



Newsletter

January - February 2012

INTERNATIONAL REGULATORY DEVELOPMENTS

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EUROPE

2nd Comitology for Heavy-duty Euro VI

On 31 January 2012, the second Comitology package (Implementing Regulation) for the heavy-duty Euro VI emissions legislation was published in the EU's Official Journal as Regulation (EU) N° 64/2012. The Regulation entered force on 3 February 2012.

The Regulation notes that vehicles and engines can only be type-approved to Euro VI once procedures for measuring PM number, specific provisions on multi-setting engines, and provisions on access to repair and maintenance information have been adopted. The new Regulation provides those requirements.

As anticipated, PM number measurement procedures are introduced to the emissions tests by reference to Annex 4C to UN Regulation 49. The new Regulation introduces a Portable Emissions Measurement System (PEMS) demonstration test on a vehicle at Type Approval in addition to the existing requirement for PEMS testing to demonstrate in-service conformity. The PEMS test at Type Approval is intended to check off-cycle emissions. New paragraphs on On-Board Diagnostics provisions are added and a new Annex XVII, based on Euro 5/6 requirements, covers access to vehicle OBD and vehicle Repair and Maintenance Information (RMI).

In addition to these points there are several clarifications in the text for a number of sections, particularly details on inducements in the Annex on requirements to ensure the correct operation of NOx control measures (Annex XIII).

Consolidated Version of the NRMM Directive

A consolidated version of the NRMM Directive, including the recent flexibility increase, is now available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1997L0068:20111213:EN:PDF>.

Implementing Regulation on Gear Shift Indicators

On 31 January 2012, Implementing Regulation (EU) N° 65/2012 on the mandatory fitment of Gear Shift Indicators (GSI) was published in the EU's Official Journal. Regulation (EC) N° 661/2009 requires the installation of GSI on all new M1 vehicles that are fitted with a manual gearbox. The new Regulation sets out the specific procedures, tests and requirements for type-approval of GSI. The procedures require that following the GSI strategy should not have any negative effect on the functioning of pollution control devices, such as catalysis, after a cold start.

Status Report on the European Strategy for Clean and Energy Efficient Vehicles

The European Commission has provided the European Council with a report on the 2011 'state of play' of the European Strategy for Clean and Energy Efficient Vehicles. The report says that the assumptions on the market penetration of different kinds of 'green' vehicles stay unchanged – "ICE vehicles, with ever better environmental performance, are expected to remain dominant in the 2030 perspective". Work on the further reduction of CO₂ emissions from conventional vehicles therefore remains of key importance.

Initiatives on green transport this year include considering whether to set post-2020 CO₂ targets for new cars. One option would be to set a limit of 70 g/km CO₂ to be met by 2025, as suggested by the European Parliament in a 2007 resolution. A study assessing the feasibility of achieving a 2020 limit of 147 g/km for vans is due in mid-2012 (a similar study for cars was issued at the end of November 2011).

Rules on eco-innovations for vans are also due to be adopted this year. A legislative proposal to reduce CO₂ emissions from heavy-duty vehicles is due in 2013. Other initiatives will include a proposal to reduce the impacts of mobile air conditioning systems; voluntary rules on the marketing of green vehicles; and a study assessing the implementation of EU rules on CO₂ labelling for cars. This year will see the launch of a long-term strategy on alternative fuels for the entire transport sector.

Studies on Heavy-duty Vehicle GHG Emissions and CO₂ Test Procedures

The European Commission has released a report co-ordinated by TU Graz on the development and testing of a certification procedure for CO₂ emissions and fuel consumption of heavy-duty vehicles.

The proposed procedure is based upon the Japanese HILS (Hybrid In Loop System). The procedure is based on tests of the individual components of the vehicle and simulations of the fuel consumption and CO₂ emissions of the entire vehicle. The engine speed course is calculated from the vehicle speed, tyre dimensions, the transmission ratios, and a driver model. With 1 Hz data on the engine power and engine speed over the test cycle, the fuel consumption of the entire vehicle is then interpolated from the engine map of the vehicle.

Different Heavy Goods Vehicle segments are considered (long haul, regional delivery, urban delivery, municipal utility, and construction) as are various classes of trailer and of vehicle. For buses, the segments are 'heavy-urban', urban, suburban,

interurban, and coach, again with various vehicle configurations. The study is at http://ec.europa.eu/clima/policies/transport/vehicles/heavy/docs/hdv_2011_01_09_en.pdf. (Despite the link being dated 2011, the report is dated Jan. 2012).

A second report, prepared for the International Council on Clean Transportation (ICCT) and now published by the European Commission looks into the potential of Heavy-duty Vehicles to reduce greenhouse gases. The study says that applying fuel-saving technologies to all new Heavy-duty Vehicles (HDV) as of 2020 has the potential to reduce their greenhouse gas emissions in 2030 to 28% below the 2030 projected business-as-usual levels.

The study draws from the data gathered for a previous study (by AEA-Ricardo) and supplements the analysis with additional input gathered from original equipment manufacturers by the US National Research Council (NRC) and TIAX consultants. The report is at http://ec.europa.eu/clima/policies/transport/vehicles/heavy/docs/icct_qhg_reduction%20potential_en.pdf.

Results of Project on Use of Vegetable Oils in Tractors for NRMM Stage IV

The results of an EU project "Demonstration of 2nd Generation Vegetable Oil Fuels in Advanced Engines (2ndVegOil)" lead, the authors say, to the conclusion that modern engine technology can use pure second-generation vegetable oils. They also reported that it had delivered evidence that vegetable oil fuels will meet all future requirements for biofuels from the EU Directives on renewable energy and fuel quality.

The joint research and technical development and demonstration project pushed the developments of neat vegetable oil-powered engines to be ready for NRMM Stage IV and Heavy-duty Euro VI. The project was co-financed under the European Commission's 7th Framework Programme. In four countries, 16 tractors contributed around 24 000 work hours in the field in addition to the engine testing.

The report "Climate design of Pure Vegetable Oil Fuels" summarising the findings of the project will be published on the project's website at <http://2ndvegoil.eu>.

EU Public Consultation on Maritime Greenhouse Gas Emissions

In January 2012 the European Commission issued a new public consultation on whether the EU should include the Greenhouse Gas (GHG) emissions of the maritime sector in its 20% overall GHG reduction commitment in the event that no agreement has been reached at the international level (through IMO) by 31 December 2011. The consultation document is at <http://ec.europa.eu/yourvoice/ipm/forms/dispatch?form=MaritimeGHG&lang=en>.

Implementing Decision on Industrial Emissions

On 24 February 2012, a Commission Implementing Decision on the Industrial Emissions Directive (2010/75/EU) was published in the EU's Official Journal. The Decision provides details of the information required for transitional national plans under the Directive. These must only include entire combustion plants and must provide details of how the implementation of the plan will be monitored and reported to the Commission. They must also identify the measures that will be applied to ensure that all combustion plants that are included in the plan comply with the Directive's limit values by 1 July 2020.

Russia delays New Vehicle Emissions Standards

The Russian government has again delayed the implementation of stricter emissions standards for new passenger vehicles, saying the supply of cleaner fuel is inadequate to support a fleet of more advanced vehicles. Under an order published on 1 February 2012 the deadline to move to the Euro 4 standard for gasoline and diesel engines was extended an additional year to 1 January 2013 and that for Euro 5 to 1 January 2015.

The Energy Minister attributed the delay to refiners' inability to produce enough lower sulfur fuel to support introduction of higher performance engines this year and marked a further departure from the timeline to switch to Euro 4 standards as laid out in the original rules that came into force in 2005.

EEA Reports on Air Pollution: 2010 Exceedances and New Indicators

12 EU Member States exceeded one or more of the emission limits set by the National Emission Ceilings (NEC) Directive, according to official data for 2010 reported to the European Environment Agency (EEA). For the first time, preliminary data reported by Member States allowed a comparison with the legally binding emission limits for 2010 set in the NEC Directive. The pollutant for which most exceedances were registered was NO_x, with eleven Member States exceeding their respective NO_x ceilings.

The EEA report says that the road transport sector is one of the main contributory factors behind the large number of NO_x exceedances, contributing approximately 40% of total EU-27 NO_x emissions. Reductions of NO_x from this sector over the last two decades have not been as large as originally anticipated, partly because the sector has grown more than expected and partly because vehicle emissions

standards have not always delivered the anticipated level of NO_x reductions, according to the report.

Updated air pollution indicators have also been published by EEA. They include indicators presenting past emission trends, contributions of different sectors and analysis of reasons for past changes.

EEA says that within the 32 EEA member countries, the transport sector is clearly the dominant source of ozone precursor pollutants. Combined, emissions from 'Road Transport' and 'Non-road Transport' contribute 34% of the total CO emissions in the EEA-32, 45% of NO_x, and 17% of NMVOC. However, since 1990, these sectors alone have contributed 66% of the total reduction of CO emissions, 44% of NO_x reduction and 57% of NMVOC reduction.

EEA's indicators and data sets are available from www.eea.europa.eu/data-and-maps/indicators#c7=all&c5=&c0=10&b_start=0.

New Swedish Requirements for Heavy-duty Retrofits

Sweden has notified the European Commission of a proposed amendment to National Type Approval Regulations to introduce requirements for retrofit emissions control systems for Heavy-duty vehicles.

The proposed amendment covers conversion of Euro II and Euro III vehicles to the Euro V standard, and sets the following conversion efficiencies when tested on the Euro V (ETC and ESC) tests:

Minimum conversion rate (%)	NO _x	PM	HC	CO
Euro II base vehicle	75	95	70	70
Euro III base vehicle	70	90	50	50

On-road durability has to be demonstrated and warranted for 5 years. PEMS (Portable Emissions Measurement Systems) can be used for this. A dashboard indicator has to show a fault on the degree of reduction of NO_x if it is less than 50% when the system has the correct operating temperature. There are also requirements for reagent tank level monitoring where a reagent is used for NO_x control.

London Mayor announces Bus Retrofits

The Mayor of London has announced a further programme of retrofits for buses in London.

A statement says that the Mayor and Transport for London (TfL) have been trialling two types of technology fitted to bus exhausts to reduce either PM₁₀ or NO_x pollution. Results have shown significant reductions in emissions on buses piloting the equipment with PM₁₀ reduced by 77% and NO_x reduced by 88%. Following these successful trials, 155 buses will be fitted with equipment to cut particulate levels, starting in March to complete by

September this year. In addition, up to 1000 older Euro III buses are set to receive the NO_x reducing equipment to bring them to Euro IV NO_x standards.

Czech Report on Air Pollution and Action on Truck Replacement

A report from the Czech Environment Ministry shows that air quality has markedly worsened in the Czech Republic. Nearly half of Czech population (48%) lived in areas with excessive concentrations of small airborne particulate matter in 2010, compared to 18% in 2009, the report says. In the Ostrava area in northern Moravia and in the Kladno area, west of Prague, the levels of small airborne dust exceeded EU limits on more than 100 days last year. In urban areas, increased concentrations of carcinogenic polycyclic aromatic hydrocarbons were measured.

The Environment Ministry recalls in its annual report that a new law on air protection was approved in 2010. It includes the introduction of low-emission zones in towns, banning the entry of older cars that do not meet emissions limits. Meanwhile the director of the Czech Republic's Road and Highway Directorate has reported that the raising of road toll tariffs from 1 January 2012 has resulted in the usage of Euro V vehicles growing by 43% in January 2012.

Air Quality and Emissions Data from European Countries

An initial evaluation of preliminary **German** air quality data by the Umweltbundesamt (UBA; Federal Environmental Agency) says that in 2011 particulate levels were, on average, higher than in the previous four years and NO₂ exposure was also still high, with limits exceeded in many places, especially in close proximity to roads in cities and metropolitan areas.

For PM₁₀, 42% of traffic-orientated stations were above the permitted daily limit; only 35 days with levels exceeding the 50 µg/m³ daily average are permitted in legislation. For NO₂, 57% of urban traffic-orientated stations were above the allowable annual average of 40 µg/m³. The UBA President said that with the introduction of advanced emissions standards (Euro 6) and the steady penetration of the fleet of such vehicles, the situation will improve in the future.

The initial evaluation is at

www.umweltbundesamt.de/uba-info-presse/2012/pd12-006_wie_gut_ist_die_luft_in_deutschland.htm.

The **UK's** Department of Environment, Food and Rural Affairs (Defra) has also published its provisional air quality statistics of particulates and ozone for 2011.

The report says that both urban background and roadside particulate (PM₁₀) pollution have shown improvement over the long-term but changed little in the past four years. Urban background ozone pollution

has shown a long-term increase although rural background ozone has changed little in the past five years, fluctuating between 67 and 70 $\mu\text{g}/\text{m}^3$ after declining from a peak of 74 $\mu\text{g}/\text{m}^3$ in 2006. The number of days of moderate or higher air pollution increased in 2011 in both urban and rural areas.

The report is at www.defra.gov.uk/statistics/files/Air-quality-statistics-in-the-UK-1987-to-2011-Provisional.pdf.

The **Irish** Environmental Protection Agency's report on the nation's transboundary gas emissions for 2010 shows that NO_x emissions were 7.6 kt above the nation's 2010 emission ceiling of 65 kt.

NO_x emissions in Ireland have decreased by 42% between 1990 and 2010 and 31% since 2008. The transport sector (mainly road transport) is the principal source of NO_x emissions, contributing approximately 51% of the total in 2010. The report says that in recent years road transport has seen a decline in emissions of 8.4 kt, or 20%, between 2007 and 2010 due to the economic recession and the changes made in 2008 to vehicle registration tax and road tax to incentivise the buying of more fuel efficient passenger cars.

The report is available from the Irish EPA website at www.epa.ie/downloads/pubs/air/airemissions/NEC%20Summary%20Report%202012.pdf.

Another new report, this one from Statistics **Norway**, says that the nation's emissions of NO_x in 2010 were 19% above the obligation set in the Gothenburg Protocol. This is an increase of 2% over 2009.

The last three years have shown a decline in the NO_x emissions from road traffic, due to new cleaning technologies for exhaust from heavy-duty diesel vehicles and a generally newer car fleet. However, the emissions from diesel fired engines used within oil extraction increased during the latter years and curbed the overall reduction in NO_x emissions. Stationary combustion in oil and gas-related activities contributed 27% of NO_x and road traffic 20%. Domestic sea transport and fishing accounted for 28% of the total Norwegian NO_x emissions in 2010. Increased fuel use by fishing vessels has offset the reductions due to technical efforts in this sector.

Emissions of PM₁₀ were also 7% higher than in 2009. 62% of PM₁₀ emissions in 2010 came from wood-burning, with wood consumption rising by 11% from 2009 to 2010. At the same time, the calculated emissions of PM from this source rose by only 8% due to a higher share of wood stoves with new technology.

In a new publication from the **Swiss** Federal Office for the Environment, NO₂ concentration levels are modelled for Switzerland, based on updated NO_x emission inventories and on a dispersion model.

The report says that an emission reduction of 27% is expected in the period 2005–2015 due to a number of

reduction measures. The concentration levels in air for 2005–2015 continuously follow the decrease of the emissions. In 2005, the average population weighted NO₂ concentration was 23.2 $\mu\text{g}/\text{m}^3$ and this drops to 18.9 $\mu\text{g}/\text{m}^3$ until 2015. In 2005, 6 to 35% of the inhabitants were exposed to excessive concentration levels. The number is expected to decrease to 1 to 10% until 2015. The exceedances mainly occur in the centres of the cities and along major highways.

The report is at www.bafu.admin.ch/publikationen/publikation/01634/index.html?lang=en.

Report on the UK PM_{2.5} Exposure Index

The UK department for Environment, Defra, has published a critical review on the calculation of the PM_{2.5} Average Exposure Index (AEI) and comparison with the national exposure reduction target.

From the 47 PM_{2.5} stations used in this assessment, it is likely that average PM_{2.5} concentrations for 2009–2011 will be between 13–14 $\mu\text{g}/\text{m}^3$. This would require the UK to comply with a 15% reduction target for 2020, equating to a required reduction in average concentrations of around 2 $\mu\text{g}/\text{m}^3$.

AEA has undertaken an assessment of the factors that are likely to make a contribution to the uncertainty of measurement of PM_{2.5}, both now and in 2020. AEA estimated that, depending on changes in conditions between now and 2020, the scale of uncertainty could be between ± 2.5 and 8.6 $\mu\text{g}/\text{m}^3$. Neither of these results would produce data with a low enough uncertainty to robustly assess a required reduction of 2 $\mu\text{g}/\text{m}^3$ in PM_{2.5} by 2020. It is possible therefore that the PM_{2.5} exposure reduction target set in the air quality Directive 2008/50/EC may not be measurable with sufficient confidence, the report concludes.

The report is at http://uk-air.defra.gov.uk/library/reports.php?report_id=682.

Norway wants Nordic Council to work on Black Carbon

Norway has announced that it will prioritise several environmental issues during its chairmanship of the Nordic Council in 2012, particularly climate change, green growth and chemical products.

Work on climate change will centre on black carbon, with each country developing its own emissions accounting system and action plan. The Council as a whole will consider which international mechanisms can be used to address the pollutant, which is not being tackled as part of international climate negotiations.

Airparif Calculation Tool to evaluate In-car Pollution

On 19 January 2012, Airparif launched a calculation tool 'En voiture!' to evaluate in-cabin pollution.

Two million inhabitants in the Paris area use their car every day to go to work. The aim of Airparif is to provide them with information on the average NO₂ level breathed during their commuting time. In the middle of traffic, car users are the primary victims of road transport-related pollution, Airparif says.

Results can be obtained by answering a series of questions which help characterise their commuting trip. Key parameters are the departure and arrival locations, the type of road used (especially Paris ring-road), environments (including time spent in tunnels), ambient air pollution levels, traffic situation, etc.

The main result is the mean NO₂ obtained on similar trips and comparison to the reference WHO target value. Results are based on a statistical analysis conducted by Airparif. In 2008, a car was equipped with an on-board in-cabin NO₂ analyser. Complimentary measures were conducted in 2011 and, in total, about 300 commuting trips were performed during traffic rush hour. The tool is at www.airparif.asso.fr/divers/exposition-en-voiture.

UK Government launches Project on Hydrogen Fuel Cell Vehicles

UK Business Minister Mark Prisk has announced a new programme - UKH2Mobility - to evaluate the potential for hydrogen as a fuel for Ultra Low Carbon Vehicles in the UK before developing an action plan for an anticipated roll-out to consumers in 2014/15.

The project aims to analyse in detail, by the end of 2012, the specific UK case for the introduction of hydrogen fuel cell electric vehicles, quantify the potential emissions benefits, and review the investments required to commercialise the technology, including refuelling infrastructure. The group brings together 3 government departments (Business, Innovation and Skills; Transport; and Energy and Climate Change) and 13 industrial participants from the utility, gas, infrastructure and global car manufacturing sectors in addition to the European Fuel Cells & Hydrogen Joint Undertaking.

Updated VERT Filter List

The Swiss-based VERT Association has posted an updated list of VERT-certified particle filter systems for combustion engines.

VERT also maintains a database of construction machinery equipped with VERT-approved particle trap systems. The database currently has nearly 8500 records. These records include 37 filter

manufacturers, 350 construction machine brands ranging from 10 to 921 kW, and 50 engine brands dating from 2001 to 2011.

The list of certified particle filtration systems is at www.vert-certification.eu/attachments/article/48/VERT-Filter-Liste%20-%20October%20%202011%20.pdf and the construction machinery database is at www.vert-certification.eu/index.php?option=com_content&view=article&id=77&Itemid=31.

Liechtenstein introducing CO₂ Limits

Liechtenstein is introducing legally binding limits for the average CO₂ emissions of all newly registered passenger vehicles. Similarly to the EU Regulation, 65% of vehicles will have to meet the limit for average CO₂ emissions (130 g/km) in 2012, rising to 100% in 2015. Importers and producers are allowed to build associations and networks to establish a balance between high- and low-CO₂ vehicles. Fines will be levied for vehicles that produce more emissions than the allowed limit.

NORTH AMERICA

California approves Advanced Clean Cars Rules

On 27 January 2012 the California Air Resources Board (CARB) unanimously approved the California Advanced Clean Car rules for cars and light trucks. The package comprises greenhouse gas standards for cars and light trucks of model years 2017-2025; LEV III tailpipe emissions standards; an enhanced Zero Emissions Vehicle (ZEV) Regulation; and a regulation on clean fuels outlets.

The new programme aims to produce a 75% reduction in smog-forming emissions from new vehicles by 2025 (compared to 2014 levels) and to cut greenhouse gas emissions from new cars by 34% from 2016 levels. CARB expects the new rules to deliver increasing numbers of 'zero-emission technologies', such as full battery electric cars, plug-in hybrids and hydrogen fuel cell cars. The package will also ensure adequate fuelling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.

Details of the Advanced Clean Cars rules are at: www.arb.ca.gov/msprog/consumer_info/advanced_clean_cars/consumer_acc.htm.

US EPA Proposal on Emergency Operation of Stationary Diesel Engines

In 2010 several energy groups filed a lawsuit challenging the US Environmental Protection Agency's 15-hour limit on the emergency operation of diesel reciprocating internal combustion engines (RICE). The provision allowed such operation to be

exempt from EPA's NESHAP (National Emission Standards for Hazardous Air Pollutants) air toxics regulation only during this period of 15 hours per year. On 4 January 2012, the EPA issued a settlement proposal which would extend the permitted period of operation during emergency situations to 60 hours.

Emergency engines include those that supply back-up power for hospitals and schools. Under the proposed settlement, EPA will, by 20 April 2012, sign a notice of proposed rulemaking that includes revision of the RICE NESHAP for existing engines and New Source Performance Standards for new stationary internal combustion engines.

US EPA Non-Conformance Penalties for 2010 Heavy-duty NOx Standard

The US Environmental protection Agency has issued information on penalties that will allow a manufacturer to produce and sell engines that do not conform to the 2010 NOx standard upon payment of a penalty.

The penalties, which apply per engine, will be available for the 2012 and 2013 model years. The maximum NOx emissions for such engines would be 0.50 g/hp-hr (the 2010 NOx standard is 0.20 g/hp-hr).

An Interim Final Rulemaking has been issued for heavy heavy-duty diesel engines and a Notice of Proposed Rulemaking for both medium and heavy heavy-duty engines. Details of the proposals are at www.epa.gov/otaq/hd-hwy.htm#regs.

California receives US EPA Waiver for Cargo Handling Equipment Regulation

The US Environmental protection Agency (EPA) has announced that it is granting California's request to enforce its regulations for Mobile Cargo Handling Equipment (CHE) at Ports and Intermodal Rail Yards. The regulation requires cargo-handling equipment to meet in-use performance standards and sets Best Available Control Technology standards for replacements and retrofits. Details are at: www.arb.ca.gov/ports/cargo/cargo.htm.

Proposal for amended SCAQMD Rule on Stationary Compression Ignition Engines

On 25 January 2012 California's South Coast Air Quality Management District (SCAQMD) proposed amendments to its Rule 1470 for stationary compression ignition (CI) engines. The Rule is intended to reduce exposure of diesel particulate matter emissions from stationary diesel-fuelled engines, but it also implements the Airborne Toxic Control Measure for stationary CI engines.

The latest proposal incorporates changes to an October 2011 proposal, with the changes mainly applying to new emergency standby engines. This will

eliminate requirements for new stationary emergency standby engines and direct-drive fire pump engines to meet aftertreatment-based Tier 4 emissions standards for NOx. It will, though, retain Tier 4 particulate emissions standards for new stationary emergency standby engines installed on or after 1 January 2013. The latest proposals would require new emergency standby engines ≥ 175 bhp that are located within 50 metres of a 'sensitive receptor' (e.g. a hospital or residence) to meet current California Off-Road PM standards. Engines situated beyond 50 metres would be required to comply with a PM emission rate of 0.15 g/bhp-hour, as would new direct-drive flood control pump engines. New direct-drive fire pump engines would be required to meet particulate emission rates ranging from 0.15 g/bhp-hr to 0.30 g/bhp-hr, depending on the engine size.

The proposed rule is at

www.aqmd.gov/rules/proposed/1470/PAR1470f.pdf.

Incentives to repower Steamships on the Great Lakes

The US Environmental Protection Agency (EPA) has published a Direct Final Rule to encourage owners of the thirteen Great Lakes steamships to repower them with cleaner Tier 2 or later marine diesel engines.

EPA says that these steamships are exempt from the fuel sulfur requirements that will begin to apply on the Great Lakes in August, 2012. Steam power plants, though, can use 30% to 50% more fuel than comparable diesel engines, with resulting high PM and SOx emissions. To encourage voluntary repowering, EPA is adding a new incentive provision that will allow owners who repower their ships to use higher sulfur residual fuel in the repowered diesel engine until the end of 2025. After that date, repowered steamships will be required to use fuel that complies with the sulfur limits that apply on the Great Lakes, or use an exhaust gas scrubber or other technology that achieves equivalent sulfur emissions.

US EPA calls for Research Information on NOx for Air Quality Standard Review

The US Environmental Protection Agency's National Center for Environmental Assessment (NCEA) has invited interested parties to provide research studies to assist in preparing an Integrated Science Assessment of NOx as part of the review of the National Ambient Air Quality Standard (NAAQS) for NO₂. A workshop on the subject was held at EPA's Research Triangle (North Carolina) premises on 29 February and 1 March 2012.

Report on Canadian Air Quality

Canada's Fraser Institute has released a report assessing several decades' worth of air-pollution monitoring data compiled by Environment Canada's National Air Pollution Surveillance Network.

Levels of harmful pollutants including ground-level ozone, particulate matter, NO_x, SO_x, and CO have been declining in most parts of Canada since monitoring began in the 1970s, the report says.

Author of the report Joel Wood said two of the most pressing pollution concerns for human health are levels of ultrafine particulate matter and ground-level ozone. Average concentrations, as well as measured spikes of those pollutants, have decreased, the report found. Ultrafine particulate matter has decreased by roughly 5 µg/m³ since widespread monitoring began around 2000, the document states. In 2008, the latest year for which there is data for all provinces, the Canada-wide standard of 30 µg/m³ was achieved at all but two of 125 monitoring stations. British Columbia has a lower target of 25 µg/m³. In this province, the total number of hours during which levels were above the allowable maximum have been cut by more than half in recent years. Ground-level ozone exceedance rates have also decreased in most Canadian provinces since 1980, the report concludes. Average annual NO₂ concentrations have decreased by more than 60% since monitoring started in 1980.

The full report is at www.fraserinstitute.org/research-news/news/display.aspx?id=2147484157.

Report says further Cuts in SO₂ and NO_x are needed to protect US Ecosystems

Further emissions cuts from the utility sector are needed to allow for ecological recovery in acid-sensitive areas despite the success of the Clean Air Act Title IV SO₂ trading program according to a US government report recently submitted to Congress.

Power sector SO₂ and NO_x emissions must be reduced to below 1 million and 0.40 million tonnes/year respectively by 2020 to reduce the number of lakes with acute acid deposition issues, according to the 2011 National Acid Precipitation Assessment Program Report to Congress. Even with the extreme emissions reductions, 13% of streams in the southeast would have elevated sulfur concentrations in 2050.

Utilities covered by the Acid Rain Program have reached 100% compliance with the SO₂ caps since 2005 either through on-site reductions or by trading allowances. To cut NO_x emissions to 0.4 million tonnes/year, power sector emissions would have to fall by about 80%. Sources outside of the power

sector such as industrial boilers would have to reduce emissions by an additional 50%, the report says.

The report is at http://ny.water.usgs.gov/projects/NAPAP/NAPAP_2011_Report_508_Compliant.pdf.

Comments on US Fuel Economy and GHG Proposals

The Alliance of Auto Manufacturers says that it is concerned that the joint proposal on fuel economy and greenhouse gas (GHG) emissions, issued by the Environmental Protection Agency and the Department of Transportation in November 2011, leaves open the possibility that vehicle manufacturers may have to account for upstream emissions from electricity generation to power electric vehicles, unless Congress passes legislation regulating utility GHG emissions.

Comments filed jointly by the American Petroleum Institute (API), American Fuel & Petrochemical Manufacturers and National Association of Manufacturers say that they believe it would be "unlawful" for EPA to finalise the proposal unless the agency backs off its position that regulating GHG emissions from automobiles triggers similar requirements for industrial sources such as refineries and factories. The API, in separate comments, said it supports adding upstream emissions to the automakers' compliance obligations.

Manufacturer to pay \$680 000 Penalty for US Emissions Violations

The US Environmental Protection Agency (EPA) has announced a settlement with recreational vehicle manufacturers, Loncin (USA) Inc., Longting USA LLC, and Chongqing Longting Power Equipment Co.Ltd., to resolve violations of the Clean Air Act related to the importation of 7115 uncertified recreational vehicles into the United States. This follows from EPA's voiding of certificates of conformity following an investigation of a California-based certification services consulting firm.

The companies are required to complete a project to mitigate excess emissions from these uncertified vehicles by donation of \$10 000 to a state, local, or tribal agency or non-profit organisation implementing a project to change or retrofit wood-burning appliances. The number of replacements or retrofits must reduce emissions by at least 26 tons of HC+NO_x and 10 tons of CO. The companies must also implement a Vehicle and Engine Compliance Plan at least 90 days before the US-directed production of any recreational vehicle or motorcycle.

SOUTH AMERICA

Stricter Emissions Limits take Effect for Brazil's Diesel-Fuelled Trucks and Buses

New diesel-fuelled trucks and buses sold in Brazil must comply with more stringent limits on emissions of NO_x, CO, hydrocarbons, and particulate matter from 1 January 2012. The new standards were required by National Environmental Council (CONAMA) resolution No. 403 of 2008.

To meet the new emissions standards, 2012 model trucks and buses must use low-sulfur S-50 diesel (50 ppm sulfur). Under an October 2008 agreement, the state oil company Petrobras was required to provide S-50 diesel nationwide by January 2012 and to replace S-50 diesel with S-10 ultra-low-sulfur (10 ppm) diesel nationwide by January 2013. Previously, 50 ppm sulfur diesel was available in Brazil's 14 largest cities, with 2000 ppm S elsewhere.

Tougher emissions limits for diesel-fuelled light-duty vehicles, mainly pickup trucks and four-wheel-drive vehicles, will go into effect on 1 January 2013. New gasoline- and ethanol-fuelled cars and vans will follow on 1 January 2014. Both of these result from a 2009 CONAMA resolution.

Petroecuador plans 50 ppm Sulfur Diesel

State-owned oil company Petroecuador, has reported that it has rolled out nationwide distribution of premium diesel this year. Previously, it was confined overwhelmingly to the cities of Quito and Cuenca. The sulfur level of the premium diesel currently in the market is 500 ppm, down from the earlier 7000 ppm. This will be cut to 250 ppm in the second half of this year, the Petroecuador chief executive said.

He also announced that the company will change the catalytic converter of the Esmeraldas refinery to produce a diesel with 50 ppm of sulfur, which with other mixes will cut the sulfur rate to the targeted level. Unleaded gasoline will rise to 87 and 91 octane, he added. From 2015, Petroecuador seeks to produce high-octane and low-sulfur fuel in sufficient quantities to supply its own domestic market.

ASIA PACIFIC

Air Pollution Policies in Vietnam

The latest annual report by the Vietnamese Ministry of Natural Resources and Environment notes that 70% of the air pollution in Vietnam's big cities is from urban transportation. "Air pollution in the big cities is getting worse and worse with too large numbers of vehicles combined with many low quality ones participating in transport activities," the Ministry warned.

Among the solutions proposed have been the greater use of biofuels, natural gas for taxis and buses, a toll scheme for central business districts, and a ban on motorbikes for streets in Hanoi and Ho Chi Minh City. From 1 January 2017, new automobiles will have to comply with Euro 4 emissions standards, with Euro 5 introduced from 1 January 2022. Motorcycles manufactured, assembled or newly imported will be required to comply with Euro 3 emissions standards from 1 January 2017. Fuel standards will move to Euro 4 levels from 1 January 2016 and Euro 5 levels by 1 January 2021.

The Vietnam Register, which is responsible for inspecting vehicles to ensure they adhere to set emissions standards, has not yet included motorbikes in its survey. Ho Chi Minh City has 4.8 million motorbikes, but only 470 000 cars. In Hanoi, which has around 3.8 million motorbikes and 380 000 cars, the growth rate in take-up of two-wheelers is estimated at 15%, while that for cars is 8%.

In January 2012, authorities in Hanoi adopted a plan to modernise existing air quality monitoring stations between now and 2020. The two-phase plan will install a total of 360 modern stations instead of more than 1250 existing ones, aiming to improve data collection and analysis of changes to air quality and meteorological elements. In the first phase, lasting until 2015, the municipal Department of Natural Resources and Environment will build and operate three air quality monitoring stations in areas vulnerable to air pollution. In the second phase all air quality monitoring stations will be operating effectively as part of the national environment monitoring system.

Emissions, Fuel Consumption and Fuel Quality Standards in China

China's Ministry of Environmental Protection (MEP) has officially announced that the implementation of the China IV emissions standard for diesel vehicles has been delayed from 1 January 2012 to 1 July 2013 because of the lack of a nationwide supply of 50 ppm sulfur diesel. The required fuel standard for China IV would technically be China IV diesel containing only 50 ppm of sulfur. It is unlikely, however, that 50 ppm S diesel will be available nationwide before July 2012.

Nevertheless, China is planning to go ahead with a plan to implement the National Phase V (10 ppm S) transportation fuels in Beijing in the first half of 2012. The Beijing Municipal Commission of Development and Reform also said that the city will lead other provinces in implementing the National 5 vehicle emission standard (equivalent to Euro 5) for new light-duty vehicles. Although no exact timetable was given for this, the commission said it hopes to further boost the standard by 2016 to make it equivalent to Euro 6.

China's Ministry of Industry and Information Technology (MIIT) has taken steps to regulate the fuel consumption of heavy-duty commercial vehicles in the country. The ministry has issued a circular on its website covering vehicles with maximum designed weight of more than 3500 kg, but excluding all-wheel drive heavy-duty commercial vehicles and special operation vehicles. Starting from 1 February 2012, vehicle manufacturers introducing new products need to comply with the commercial vehicle fuel consumption measurement method introduced last year. The ministry also urged vehicle manufacturers to actively conduct research on energy-efficient technologies and to continue to improve the fuel economy of heavy-duty commercial vehicles.

Air Quality Developments in Chinese Regions

Beijing's Municipal Environmental Protection Bureau (MEPB) has released, for the first time, PM_{2.5} air quality monitoring data. The data has previously only been available for laboratory use. It will now be released every hour via the bureau's website and other media. The first data, released on 21 January 2012, showed a PM_{2.5} level of 0.003 µg/m³, which was classified as 'good'. At present, there are only six sub-stations in Beijing equipped to monitor PM_{2.5}. The MEPB is now working to increase its number of monitoring sub-stations, as this will allow it to release real-time PM_{2.5} data by the end of 2012.

Hong Kong's roadside pollution levels were the worst ever last year, according to the Environmental Protection Department (EPD). Readings at the three roadside monitoring stations showed that pollution levels were above the 100 mark more than 20% of the time. In 2005 very high readings were recorded only 2% of the time. A reading over 100 means at least one pollutant fails the air quality objectives. Pollution readings at 11 general stations, which reflect more background and regional pollution, however, remained steady and similar to previous years. The EPD said increased NO₂ levels at the roadside and poor weather conditions were behind the worsening air pollution readings. The annual average roadside readings of PM_{2.5} at both Central and Mong Kok marginally failed the proposed new air quality standard of 35 µg/m³, according to 'Clear the Air', although the EPD said that the average concentration of fine particles at monitored locations had declined by more than a quarter over the past five years. It also said that at least 60% of the fine particles were generated across the border.

The Government of the Hong Kong Special Administrative Region has announced that it will adopt proposed new Air Quality Objectives (AQOs) together

with a package of air quality improvement measures, drawn up based on the results of public consultation, to better protect public health. Preparatory work will start on the amendment of the Air Pollution Control Ordinance with an aim to table the Amendment Bill in the 2012-13 session of the Legislative Council. It is expected that the proposed new AQOs would take effect in 2014. The Government will review the practicability of the tightened AQOs, which are comparable to those being adopted by the EU and the United States, every five years and formulate the air quality improvement package accordingly.

To attain the new AQOs as soon as practicable, the Government has drawn up 19 air quality improvement measures and put forward additional improvement initiatives targeting the problem of roadside NO₂. Further measures include retrofitting Euro II and III franchised buses with Selective Catalytic Reduction (SCR) devices to reduce their NO_x emissions.

Guangdong province in southern China plans to cut its carbon intensity (a measure of the CO₂ produced per unit of consumed energy) by 19.5% from 2005 levels by the end of 2015, the official newspaper of the Communist Party of Guangdong reported on 11 January 2012. By 2020, the province hopes to reduce its carbon intensity by 45% compared to 2005. The province will also aim to have 20% of its consumed energy come from non-fossil fuel sources by 2015. Guangdong is the first of five provinces and eight cities chosen to pilot low-carbon development in the 12th Five-Year Plan period (2011–2015) to have its draft plans approved by the National Development and Reform Commission.

The **Shanghai** Municipal Bureau of Environmental Protection has announced that it will spend 10.3 billion yuan (€1.2 billion) on air pollution reduction over the next three years - a 40% increase over the amount spent over the last three years combined. The city will implement the tighter National 5 vehicle emissions standard (equivalent to Euro 5) for passenger cars and light-duty vehicles in 2013 or 2014. Local environmental protection authorities will help coal-fired power plants cut emissions and help coal-fired boilers find clean energy sources, the statement said. The city will also begin using the stricter PM_{2.5} air quality standard in June instead of the current PM₁₀ standard.

The **Macau** Direcção dos Serviços de Protecção Ambiental (DSPA - Environmental Protection Bureau) has launched a consultation on upgrading vehicle fuels to Euro 5 standards, to alleviate air pollution in the territory. The consultation paper "Standards of vehicle-use unleaded gasoline and light diesel" is available on DSPA's website at www.dspa.gov.mo. The consultation will run until 19 March 2012.

India's Air is the World's Unhealthiest, Study says

India has the worst air pollution of 132 countries in the world, according to a study released during this year's World Economic Forum in Davos.

The annual study, the Environmental Performance Index, is conducted and written by environmental research centres at Yale and Columbia universities with assistance from outside scientists. The study uses satellite data to measure air pollution concentrations.

India's high levels of fine particulate matter are one of the major factors contributing to the country's poor air quality. Levels of PM_{2.5} are nearly five times the health threshold levels.

New Delhi looks at Air Pollution Mitigation Measures

The Times of India reports that deteriorating air pollution levels in New Delhi have forced the Delhi government to take up mitigation measures.

The environment department led by the chief minister, along with various NGOs, the Indian Institute of Technology, the Ministry of Environment and Forests, Central Pollution Control Board, civic agencies and Delhi government departments, has drawn up a check-list of actions that need to be undertaken across various sectors, including power and transport, to improve air quality. The prime focus has been put on the transport sector. Environment department officials said that as a long-term measure to control vehicular emissions, Euro V and VI norms and a usage of 10 ppm sulfur fuel should be enforced by 2017. Pollution control checking also needs to be revised to ensure 100% compliance and the introduction of on-road emissions testing for polluting vehicles was also discussed. Officials also said that diversion of interstate traffic, including primarily polluting transport vehicles, was to be addressed through the western and eastern expressways.

India starts testing Emissions from Diesel Locomotives

India launched the country's first emissions testing car for rail engines at the Integral Coach Factory (ICF) in Chennai on 6 February 2012.

The unit, which is equipped with Horiba emissions measuring equipment, is capable of measuring NOx, PM, total HC, methane, smoke opacity and CO. It can be moved to diesel sheds and coaching depots to measure the emissions levels of diesel locomotives and railcars. It will help analyse the performance of the engines as well as improving their fuel efficiency and reduce environmental pollution, said ICF.

Singapore moves to CO₂-based Rebate and Lower Taxes for Euro 5 Diesels

The Deputy Prime Minister of Singapore has announced that a new CO₂ emissions-based vehicle scheme will replace the technology-based Green Vehicle Rebate (GVR) from January next year. Under the scheme, which will be applicable to all new passenger cars, models with low CO₂ emissions will get rebates on their Additional Registration Fee of up to S\$20 000 (approx. €12 000). Models with high CO₂ emissions will pay a registration surcharge of up to S\$20 000. For commercial vehicles and motorcycles, GVR will be extended to the end of 2014.

To encourage the adoption of cleaner diesel technologies, the Special Tax for Euro 5-compliant cars was lowered by 70%, from S\$1.25 per cc to S\$0.40 per cc, starting from January 2012, subject to a minimum annual payment of S\$400. For a 1600 cc Euro 5 diesel car, this means the Special Tax payable is comparable to the annual fuel tax paid by an equivalent petrol car.

Japanese Pollution Levels in 2010

Levels of photochemical oxidants that cause smog exceeded environmental limits at all 1177 observation points across Japan in fiscal year 2010, an Environment Ministry survey shows. It was the first time since fiscal year 1974 that photochemical pollutants exceeded limits at all observation points. The survey also showed that suspended particulate levels exceeded environmental limits at 124 of 1773 points surveyed and that nitrogen dioxide levels exceeded limits at nine of 1748 points.

AFRICA

Computerized Vehicle Inspections to begin in Ethiopia

Computerised vehicle inspections and technical investigation are set to begin in Ethiopia. As well as safety issues, testing will include exhaust emissions.

Nineteen inspection sites are expected to commence operation during this financial year with twelve becoming operational during January in Addis Ababa and three other locations in Amhara Regional State.

UNITED NATIONS

UNECE adopts Euro VI Amendment to Regulation 49

On 19 January 2012, the UN's Working Party on Pollution and Energy (GRPE) approved a proposal for an amendment to Regulation No. 49 on emissions requirements for heavy-duty vehicle engines. The proposal will be submitted to the World Forum in June

2012 for its final adoption. It will enter into force in stages from the first quarter of 2013, with full application in January 2014.

This modification is aimed at aligning the emissions requirements to the EU's Euro VI legislation (EC Regulations 595/2009 and 582/2011), which will enter into force in January 2013. It will allow all Parties to the 1958 UN agreement to apply these new limits.

GENERAL

International Coalition on Short-lived Climate Forcers including Black Carbon

An international coalition was launched on 16 February 2012 with the aim of reducing emissions of black carbon, methane and HFCs. The group, which includes the US, Canada, Mexico, Sweden, Bangladesh and Ghana, says it expects more countries to join shortly.

The coalition has no formal targets but intends to implement recommendations made in a recent UNEP report on short-lived 'climate forcers'. UNEP believes these could prevent 0.5 degrees of warming by 2040 and save 2.5 million lives a year. So far, the group has secured \$15m of funding: \$12m from the US and \$3m from Canada. US officials said they also expect Sweden to contribute. UNEP will act as its secretariat. Introducing the initiative, US Secretary of State Hillary Clinton said "There is no way to effectively address climate change without reducing carbon dioxide...So this coalition is intended to complement, not supplant, the other actions we are, and must be, taking."

Workshop on the GHG Reduction Potential of Light-Duty Vehicles

On 1 February 2012, the International Council on Clean Transportation (ICCT) organised an international workshop in Brussels on the Greenhouse Gas (GHG) reduction potential and costs of light-duty vehicle technologies.

The workshop included presentations from representatives of the US Environmental Protection Agency, Ricardo, FEV, the University of California Davis and ICCT; and attendees included European institutes and the European Commission. The main topic was presentations on and discussion of draft reports on the "Analysis of Greenhouse Gas Emission Reduction Potential of Light Duty Vehicle Technologies in the European Union for 2020–2025, and their costs", a study conducted by Ricardo and FEV on behalf of ICCT. The ICCT expects to publish a report in June 2012.

VDA publishes Revised List of AdBlue® Licensees

VDA has published a revised list of AdBlue® licencees as part of efforts to clamp down on unauthorised use of the AdBlue® licence. VDA says that as SCR systems are "highly susceptible" to contamination, many vehicle manufacturers are quick to point the finger at the AdBlue® supply when SCR failure occurs. Using a licensed supplier helps ensure compliance to the ISO22241 standard and reduces the risk of SCR replacement not covered by warranty.

The revised list can be accessed from the VDA website at www.vda.de/en/publikationen/publikationen_downloads/detail.php?id=751.

RESEARCH SUMMARY

Effects of Emissions and Pollution

Allergic Inflammation in the Human Lower Respiratory Tract Affected by Exposure to Diesel Exhaust, Riedl, Marc A. , David Diaz-Sanchez, William S. Linn, Henry Gong Jr., Kenneth W. Clark, Richard M. Effros, J. Wayne Miller, David R. Cocker, and Kiroso T. Berhane; *HEI report No. 165* (23 February 2012) <http://pubs.healtheffects.org/view.php?id=373>.

Advanced Collaborative Emissions Study (ACES) Phase 3A: Characterization of U.S. 2007-Compliant Diesel Engine and Exposure System Operation, Mauderly, Joe L., and Jacob D. McDonald; *HEI Communication No. 17* (23 February 2012), <http://pubs.healtheffects.org/view.php?id=372>.

Exposures to Diesel motor exhaust and lung cancer: are findings of a large pooled analysis really consistent, Morfeld and Erren; *American Journal of Respiratory and Critical Care Medicine* (1 January 2012), 185 (1) p.104.

Particulate air pollution and cardiorespiratory hospital admissions in a temperate Australian city: A case-crossover analysis, Hansen et al.; *Science of The Total Environment*, (Feb. 2012) 416 pp. 48-52, [doi: 10.1016/j.scitotenv.2011.09.027](https://doi.org/10.1016/j.scitotenv.2011.09.027).

Maternal exposure to air pollution before and during pregnancy related to changes in newborn's cord blood lymphocyte subpopulations. The EDEN study cohort, Baiz et al; *BMC Pregnancy and Childbirth* (2011), 11 (87), [doi:10.1186/1471-2393-11-87](https://doi.org/10.1186/1471-2393-11-87).

Platinum pollution in road dusts, roadside soils, and tree barks in Seoul, Korea, Lee, Chon, Sager and Marton; *Environmental Geochemistry and Health* (Jan. 2012) 34 Supplement 1 pp.5-12, [doi: 10.1007/s10653-011-9403-5](https://doi.org/10.1007/s10653-011-9403-5).

Experimental Determination of Deposition of Diesel Exhaust Particles in the Human Respiratory Tract, Rissler, Swietlicki, Bengtsson, Boman, Pagels, Sandström, Blomberg and Löndahl; *Journal of Aerosol Science* (June 2012) 48 pp.18-33, [doi: 10.1016/j.jaerosci.2012.01.005](https://doi.org/10.1016/j.jaerosci.2012.01.005).

Outdoor Air Pollution and Incidence of Ischemic and Hemorrhagic Stroke: A Small-Area Level Ecological Study, Maheswaran, Pearson, Smeeton, Beevers, Campbell and Wolfe; *Stroke*, 2012 43 (1) pp.22-27, [doi: 10.1161/STROKEAHA.110.610238](https://doi.org/10.1161/STROKEAHA.110.610238).

Diesel Exhaust Exposure and Nasal Response to Attenuated Influenza in Normal and Allergic Volunteers, Terry L. Noah, Haibo Zhou, Hongtao Zhang, Katie Horvath, Carole Robinette, Matthew Kesic, Megan Meyer, David Diaz-Sanchez, and Ilona Jaspers; *Am. J. Respir. Crit. Care Med.* 2012; 185:179-185, [doi: 10.1164/rccm.201103-0465OC](https://doi.org/10.1164/rccm.201103-0465OC).

Effects of roads on adjacent plant community composition and ecosystem function: An example from three calcareous ecosystems, Mark A. Lee, Linda Davies, Sally A. Power; *Environmental Pollution* (April 2012) 163 pp.273-280, [doi: 10.1016/j.envpol.2011.12.038](https://doi.org/10.1016/j.envpol.2011.12.038).

Relationship between physicochemical characterization and toxicity of fine particulate matter (PM_{2.5}) collected in Dakar city (Senegal), Denis Dieme, Mathilde Cabral-Ndior, Guillaume Garçon, Anthony Verdin, Sylvain Billet, Fabrice Cazier, Dominique Courcot, Amadou Diouf, Pirouz Shirali; *Environmental Research* (in press), [doi: org/10.1016/j.envres.2011.11.009](https://doi.org/10.1016/j.envres.2011.11.009).

Costs of childhood asthma due to traffic-related pollution in two California communities; S.J. Brandt, L. Perez, N. Künzli, F. Lurmann and R. McConnell; *European Respiratory Journal* (Feb.2012) 113 pp.1-13, [doi:10.1183/09031936.00157811](https://doi.org/10.1183/09031936.00157811).

Electric Vehicles in China: Emissions and Health Impacts, Shuguang Ji, Christopher R. Cherry, Matthew J. Bechle, Ye Wu, and Julian D. Marshall *Environmental Science & Technology* (2012) 46 (4) pp.2018-2024, [doi: 10.1021/es202347q](https://doi.org/10.1021/es202347q).

Ex vivo toxicity of nitrogen dioxide in human nasal epithelium at the WHO defined 1-h limit value, C. Koehler, C. Ginzkey, G. Friehs, S. Hackenberg, K. Froelich, A. Scherzed, M. Burghartz, M. Kessler, N. Kleinsasser; *Toxicology Letters* (Nov.2011) 207 (1) pp.89-95, [doi: 10.1016/j.toxlet.2011.08.004](https://doi.org/10.1016/j.toxlet.2011.08.004).

Air pollutant exposure and preterm and term small-for-gestational-age births in Detroit, Michigan: Long-term trends and associations, Hien Q. Le, Stuart A. Batterman, Julia J. Wirth, Robert L. Wahl, Katherine J. Hoggatt, Alireza Sadeghnejad, Mary Lee Hultin, Michael Depa; *Environment International* (in press), [doi: 10.1016/j.envint.2012.01.003](https://doi.org/10.1016/j.envint.2012.01.003).

Exposure to Particulate Air Pollution and Cognitive Decline in Older Women, Jennifer Weuve, Robin C. Puett, Joel Schwartz, Jeff D. Yanosky, Francine Laden, Francine Grodstein; *Archives of Internal Medicine* (2012) 172 (3) pp.219-227, [doi:10.1001/archinternmed.2011.683](https://doi.org/10.1001/archinternmed.2011.683).

Ambient Air Pollution and the Risk of Acute Ischemic Stroke, Gregory A. Wellenius, Mary R. Burger, Brent A. Coull, Joel Schwartz, Helen H. Suh, Petros Koutrakis, Gottfried Schlaug, Diane R. Gold, Murray A. Mittleman, *Archives of Internal Medicine* (2012) 172 (3) pp.229-234, [doi:10.1001/archinternmed.2011.732](https://doi.org/10.1001/archinternmed.2011.732).

Main Air Pollutants and Myocardial Infarction: A Systematic Review and Meta-analysis, Hazrije Mustafić, Patricia Jabre, Christophe Caussin, Mohammad H. Murad, Sylvie Escolano, Muriel Tafflet, Marie-Cécile Périer, Eloi Marijon, Dewi Vernerey, Jean-Philippe Empana, Xavier Jouven; *The Journal of the American Medical Association* (2012) 307 (7) pp.713-721, [doi:10.1001/jama.2012.126](https://doi.org/10.1001/jama.2012.126).

The relationship between ambient particulate matter and respiratory mortality: a multi-city study in Italy, A. Faustini, M. Stafoggia, G. Berti, L. Bisanti, M. Chiusolo, A. Cernigliaro, S. Mallone, R. Primerano, C. Scarnato, L. Simonato, M.A. Vigotti and F. Forastiere on behalf of the EpiAir Collaborative Group; *European Respiratory Journal* (2011) 38 (3) pp.538-547, [doi: 10.1183/09031936.00093710](https://doi.org/10.1183/09031936.00093710).

Air Quality, Sources and Exposure

Sources for PM air pollution in the Po Plain, Italy: II. Probabilistic uncertainty characterization and sensitivity analysis of secondary and primary sources, Larsen et al.; *Atmospheric Environment* (April 2012) 50 pp.203-213, [doi: 10.1016/j.atmosenv.2011.12.038](https://doi.org/10.1016/j.atmosenv.2011.12.038).

Air quality assessment in a heavily polluted urban Mediterranean environment through air quality indices, Kassomenos et al.; *Ecological Indicators*, (July 2012) 18 pp.259-268, [doi: 10.1016/j.ecolind.2011.11.021](https://doi.org/10.1016/j.ecolind.2011.11.021).

Intra-urban air pollution in a rapidly growing Sahelian city, Linden, Boman, Holmer, Thorsson and Eliasson; *Environment International* (April 2012), 40 pp.51-62, [doi: 10.1016/j.envint.2011.11.005](https://doi.org/10.1016/j.envint.2011.11.005).

Chemical composition and size distribution of airborne particulate matters in Beijing during the 2008 Olympics, Xingru Li et al.; *Atmospheric Environment*, (April 2012) 50 pp.278-286, [doi: 10.1016/j.atmosenv.2011.12.021](https://doi.org/10.1016/j.atmosenv.2011.12.021).

Assessing PM₁₀ source reduction in urban agglomerations for air quality compliance, Aleksandropoulou et al; *Journal of Environmental Monitoring* (2012), 14, pp.266-278, [doi: 10.1039/C1EM10673B](https://doi.org/10.1039/C1EM10673B).

Particle number size distribution and new particle formation: New characteristics during the special pollution control period in Beijing, Jian Gao, Fahe Chai, Tao Wang, Shulan Wang and Wenxing Wang; *Journal of Environmental Sciences* (January 2012) 24 (1) pp.14-21, [doi: 10.1016/S1001-0742\(11\)60725-0](https://doi.org/10.1016/S1001-0742(11)60725-0).

Air quality management in China: Issues, challenges, and options, Shuxiao Wang and Jiming Hao, *Journal of Environmental Sciences*, (January 2012) 24 (1) pp.2-13, [doi: 10.1016/S1001-0742\(11\)60724-9](https://doi.org/10.1016/S1001-0742(11)60724-9).

Analysis of black carbon, particulate matter, and gaseous pollutants in an industrial area in Korea, Hee-Jong Yoo, Jungkon Kim, Seung-Muk Yi, Kyung-Duk Zoh; *Atmospheric Environment* (Dec. 2011) 45 (40) pp.7698-7704, [doi: 10.1016/j.atmosenv.2011.02.049](https://doi.org/10.1016/j.atmosenv.2011.02.049).

The Aggregate Risk Index: An intuitive tool providing the health risks of air pollution to health care community and public; Sicard, P., Talbot, C., Lesne, O. et al.; *Atmospheric Environment* (January 2012) 46 pp.11-16, [doi: 10.1016/j.atmosenv.2011.10.048](https://doi.org/10.1016/j.atmosenv.2011.10.048).

Correlations of particle number concentrations and metals with nitrogen oxides and other traffic-related air pollutants in Glasgow and London, Araceli Sánchez Jiménez, Mathew R Heal, Iain J Beverland; *Atmospheric Environment* (in press), [doi: 10.1016/j.atmosenv.2012.01.047](https://doi.org/10.1016/j.atmosenv.2012.01.047).

Estimating the National Public Health Burden Associated with Exposure to Ambient PM_{2.5} and Ozone, Neal Fann, Amy D. Lamson, Susan C. Anenberg, Karen Wesson, David Risley, Bryan J. Hubbell; *Risk Analysis* (January 2012) 32 (1) pp.81-95, [doi: 10.1111/j.1539-6924.2011.01630.x](https://doi.org/10.1111/j.1539-6924.2011.01630.x).

Differences Between Weekday and Weekend Levels of Ozone, NO₂, NO_x, and Respirable Suspended Particulates in Hong Kong, Bin Li and Bin Liu; *Environmental Engineering Science* (January 2012) 29 (1) pp.35-41, [doi:10.1089/ees.2010.0320](https://doi.org/10.1089/ees.2010.0320).

Emissions Measurements and Modelling

Modeling air pollutant emissions from Indian auto-rickshaws: model development and implications for fleet emission rate estimates Grieshop et al.; *Atmospheric Environment*, (April 2012) 50 pp.148-156, [doi: 10.1016/j.atmosenv.2011.12.046](https://doi.org/10.1016/j.atmosenv.2011.12.046).

Global Emission of Black Carbon from Motor Vehicles from 1960 to 2006, Rong Wang et al.; *Environmental Science & Technology* (2012) 46 (2) pp.1278-1284, [doi: 10.1021/es2032218](https://doi.org/10.1021/es2032218).

Observation of increases in emission from modern vehicles over time in Hong Kong using remote sensing, Lau, Hung and Cheung; *Environmental Pollution*, (April 2012) 163 pp.14-23, [doi: 10.1016/j.envpol.2011.12.021](https://doi.org/10.1016/j.envpol.2011.12.021).

Emission Changes Resulting from the San Pedro Bay, California Ports Truck Retirement Program, Bishop, Schuchmann and Stedman; *Environmental Science & Technology*, (2012) 46 (1) pp.551-558, [doi: 10.1021/es202392q](https://doi.org/10.1021/es202392q).

Effect of fuel on the soot nanostructure and consequences on loading and regeneration of diesel particulate filters, Lapuerta, Oliva, Agudelo and Boehman; *Combustion and Flame* (Feb. 2012) 159 (2) pp.844-853, [doi: 10.1016/j.combustflame.2011.09.003](https://doi.org/10.1016/j.combustflame.2011.09.003).

Physicochemical characterization of particulate emissions from a compression ignition engine: The influence of biodiesel feedstock, Surawski et al.; *Environmental Science and Technology* (Dec. 2011) 45 (24) pp.10337-10343, [doi: 10.1021/es2018797](https://doi.org/10.1021/es2018797).

Influence of Real-World Engine Load Conditions on Nanoparticle Emissions from a DPF and SCR Equipped Heavy-Duty Diesel Engine, Arvind Thiruvengadam, Marc C. Besch, Daniel K Carder, Adewale Oshinuga, and Mridul Gautam; *Environmental Science & Technology* (January 2012) 46 (3) pp.1907-1913, [doi: 10.1021/es203079n](https://doi.org/10.1021/es203079n).

Reduction of gaseous and particulate emissions from small scale wood combustion with a catalytic combustor, A. Hukkanen, T. Kaivosoja, O. Sippula, K. Nuutinen, J. Jokiniemi, J. Tissari; *Atmospheric Environment* (April 2012) 50 pp.16-23, [doi: 10.1016/j.atmosenv.2012.01.016](https://doi.org/10.1016/j.atmosenv.2012.01.016).

Review of the effects of biodiesel on NOx emissions, S. Kent Hoekman, Curtis Robbins; *Fuel Processing Technology* (April 2012) 96 pp.237-249, [doi: 10.1016/j.fuproc.2011.12.036](https://doi.org/10.1016/j.fuproc.2011.12.036).

The effects of operating conditions on particulate matter exhaust from diesel locomotive engines, Duckshin Park, Younghun Yoon, Soon-Bark Kwon, Wootae Jeong, Youngmin Cho, Kiyoun Lee; *Science of The Total Environment* (March 2012) 419 pp.76-80, [doi: 10.1016/j.scitotenv.2012.01.002](https://doi.org/10.1016/j.scitotenv.2012.01.002).

Turbulent operation of diesel oxidation catalysts for improved removal of particulate matter, Henrik Ström, Srdjan Sasic, Bengt Andersson; *Chemical Engineering Science* (13 February 2012) (69) 1 pp.231-239, [doi: 10.1016/j.ces.2011.10.043](https://doi.org/10.1016/j.ces.2011.10.043).

Emission characteristics of a spark-ignition engine fuelled with gasoline-n-butanol blends in combination with EGR, Xiaolei Gu, Zuohua Huang, Jian Cai, Jing Gong, Xuesong Wu, Chia-fon Lee; *Fuel* (March 2012) 93 pp.611-617, [doi: 10.1016/j.fuel.2011.11.040](https://doi.org/10.1016/j.fuel.2011.11.040).

Influence of oxygenates on fine particle and regulated emissions from a diesel engine, Md. Nurun Nabi, Johan Einar Hustad; *Fuel* (March 2012) 93 pp.181-188, [doi: 10.1016/j.fuel.2011.11.019](https://doi.org/10.1016/j.fuel.2011.11.019).

Emissions Control, Catalysis, Filtration

Effect of Diesel Oxidation Catalysts on the Diesel Particulate Filter regeneration process, Lizarraga et al.; *Environmental Science & Technology*, (2011), 45 (24) pp.10591-10597, [doi: 10.1021/es2026054](https://doi.org/10.1021/es2026054).

The influence of sulfur dioxide and water on the performance of a marine SCR catalyst, Magnusson, Fridell and Ingelsten; *Applied Catalysis B: Environmental* (12 January 2012) 111-112 pp.20-26, [doi: 10.1016/j.apcatb.2011.09.010](https://doi.org/10.1016/j.apcatb.2011.09.010).

Mechanistic investigation of hydrothermal aging of Cu-Beta for ammonia SCR, Wilken et al; *Applied Catalysis B: Environmental* (12 January 2012) 111-112 pp.58-66, [doi: 10.1016/j.apcatb.2011.09.018](https://doi.org/10.1016/j.apcatb.2011.09.018).

Selective catalytic reduction of NOx on combined Fe- and Cu-zeolite monolithic catalysts: Sequential and dual layer configurations, Metkar, Harold and Balakotaiah; *Applied Catalysis B: Environmental* (12 January 2012) 111-112 pp.67-80, [doi: 10.1016/j.apcatb.2011.09.019](https://doi.org/10.1016/j.apcatb.2011.09.019).

NO/NO₂/N₂O-NH₃ SCR reactions over a commercial Fe-zeolite catalyst for diesel exhaust aftertreatment: Intrinsic kinetics and monolith converter modelling, Colombo et al.; *Applied Catalysis B: Environmental* (12 January 2012) 111-112 pp.106-118, [doi: 10.1016/j.apcatb.2011.09.023](https://doi.org/10.1016/j.apcatb.2011.09.023).

Microkinetic modelling for selective catalytic reduction (SCR) of NOx by propane in a silver-based automotive catalytic converter, Sawatmongkhon et al.; *Applied Catalysis B: Environmental* (12 January 2012) 111-112 pp.165-177, [doi: 10.1016/j.apcatb.2011.09.031](https://doi.org/10.1016/j.apcatb.2011.09.031).

Deactivation of Pd/Ce_{0.5}Zr_{0.5}O₂ model three-way catalyst by P, Ca and Zn deposition, Christou, Garcia-Rodriguez, Fierro and

Efstathiou; *Applied Catalysis B: Environmental* (12 January 2012) 111-112 pp.233-245, [doi: 10.1016/j.apcatb.2011.10.004](https://doi.org/10.1016/j.apcatb.2011.10.004).

Isothermal desulfation of pre-sulfated Pt-BaO/γ-Al₂O₃ lean NOx trap catalysts with H₂: The effect of H₂ concentration and the roles of CO₂ and H₂O, Kim, Kwak, Szanyi and Peden; *Applied Catalysis B: Environmental* (12 January 2012) 111-112 pp.342-348, [doi: 10.1016/j.apcatb.2011.10.017](https://doi.org/10.1016/j.apcatb.2011.10.017).

Dual layer automotive ammonia oxidation catalysts: Experiments and computer simulation, Scheuer et al; *Applied Catalysis B: Environmental* (12 January 2012) 111-112 pp.445-455, [doi: 10.1016/j.apcatb.2011.10.032](https://doi.org/10.1016/j.apcatb.2011.10.032).

A non-NH₃ pathway for NOx conversion in coupled LNT-SCR systems, Wang, Ji, He, Crocker, Dearth and McCabe; *Applied Catalysis B: Environmental* (12 January 2012) 111-112 pp.562-570, [doi: 10.1016/j.apcatb.2011.11.008](https://doi.org/10.1016/j.apcatb.2011.11.008).

Model-based temperature control of a diesel oxidation catalyst, Olivier Lepreux, Yann Creff, Nicolas Petit; *Journal of Process Control* (January 2012) 22 (1) pp.41-50, [doi: 10.1016/j.jprocont.2011.10.012](https://doi.org/10.1016/j.jprocont.2011.10.012).

On the effect of reduction and ageing on the TWC activity of Pd/Ce_{0.68}Zr_{0.32}O₂ under simulated automotive exhausts, M. Pilar González-Marcos, Beñat Pereda-Ayo, Asier Aranzabal, José A. González-Marcos, Juan R. González-Velasco; *Catalysis Today* (17 January 2012) 180 (1) pp.88-95, [doi: 10.1016/j.cattod.2011.04.035](https://doi.org/10.1016/j.cattod.2011.04.035).

The NO/NOx ratio effect on the NH₃-SCR efficiency of a commercial automotive Fe-zeolite catalyst studied by operando IR-MS, Irene Malpartida, Olivier Marie, Philippe Bazin, Marco Daturi, Xavier Jeandel; *Applied Catalysis B: Environmental*, (22 February 2012) 113-114, pp.52-60, [doi: 10.1016/j.apcatb.2011.11.023](https://doi.org/10.1016/j.apcatb.2011.11.023).

Infrared studies of CO oxidation by oxygen and by water over Pt/Al₂O₃ and Pd/Al₂O₃ catalysts, Guido Busca, Elisabetta Finocchio, Vicente Sanchez Escribano; *Applied Catalysis B: Environmental* (22 February 2012) 113-114 pp.172-179, [doi: 10.1016/j.apcatb.2011.11.035](https://doi.org/10.1016/j.apcatb.2011.11.035).

Study of the "Fast SCR"-like mechanism of H₂-assisted SCR of NOx with ammonia over Ag/Al₂O₃, Dmitry E. Doronkin, Sebastian Fogel, Stefanie Tamm, Louise Olsson, Tuhin Suvra Khan, Thomas Bligaard, Pär Gabriellsson, Søren Dahl; *Applied Catalysis B: Environmental* (22 February 2012) 113-114 pp.228-236, [doi: 10.1016/j.apcatb.2011.11.042](https://doi.org/10.1016/j.apcatb.2011.11.042).

Novel Strategies and Optimization Techniques to Reduce Harmful Diesel Engine Emissions, Kibum Kim, Hyungmin Kim, and Kihyung Lee; *Environmental Engineering Science* (in press), [doi: 10.1089/ees.2011.0068](https://doi.org/10.1089/ees.2011.0068).

The interaction of iron pyrite with oxygen, nitrogen and nitrogen oxides: a first-principles study, Marco Sacchi, Martin C. E. Galbraith and Stephen J. Jenkins; *Physical Chemistry Chemical Physics* (2012) 14 pp.3627-3633, [doi: 10.1039/C2CP23558G](https://doi.org/10.1039/C2CP23558G).

Global Kinetics for Ammonia Formation and Oxidation Reactions in a Commercial Three-Way Catalyst, Karthik Ramanathan, Chander Shekhar Sharma and Chang Hwan Kim; *Industrial & Engineering Chemistry Research* (2012) 51 (3), pp.1198-1208, [doi: 10.1021/ie2017866](https://doi.org/10.1021/ie2017866).

Propene Poisoning on Three Typical Fe-zeolites for SCR of NOx with NH₃: From Mechanism Study to Coating Modified Architecture, Lei Ma, Junhua Li, Yisun Cheng, Christine K. Lambert, and Lixin Fu; *Environmental Science & Technology* (12 January 2012) 46 (3) pp.1747-1754, [doi: 10.1021/es203070g](https://doi.org/10.1021/es203070g).

Climate Change and Transport

Simultaneously Mitigating Near-Term Climate Change and Improving Human Health and Food Security, Shindell et al.; *Science* (13 Jan. 2012) 335 (6065) pp.183-189, [doi: 10.1126/science.1210026](https://doi.org/10.1126/science.1210026).

Diesel vehicles and sustainable mobility in the US, Wallington, Lambert, and Ruona; *Energy Policy* (in press), doi: [10.1016/j.enpol.2011.11.068](https://doi.org/10.1016/j.enpol.2011.11.068).

Long-term impacts of aerosols on the vertical development of clouds and precipitation, Zhanqing Li, Feng Niu, Jiwen Fan, Yangang Liu, Daniel Rosenfeld and Yanni Ding; *Nature Geoscience*, (2011) 4, pp.888-894, doi:[10.1038/ngeo1313](https://doi.org/10.1038/ngeo1313) (to open paste www.nature.com/ngeo/journal/v4/n12/full/ngeo1313.html into your browser).

Ozone and PM related health co-benefits of climate change policies in Mexico, Crawford-Brown, Barker, Anger and Dessens; *Environmental Science & Policy* (March 2012) 17 pp. 33-40, doi: [10.1016/j.envsci.2011.12.006](https://doi.org/10.1016/j.envsci.2011.12.006).

Aerosol-induced intensification of rain from the tropics to the mid-latitudes, Ilan Koren, Orit Altaratz, Lorraine A. Remer, Graham Feingold, J. Vanderlei Martins & Reuven H. Heiblum; *Nature Geoscience* (2012) 5 pp.118-122, doi:[10.1038/ngeo1364](https://doi.org/10.1038/ngeo1364) (to open paste www.nature.com/ngeo/journal/v5/n2/full/ngeo1364.html into your browser).

Fuel consumption and life cycle GHG emissions by China's on-road trucks: Future trends through 2050 and evaluation of mitigation measures, Han Hao, Hewu Wang, Minggao Ouyang; *Energy Policy* (January 2012), doi: [10.1016/j.enpol.2011.12.061](https://doi.org/10.1016/j.enpol.2011.12.061).

A new comparison between the life cycle greenhouse gas emissions of battery electric vehicles and internal combustion vehicles, Hongrui Ma, Felix Balthasar, Nigel Tait, Xavier Riera-Palou, Andrew Harrison; *Energy Policy*, (May 2012) 44 pp.160-173, [10.1016/j.enpol.2012.01.034](https://doi.org/10.1016/j.enpol.2012.01.034).

FORTHCOMING CONFERENCES

International CTI Seminar "Basics of SCR Systems"

19-20 March 2012, Stuttgart, Germany

Details at www.car-training-institute.com/basics-scr

The seminar will provide basic knowledge about current SCR systems and the respective exhaust gas sensors by sharing practical examples. Applications for passenger cars will be discussed as well as for heavy-duty trucks and large engines.

EU Debate on Electromobility: Challenges & Priorities towards Zero Emissions

20 March 2012, Brussels, Belgium

Details at www.emcnet.eu/event/VCC_PROG_LINK.pdf

2nd Annual European Raw Materials Conference

20 March 2012, Brussels, Belgium

Details at www.eu-ems.com/summary.asp?event_id=106&page_id=793

4th International Conference Advanced Charging & Downsizing Concepts

26-28 March 2012, Stuttgart, Germany

Details at www.charging-downsizing-concepts.com/Event.aspx?id=662514

The conference will address future concepts for boosting small gasoline and diesel engines, approaches to improve low end torque to ensure efficient performance of the engine, potential of two stage turbo-charging including limitations and

interaction, concepts to application of turbo-charging systems in HEVs, and potentials of new EGR approaches and their success of energy recuperation.

Diesel Emissions Conference & AdBlue® Forum Asia 2012

27-29 March 2012, Beijing, China

Details at

www.integer-research.com/conferences/dec-asia

The conference will facilitate focused discussion on the future diesel emissions market in Asia. Technology discussions will include NOx & PM reduction technologies such as SCR, EGR, DOC and DPF, and CO₂ reduction technologies such as hybrid systems and bio-fuels.

9th Green Ship Technology Conference

27-29 March 2012, Copenhagen, Denmark

Details at

www.informaglobalevents.com/event/greenshiptechnology

The conference includes expanded sessions on energy efficiency and emissions management and a new stream on alternative power sources.

Intermat 2012 (International Construction Equipment Exhibition)

16-21 April 2012, Paris, France

Details at <http://en.intermat.fr>

International CTI Seminar "Basics of SCR Systems"

17-18 April 2012, Düsseldorf, Germany

Details at

www.iir.de/produkt.aspx?pnr=P2300271&lang=EN

The seminar will provide basic knowledge about current SCR systems and the respective exhaust gas sensors by sharing practical examples. Applications for passenger cars will be discussed as well as for heavy-duty trucks and large engines.

REACH Registration 2013 Conference Part 1: "Where you should be now?"

18 April 2012, Brussels, Belgium

Details at www.reachcentrum.eu/en/learning/reach-conference.aspx

The conference brings together industry as well as experts from European Chemical Associations to present key topics relating to this important milestone for REACH.

Transport Research Arena Conference

23-26 April 2012, Athens, Greece

Details at www.traconference.eu

The conference brings together academia and industry to present research (theoretical and applied) on pressing problems of the transport.

SAE 2012 World Congress

24-26 April 2012, Detroit, Michigan, USA

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

33. International Vienna Motorsymposium

26-27 April 2012, Vienna, Austria

Details at www.oevk.at

Latest results in worldwide engine and powertrain development, future legislation, fuels and components, drive train electrification, hybrid technology, CO₂ reduction, exhaust emissions control.

i-SUP2012 Innovation for Sustainable Production 2012

6-9 May 2012, Bruges, Belgium

Details at www.i-sup2012.org

The themes of the parallel sessions during i-SUP2012 will be: Urban Development; Rural development; Transport & Mobility; Energy; Materials; Chemistry and Products.

DPF and Combined Systems

8 May 2012, Stuttgart, Germany

Details at www.iir.de/produkt.aspx?pnr=P2300262&lang=EN

Topics include global emissions legislation, DPF materials, design criteria and mathematical modelling for combined systems, regeneration strategies, particulate filter cleaning and impacts of fuel quality.

International CTI Conference "EGR Systems and NOx Reduction Concepts"

9-10 May 2012, Stuttgart, Germany

Details at www.iir.de/produkt.aspx?pnr=P2300263&lang=EN

5th AVL Large Engine Techdays

9-10 May 2012, Graz, Austria

Details at www.avl.com/large-engines-techdays

The TechDays will be dedicated to "emissions". The technical sessions will provide an information exchange platform, focusing on major key topics including aftertreatment and EGR, gas and dual-fuelling, and likely emissions steps for 2020.

6th Emission Control 2012

10-11 May 2012, Dresden, Germany

Details at <http://tu-dresden.de/ec>

The main focus of the conference Emission Control lies on those automatic control solutions of exhaust emission, fuel consumption and energy management of the vehicle, which are qualified to optimize the complete vehicle system.

Diesel particulates and NOx Emissions Short Course

14-18 May 2012, Leeds, UK

Details at www.engineering.leeds.ac.uk/short-courses/automotive

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

Cambridge Particles Meeting

18 May 2012, Cambridge, UK

Details at www.cambridgeparticlemeeting.org/2012

Key Developments in the Port and Maritime Sector

21-22 May 2012, Antwerp, Belgium

Details at <http://webh01.ua.ac.be/sig2/wctrs/html/activities.html>

Topics include environmental issues, maritime engineering and legal issues.

Advanced Emission Control Concepts for Gasoline Engines

21-23 May 2012, Stuttgart, Germany

Details at www.emissioncontrol-gasoline.com/Event.aspx?id=690564

The topic of the conference is emissions control approaches by the improvement of filter material development in gasoline engines. There will be a special focus on particulate filter technology and improvement on materials.

Motorship Propulsion & Emissions Conference 2012

23-24 May 2012, Hamburg, Germany

Details at www.propulsionconference.com

The conference will provide ship operators with solutions and answers to ensure their fleets comply with the 0.1% sulfur limits coming into force in Emission Control Areas (ECAs) from 2015. Topics include LNG engine developments and dealing with future NOx, PM and CO₂ emissions limitations for existing fleets. For new builds, topics include holistic approaches to designing future ultra-efficient ships.

3rd International Exhaust Emissions Symposium

24-25 May 2012, Bielsko-Biala, Poland

Experts from automotive and engine manufacturers, their suppliers and the oil industry, will discuss all emissions-related issues and will report on recent and near future issues regarding engine emissions.

Diesel Emissions Conference & AdBlue® Forum Europe 2012

30 May - 1 June 2012, Düsseldorf, Germany

Details at

www.integer-research.com/conferences/dec-europe/2012

Discussions will include updates on Euro VI/6 legislation for heavy-duty vehicles and passenger cars and stage IV for non-road vehicles. Technology discussions will provide insight into the latest developments in CO₂ technologies, alternative fuels, bio-diesel and hybrid systems, and NO_x technologies including SCR, EGR, DOC & DPF.

SIA International Conference: Diesel Powertrain

5-6 June 2012, Rouen, France

Details at

www.sia.fr/evenement_detail_diesel_powertrain_welcome_1107.htm

Topics to be addressed include future Diesel powertrains, future emissions regulations including Euro 7 and WLTP, advanced combustion systems, thermal management, exhaust aftertreatments, engine design, development & simulations, engine and vehicle tests, and fuels and lubricants.

4th MinNO_x Conference

12-13 June 2012, Berlin, Germany

Details at

www.iav.com/termine/iav-tagung/4-tagung-minnox

The conference will provide an in-depth discussion of the current state-of-the-art, new technologies and applications as well as innovative ideas and concepts for cutting NO_x-emissions on the basis of exhaust gas aftertreatment. Attention will also focus on harnessing synergies to cut fuel consumption by introducing NO_x-reducing technologies.

Engine Expo 2012 Open technology Forum

12-14 June 2012, Stuttgart, Germany

Details at www.engine-expo.com

Proposed topics include engine, transmission, sensor and component developments, emissions, hybrid technology, electric vehicles and fuel cells.

Engine Emissions Measurement Short Course

18-22 June 2012, Leeds UK

Details at

www.engineering.leeds.ac.uk/short-courses/automotive

The course is directed at both emissions legislation compliance and at engine and catalyst development for low emissions. The course also covers the fast growing area of in-vehicle emissions measurement for real world driving emissions measurement.

NO_x Reduction: Current and Future Solutions for On-and Off-Road Applications

19-20 June 2012, Detroit, Michigan, USA

Details at www.emission-control-systems.com

Topics include US regulatory directions, an integrated technology approach for NO_x reduction, SCR for light- and medium-duty diesels, regulations and NO_x technologies for on- and off-road, and dual-fuel RCCI.

16th ETH Conference on Combustion Generated Nanoparticles

24-27 June 2012, Zürich, Switzerland

Details at www.lav.ethz.ch/nanoparticle_conf

Diesel Emissions Conference & ARLA 32 Forum Brazil 2012

26-28 June 2012, São Paulo, Brazil

Details at

www.integer-research.com/conferences/dec-brazil

The conference will discuss the latest developments in PROCONVE P7 diesel emissions legislation, and latest NO_x reduction technologies for heavy-duty, non-road and passenger vehicles, including SCR, EGR, DOC and DPF. The conference will also discuss developments in CO₂ reduction technologies.

Next Generation Off-Highway Engines

27-29 June 2012, Wiesbaden, Germany

Details at www.off-highway-engines.com

This event will provide information on the latest developments and exclusive OEM studies in the area of emissions control technologies for large engines.

9th International Congress on Catalysis and Automotive Pollution Control (CAPoC9)

29-31 August 2012, Brussels, Belgium

Details at <http://capoc.ulb.ac.be>

All topics related to applications and requirements of catalysis in automotive (including cars, light- and heavy-duty vehicles) emissions control will be considered.

5th Environmentally Friendly Vehicle Conference

10-12 September 2012, Baltimore, Maryland, USA

Details at www.efv2012.com

SAE 2012 Heavy Duty Diesel Emissions Control Symposium

11-12 September 2012, Gothenburg, Sweden

Details at www.sae.org/events/hddec

This event provides upcoming regulatory actions, state-of-the-art technical information and first hand experiences relating to heavy-duty diesel emission control strategies, engines and aftertreatment.

Diesel Emissions Conference India 2012

12-14 September 2012, India

Details will be at

www.integer-research.com/conferences/dec-india/2012

24th AVL Conference: Engine & Environment

13-14 September 2012, Graz, Austria

Details at www.avl.com/engine_environment

The topic for the 2012 conference is "95-70-50 g CO₂/km – Evolution or Revolution?"

SAE 2012 Emission Control from Large Ships Symposium

13-14 September 2012, Gothenburg, Sweden

Details at www.sae.org/events

Organized by SAE International and the International Association for Catalytic Control of Ship Emissions to Air (IACCSEA), this symposium will prove essential in updating attendees on the pending marine emissions regulations and in profiling the technologies now available to address them.

SAE 2012 Powertrains, Fuels and Lubricants Meeting

18-20 September 2012, Malmo, Sweden

Details at www.sae.org/events/pfl

Topics will include combustion optimisation, hybrid powertrains, aftertreatment, engine control, fuels and fuel efficiency, and regulated and non-regulated emissions reduction, measurement and modelling.

Green Port Congress 2012

3-5 October 2012, Marseille, France

Details at www.greenport.com/congress

Papers are invited on SO_x and NO_x emissions and their control, Nitrogen Emission Control Areas and Green Terminals and Logistics.

21st Aachen Colloquium Automobile and Engine Technology

8-10 October 2012, Aachen, Germany

Details at www.aachen-colloquium.com

Trends and developments will be discussed, including electric and hybrid drives, range extenders, powertrains, commercial vehicles, industrial engines, emission concepts, and aftertreatment.

European Electric Vehicle Congress 2012

10-12 October 2012, Brussels, Belgium

Details at www.eevc.eu

Diesel Emissions Conference USA 2012

16-18 October 2012, USA

Details will be at

www.integer-research.com/conferences/dec-usa/2012

Heavy-Duty-, On- und Off-Highway-Motoren (7. Internationale MTZ-Fachtagung)

6-7 November 2012, Nürnberg, Germany

Details at

www.atzlive.de/pdf/cfp_haevyduty_2012_13.pdf

Deadline for abstracts 4 May 2012

2012 Eucar conference

6-7 November 2012, Brussels, Belgium

34th FISITA World Automotive Congress

27-30 November 2012, Beijing, China

Details at www.fisita2012.com

The congress will focus on solutions for sustainable mobility in all areas of passenger car, truck and bus transportation. Emphasis will be placed on the development of future powertrain systems, advanced internal combustion engines, energy efficient transmissions & drivelines as well as vehicle design, electronics, safety solutions, NVH and manufacturing.

4th CLEPA Aftermarket Conference

29 November 2012, Brussels, Belgium

Symposium on International Automotive Technology (SIAT 2013)

16-19 January 2013, India

BAUMA 2013 (International Construction Equipment Exhibition)

15-21 April 2013, Munich, Germany

Details at www.bauma.de/en

International Commercial Powertrain Conference

22-23 May 2013, Graz, Austria

Details at www.avl.com/icpc

The conference covers commercial vehicles, agricultural tractors and non-road vehicles, and industrial machinery.