8 October 2008, 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.

7th International Motorcycle Conference: 'Safety – Environment – Future'

7-8 October 2008, Cologne, Germany

Details at

www.ifz.de/e-events-conferences-7intmotorcycle.htm

Environmental aspects to be covered are motorcycle emissions, standards and measurement procedures.

SAE 2008 Commercial Vehicle Engineering Congress and Exhibition

7-9 October 2008, Rosemont, Illinois, USA

Details at www.sae.org/events/cve/

Abstracts are being invited on design, manufacture, operation and maintenance of heavy-, medium-, and light-duty commercial trucks, buses and military vehicles, construction, agricultural, forestry and utility equipment. This event will cover all on-road and off-road applications for commercial vehicles and include alternative fuels, emissions and global harmonisation.

International conference 'Environment & Transport in different contexts'

27-28 October 2008, Ghardaia, Algeria

Details at www.inrets.fr/services/manif/ghardaia-oct08/index-EN.html

The conference deals with the environment issues related to transport in different areas with a particular focus on the Southern countries. The main topics to be dealt with are transportation systems and environmental impacts, evaluation methodology, control technology and transportation policy.

Near Zero Vehicle Emission Technologies Conference

30 October 2008, Dearborn, Michigan, USA

Proposed topics include EGR systems, strategies for reducing CO₂, nitrous oxide reduction approaches including SCR, and Diesel particulate filters.

Better Air Quality BAQ2008

12-14 November 2008, Bangkok, Thailand

Details at www.baq2008.org/

The BAQ 2008 theme is "Air Quality and Climate Change: Scaling up win-win solutions in Asia." This theme is directly related to the recommendation of the Intergovernmental Panel on Climate Change to integrate air quality management (AQM) and climate change mitigation strategies.

ICAT-08 International Conference on Automotive Technologies

13-14 November 2008, Istanbul, Turkey

Details at www.icatconf.org

The main theme of this conference will be "Alternative Technologies for the reduction of CO₂ emissions". Topics include Diesel Engine Development, Durability and Emissions, Advanced Diesel Emissions Controls and Gasoline Direct Injection Engines.

Diesel Engine Aftertreatment

27 November 2008, Paris, France

Details at www.sia.fr

Although advances in the area of turbo charging and high pressure injection have led to significant improvements in diesel engine performance, efforts to continue reducing emissions levels are vital. Today's regulatory requirements impose the use of dedicated aftertreatment systems that are both complex and costly. The technological challenge is to develop systems that are more innovative, less costly, more efficient, sustainable and neutral as regards fuel consumption.

SAE 2009 World Congress

20-23 April 2009, Detroit, Michigan, USA

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

The theme of the 2009 congress is "racing to green mobility".