



Newsletter

July - August 2011

INTERNATIONAL REGULATORY DEVELOPMENTS

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EUROPE

Formal EU Adoption of Updated UNECE Regulation 49 including PMP

The EU has formally published in the Official Journal its adoption of the latest version of UNECE Regulation No. 49 on emissions of heavy-duty engines.

The update incorporates supplements 3 and 4 to the 05 series of amendments to the ECE Regulation. It adds a new Annex 4C which is the PMP particle number measurement test procedure. There are also changes to the scope of the Regulation to align with current EU Regulations – it now applies to M1, M2, N1 and N2 vehicles with a reference mass exceeding 2610 kg and to all M3 and N3 vehicles. At the same time it allows for engines mounted in vehicles of up to 2840 kg to be approved to UNECE Regulation 83 by extension from a vehicle with reference mass ≤2610 kg, in line with the Euro 5/6 Regulation.

The Regulation now also includes a revised table of requirements covering PI engines fuelled by natural gas or LPG and diesel or ethanol-fuelled CI engines:

	Requirements				
	Positive-ignition engines			Compression-ignition engines	
	Petrol	NG	LPG	Diesel	Ethanol
Gaseous pollutants	—	Yes	Yes	Yes	Yes
Particulates	—	Yes (a)	Yes (a)	Yes	Yes
Smoke	—	—	—	Yes	Yes
Durability	—	Yes	Yes	Yes	Yes
In-service-conformity	—	Yes	Yes	Yes	Yes
OBD	—	Yes (a)	Yes (a)	Yes	Yes

(a) Applicable to EEVs only
(b) From 1 October 2009

Official Proposal for Revision of Recreational Craft Directive

On 26 July 2011 the European Commission issued its long-awaited proposal for revision of the Recreational Craft Directive, 94/25/EC. As well as emissions requirements the Directive lays down safety requirements and noise limits. Improved market surveillance is also proposed.

The revision proposed in document COM (2011) 0456 covers motorboats, inboard and outboard and stern drive engines, and jet skis. The Directive will also apply to installed propulsion engines that are subjected to a major modification and to watercraft that are subject to a major conversion. There are exclusions for racing boats and for replicas of historical (pre-1950) propulsion engines.

For CI (compression ignition) engines, the limits are based on the US EPA standards for marine recreational engines (40 CFR §1042). For SI (spark

ignition) engines they are based upon US EPA standards for non-road SI engines (40 CFR §1045). Engines Type-Approved to Stages IIIA, IIIB or IV of the EU's NRMM Directive (97/68/EC), other than rail or inland waterway applications, can also be used, as can engines Type-Approved to 2005/55/EC (Euro IV/V) providing the manufacturer declares that the engine will meet the emissions requirements of the Directive when installed in a watercraft.

Limits for CI Engines				
Swept volume (SV) (litres/cyl.)	Rated engine power (P _N) (kW)	Particulate (g/kWh)	HC+NO _x (g/kWh)	CO (g/kWh)
SV < 0.9	P _N < 37	1.0	See note ¹⁾	5.0
	37 ≤ P _N < 75 ²⁾	0.30	4.7	5.0
	75 ≤ P _N < 3700	0.15	5.8	5.0
0.9 ≤ SV < 1.2	P _N > 3700	0.14	5.8	5.0
1.2 ≤ SV < 2.5		0.12	5.8	5.0
2.5 ≤ SV < 3.5		0.12	5.8	5.0
3.5 ≤ SV < 7.0		0.11	5.8	5.0
Limits for SI Engines				
Stern drive & inboard engines	P _N ≤ 373	-	5	75
	373 < P _N ≤ 485	-	16	350
	P _N > 485	-	22	350
Outboard engines and powered watercraft	P _N < 4.3	-	500 - 5.0 × P _N	30
	4.0 ≤ P _N < 4.3	-	500 - 5.0 × P _N	See note ³⁾
	P _N > 0.40	-	300	

¹⁾ HC = A + B/P_N¹⁾ where A = 6.0, B = 50.0 and n = 0.75

²⁾ Alternatively, particulates 0.20 g/kWh and HC+NO_x 5.8 g/kWh

³⁾ CO = 15.7 + (50/P_N^{0.9})

Test cycles are ISO 8178-4:1996 E1 or E5 (or E3 for engines >130 kW) for CI engines, E4 for SI engines.

It is intended that the revised Directive will apply 2 years after formal publication of the final version. Products meeting the current requirements can be put on the market or into service for 1 year after entry into force. Small volume manufacturers of SI engines below 15 kW will be given a further 3 years.

Durability requirements are:

- 480 hours/10 years for inboard or stern drive SI engines <373 kW and for all CI engines,
- 50 hours/3 years for SI engines of 373 < P_N ≤ 485,
- 50 hours/1 year for SI engines >485 kW,
- 350 hours/5 years for personal watercraft,
- 350 hours/10 years for outboard engines.

The proposal is available from DG Enterprise at http://ec.europa.eu/enterprise/sectors/maritime/files/recreational_crafts_provisional_en.pdf. It will now be considered by the Parliament and Council.

European Council adopts Tractors Flexibility Amendments

A meeting of Agriculture Ministers in Brussels on 19 July 2011 adopted the proposals for increased flexibility provisions for tractors. The compromise proposal was adopted after a first-reading agreement was reached with the European Parliament.

The proposal affects the number of Stage IIIA tractors that a manufacturer can sell after the stricter Stage IIIB emissions limits come into force. The agreement will allow up to 40% of each manufacturer's sales, averaged over the past five years, to meet the less stringent limits. The European Commission had initially proposed increasing the existing 20% quota to 50% of sales. There is also an alternative fixed number of engines, intended to be applied by small manufacturers. The fixed figure is up to 250 of specific models sold by each manufacturer, depending on engine size.

Commission adopts Rules for Eco-Innovation and Car CO₂

On 25 July 2011 the European Commission adopted Regulation (EU) No. 725/2011 that defines the rules for innovations that carmakers can use to receive credits of up to 7 g/km towards their CO₂ targets.

Under the Regulation, a technology can qualify as an eco-innovation if it is new to the market, contributes to significant CO₂ savings (≥ 1 g/km CO₂) and is not otherwise taken into account in determining a vehicle's CO₂ emissions. The technology should improve vehicle propulsion or the energy consumption of mandatory devices. For instance solar panels providing electric energy could potentially qualify but an energy-efficient in-car music system would not.

The Commission will adopt decisions approving generic eco-innovations based on inputs from manufacturers and suppliers, but the actual CO₂ savings for each specific car will be certified as part of the vehicle type approval procedure.

Commission adopts Proposal on Marine Fuels Sulfur Content

On 15 July 2011 the European Commission adopted its proposal to take into EU law stricter international limits on the sulfur content of marine fuels.

The proposal would lower the sulfur limit from 4.5% to 0.5% in 2020. For sulfur emission control areas (SECAs) - currently the Baltic Sea and the North Sea - the limit would be lowered from 1.5% to 0.1% in 2015. The proposal also goes beyond what is required by the IMO by imposing the stricter 0.1% sulfur standard for passenger ships outside SECAs.

As well as aligning Directive 1999/32/EC with the latest IMO provisions on fuel sulfur, the proposal adapts the Directive to the IMO provisions on alternative compliance methods such as exhaust gas cleaning systems.

The proposal is available from DG Environment at http://ec.europa.eu/environment/air/transport/ships_directive.htm.

Amendment to the EU Framework Directive

On 15 July 2011 an amendment to the Framework Directive (the basis for Type Approval of motor vehicles) was published in the EU's Official Journal as Commission Regulation (EU) No. 678/2011.

The new Regulation replaces Annex II which defines vehicle categories such as M1 (vehicles for up to 8 passengers + driver), sub-categories (such as Off-Road Vehicles), and Types. The latter essentially means the same model and engine type but can, for instance, include a saloon and a coupe in the case of M1 vehicles. The Recitals to the Regulation say that "experience shows that the current criteria for determining whether a new model of vehicle is to be considered a new type are too vague... Moreover, experience shows that it is possible to circumvent the EU small series legislation by dividing a vehicle type into several sub-types under different type-approvals... It is therefore important to specify which vehicle technical features are to be used as criteria in determining what constitutes a new type." These revised requirements apply from 9 April 2011.

Consultation on Alternative Transport Fuels

The European Commission is consulting stakeholders on plans for an alternative fuel strategy due in early 2012. The strategy is being developed through the Commission's Clean Transport Systems initiative, which also includes a scoping study. It could be accompanied by legislative proposals on the infrastructure requirements of alternative fuels. Stakeholders are being asked whether the EU should take a technology-based approach, giving preference to certain fuels or technologies, or a technology-neutral strategy centred around performance criteria, such as energy efficiency and the reduction of CO₂ and pollutant emissions. The Commission also asks respondents to complete matrices indicating which alternative fuels are best suited to particular types of transport in the time horizons to 2020, 2030 and 2050.

The questionnaire is available at <http://ec.europa.eu/yourvoice/ipm/forms/dispatch?form=cts>.

Recession contributes to Air Pollutant Emissions Decrease in 2009

Emissions of almost all main air pollutants fell across the EU-27 in 2009, according to the latest annual European Union air pollutant emission inventory report compiled by the European Environment Agency (EEA). Some pollutants decreased significantly compared to the previous year, with analysis showing economic recession to be an important factor in this decrease.

The annual report to the United Nations Economic Commission for Europe Long-range Transboundary Air Pollution Convention confirms a long-term trend of decline for most air pollutants. SOx emissions have fallen the most since 1990 (-80%), followed by CO (-62%), non-methane volatile organic compounds (NMVOCs) (-55%) and NOx (-44%).

Emissions of NOx from road transport have decreased by 42% since 1990, mainly due to the introduction of three-way catalytic converters in passenger cars and stricter regulation of emissions from heavy goods vehicles across Europe, the report says. Nevertheless, road transport remains the most important source of the ozone precursors NOx and CO, contributing 42% and 34% respectively in the EU-27 in 2009. The report also comments that NOx emissions from road transport have not decreased as much as originally anticipated.

EEA report 9/2011 is available from www.eea.europa.eu/publications/eu-emission-inventory-report-1990-2009.

UK Report on Feasibility of NOx Retrofit Certification Scheme

The UK's Environment Department (Defra) has issued a draft report for technical comment on "an investigation into the feasibility of developing a certification scheme for technology retrofitted to HDVs to abate NOx emissions".

The report covers three broad subject areas – emissions standards and abatement techniques, administering a national certification scheme, and options available for enforcement of any future Low Emission Zones (LEZ) or similar schemes. It reports on the development of a UNECE Regulation on retrofit and, in the section on enforcement, concludes that it would be advantageous for there to be a harmonised certification scheme across the EU.

The report concludes that any scheme would most likely need to certify equipment against a percentage mass emissions reduction of NOx and NO₂ (with separate quantitative requirements for N₂O and ammonia) from which equivalency to Euro emissions standards could be inferred.

A certification scheme would also need to ensure the effectiveness of retrofitted equipment over additional duty cycles as compared to those used for Type Approval, the report says. Stakeholders indicated support for chassis- rather than engine-based testing and at a workshop expressed support for the adoption of the Euro VI test cycle.

The report is available from Defra at http://uk-air.defra.gov.uk/library/reports?report_id=668.

Vienna to require Taxis to meet Euro 5/6

The Austrian government has advised the European Commission that the Vienna Ordinance on the operation of taxis, rental cars and courtesy cars is to be amended so that from 1 April 2012 taxis will only be allowed to trade in Vienna if they meet the Euro 5 emissions limits. From 1 September 2015 the requirement will move to Euro 6.

Deutsche Umwelthilfe says New Petrol Engines need Strict Particle Limits

On 7 July 2011, German environmental organisation Deutsche Umwelthilfe (DUH) issued a press statement on particle emissions from petrol engines.

They say that measurements show dangerously high particulate emissions from gasoline engines with direct injection and so DUH and Verkehrsclub Deutschland (VCD) demand particle number limits analogous to the EU diesel emissions standards. Even modern direct injection gasoline engines have a particulate problem, DUH says. Results from two modern vehicles measured by ADAC were up to an order of magnitude above the legal requirements that apply to diesel cars, according to the DUH statement. Jürgen Resch, DUH's CEO, said "The technology for reduction is also available for petrol engines and is cheaper than for diesel engines".

The VCD said that they support the current strategy of the German Federal Government and the European Commission to stipulate for diesel and gasoline identical limits on the allowable number of particles, "We hope that the auto industry will go along this time and not - as for their years of denial of the diesel particulate filter - maintain a blockade" said, VCD Transport Policy spokesman Gerd Lottsiepen.

EC and Switzerland agree Swiss Rebate for DPF-Retrofitted Trucks

On 23 July 2011 Decision No. 1/2011 of the Community/Switzerland Inland Transport Committee was published in the EU's Official journal.

The decision concerns the Swiss performance-based fee on heavy goods vehicle traffic and permits a rebate of 10% of the fee for Euro II and Euro III vehicles that are fitted with approved Diesel Particulate Filters (DPFs). The rebate will be granted only to vehicles with an entry in the vehicle registration certificate or with an equivalent certificate from the national authorities that confirms it has been retrofitted with an approved particulate reduction system, in accordance with Swiss legislation or that of the Member State in which the vehicle is registered. The system must give compliance with at least the Euro IV emission limit of 0.02 g/kWh PM.

By 30 September 2011, the authorities in the EU Member State where the vehicle is registered have to endeavour to transmit to the Swiss authorities a specimen of the entry of the particulate filter system in the vehicle registration certificate or equivalent certificate and to have confirmed that the specimen ensures compliance with the Euro IV limit value.

Denmark to require Foreign Trucks to display Low-Pollution Labels

Starting on 1 November 2011, Denmark will require all foreign commercial vehicles to display Danish environmental labels before they can be driven into four densely populated urban areas.

The new rules, which were detailed in a statement from the Environment Ministry on 1 July 2011, will apply to all diesel-powered vehicles entering the cities of Copenhagen, Aarhus, Aalborg, and Odense. The requirement will affect foreign companies making deliveries in Denmark as well as haulage companies and operators of other commercial vehicles such as tourist buses. It will apply only to designated environmental zones covering each city's central area.

Currently, all Danish-registered vehicles weighing more than 3.5 tonnes that do not conform to Euro IV emissions standards are banned from these zones, but foreign-registered vehicles are exempt. Under the new rules, owners of foreign vehicles will have to apply for a label certifying that their vehicles' engines meet Euro IV requirements or, for older models, have a certificate confirming that the vehicles have been retrofitted with a qualifying particulate filter.

Changes to French Decree on 40- to 44-tonne Trucks

A French decree adopted on 4 August 2011 has delayed the deadline by which trucks above the normal French weight limit of 40 tonnes must meet Euro IV emissions standards.

In January this year a decree allowed trucks of over 40 tonnes and up to 44 tonnes to be used on French roads for the transport of food and agricultural products. That decree said that these 40- to 44-tonne lorries would, from 1 October 2011, have to meet Euro IV or higher emissions standards – in other words 40- to 44-tonne lorries (only) that meet earlier standards would not be permitted on French roads. The new decree issued on 4 August allows Euro III (and higher) lorries of 40 to 44 tonnes to drive on French roads until 30/9/2014. From 1/10/2014 until 30/9/2017 they must be Euro IV or higher, and from 1/10/2017 they must be Euro V or higher. 44-tonne lorries will be allowed in other sectors once the French eco-tax is introduced.

UK Report on NOx and NO₂

The UK's Department for Environment, Food and Rural Affairs has published a report on trends in NOx and NO₂ emissions and ambient air measurements in the UK. The report notes that the fraction of primary NO₂ in vehicle exhausts has increased from around 5–7% in 1996 to 15–16% in 2009 (21–22% in London).

The report says one implication is that current methods used to estimate compliance with air quality NO₂ limit values and with national emission ceilings for NOx are erroneous. The reasons for the mismatch between the observed and modelled behaviour need to be fully understood before projections of future compliance can be made with confidence.

The report suggests that degradation of NOx emissions from Euro 1 to 3 petrol vehicles may be more important than had been thought. Measures that encourage the removal of older petrol vehicles from the fleet or which ensure better maintenance would be beneficial, and policies that promote small, modern (Euro 5/6) petrol vehicles, petrol hybrids and electric vehicles in urban areas should be incentivised.

The authors say that it will be essential to ensure that Euro 6 vehicles result in a considerable reduction in NOx emissions, particularly under urban driving conditions. The implementation of Euro 6 vehicles should be monitored to ensure there is sufficient evidence to support claims of significantly reduced NOx emissions under 'real-world' driving conditions. The report recognises that the current light-duty test cycle is inadequate to ensure that real-world emissions of NOx, particularly from diesel vehicles, decrease in line with emissions limits. It says the UK's Environment and Transport Departments (Defra and DfT) should ensure that any agreement on the new World-harmonised Light-duty Test Procedure (WLTP) being developed in UNECE is capable of ensuring real-world decreases in NOx emissions in the UK in line with future emissions limits.

The report also says that the accelerated introduction of Euro VI diesel Heavy Goods Vehicles should be considered beyond the incentive already in place through the UK's Reduced Pollution Certificate. Alternative technologies such as hybrids could offer advantages and should be considered as serious alternatives to conventional fuels. The targeting of specific fleets (for instance urban bus fleets) for retrofitting has the potential to reduce NOx emissions. However, it would be important to ensure that the technology is matched to specific duty cycles e.g. optimised to deal with lower engine-out temperatures.

The report (*Carlaw et al, Trends in NOx & NO₂ emissions and ambient measurements in the UK – Final*) is at http://uk-air.defra.gov.uk/reports/cat05/1108251149_110718_AQ072_4_Final_report.pdf.

Study on reducing Inland Waterway Emissions in Flanders

Transport & Mobility Leuven (TML), with Arcadis and LDR, has completed a project for the Flemish government on local measures to reduce emissions of inland waterways.

This project studied local measures that could be taken by the Flemish government to reduce emissions of inland waterways. In the first step, technologies were identified which can be effectively applied after the introduction of low-sulfur (10 ppm) fuels. The most cost efficient measures were determined, based on data collection on costs and reduction potential. A legal and economic-financial analysis was performed and a monitoring system was proposed.

The measures analysed in detail included the replacement of old engines with NRMM Stage IIIA compliant engines, the installation of integrated exhaust aftertreatment systems (DPF + SCR + oxidation catalyst), and shore-side electricity. The study concludes that subsidies for the installation of integrated exhaust aftertreatment systems are the best instrument for the Flemish government to reduce emissions of inland waterways. Preferably, these should be accompanied by compulsory measures.

The final report (in Dutch) is available on the website of the Flemish government's Environment, Nature and Energy Department (LNE) at: www.lne.be/themas/milieu-en-mobiliteit/downloads/studie-en-onderzoek.

Romanian Vehicle Tax to include Reduction for Cars with DPFs

Romanian Minister of the Environment and Forestry László Borbély told a press conference on 23 August 2011 that a new bill on vehicle tax will be adopted within 2 weeks.

In the bill on the modification of the vehicle tax that has been posted on the website of the Ministry of the Environment, the owners of cars equipped with Diesel Particulate Filters will pay a 25% smaller car tax. The vehicle tax applying to cars registered in the country before 1 January 2007 is calculated in accordance with the CO₂ emissions, the engine displacement and the pollution level.

Swiss Environmental Report

A new report from the Swiss Federal Office for the Environment and the Federal Statistical Office says that "considerable progress has been achieved in the area of environmental protection in recent decades" but improvements in air and water quality have stalled since the turn of the millennium. Ambient air quality standards for coarse particulate matter, ozone, and nitrogen dioxide are "still being exceeded by a

substantial margin". On climate change, Switzerland's total greenhouse gas emissions have remained more or less constant since 1990, totalling 51.8 million tonnes of CO₂-equivalent in 2009.

The report "Environment Switzerland 2011" is available in German, French, Italian and English at www.bafu.admin.ch/publikationen/publikation/01608.

Ukraine Extends Euro 2 and Euro 3 Fuel Standards until 2012

The Ukrainian State Committee for Technical Regulation and Consumer Policy has extended the Euro 2 and Euro 3 standards for gasoline and diesel fuels until 31 December 2011. The announcement was made in the Committee's Directive No. 240 dated 1 July 2011. Originally, Ukraine planned to switch to the Euro 4 and Euro 5 fuels in 2011, but it extended the use of the old standard to the first half of 2011 at the initiative of several government departments.

NORTH AMERICA

California Amendments to Small Off-Road Engines Regulations

The California Air Resources Board (CARB) has released a draft of proposed amendments to the Small Off-Road Engines (SORE) Regulation. The aim is to harmonise California's test procedures with those of the US Environmental Protection Agency.

The proposal is that the current procedures will end with the 2012 model year, and portions of Parts 1054 and 1065 of Title 40, Code of Federal Regulations will be used instead. Because California has different air quality goals than the rest of the country, some portions of Parts 1054 and 1065 have been either modified as necessary for California's purposes or excluded entirely. For example, EPA and CARB have different emission credit programmes, so CARB has excluded portions of EPA's credit provisions.

The proposal is scheduled to be considered by the Board in December 2011 and can be found at www.arb.ca.gov/msprog/mailouts/mouts_11.htm.

Proposed Modifications to California Regulations for Tier 4 Off-Road Engines

The California Air Resources Board (CARB) has also released a draft of proposed amendments to the California Tier 4 off-road compression-ignition (CI) engine test procedures. The aim is primarily to align with similar US federal requirements.

The basis of these test procedures is the US Environmental Protection Agency's non-road CI engine regulations (40 CFR Parts 1039, 1065, and 1068) which CARB adopted originally in October 2005. The draft proposal from CARB reflects both the

amendments that EPA has made since 2005, as well as CARB's proposed amendments for aligning with those federal amendments. The proposal will end the current California test procedures (Part I-C) with the 2010 model year, and create new Parts I-D, I-E, and I-F. These relate to §1039, 1065 and 1068 of the Federal regulations, respectively.

The draft amendments also include revised Tables of Tier 4 Exhaust Emission Standards from the California Code of Regulations – further amendments to reflect the test procedures changes will follow.

The draft test procedure amendment proposals are at www.arb.ca.gov/msprog/mailouts/mouts_11.htm.

California proposes Changes to Off-Road Test Fuels

The California Air Resources Board (CARB) is proposing to amend the certification test fuel required for demonstrating compliance with California's exhaust and evaporative emission standards for off-road, spark-ignition (SI) engines.

The categories affected include:

- Large Spark Ignition (LSI) engines
- Small off-road engines (SORE)
- Off-highway recreational vehicles (OHRV)
- Recreational marine SI engines (Marine SI)

The proposed certification test fuel will have a 10% blend of ethanol with petrol (E10), and will be consistent with the new certification test fuel that CARB intends to propose for adoption by on-road motor vehicles under the third phase of California's Low Emission Vehicle rulemaking (LEV III). CARB will propose at the December 2011 Board meeting that this E10 be optional for the California off-road SI categories until the 2018 model year and mandatory for certifications beginning with the 2019 model year.

Modified Text for California Off-Road Fleet Regulations

On 22 August 2011, California published a modified text for amendments to the Regulations for in-use Off-Road diesel-fuelled fleets and off-road Large Spark Ignition (LSI) engine fleet requirements.

The latest proposed modification includes amending the applicability of the regulation to include both engines of all off-road and on-road two-engined vehicles, except road sweepers regulated by the Truck and Bus regulation, vehicles already subject to the Public Fleet and Utilities Regulation, and two-engined vehicles that have Tier 0 auxiliary engines.

There are also some changes to the sections of the Off-Road Regulation on public funding of purchases, repowers and retrofits, alternative fuel provisions, and rules on the transfer of fleet ownership. For the LSI

Regulation, in addition to changes to some definitions of various operations there is a new definition of 'limited hours of use' that will, from 2012, allow operators to exclude from their fleet average emissions LSI equipment operated no more than 199 hours in the previous year (250 hours for 2011).

Details are at

www.arb.ca.gov/regact/2010/offroadlsi10/offroadlsi10.htm.

CARB proposes Changes to Regulation on Cargo Handling Equipment

The California Air Resources Board (CARB) has proposed amendments to the regulation covering the emissions of mobile cargo handling equipment used at ports and intermodal rail yards in the state.

The main aim is to provide additional flexibility whilst maintaining the expected emissions benefits. The proposals affect retrofit requirements, operational requirements and emissions standards. They include an additional 2 years for compliance for in-use equipment where verified diesel emissions control strategies (VDECS) are not available. They will also allow extensions for experimental diesel particulate control strategies for gathering verification data. Tier 4 engines certified to the alternate PM emissions standards under the averaging, banking and trading options will have to be retrofitted with the highest level VDECS within 1 year.

Details of the proposals are at

www.arb.ca.gov/regact/2011/cargo11/cargoisor.pdf.

Agreement on New US Light-duty Fuel Efficiency Standard

The US President has announced an agreement with thirteen major automakers to pursue the next phase in the US national vehicle programme, increasing fuel economy to 54.5 miles per gallon (4.3 litres/100 km) or 163 g/mile CO₂ for cars and light-duty trucks by Model Year 2025. The programme will follow on from the existing agreement to reach 35.5 mpg (6.6 litres/100 km) over model years 2012-2016.

The new standards will increase in stringency for passenger cars by an average of 5% each year. For pick-ups and other light-duty trucks the stringency will increase by an average of 3.5% annually for the first five model years and 5% annually for the last four model years of the programme.

EPA and NHTSA are developing a joint proposed rulemaking and plan to issue a Notice of Proposed Rulemaking by the end of October 2011. California plans on adopting its rule in the same timeframe. A number of incentive programmes are being considered to encourage early introduction into the marketplace of advanced technologies that represent "game changing" performance improvements.

US announces Fuel Efficiency Standards for Heavy-duty Trucks and Buses

On 9 August 2011 President Obama announced the final rulemaking for the United States' Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, developed by the US Department of Transportation (DOT) and the US Environmental Protection Agency (EPA).

Vehicles are divided into three major categories: combination tractors (semi-trucks), heavy-duty pickup trucks and vans, and vocational vehicles (such as transit buses and refuse trucks). Within each of those categories, even more specific targets are laid out based on the design and purpose of the vehicle. Fuel efficiency improvement goals are charted for each year and for each vehicle category and type.

By the 2018 model year, certain combination tractors will be required to achieve up to a 20% reduction in fuel consumption and greenhouse gas emissions. For heavy-duty pickup trucks and vans, separate standards are required for gasoline-powered and diesel trucks. These vehicles will be required to achieve up to a 15% reduction in fuel consumption and greenhouse gas emissions by model year 2018. Vocational vehicles – including delivery trucks, buses, and garbage trucks – will be required to reduce fuel consumption and greenhouse gas emissions by approximately 10% by model year 2018.

EPA says the greenhouse gas standards will also reduce emissions of harmful air pollutants like particulate matter. In addition to CO₂ standards, EPA has adopted emissions standards for the global warming gases N₂O (nitrous oxide) and CH₄ (methane) to ensure that manufacturers do not allow them to rise significantly in future engines. There will also be standards for leakage of air conditioning gas.

More information is available on EPA's website: www.epa.gov/otaq/climate/regulations.htm.

Canadian Consultation on Heavy-duty Vehicle Greenhouse Gas Emissions

Environment Canada has issued a consultation document on the main elements of a proposed Regulation to limit Greenhouse Gas emissions from new on-road heavy-duty vehicles and engines.

The proposed regulations will set vehicle and engine standards starting with the 2014 model year, and becoming progressively more stringent up to the 2018 model year. They will apply to the whole range of heavy-duty vehicles from full-size pick-up trucks to combination tractors and buses as well as a wide variety of vocational vehicles. This will effectively include all on-road vehicles with a Gross Vehicle

Weight Rating of more than 3856 kg. The proposed standards will be aligned with those of the final US national programme (see preceding article).

The Canadian consultation is at www.ec.gc.ca/lcpe-cepa/default.asp?lang=En&n=E826C69F-1.

Canada Requires Renewable Content in Diesel Fuel

Environment Canada has published final regulations that require 2% renewable fuel content in all diesel fuel and home heating oil sold from 1 July 2011.

The regulations include a permanent exemption for Newfoundland and Labrador, temporary exemptions in the first compliance period for Quebec and the Atlantic provinces, an extended first compliance period for all refiners, and trading of compliance units.

US-EPA aims to adopt New Aircraft Emissions Standards

The US Environmental Protection Agency (EPA) is proposing to adopt new air pollution standards for aircraft gas turbine engines used primarily in large commercial aircraft (rated thrusts >26.7 kN). EPA says the proposal would reduce ground-level NO_x emissions by an estimated 100 000 tons by 2030.

The standards were previously agreed by the United Nation's International Civil Aviation Organization (ICAO) and include two new tiers of emissions standards for NO_x, referred to as Tier 6 (or CAEP/6) and Tier 8 (CAEP/8). If adopted in the US, the standards would be phased in over the next two years, applying to all new engines in 2013. Details are at www.epa.gov/otaq/aviation.htm.

IMO designates Caribbean Emissions Control Area

On 15 July 2011, the IMO officially designated waters around Puerto Rico and the US Virgin Islands as an Emissions Control Area (ECA) in which stringent international emissions standards will apply to ships. For this area, the effective date of the first-phase fuel sulfur standard is 2014, and the second phase begins in 2015. Stringent NO_x engine standards begin in 2016. Details of the Caribbean ECA are available at www.epa.gov/otaq/oceanvessels.htm#emissioncontrol.

New US Air Pollution Rules for Power Plants

The US Environmental protection Agency (EPA) has finalised the Cross State Air Pollution Rule which will reduce air pollution from coal-fired power plants in 27 States east of the Rocky Mountains. Compared to 2005 emissions levels, by 2014 the rule will reduce power plant NO_x emissions by 54% and SO₂ emissions by 73% when combined with State

environmental laws. Power plants have to start cutting their SO₂ emissions in January 2012 and their NO_x emissions in May 2012.

EPA is also taking public comment on a supplemental rule that would require six states (Iowa, Kansas, Michigan, Missouri, Oklahoma and Wisconsin) to reduce NO_x pollution in the summer months. That rule is expected to be finalised late this year.

US-EPA to allow States to abandon Refuelling Vapour Capture at Pumps

The US Environmental Protection Agency (EPA) has announced that it is proposing criteria to waive Federal requirements for systems at fuel stations to capture petrol vapours when refuelling vehicles. From 30 June 2013, States that meet the new criteria would have the option to do away with vapour recovery systems at the pump since an estimated 70% of all vehicles will be equipped by then with on-board vapour recovery systems that capture these emissions. More information is available from www.epa.gov/airquality/ozonepollution/actions.html#impl.

US-EPA re-affirms CO Air Quality Standards but changes Monitoring

After a scientific review, the US Environmental Protection Agency (EPA) has re-affirmed the current national air quality standards for CO (9 ppm over 8 hours and 35 ppm over 1 hour). EPA says that the science shows that the current standards protect public health and the environment, but that it plans to revise the air monitoring requirements.

The changes will require a more focused monitoring network with CO monitors placed near roads in 52 urban areas with populations of 1 million or more. Monitors in areas with populations of 2.5 million or more are required to be operational by 1 January 2015 and monitors required in areas with populations of 1 million or more have to be operational by 1 January 2017. EPA notes that since 1980, levels of CO in the air have fallen by 80%, mostly as a result of motor vehicle emissions controls.

More information is available from the EPA website at www.epa.gov/airquality/carbonmonoxide.

US-EPA proposes Revisions to NO₂ and SO₂ Secondary Air Quality Standards

The US Environmental Protection Agency (EPA) is proposing revision of the secondary air quality standards for nitrogen and sulfur oxides.

EPA says it has made significant progress in developing a multi-pollutant standard (for NO_x and SO_x combined) that would protect vulnerable ecosystems, including streams and lakes. To ensure such a standard is effective, the agency is planning to

conduct a field pilot programme to collect and analyse additional data and information. In the meantime, the agency is proposing to retain the existing secondary standards for NO_x and SO_x but to also set an additional secondary standard for each pollutant.

The existing secondary standards are a 0.053 ppm annual average for NO₂ and a 0.5 ppm 3-hour average for SO₂, not to be exceeded more than once per year. The additional set of secondary standards (identical to the health-based primary standards EPA set in 2010) would be a 1-hour average of 100 ppb for NO₂ and a 75 ppb 1-hour average for SO₂.

More details on the proposal are at www.epa.gov/air/nitrogenoxides/actions.html.

US abandons Plans for Stricter Ozone Air Quality Rules

US President Obama has rejected a proposed rule from the Environmental Protection Agency (EPA) that would have significantly reduced emissions of smog-causing precursors, saying that it would impose too severe a burden on industry and local governments at a time of economic distress.

EPA, following the recommendation of its scientific advisers, had proposed lowering the ozone standard of 75 ppb to a stricter standard of 60 to 70 ppb. The change would have thrown many areas out of compliance with the Clean Air Act and required a major enforcement effort by state and local officials, as well as new emissions controls at industries across the country. There will still be an already-scheduled reconsideration of limits in 2013.

Penalties for Emissions-related Violations on Scooters and Diesel Engines

The California Air Resources Board (CARB) has announced that a Chicago-based company, Genuine Scooters, has paid a \$300 000 (approx. €212 000) penalty for selling motorised scooters without California vehicle emissions certification. Through a routine inspection in 2008, CARB found that the company was selling or offering for sale 2008 model year scooters prior to obtaining the required vehicle certification. The penalty will go to the Air Pollution Control Fund for air quality projects and research.

CARB has also announced that Cummins Inc., has paid \$500 000 (approx. €350 000) for failing to properly retest its engines already in use. Cummins' violations of a 1998 settlement agreement include not testing at least four engines in selected engine families; testing 10 vehicles at less than the maximum weight; and late completion and reporting of tests. CARB, working with the US Environmental Protection Agency (EPA), discovered the offence during an investigation regarding the company's delivery of

approximately 570 000 diesel engines without exhaust aftertreatment devices between 1998 and 2006, a violation of the Clean Air Act.

Meanwhile the US EPA and the US Department of Justice have announced a settlement with Caterpillar Inc. to resolve alleged Clean Air Act violations for shipping more than 590 000 highway and non-road diesel engines without the correct aftertreatment devices and with improperly configured fuel injector and map settings. Caterpillar also allegedly failed to comply with emissions control reporting and engine-labelling requirements. The company will pay a \$2.55 million (€1.77 million) penalty, continue a recall of non-compliant engines and reduce excess emissions through permanent retirement of banked emissions credits. California is also settling its claims for violations arising from the sale of improperly configured systems.

SOUTH AMERICA

Brazil to introduce Stage III-equivalent NRMM Emissions Legislation

The Brazilian government has published a resolution on diesel emissions from construction and farm machinery. Resolution No. 433, published on 13 July 2011 by the National Council for the Environment (CONAMA) is the country's first legislation on non-road mobile machinery (NRMM) emissions. It includes noise as well as CO, HC, NOx and PM limits. This first phase is referred to as PROCONVE MAR-I.

The new requirements will be phased in from 1 January 2015. From that date it will apply to engines for new construction machinery models with power ≥ 37 kW and will apply to all construction machinery from 1 January 2017. Engines for farm machinery with power ≥ 75 kW will have to comply from 1 January 2017 and from 1 January 2019 the limits will also apply to all new farm machinery with power between 19 and 75 kW.

Tabela I - Limites máximos de emissão para motores de máquinas agrícolas e rodoviárias (PROCONVE MAR-I)

(Potência P em kW)*	CO (g/kWh)	HC + NOx (g/kWh)	MP (g/kWh)
130 ≤ P ≤ 560	3,5	4,0	0,2
75 ≤ P < 130	5,0	4,0	0,3
37 ≤ P < 75	5,0	4,7	0,4
19 ≤ P < 37	5,5	7,5	0,6

*Potência máxima de acordo com a Norma ISO 14396:2002, que a critério do IBAMA poderá adotar norma ABNT equivalente.

(* Maximum output according to ISO 14396:2002, which at the discretion of IBAMA may adopt ABNT equivalent.)

Resolution 433 is available via the CONAMA website at www.mma.gov.br/port/conama/legiabre.cfm?codlegi=654.

Brazil to tighten Emissions Standards for New Motorcycles from 2014

New motorcycles and mopeds will have to meet more stringent limits on pollutant emissions under Resolution No. 432 published on 14 July 2011 by Brazil's National Environmental Council (CONAMA).

The resolution sets new emissions limits for mopeds, motorcycles, tricycles (trikes) and quadricycles (quads) from 1 January 2014 and a further stage of stricter limits from 1 January 2016 for only motorcycles, trikes and quads. Testing for motorcycles, trikes and quads is based on the UNECE World-harmonised Motorcycle Test Cycle (WMTC). From 2015 there will also be an evaporative emissions limit of 1 g/test for all categories of these vehicles. Table 1 shows the emissions limits for motorcycles, trikes and quads, Table 2 shows the emissions limits for mopeds.

Tabela I

Categoria	Data de Vigência	Velocidade Máxima	Limites			
			CO (g/Km)	HC (g/km)	NOx (g/Km)	CO ₂
Motociclos e Similares	01/01/2014	< 130 Km/h	2	0,8	0,15	
		≥ 130 Km/h	2	0,3	0,15	
	01/01/2016	< 130 Km/h	2	0,56	0,13	Informar
		≥ 130 Km/h	2	0,25	0,17	

Tabela II

Categoria	Data de Vigência	Limites			
		CO (g/Km)	HC (g/Km)	NOx (g/Km)	CO ₂ (g/Km)
Ciclomotores	01/01/2014	1	0,8	0,15	Informar

Durability requirements are 10 000 km for mopeds, 18 000 km for motorcycles, trikes and quads with maximum speed (v_{max}) less than 130 km/h, and 30 000 km for those with $v_{max} \geq 130$ km/h.

Resolution 432 is available via the CONAMA website at www.mma.gov.br/port/conama/legiabre.cfm?codlegi=653.

ASIA PACIFIC

Viet Nam adopts Vehicle Emissions and Fuel Standards Timetable

The Vietnamese Prime Minister enacted the official roadmap for vehicle and motorcycle emissions standards on 1 September 2011. Vehicle emissions will have to meet Euro 4 standards from 1 January 2017 and Euro 5 from 1 January 2022. In both cases fuel quality will have to meet the appropriate standards one year earlier. Motorcycles will have to meet Euro 3 emissions levels from 1 January 2017.

Taiwan proposes Ban on Lengthy Idling

Drivers of motor vehicles that idle for more than three minutes could be fined up to 60 000 Taiwan new

dollars (€1417) under a proposal announced by the Environmental Protection Administration. Draft regulations are to be issued in September for public review with the Regulations taking effect in March 2012. In addition to exemptions for certain types of vehicle including ambulances and school buses, exemptions would apply when temperatures exceed 30°C and when drivers are stuck in traffic jams.

Japan plans 2020 Fuel Economy Targets

A draft version of new Japanese fuel economy standards for 2020 was released for public comment on 19 August 2011. If adopted, the new guidelines could take effect as early as next spring, the government said.

The draft, prepared by the Ministry of Economy, Trade and Industry and the Transport Ministry would set fuel economy targets averaged across a carmaker's entire fleet. The draft guideline calls for the average to reach 20.3 km/litre in 2020, an improvement of 24.1% compared to the 16.3 km measured in 2009. Passenger cars will be divided into 15 sub-divisions by weight with fuel economy targets ranging from 10.6 km/litre to 24.6 km/litre. Hybrids would come under the guidelines, while electric cars and plug-in hybrids would be excluded from the requirements.

Japanese Panel to consider Stricter Rules for Emissions from Large Trucks, Buses

The Japanese government has convened a committee to study stricter regulation of emissions from large trucks and buses for introduction in 2016, according to officials of the Ministry of the Environment and the Ministry of Land, Infrastructure, and Transport.

A motor industry official told the press that the government had brought forward the convening of the "Study Committee on Vehicle Emissions in Off-cycle", chaired by Waseda University professor Yasuhiro Ohijiri, after receiving reports that some truck and bus manufacturers have exploited the JE05 cycle by configuring mechanisms to emit more pollutants in driving conditions not covered by that test. The official said the two ministries plan to conclude the committee's meetings by the end of 2011 and added that the panel will publish results to be reflected in the next, tougher emissions Regulations for large trucks and buses.

Pollution Levels in Major Indian Cities

The Indian Ministry of Environment and Forests has announced that the Government has assessed the pollution level in the country's big cities.

NO₂ exceeded the limit of 40 µg/m³ in Asansol, Dhanbad, Delhi, Jamshedpur, Kolkata, Meerut and

Mumbai during 2010. The levels of PM₁₀ were exceeded in most of the cities, except Chennai, Kochi and Madurai during 2010. The report says that pollution levels are rising due to rising population, increasing urbanisation, industrial and vehicular pollution.

The level of pollution is monitored by the Central Pollution Control Board in association with various State Pollution Control Boards, Pollution Control Committees for Union Territories and NEERI, Nagpur in terms of SO₂, NO₂ and under National Air Quality Monitoring Programme (NAMP).

Report on Pollution Levels in Mumbai

The Brihanmumbai Municipal Corporation's Environment Status Report (ESR) for the year 2010-11 reveals that the emissions load of Mumbai has increased from 588.57 tonnes per day (tpd) last year to 597.12 tonnes per day in 2010-11, leading to the rise in air pollution. The rise is attributed to an increase in the number of vehicles and hence exhaust emissions, and to construction activities.

According to the report, exhaust emissions from automobiles increased from 383.69 tpd to 391.26 tpd last year. Exhaust emissions constitute 65% of the total emission load. This is largely because Mumbai's car population is growing at a rate of 5.6 % annually. "Traffic congestion is reducing fuel efficiency and is leading to an increase in emissions," said Rakesh Kumar of the National Environmental Engineering Research Institute. He said that the low popularity of clean fuels such as CNG and LPG among private car owners is contributing to the problem.

Suspended Particulate Matter (SPM) has exceeded the Central Pollution Control Board's (CPCB) standards of 140 µg/m³ at all the six air pollution monitoring sites in the city. The average SPM count was 125 to 642 µg/m³. The report also says that levels of NO₂ are within approved standards in all five air monitoring stations except Maravli.

New Zealand Study on Traffic Emissions in Schools

Scientists from the National Institute of Water & Atmospheric Research (NIWA) are investigating traffic-related air pollution and ultra-fine particles at schools in Auckland, New Zealand. Measurements are being made both inside and outside classrooms, to help understand the long-term health effects on children.

The aim of the research is to assess what proportion of potentially health-damaging emissions comes from motorways, determine how far the emissions travel, and assess what proportion of emissions penetrate into the classrooms.

The first school monitored was 2 kilometres from the nearest motorway, providing control or background levels. In the second school measured, on the west side of a motorway interchange, NIWA found that pollution and particle levels were significantly elevated in easterly winds.

Further studies are planned and analysis of the data will be completed in 2012.

AFRICA

Nigerian Timetable for Ban on 2-Stroke and Implementation of Euro 2

The Director General of the National Automotive Council (NAC) of Nigeria, Aminu Jalal has told the press that with effect from 1 December 2011 all vehicles (both new and used) that do not have installed approved emissions reduction technology shall not be imported or manufactured in Nigeria.

A Federal Government regulation on vehicle emissions issued in Gazette No.47 of 17 May 2011, directed that motor vehicles with petrol and diesel engines should meet the Euro 2 emissions standards whilst 2-stroke engined motorcycles should no longer be manufactured or imported into the country. From 1 January 2015, motor vehicles with petrol and diesel engines should meet Euro 3 emissions standards, with appropriate fuel sulfur limits implemented.

"After consultation with stakeholders, the council is requesting that the implementation of this Gazette should be from 1 December 2011 to enable the clearing of items that are already ordered for and are in transit", Mr. Jalal said. He noted that Nigeria imports most of its motorcycles from India and China and that they have banned the 2-stroke engine.

UNITED NATIONS

IMO agrees Mandatory Energy Efficiency Rules for Ships

The International Maritime Organization (IMO) has agreed to introduce a mandatory energy efficiency standard for new ships. Ships built after 2015 will have to be 10% more efficient according to an Energy Efficiency Design Index (EEDI), but developing countries were given an exemption until 2019. Further improvements will come in stages; a 20% improvement between 2020 and 2024 and 30% for ships built after 2024.

The amendments to MARPOL Annex VI Regulations agreed by the IMO's Marine Environment Protection Committee (MEPC) add a new chapter 4 to Annex VI on Regulations on energy efficiency for ships. This makes the EEDI and the Ship Energy Efficiency Management Plan (SEEMP) mandatory for all ships

≥400 gross tonnage. The amended Regulations are expected to enter force on 1 January 2013.

New Regulation to Reduce Marine Pollution in Antarctic enters into Force

A ban on pollution from heavy grade fuel oils in the Antarctic region went into effect on 1 August 2011.

The International Maritime Organization (IMO) said that amendments to the International Convention for the Prevention of Pollution from Ships (MARPOL) detailing specific densities of crude oil which should not be used in the Antarctic mean that ships trading to the area, whether passenger or cargo ships, with lower grade fuel will have to switch to a better fuel while in the area.

GENERAL

International Transport Forum Report on Car Subsidy Schemes

According to a new report prepared by TNO for the International Transport Forum, OECD Environment Directorate and FIA Foundation, car fleet renewal programmes in US, France, Germany fall short of their potential emissions and safety benefits.

Schemes in the three countries were introduced primarily to stimulate consumer spending on cars in the wake of the 2008 economic crisis. The study investigates the impact on CO₂ and NO_x emissions of 2.8 million transactions in which old cars were traded for new vehicles under the schemes. The report assesses the value for money of the different schemes and identifies critical design elements for ensuring success in meeting the environmental and safety objectives.

In the US, there were positive results from targeted incentives with regard to fuel economy. However, these incentives were not optimally designed to achieve improvements in fuel consumption or pollutant emissions. With the German scheme, a greater number of lighter and smaller vehicles were traded in for medium-sized vehicles which reduced its effectiveness. The French scheme benefited from imposing a type-approval CO₂ limit for new cars and retiring very old gross-emitters. However, this led to a very high share of new diesel vehicles which strongly limits lifetime NO_x benefits, the report says.

The report concludes that it is vital to consider the objectives of the schemes very carefully when setting their design parameters. It also suggests that seeking CO₂ reduction ahead of pollution or safety improvements in the design of the schemes leads to decreased cost-effectiveness and lower overall societal benefit. The report is available at www.internationaltransportforum.org/Pub/pdf/11Fleet.pdf.

RESEARCH SUMMARY

Effects of Emissions & Pollution

Non-genotoxic Effects of Urban PM

Andrysik et al., Activation of the aryl hydrocarbon receptor is the major toxic mode of action of an organic extract of a reference urban dust particulate matter mixture: The role of polycyclic aromatic hydrocarbons; *Mutation Research/Fundamental and Molecular Mechanisms of Mutagenesis* (2011) 714 (1-2), pp.53-62, [doi:10.1016/j.mrfmmm.2011.06.011](https://doi.org/10.1016/j.mrfmmm.2011.06.011).

Pollution Effects on Children's Pulmonary Function

Yungling Leo Lee, Wen-Hua Wang, Chia-Wen Lu, Ya-Hui Lin and Bing-Fang Hwang, Effects of ambient air pollution on pulmonary function among schoolchildren; *International Journal of Hygiene and Environmental Health* (2011), 214 (5) pp.369-375, [doi:10.1016/j.ijheh.2011.05.004](https://doi.org/10.1016/j.ijheh.2011.05.004).

Air Pollution provokes Depressive-like Behaviour

Fonken, Xu, Weil, Chen, Sun, Rajagopalan and Nelson, Air pollution impairs cognition, provokes depressive-like behaviors and alters hippocampal cytokine expression and morphology; *Molecular Psychiatry* (2011), [doi:10.1038/mp.2011.76](https://doi.org/10.1038/mp.2011.76).

Ambient Particulate induces Oxidative Stress

Zhaobin Xu et al., Ambient Particulate Air Pollution Induces Oxidative Stress and Alterations of Mitochondria and Gene Expression in Brown and White Adipose Tissues; *Particle and Fibre Toxicology* (2011) 8 (20), [doi:10.1186/1743-8977-8-20](https://doi.org/10.1186/1743-8977-8-20), or <http://www.particleandfibretoxicology.com/content/8/1/20/abstract>.

Adverse Vascular Effects of Diesel Nanoparticulate

Mills et al., Combustion-derived nanoparticulate induces the adverse vascular effects of diesel exhaust inhalation; *European Heart Journal* (2011), [10.1093/eurheartj/ehr195](https://doi.org/10.1093/eurheartj/ehr195).

Association of SO₂ and PM_{2.5} with Asthma

Li, Batterman, Wasilevich, Wahl, Wirth, Su and Mukherjee, Association of daily asthma emergency department visits and hospital admissions with ambient air pollutants among the pediatric Medicaid population in Detroit: Time-series and time-stratified case-crossover analyses with threshold effects; *Environmental Research* (2011, in press), [doi:10.1016/j.envres.2011.06.002](https://doi.org/10.1016/j.envres.2011.06.002).

PM Exposure Mechanism initiating Inflammation

Fritsch-Decker, Both, Mulhopt, Paur, Weiss, and Diabate, Regulation of the arachidonic acid mobilization in macrophages by combustion-derived particles; *Particle and Fiber Toxicology* (2011) 8 (23), [doi:10.1186/1743-8977-8-23](https://doi.org/10.1186/1743-8977-8-23).

Antisocial Behaviour linked with Metals and PM?

Haynes, Chen, Ryan, Succop, Wright and Dietrich, Exposure to airborne metals and particulate matter and risk for youth adjudicated for criminal activity; *Environmental Research* (2011, in press), [doi: 10.1016/j.envres.2011.08.008](https://doi.org/10.1016/j.envres.2011.08.008).

Airparif Studies on the Public Perception of Pollution

The August 2011 edition of AirParif Actualité contains a summary of two studies: on the public perception of pollution and on the impact of highways pollution on agricultural land. www.airparif.asso.fr/airparif/pdf/NUMERO36.pdf.

Assessment of Sources and Exposure

PM_{2.5} Toxicity from Urban, Industrial, Rural Sources

Garçon, Dergham, Billet, Lepers, Verdin, Courcot, Cazier, and Shirali, Comparative toxicity of air pollution particulate matter (PM_{2.5}) sampled under urban, industrial or rural influence in human bronchial epithelial lung cells (BEAS-2B); *Toxicology Letters* (2011) 205 (1) pp.S53, [doi: 10.1016/j.toxlet.2011.05.205](https://doi.org/10.1016/j.toxlet.2011.05.205).

Acute Manifestations for Diverse PM Sizes Exposure

Cigolini, Martinelli, Zannoni, Ricci, Perfetti, Codogni, Rocca, and Olivieri, Diversely-sized particulate matter air pollution (PM_{2.5}, PM_{10-2.5}) is associated with different acute manifestations of diseases in Emergency Department; *Toxicology Letters* (2011) 205 (1) pp. S52-S53, [doi: 10.1016/j.toxlet.2011.05.204](https://doi.org/10.1016/j.toxlet.2011.05.204).

Sources of Particulate Pollution in Thessaloniki

Kassomenos, Kelessis, Paschalidou and Petrakakis, Identification of sources and processes affecting particulate pollution in Thessaloniki, Greece; *Atmospheric Environment* (2011, in press), [doi:10.1016/j.atmosenv.2011.08.034](https://doi.org/10.1016/j.atmosenv.2011.08.034).

Local, Regional and Long Range PM₁₀ Contributions

Juda-Rezler, Reizer and Oudinet, Determination and analysis of PM₁₀ source apportionment during episodes of air pollution in Central Eastern European urban areas: the case of wintertime 2006; *Atmospheric Environment* (2011, in press), [doi:10.1016/j.atmosenv.2011.08.020](https://doi.org/10.1016/j.atmosenv.2011.08.020).

Air Quality

Trends in NO₂ and NO_x levels in East Asia

Zang-Ho Shon, Ki-Hyun Kim and Sang-Keun Song, Long-term trend in NO₂ and NO_x levels and their emission ratio in relation to road traffic activities in East Asia; *Atmospheric Environment* (2011) 45 (18) pp.3120-3131, [doi:10.1016/j.atmosenv.2011.03.009](https://doi.org/10.1016/j.atmosenv.2011.03.009).

CI and PI High Emitters of Ultrafine Particles

Klems, Pennington, Zordan, McFadden and Johnston, Apportionment of motor vehicle emissions from fast changes in number concentration and chemical composition of ultrafine particles near a roadway intersection. *Environmental Science & Technology* (2011) 45 (13) pp.5637-43.

Impact of EU Control Strategies on Air Quality

Giannouli, Kalognomou, Mellios, Moussiopoulos, Samaras, and Fiala, Impact of European emission control strategies on urban and local air quality; *Atmospheric Environment* (2011) 45 (27) pp.4753-4762, [doi:10.1016/j.atmosenv.2010.03.016](https://doi.org/10.1016/j.atmosenv.2010.03.016).

Traffic dominates Air Pollutants in Lagos – Nigeria

Olajire, Azeez and Oluyemi, Exposure to hazardous air pollutants along Oba Akran road, Lagos – Nigeria; *Chemosphere* (2011) 84 (8) pp.1044-1051, [doi: 10.1016/j.chemosphere.2011.04.074](https://doi.org/10.1016/j.chemosphere.2011.04.074).

Emissions Measurements

JRC Report: On-Road Light-duty Vehicle Emissions

Weiss, Bonnel, Hummel, Provenza and Manfredi, On-road emissions of light-duty vehicles in Europe; *Environmental Science & Technology* (2011), [doi: 10.1021/es2008424](https://doi.org/10.1021/es2008424).

Particle Emissions from a Euro 5a Diesel Car

Mamakos et al., Particle Emissions from a Euro 5a Certified Diesel Passenger Car, DG-JRC report JRC65206, (2011), ISBN 978-92-79-20486-9, [doi: 10.2788/3173](https://doi.org/10.2788/3173).

Ship Emissions in Venice

Premuda, Masieri, Bortoli, Kostadinov, Petritoli and Giovanelli, Evaluation of vessel emissions in a lagoon area with ground based Multi axis DOAS measurements; *Atmospheric Environment* (2011) 45 (29) pp.5212-5219, [doi:10.1016/j.atmosenv.2011.05.067](https://doi.org/10.1016/j.atmosenv.2011.05.067).

Ultrafine Particles due to Ship Emissions

González, Rodríguez, Guerra García, Trujillo and García, Ultrafine particles pollution in urban coastal air due to ship emissions, *Atmospheric Environment* (2011) 45 (28), pp.4907-4914, [doi:10.1016/j.atmosenv.2011.06.002](https://doi.org/10.1016/j.atmosenv.2011.06.002).

Nanoparticles reduced by Biogas-Biodiesel Fuelling

Yoon and Lee, Effect of biofuels combustion on the nanoparticle and emission characteristics of a common-rail DI diesel engine; *Fuel* (2011) 90 (10) pp.3071-3077, doi:10.1016/j.fuel.2011.05.007.

Heavy-duty PEMS PM Evaluation

Johnson, Durbin, Jung, Cocker, Bishnu and Giannelli, Quantifying in-use PM measurements for Heavy-duty Diesel vehicles, *Environmental Science & Technology*, (2011) 45 (14) pp.6073-6079, doi:10.1021/es104151v.

Speed-Dependent Emissions from Gasoline Cars

Jung, Kim, Lee, Lyu, and Park, Speed-dependent emission of air pollutants from gasoline-powered passenger cars; *Environmental Technology* (2011) 32 (11) pp.1173-1181, doi:10.1080/09593330.2010.505611.

DME improves Ethanol/Diesel Emulsion Emissions

Ashok, Effect of Dimethyl Ether in a Selected Ethanol/Diesel Emulsified Fuel Ratio and Comparing the Performance and Emission of the Same to Diesel Fuel; *Energy & Fuels* (2011) 25 (8), pp.3799-3805, doi: 10.1021/ef2007547.

Charge Dilution and Alcohol Effects on Emissions

Zhu, Cheung, Zhang and Huang, Effect of charge dilution on gaseous and particulate emissions from a diesel engine fueled with biodiesel and biodiesel blended with methanol and ethanol; *Applied Thermal Engineering* (2011), 31 (14-15), pp.2271-2278, doi:10.1016/j.applthermaleng.2011.03.023

Climate Change, CO₂ and Emissions

Aerosol Forcing Increasing due to Sulfate Decreasing and Rise in Elemental Carbon

Kim, Kim, and Kang, Long-term trend of Aerosol Composition and Direct Radiative Forcing due to Aerosols over Gosan: TSP, PM₁₀, and PM_{2.5} data between 1992 and 2008; *Atmospheric Environment* (2011, in press), doi: 10.1016/j.atmosenv.2011.08.051.

Life Cycle Analysis for Alternative Fuels in China

Xunmin Ou, Xiaoyu Yan, Xiliang Zhang, and Zhen Liu, Life-cycle analysis on energy consumption and GHG emission intensities of alternative vehicle fuels in China; *Applied Energy* (2011, in press), doi:10.1016/j.apenergy.2011.03.032.

FORTHCOMING CONFERENCES

10th International Conference on Engines & Vehicles (ICE 2011)

11-15 September 2011, Capri, Italy

Details at www.sae-na.it

Topics of the conference include powertrain technology; exhaust aftertreatment and emissions; fuel injection and combustion processes; alternative and advanced power systems; and fuels.

4th CTI Conference: Emissions Reduction for Off-Highway Applications

19-20 September 2011, Bonn, Germany

Details at www.car-training-institute.com/offhighway

Topics include international emissions regulation, emissions concepts for worldwide use, engine and emissions concepts for rail vehicles, extruded SCR

catalysts for Stage IV non-road applications and Stage IV challenges in agricultural machinery.

Selective Catalytic Reduction 2011

26-28 September 2011, Wiesbaden, Germany

Details at www.scr-systems.de

IQPC, the organisers of this conference, say that the conference will cover the challenges and the chances of the Euro 6/VI and Euro7/VII through the view of an OEM, future aspects for SCR system optimisation, new control strategies for modern SCR applications, new developments in NH₃ catalysts, innovative SCR systems and the latest component improvements such as SCR injection systems, urea lines, storage and delivery.

Green Ship Technology Asia Conference 2011

28-29 September 2011, Singapore

The conference will have a programme of targeted, technical and operational presentations, technical streams, stakeholder panels and breakfast briefings, including one on abatement technology.

Details at www.informaglobalevents.com/event/gst-asia

2011 Directions in Engine-Efficiency and Emissions Research (DEER) Conference

3-6 October 2011, Detroit, Michigan, USA

Details at <http://www.orau.gov/deer2011/>

DEER 2011 is sponsored by the U.S. Department of Energy's (DOE) Office of Vehicle Technologies (OVT) and is DOE's primary mechanism for the public exchange of state-of-the-art combustion engine research and development.

10th Aachen Colloquium on Automobile and Engine technology

10-12 October 2011, Aachen, Germany

Details at www.aachen-colloquium.com/index_e.htm

Papers have been solicited on innovative vehicle concepts, electric vehicles and hybrids, commercial vehicles, energy and thermal management, and automotive strategy concepts.

XIX International Symposium on Alcohol Fuels

10-14 October 2011, Verona, Italy

Details at www.isaf2011.it

Much of the conference will concentrate on biofuel production, but there is a session on alcohols and biofuels end use in transport.

CECE-CEMA Summit 2011

11-12 October 2011, Brussels, Belgium

Details at [www.cema-](http://www.cema-agri.org/contentTopicDetail.php?subID=28&topicID=380)

[agri.org/contentTopicDetail.php?subID=28&topicID=380](http://www.cema-agri.org/contentTopicDetail.php?subID=28&topicID=380).

The topic of the summit is "The Green Challenge, the Business Solution". The two key messages of the

summit are: "We care about the environment and are committed to develop sustainable solutions, through improving products and processes, even without legislation" and "The increasing ambitions of European environmental lobbyists and legislators present a challenge to business in a time when the European share in global markets for our products is diminishing".

Diesel Emissions Conference USA

17-19 October 2011, Atlanta, Georgia, USA

Details at <https://www.integer-research.com/conferences/dec-usa>

The conference will bring together leading stakeholders from around the globe to discuss the latest emissions technologies available to meet current and future legislation.

European Electric Vehicle Congress

26-28 October 2011, Brussels, Belgium

Details at www.eevc.eu

A plenary session will be dedicated to the strategic policy for "Europe's vision and action plan", two full days will be R&D oriented but industry and political aspects will not be forgotten. The last part of the conference will then gather participants in round tables discussions on topics including plug-in hybrids, hydrogen and fuel cells, and health.

Advanced Diesel Particulate Filtration Systems - SAE Training Seminar

31 October – 1 November 2011, Turin, Italy

Details at www.associationhq.com/be-bruga/associationhq/sae/C0502.html

This seminar covers many DPF-related topics using fundamentals from various branches of applied sciences and will provide both a theoretical and an applications-oriented approach to enhance the design and reliability of aftertreatment platforms. Structure, geometry, composition, performance, applications and optimizations of DPFs are some of the main topics covered in this advanced level seminar. Computer simulation techniques will also be demonstrated.

Selective Catalytic Reduction for Diesel Engines- SAE Training Seminar

2-3 November 2011, Turin, Italy

Details at www.associationhq.com/be-bruga/associationhq/sae/C0913.html

This seminar will begin with an explanation of NOx formation in diesel engines and in-cylinder methods for reducing these emissions. The aftertreatment systems for NOx reduction will be explained and the advantages and disadvantages of these emission reduction technologies will be discussed.

SAE 2011 Light-duty Diesel Emissions Control Symposium

2-3 November 2011, Ann Arbor, Michigan, USA

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

The conference will discuss and present information highlighting the pathways to emissions compliance and technologies that are under investigation, being demonstrated, and are set to be applied on current and future generations of light-duty diesel engines

9th FAD-Conference

3-4 November 2011, Dresden, Germany

Details at www.fad-diesel.de

The programme will focus on OEM-solutions for exhaust aftertreatment systems, NOx aftertreatment, emission reduction potential of electrified drivetrains, downsizing of exhaust aftertreatment or 4 way de-emission-system, limit values for particle number, exhaust aftertreatment for maritime and stationary applications, retrofit and quality assurance, and new technologies for exhaust aftertreatment.

Diesel Particulates and NOx Short Course

7-11 November 2011, Michigan, USA.

Details at

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

Sessions cover Diesel combustion and emissions, engine design, lube oil, fuel and additive influences on emissions, particulate and catalytic control of emissions, and diesel fuel injection and engine design trends for low emissions.

SAE 2011 Small Engine Technology Conference

8-10 November 2011, Sapporo, Japan

Details at www.setc-jsae.com

The conference will cover products such as ATVs, motorcycles, generators and agricultural/gardening equipment, focussing on combustion engines but also covering hybrids and electric drive.

Includes AECC/TU Graz paper "A demonstration of the emission behaviour of 50 cm³ mopeds in Europe including unregulated components and particulate matter".

ECT 2011 – After Treatment Technologies 2013 & beyond

9-10 November 2011, New Delhi, India

Details at

http://cleanairinitiative.org/portal/system/files/1st_Announcement_Brochure_ECT_2011_1.pdf

(you may need to paste this address into your browser)

The venue of this International Conference is "Stein Auditorium - Habitat World, at India Habitat Centre".

2011 Conference of Polis & the European Economic and Social Committee: Innovation in transport for sustainable cities and regions.

29-30 November 2011, Brussels, Belgium

Details at

<http://www.polisnetwork.eu/publicevents/68/61/Polis-Annual-General-Assembly-and-Annual-Conference/>

Topic areas include traffic efficiency and mobility; economic and social dimension of transport; and environment and health, including clean vehicles, electro-mobility and active transport for health.

The Spark Ignition Engine of the Future

30 November – 1 December 2011, Strasbourg, France

Details at

www.sia.fr/evenement_detail_the_spark_ignition_engine_call_for_1085.htm

This conference is intended to provide the opportunity for both technical experts and executives from the automotive industry, the oil industry, external analysts, research laboratories and universities to exchange their points of view and information on the potential of the future spark ignition engine to respond to the main challenges of mobility, CO₂ emissions and hybridization.

Includes AECC/TU Graz paper "Regulated and non-regulated emissions of selected state-of-the-art European mopeds".

Towards the 2013 Revision of the Ambient Air Quality Directive – Issues and Solutions

12-13 December 2011, London, UK

Details at www.aamg-rsc.org

The conference will be introduced by internationally recognised experts to set the scene at the national and European level. It will bring together leading scientists and policy makers, and will provide a broad and up-to-date survey of the measurement, regulatory and scientific issues, including policy implications, health effects and future perspectives.

10th International CTI Forum "Exhaust Systems"

23-26 January 2012, Stuttgart, Germany

Details will be at www.exhaustsystems-forum.com

Diesel Emissions Conference Russia 2012

7-8 February 2012, Russia

Details will be at

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

9th Green Ship Technology Conference

March 2012, Copenhagen, Denmark

Details will be at

www.informaglobalevents.com/event/greenshiptechnology

7th International AVL Exhaust Gas and Particulate Emissions Forum

6-7 March 2012, Ludwigsburg, Germany

Details at www.forum-emissions.com/index.html.

Main topics are the reduction of particulate emissions of GDI engines, the development of NO_x after-treatment systems and the specific requirements and possible solutions for electrical drives. The application of the whole system and the experiences with "In Use Compliance of HD appliance" are further topics as well as the status of emission sensor systems and On Board Diagnostics (OBD). Traditionally the measurement technology is in the focus of the Forum.

13th European Fuels Conference

13-16 March 2012, Paris, France

Details at www.wraconferences.com/european-fuels-conference-13th-annual-meeting-2012/s4/a205

The agenda includes alternative fuels for light- and heavy-duty vehicles and shipping, gas scrubbing technology as an alternative to low sulfur marine fuels refinery developments to increase diesel share.

Fuel Systems for IC Engines

14-15 March 2012, London, UK

Details at www.imeche.org/events/c1342

This conference will focus on the latest technology for state-of-the-art system design, characterisation, measurement, and modelling, addressing all technological aspects of diesel and gasoline fuel injection systems. This will range from fundamental fuel spray theory, component design, to effects on engine performance, fuel economy and emissions.

Diesel Emissions Conference & AdBlue[®] Forum Asia 2012

20-22 March 2012, China

Details will be 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 NO_x & PM reduction technologies such as SCR, EGR, DOC and DPF, and CO₂ reduction technologies such as hybrid systems and bio-fuels.

Diesel Emissions Conference & ARLA 32 Forum Brazil 2012

17-19 April 2012, Brazil

Details at

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

Over 40 presentations and panel discussions, 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, including hybrid systems and bio-fuels.

Transport Research Arena Conference

23-26 April 2012, Athens, Greece

Details at www.traconference.eu/

The conference brings together academia and industry from Europe and the rest of the world 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

<http://www.sae.org/congress/techprogram/cfp.pdf>

Key Developments in the Port and Maritime Sector

17-18 May 2012, Antwerp, Belgium

Details at

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

Deadline for Abstracts: 15 December 2011

The Special Interest Group 2 (Ports and Maritime) of the World Conference on Transport Research Society (WCTRS), will host this conference. It will be held at the Department of Transport and Regional Economics at the University of Antwerp, Belgium. Topics include environmental issues, maritime engineering and legal issues.

Diesel Emissions Conference & AdBlue® Forum Europe 2012

12-14 June 2012, Germany

Details will be at

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

Government lead discussions will include updates on Euro VI legislation for heavy-duty vehicles (2013) and passenger cars (2014), and stage IV (2014) for non-road vehicles. Technology discussions will provide insight into the latest developments in CO₂ technologies, such as alternative fuels, bio-diesel and hybrid systems, and NO_x technologies including SCR, EGR, DOC & DPF.

16th ETH Conference on Combustion Generated Nanoparticles

24-27 June 2012 (Tentative), Zürich, Switzerland.

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

29-31 August 2012, Brussels, Belgium

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

Deadline for abstracts 30 November 2011

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

Diesel Emissions Conference India 2012

4-6 September 2012, India

Details will be at

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

Diesel Emissions Conference USA 2012

16-18 October 2012, USA

Details will be at

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

Symposium on International Automotive Technology (SIAT 2013)

16-19 January 2013, India