

UK MONITORING

Upgrade to cost millions

Defra is struggling to find money to comply with new EU air quality testing requirements.

The move towards exposure reduction, new directive requirements and recent equivalence tests meant that Defra is having to update its automatic urban and rural network (AURN). Defra's Tim Williamson says it will cost £3 million to implement against a current budget of less than £1 million.

Williamson was talking to the recent AAMG (Automation and Analytical Management Group of the Royal Society of Chemistry) conference held in London: "The AURN has some 127 sites with some 400 instruments, of which just 67 are PM₁₀ monitors despite the fact that PM₁₀ is considered most important.

"There are a number of drivers for us having to upgrade the network. The fourth Daughter Directive covering cadmium, arsenic, nickel and mercury requires new monitoring, our current pesticide network measures at PM₁₄ and it should be PM₁₀, we'll be replacing all our 24 PAH monitors and we will require further 11 B[a]P sites

and 10 heavy metals sites.

"The new air quality directive will require 51 fewer carbon monoxide sites, and 35 fewer sulphur dioxide sites. Some sites will need to be moved – for instance for NO₂, we will need more sites in zones, and fewer in agglomerations, especially at urban background.

"The real biggy is particles. We will need 52 additional sites, 22 current monitors converted to PM_{2.5}, and 22 new urban background PM_{2.5} machines. 11 will need to be collocated with existing PM₁₀ monitors. There will be eight new PM₁₀ and PM_{2.5} co-located monitors which we hope to develop a relationship between the two. On this point we will be talking to the Commission.

"The directive allows 'supplementary' methods to be used to record air quality in a member state – essentially this means modelling, if we don't use modelling then monitoring sites need to be further doubled." Williamson criticised the directive for describing modelling as 'supplementary': "Modelling gives more extensive coverage than monitoring and should be encouraged. Describing it as a

supplementary assessment method devalues it.

"The capital costs of new monitors are £379,000 for PM equivalence, £434,000 for fourth daughter directive monitoring, and £1.9-2.3m for the new air quality directive requirements. In total this is £2.7-3.2m. Our current capital budget is £800,000 a year – and running costs more or less double this cost."

He questioned what Defra could do about this funding gap. Local authorities have many monitors that could theoretically be included in the AURN. But in practice local siting and management practices mean many are unsuitable. He suggested that the UK could declare itself as one zone to avoid using so many monitors – but accepted this would be "ludicrous", leaving England covered by just a few monitoring sites. Williamson has even looked at remote sensing, but for the €100m cost "we could use Teom's for wallpaper".

He concluded: "The new monitoring requirements impose huge burdens on member states both in setting up networks and maintaining them."

MORE ON MONITORING

New results question FDMS intercomparison

Just as it was thought that some certainty had been agreed in particle measurement, new results presented to the latest Investigation of Air Pollution Standing Conference (Iapsc) held in Birmingham suggests the newly Defra-approved FDMS Teom is not as equivalent as first thought.

ERG's Dave Green told the audience that based on its experience of FDMSs running in the London network, there were still unexplained differences occurring against gravimetric results favoured by European air quality legislation.

Teoms sample particles using

a heated inlet to drive off moisture. The heating provides some consistency to sampling – gravimetric (filter based) methods can be confounded if particles contain water vapour.

But the heating can drive off volatile components – so the UK has used a 1.3 factor in a bid to show equivalence with EU legislation, even though it was known that the factor was inaccurate. Early last year the UK carried out equivalence testing of new methods to get round these problems, and endorsed the FDMS-Teom and the Bam – and confirmed the standard Teom was not suitable.

The FDMS samples at a lower temperature and does not drive off so many volatiles. Instead it splits the sample, one sample is dried, the other left undried, and the results compared to derive the volatile and solid components.

Defra's intercomparison trials gave wholehearted endorsement to the FDMS and it is now being introduced into Defra's official AURN network as the de facto standard. But ERG's new findings question whether that endorsement should be subject to further trials.

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Thermo pulls in Teom

Teom manufacturer Thermo has announced it will sell its own Teom particle monitors, ending its preferred seller arrangement with Jim Mills at Air Monitors.

The Teom (and latest FDMS variant) was developed by R&P. Last year Thermo took over R&P but agreed to leave sales to Air Monitors, not least because the firm has been aggressively marketing them and invested much money in getting them accepted by Defra. Now Thermo (properly called ThermoFisher Scientific since Thermo Electron's merger with Fisher in November) wants to market them itself, leaving Air Monitors as a partner rather than 'preferred seller'.

Colin Craggs of Thermo said: "Investment will be made in service capabilities and infrastructure, as well as in sales and application support, with additional investment in product certification for the UK market. Products included in this expansion are:

- Ambient AQ gas analysers for criteria pollutant gases;
- Beta attenuation, Teom and Teom FDMS monitors;
- Particulate samplers;
- Total system integration for air quality monitoring stations and networks.

"Alongside Thermo's direct UK sales and service infrastructure, Air Monitors will continue to sell and service Thermo products into the UK market as a sales channel partner."

● *Editor's comment: The changes may appear minor but the UK monitor market is highly strung.*

Jim Mills has pushed Teoms in his time at ETI, Casella and more latterly Air Monitors, investing much time and effort to get them accepted by Defra. Rightly or wrongly, they have become a de facto UK standard mostly thanks to Mills' energy.

Thermo will do well to keep that energy onside, and the next 12 months will prove very interesting indeed.

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IN BRIEF

Budget disappoints

There were few measures contained in the December pre Budget report to please those seeking further curbs on transport and pollution.

Gordon Brown's pre-Budget report flags up measures that are likely to be contained in the spring Budget. Measures to tackle congestion and climate change were outlined, such as a 1.25p rise in fuel duty and continued endorsement for road pricing. These will have a very small effect on pollution. An expected increase in VED for large 4x4s failed to materialise.

Measures were announced to encourage the development and extension of the market for biofuels which offer global warming and local pollution benefits.

NSCA welcomed the early introduction of regulations to provide widespread availability of sulphur free petrol and diesel. Sulphur free fuels are key to the introduction of several low emission technologies, and early introduction of these fuels will facilitate further reductions in new vehicle emissions.

NSCA added: "We applaud news that the Government will look at incentivising 'flex fuel' cars (capable of running on E85 biofuel) within the company car tax system. The 2002 reform of the company car tax regulations provided a significant boost to the early introduction of cleaner diesel cars onto our roads, and we are pleased the Government is continuing to use this system to incentivise cleaner vehicles."

The Treasury has confirmed the planned erosion of tax breaks for road fuel gases (Liquid Petroleum Gas and Compressed Natural Gas).

NSCA commented: "Whilst we understand the technical reasons for this action, we are concerned that the negative impressions left with the public by the introduction and subsequent removal of support for these fuels may hamper uptake of new fuels in the future, for example biofuels and, in the longer term, hydrogen."

NEWS FROM THE DECEMBER IAPSC MEETING HELD IN LONDON

Dust dominates Fuller's 50

ERG's Gary Fuller outlined his 'top 50' monitoring sites headed up by many with exceedences caused by waste dust.

Fuller told the Iapsc conference held in Birmingham: "In the top 50, Marylebone Road is not the worst site – sites near waste transfer depots feature very highly in the rankings. Brent, for instance, exceeds the daily particle objective for 250 days in the year."

Fuller has been working with Bexley and other London boroughs affected by waste transfer sites. Bexley has done much work with its Manor Road site and despite proven toxicity of the dust, little has been done to improve matters.

ERG's work has looked at other sites such as Ealing, Brent and Hastings that have similar problems. Dust near these sites is not represented in emission inventories, says Fuller, and can be overlooked: "There is increasingly strong evidence of very large breaches of the EU limit value and these are in residential areas. The dust is not benign and given the concentrations shouldn't be

ignored. These are regulated sites and something clearly needs to be done about it." He suggested there may be many waste management sites across the UK that had problems that had yet to be picked up by the local authority.

His analysis suggests the sources are not 'fugitive' – ie wind-blown dust from stockpiles on the site, rather dust deposited on the public highway by trucks leaving the sites. This dust is then resuspended. Monitors show clear daily peaks, with 'half days' on Saturdays, and no peaks on Sundays, closely mirroring the opening hours of the sites. Wind roses also point the finger at dust on the road rather than the site itself.

This gives enforcement problems. Waste operators are often seen to be difficult to deal with and apportioning blame (when different operators share the site) can be impossible. At one site, noted Fuller, the waste management licence had been revoked and yet the firm was still operating.

The greatest exposures are within 100m of the waste depot, with lower concentrations 500-1000m from the depot on haul routes, just exceeding the strategy objective.

Bexley and others have tried roadsweeping in a bid to reduce dust. Fuller says that based on Bexley's experience, roadsweeping was not effective. The Environment Agency, which regulates waste sites, has yet to prevent the exceedences.



Dirty roads near a waste depot

MONITORING

FDMS: ERG reveals teething problems

Iapsc delegates heard from the King's London ERG team how the FDMS Teom particle monitor was working in practice.

The group has been running FDMS units in North Kensington, Bexley, Marylebone Road, Greenwich and Ealing.

One key issue is the purge filter. Green said: "As it is only sampling for half the time, it lasts twice as long, but it takes twice as long to load." He warned maintenance teams to make sure the Teflon side of the filter faces the flow. "The filter housing must be dry, and if the O-rings are not correctly fitted, moisture will enter." Silicone grease is recommended to seal the rings properly.

There is some data loss after maintenance – the machine takes a long time (up to 48 hours) to stabilise after a filter change, and the dryer is an additional point of failure:

"We've noticed some long term drifts of data which may be a result of declining dryer efficiency."

The dryer is less likely to fail if the cabin is kept at a

temperature of around 22 deg C. The machine can give eight different readings – one of which is the sample dew point, this can be used to double check that the dryer is working.

MONITORING

Rugby seeks £500,000 monitoring partner

Rugby Borough Council is seeking bids for provision of air quality consultancy services for the next five years. The European Journal procurement website suggests the contract is worth £500,000.

The work, currently carried out by Faber Maunsell, involves provision of two automatic air quality monitoring stations, maintenance and calibration of these units, maintenance and calibration of 10 turnkeys owned by the council, data handling, report writing and

provision of professional air quality advice.

The contract mentions that consultants will be expected to deal with local interests. That includes Rugby Cement activist Lillian Pallikaropoulos who is waging a campaign against the works.

Pallikaropoulos has been accused by the council of costing it some £50,000 in response to her demands for information on the plant, including details of air quality monitoring and modelling.

NEWS FROM THE DECEMBER IAPSC MEETING HELD IN LONDON

Exposure reduction: is it fair?

Exposure reduction – the term given to ‘evenly’ improving air quality, may reduce the burden of bad air quality on the poor.

Exposure reduction is a concept developed by Steven Moorcroft of Air Quality Consultants, who encouraged the UK government and Europe to consider it for inclusion in new objectives. It complements the improvement of hotspots with a general requirement to lower concentrations of particles, a non-threshold pollutant, thus improving the health prospects of the mass population (albeit by a little), as opposed to improving the health of the few who live in hotspots by a lot.

The fear has been expressed that any move to exposure reduction would necessarily reduce effort at hotspots where, typically, poor people live. This would be ‘regressive’.

Moorcroft told the Iapsc audience: “There is a recognition that people who are the most socially and economically disadvantaged live in the areas of poorest air quality. Often the air quality problems are caused by the actions of others who live outside these communities. Those who are most responsible for it are most able to avoid it.” Transport is a main contributor to poor air quality – and socially deprived areas are least likely to

have high car ownership.

Moorcroft said that for exposure reduction concept to work – a less stringent cap on hotspots must be adopted to allow resources to be diverted to wider exposure reduction. “This does have implications for people exposed at hot spot locations.” But he added that it was important to recognise that not all people in socially deprived areas with high air pollution levels live close to busy roads, and with exposure reduction, they would all gain.

There are also potential social costs in adopting a more stringent PM cap. Such measures could divert resources away from other social services.

MONITORING

Delays creep into network update

Installation of new FDMS Teoms into the national automatic monitoring network (AURN) has been slightly delayed, Bureau Veritas’s Richard Maggs told the Iapsc audience.

Last year (*AQB July 2006 p1*) Defra confirmed that Teoms no longer met equivalence criteria and that more complicated FDMS Teoms were to be used

in the network as these were considered equivalent. But plans have been delayed for two reasons.

One is practical – the FDMS Teom samples air in two streams, and requires a nafion moisture dryer in the sampler head. This increases the height of the head causing difficulties in accommodating the new Teoms in existing enclosures.

Secondly, based on the advice of the Committee on the Medical Effects of Air Pollution (Comeap), it was decided to try to preserve the continuity of the 2006 dataset by not swapping Teoms before the end of the year.

The work will be done now in order to try and get the FDMS Teom’s up and running to get good data for 2007.

● continued from p1

More Teom intercomparison trouble (continued from page one)

Dave Green told Iapsc that ERG’s FDMS equipment has shown readings that are not always agreeing with the official gravimetric reading – for instance at co-located equipment at London’s Marylebone Road.

Here, in 2004 the FDMS read $32\mu\text{g}/\text{m}^3$ annual mean as compared to the $41\mu\text{g}/\text{m}^3$ measured by the gravimetric sampler (ie converting a fail to a pass). In 2005 it measured $23\mu\text{g}/\text{m}^3$ as opposed to $29\mu\text{g}/\text{m}^3$ for the gravimetric. Daily mean exceedences in 2005 were nearly a factor of three out.

“If Marylebone Road meets the objective, my guess is that most roadside locations across the UK will pass as well,” Green commented. If it really is true that a roadside FDMS will

turn a failure into a pass – and Green emphasised that he believed his results – these findings have obvious implications for local authorities across the UK.

However the FDMS *did* agree reasonably well at co located samplers at North Kensington suggesting the problem may be at roadside. As FDMS was thought to provide (once and for all) a reliable alternative method to gravimetric – these results are considered worrying.

Tim Chatterton of UWE asked Green why the gravimetric sampler was overestimating at Marylebone Road: “Does this call into question the results of the Defra equivalence testing?” Green emphasised that results were still being studied and focused

on the roadside.

Monica Price of Sunderland University told *AQB*: “Kings’ gravimetric peaks not recorded by the FDMS are exactly the same as we reported for the SES Teom in Sunderland. These modifications to the Teom have been developed for the US where there is high nitrate and a continental climate. I suspect there will be problems at UK kerbside sites with the FDMS not recording as many exceedences as the gravimetric method. The equivalence trial was somewhat limited, and at present we still don’t know how the conditioning in the FDMS affects the particles sampled.”

Editors comment

What a can of worms! Just as we thought the Teom v

IN BRIEF

Defra consults on POPs and dioxins

Defra is consulting on the UK National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants (POPs) and its associated regulations. POPs include dioxins and furans.

The Stockholm Convention on Persistent Organic Pollutants (POPs) became law in 2004 and saw 151 countries agree to control 12 POPs (10 pesticides and dioxins and furans). The convention requires member states to produce a National Implementation Plan setting out how POPs will be controlled. The deadline for the UK plan is 17 April 2007.

The National Implementation Plan contains a Dioxins Action Plan which outlines 13 activities to be taken forward by the UK to further reduce emissions. This action plan follows much the same lines of a dioxins report produced last year (*AQB August 2006 p8*).

- The consultation is available on www.defra.gov.uk/corporate/consult/organicpollutant-plan/index.htm.

IN BRIEF

Drax trial extended

The Environment Agency says it needs extra time (until June 2007) to assess any health risk from burning petcoke at Drax power station.

Agency inspector Ian Foster said: "We have analysed a considerable amount of data and it shows that while some emissions such as NO_x has risen, other emission levels have fallen. What is not clear though is whether this is linked to burning petcoke."

The trial started at Drax in June 2005 and since then Ratcliffe power station in Nottinghamshire has been granted permission by the Environment Agency to burn petcoke coal blends similar to the type used at Drax.

The trial prompted some fears that burning petcoke would increase sulphur emissions, and its storage would increase the amount of petcoke dust from the site.

The Agency says a report produced by Professor Roy Harrison of Birmingham University, a member of the expert panel on Air Quality Standards, indicated that there would not be any significant effect on public health from the trial.

Aviation act tackles air

The Civil Aviation Act received Royal Assent before Christmas.

Among other things, it clarifies the ability of airports to set charges that reflect local air quality emissions from aircraft. The Secretary of State is also given powers to direct airports to levy charges

RCEP under scrutiny

Environmental scrutiny body the Royal Commission on Environmental Pollution is itself under review.

The review will evaluate the performance of the Royal Commission since its last review in 1999, in order to make recommendations on its future development. The review will focus on the quality and impact of the Commission's studies, its working methods, resources, and how they are managed.

AQMAS

Cardiff bucks trend to undeclare

Cardiff council is undeclaring two of its four air quality management areas (AQMAS).

The decision bucks the recent trend for declaring more rather than less – and comes as the city is proposing the use of road pricing to reduce congestion.

Councils such as Bromley and Bexley are among the many increasing the size of their AQMAS as they find higher than expected NO₂ levels.

Emission factors had predicted a drop in NO₂ emissions – but councils have found, especially in street canyons, that concentrations have risen rather than fallen as predicted.

Cardiff's decision to undeclare two areas, and shrink the size of a third, follows "over declaration" back in 2000, it was one of the earliest authorities to declare. Cardiff's

John Vesey told *AQB*: "Whilst kerbside concentrations, including those that formed the basis of the declaration, remain high, we do not see concentrations at nearby façades that are above the objective. We now have several years of monitoring that confirm this and, had we known then what we know now, we wouldn't have declared for Newport Road and The Philog. Likewise for the Cardiff West AQMA other than at Ely Bridge. All we are doing is correcting for this.

"While nationally, others are finding new problems, we were successful in identifying kerbside hotspots early in the LAQM process. These hotspots do not, in Cardiff, translate into façade-based hotspots away from the kerb as our early assessments predicted.

"There are many possible reasons for this, most significant being that our background concentrations are relatively low. Cardiff is a coastal city with generally south-westerly winds blowing in clean, NO_x-free air from the Atlantic."

Cardiff adds that there are other locations where façade-based monitoring is giving cause for concern – if monitoring results are ratified, this may prompt declaration of a new AQMA.

Rushcliffe undeclares

Rushcliffe Borough Council is formally undeclaring its Barnstone AQMA.

The AQMA was called because of excess sulphur dioxide caused by the Lafarge plant, which has now shut down.

AVIATION

Reigate sets out action to deal with Gatwick

Reigate and Banstead has agreed an air quality action plan for Horley – an area hit by pollution from Gatwick Airport.

Despite the council's calculation that non-airport sources only make up 10% of the NO₂ exposure at properties closest to the airport, the action plan only covers non-airport sources: "Limiting the growth of road traffic is a vital element of this plan, along with using renewable energy sources in new developments to lower household emissions."

The council added: "Although

the council has no direct control over Gatwick's pollution emissions, we have been working with BAA Gatwick who are producing their own action plan, detailing how they intend to reduce pollution from the airport, which is expected next year.

"We will be writing to Gatwick asking them to consider a number of issues that our action plan raises as part of their own plan."

Airport emissions are predicted to contribute to over 50% of the NO₂ where

properties in the Horley area are predicted to be at risk of breaching the 2010 EU limit value, so the airport "has a significant role to play in reducing emissions". 40% of pollution is from 'background' levels, which are present across the whole of the south east of England, the council adds.

"Work is now underway to predict future levels and computer modelling currently suggests that in 2010 the air quality in parts of Horley will be close to breaching statutory limits."

AVIATION

Progress report: wait and see on air quality

The much heralded air transport White Paper progress report has been published by the Government.

Amongst other things, it restates its interest in pursuing development of a third runway at Heathrow and will rely heavily on findings of the Project for Sustainable Development at Heathrow (PSDH) working groups. These groups reported on their methodology last year (*AQB August 2006 p1*).

More deliberations from

PSDH will be included in a full public consultation on the future development of Heathrow in 2007.

DfT says: "The consultation will describe the mixed mode and third runway proposals in detail and report on the predicted impacts of development, in particular against the noise and air quality limits. It will also seek views on the appropriateness of current operational practices driven by the Cranford Agreement, runway alternation and westerly

preference.

• The progress report can be viewed on www.dft.gov.uk/stellent/groups/dft_control/documents/contentservertemplate/dft_index.hcst?n=17484&l=2

Stern review

The 'Stern' review of transport has reiterated the Government's view that airports should seek to meet growing aviation demand, arguing the economic benefits outweigh environmental damage.

NEWS FROM THE SOCIETY OF CHEMICAL ENGINEERS AAMG MEETING

Shift from equity to efficiency

Air quality policy is moving from one based on social equity to social efficiency, policy expert Paul Watkiss told the RSC AAMG conference.

Air quality experts (such as Steve Moorcroft, see news, p3) must consider equity as it is government policy to reduce extra burdens faced by the poor.

Watkiss, formerly of Netcen, has been the key advisor to Defra in its cost benefit analysis supporting its new air quality strategy. A key change in the new strategy, currently being finalised, is a move from reliance on limit values (tackling hotspots) to one involving more general exposure reduction.

“Historically air quality standards have been set to protect health with target levels to protect all – even if there is a disproportionately high cost of achieving those. Now we are setting policies to achieve goals as cheaply as possible. We are

moving from environmental equity towards environmental efficiency where there are small benefits to lots of people rather than a larger benefit to a few.”

He explained that previous policies were justified if cost effective – in other words showing a *relative* benefit. Now cost benefits are ranked so that policies are chosen if there is an *absolute* benefit. “This is controversial, many people object to putting values on everything, but if you don’t put values on it, it doesn’t get considered. As we move towards stricter air quality policies, things get more expensive so we need to focus on the best value for our money.

“Cost benefit analysis is adored by Treasury, but while the technique is extremely valuable to *support* decision making, it doesn’t *replace* decision making – the danger is assuming it covers everything.”

He noted that early in the cost

benefit process, charities and NGOs were against it, with industry for it. But once the results came out and supported action, the tables flipped and NGOs supported it, and industry turned against it.

Speaking from the floor, leading air quality medic Stephen Holgate begged to differ: “This is fundamentally flawed and is making social judgements. Who is to say that advancing the death of a 75 year old by three months is more important than an asthmatic health-impaired child. You cannot do this economically.

“The whole idea of driving everything by cardiovascular deaths excludes a whole sector of the population for whom respiratory health matters enormously.” Watkiss responded: “While this remains a terrible approach, it is better than anything else out there.”

● AAMG: contact email conference@aamg-rsc.org

POLICY

Air quality policy driven by particles

Continuing his discussion on the use of cost benefit analysis for air quality decision making, Watkiss said that health costs of particles dominate economic benefits.

But he warned that this had dangers. “We don’t know what drives the health effects. We assume that all PM is equally dangerous – and it isn’t. And we tend to assume that primary PM is more dominant in terms of health effects. These questions are unanswered, yet remain important for policy, and important for monitoring.

He pointed out that given the huge significance of particles for health policy – there was a relatively large proportion of monitoring still being carried out on less important pollutants such as NO₂ and SO₂.

Air Quality Consultants’ Steven Moorcroft echoed Watkiss’s thoughts. He said that NO₂ was the principal focus of air quality assessments in the UK, and of the 200 air quality management areas that have been declared, over 90% of them relate to NO₂ – despite particles being the driver for

health effects.

“NO₂ also drives the planning process – development is constrained by the annual mean NO₂ objective (a case in point in the third runway at Heathrow) and not particles.”

He continued: “I agree with Watkiss that particles are the main policy driver. If you base policy on cost benefit analysis (as is the case in EU and UK) then it can be no other way. If we put NO₂ into the cost benefit analysis we would end up doing nothing as we get no health benefits from reduction.”

HEALTH EFFECTS

Holgate: particle mass measurement ‘banal’

Southampton air quality and asthma specialist Stephen Holgate told the AAMG conference of the impact of pollution on respiratory health – especially children.

He pointed out that asthma prompted by pollution is unlike that prompted by allergies – pollution-prompted asthma does not respond well to steroid treatment.

Holgate added that nearly one in four children now carry inhalers. “Asthma and pollution is not a small issue.”

He said that air quality hotspots are driving the asthma issue, short lived pollution is the risk factor, and living near roads increasing the risk of asthma. “Much of this is missed in larger health studies, and then missed again in subsequent

economic analysis.”

Given the dangers of vehicle engine derived particles, he concluded: “Measuring particles by mass is so banal. We’ve got this incredible time bomb and yet we still don’t know enough about the biology. We can’t go on talking about particles the way we do (as a single substance). The chemistry is quite crucial.”

IN BRIEF

Dust code finalised

London’s dust code has been finalised. It aims to provide guidance to reducing dust from construction sites across London.

The guide has been in draft form for some time but is now finalised. Produced by London Councils (formerly the Association of London Government), the best practice guidance gives consolidated advice for developers, local authorities and other organisations involved in construction, on reducing emissions and dust from construction sites in London. Construction derived dust is estimated to cause 1000 accelerated deaths and 1000 extra respiratory hospital admissions.

One specific recommendation is to seek to lower exhaust emissions from off-road construction vehicles and plant used on major sites wherever possible.

● *The Best Practice Guidance on reducing emissions and dust from construction sites in London* is available from www.london.gov.uk/mayor/environment/air_quality/construction-dust.jsp

GLA defends taxi curbs

The Greater London Authority has defended itself from accusations that its requirements for cleaner taxis have worsened emissions.

Claims were made that taxis fitted with engine clean up equipment were smoky and failed tests. The GLA rebutted the claims by sending the taxis to Millbrook testing ground.

The taxi drivers refused to allow testers to carry out the full tests – and indeed the vehicles were so smoky that Millbrook refused to carry out the full test as the excess smoke would have wrecked their equipment. However GLA’s report suggests that the vehicles were defective and emissions – either through neglect or poor adjustment – were so smoky that the particle traps had failed.

IN BRIEF

Scotland's green laws

The Scottish Executive is consulting on its environmental regulations.

It says it is considering how it can improve the environment not by introducing new laws but by enforcing existing laws better. It is considering options for securing better compliance including better education and advice for business, to prosecution in the courts.

● *Strengthening and streamlining: the way forward for the enforcement of environmental law in Scotland* can be viewed on www.scotland.gov.uk/Publications/2006/11/22152827/0

LEZ fleet impacts

London boroughs are consulting on the impact of the London low emission zone on council vehicle fleets.

The low emission zone will require truck operators to upgrade their vehicles or pay large charges (*AQB December p9*). There are concerns that this will disproportionately impact specialist borough fleets that can include infrequently used vehicles such as winter gritters and mobile libraries.

● Details email jared.boow@londoncouncils.gov.uk

Dioxin seminar touted

Quantitech has issued an open invitation to attend a seminar on techniques and technologies to monitor dioxins.

The seminar will take place at the Open University in Milton Keynes on Thursday 22nd February 2007.

An expert from specialist instrument manufacturer TCR Tecora will speak at the seminar on an automated version of the long-established manual method. The new system is uniquely able to comply with both EN1948 and USEPA Method 23.

● Anyone interested in attending should email their contact details to quant@quantitech.co.uk.

MONITORING

LTP air efforts ranked

DfT has published its ranking of final local transport plan bids. Air quality input into those bids has been judged to be much improved (*AQB December p2*).

Local transport plans (LTPs) are put together every five years and bids are being assessed for the second round. The draft bids were marked in 2005, and final bids marked last year with results released at Christmas. Air quality was specifically included in two sub categories reflecting the hope that air quality should be included in transport plans.

Authorities were marked both on indicator 2e (for instance air quality modelling) and more importantly criterion 8 (solely based on air quality performance). For the latter, there were eight authorities judged excellent: Greater Manchester, Dorset County Council, York City Council,

East Sussex CC, Norfolk CC, Suffolk CC, Nottingham City Council and Nottinghamshire County Council. Just one was judged poor (Cumbria County Council) with the vast majority judged good.

Indicator 2e includes non air quality issues but marks show a clear regional bias – West Midlands authorities do rather well and yet the likes of the West Yorkshire and South Yorkshire authorities are marked down despite some high profile good work.

Insiders say the marking was carried out based on evidence supplied – and authorities may well be renowned for their air quality excellence – and even Beacon candidates – but if the evidence wasn't supplied in their LTP submission, the authorities were marked down.

● The markings (and linked Atkins report) can be found on

www.dft.gov.uk/stellent/groups/dft_localtrans/documents/divisionhomepage/613888.hcsp

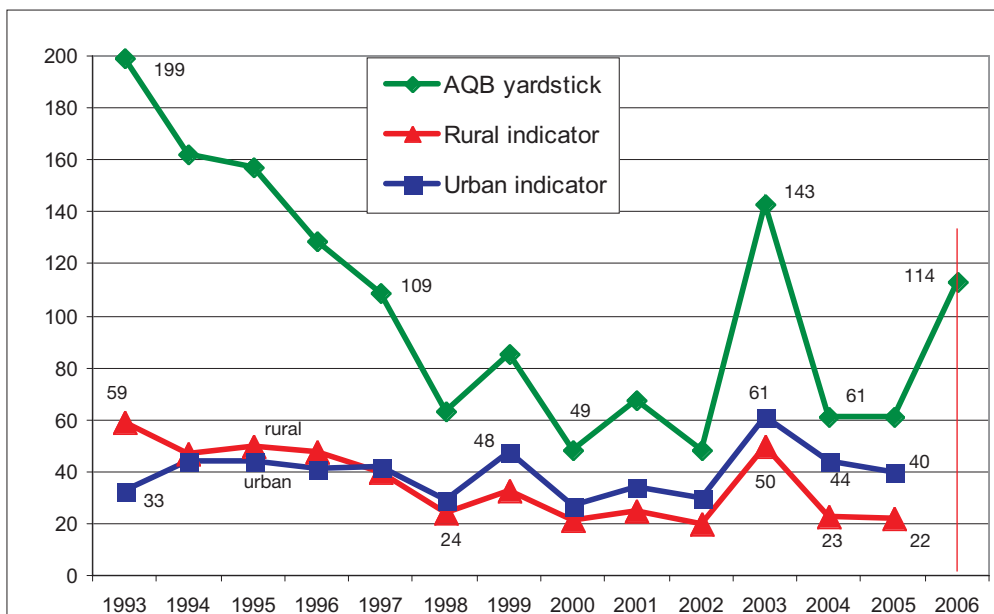
● Editor's comment:

Our table (see opposite) is a bit of a let down – all authorities have improved and most are 'good' – seemingly a default mark for any local authority keeping their head down.

Reading the text of the judgements themselves makes it clear that consultant Bureau Veritas had their work cut out in awarding the marks, comments appear somewhat random and anodyne. But take pity on them – they had to aggregate the efforts of differing authorities, some of whom were good, some were less good, and give an average mark leading to some clearly unusual assessments.

While much of the text reads much like a computer-generated end of term school report,

AQB 'yardstick' sees 2006 rise



The *Air Quality Bulletin* 'yardstick' is a rough and ready measure aimed at providing a quick summary of national air pollution some months before official figures can be produced.

When we last ran it in early summer – it suggested that 2006 might prove worse than 2003 in terms of pollution, but a cool summer with better air quality meant that in the end, pollution was the second-worst since 1997 with a score of 114 compared to 61 last year and 143 in 2003.

Official ERG and Defra results will emerge in coming months.

How we've calculated it: *Our yardstick is derived from the number of moderate exceedences of each pollutant divided by the number of monitoring stations where that pollutant is recorded as moderate, the whole lot divided by five (there are five pollutants) to make it vaguely compatible with Defra's official indicators. We're not saying it's particularly scientific, but it does give an early indication.*

● LTP marking, continued from p6, left

sometimes the markers commit themselves. For instance York gets a glowing report. Hull's is short and sweet. South Yorkshire text contained some very negative messages, Southampton and South Tyneside

were warned to carry out a "sense check". Otherwise the hackneyed four words "good – could do better" would adequately summarise most authorities' comments. But while the output might stink of

box-ticking and form-filling gone wild – the process of requiring transport authorities to spell out what they are doing on air quality must have concentrated many minds.

Key to 'marking':
Indicator 2e: "The plan makes appropriate use of analytical techniques (e.g. modelling), and air quality assessment" The **2e 2005** interim plan marking is shown and marked as "very promising" (●●●●), "promising" (●●●) and "needs substantial improvement" (●●). The **2e 2006** final plan marking was different: excellent (●●●●●), good (●●●●), fair (●●●) and weak (●●).
Criteria 8: "Air Quality – "How the plan proposes air quality problems will be tackled". Marked as for **2e (2006)** above.

Authority	Indicator 2e		Criteria 8
	2005	2006	
NORTH WEST REGION			
Blackburn DC	●●	●●●	●●●
Blackpool DC	●●	●●●	●●●
Cheshire County Council	●●●	●●●●	●●
Cumbria County Council	●●	●●	●
Greater Manchester	●●●	●●●	●●●●
Halton Borough Council	●●	●●●	●●●
Lancashire County Council	●●	●●●	●●●
Merseytravel	●●	●●●	●●●
Warrington Borough Council	●●	●●●	●●●
NORTH EAST REGION			
Darlington Council	●●	●●●	●●●
Durham County Council	●●	●●●	●●●
Gateshead Council	●●	●●	●●●
Hartlepool Borough Council	●●	●●	●●●
Middlesbrough Council	●●	●●	●●●
Newcastle City Council	●●	●●	●●●
North Tyneside Council	●●	●●	●●●
Northumberland CC	●●	●●	●●
Redcar and Cleveland BC	●●	●●●	●●●
South Tyneside Council	●●	●●	●●●
Stockton Borough Council	●●	●●●	●●●
Sunderland City Council	●●	●●	●●●
Tyne and Wear PTA	●●	●●	●●●
YORKSHIRE AND HUMBERSIDE			
Barnsley MBC	●●	●●	●●
Bradford City Council	●●	●●	●●●
Calderdale MBC	●●	●●	●●●
Doncaster MBC	●●●	●●	●●
East Riding of Yorkshire	●●	●●●	●●●
Hull	●●	●●	●●●
Kirklees MBC	●●	●●	●●●
Leeds City Council	●●	●●	●●●
North East Lincs DC	●●	●●	●●●
North Lincs DC	●●	●●	●●●
North Yorks County Council	●●	●●●	●●●
Rotherham MBC	●●	●●	●●
Sheffield City Council	●●	●●	●●
South Yorks PTE	●●	●●	●●
Wakefield MBC	●●	●●	●●●
West Yorks PTE	●●	●●	●●●
York City Council	●●	●●●●	●●●●
WEST MIDLANDS			
Birmingham City Council	●●	●●●●	●●●
Centro PTE	●●	●●●●	●●●
Coventry City Council	●●	●●●●	●●●
Dudley MBC	●●	●●●●	●●●
Herefordshire Council	●●	●●	●●
North Staffs	●●●	●●●	●●●
Sandwell MBC	●●	●●●●	●●●
Shropshire CC	●●●	●●●●	●●●
Solihull MBC	●●	●●●●	●●●

Authority	Indicator 2e		Criteria 8
	2005	2006	
Staffordshire CC	●●	●●●	●●●
Telford and Wrekin Council	●●	●●●	●●●
Walsall MBC	●●	●●●●	●●●
Warwickshire CC	●●	●●●	●●
Wolverhampton MBC	●●	●●●●	●●●
Worcestershire CC	●●	●●	●●
EAST MIDLANDS REGION			
Derby City Council	●●●	●●●●	●●●
Derbyshire County Council	●●	●●●●	●●●
Leicestershire CC	●●	●●●	●●●
Lincolnshire CC	●●	●●●	●●
Northamptonshire CC	●●	●●●	●●●
Nottingham City Council	●●●	●●●	●●●●
Nottingham County Council	●●	●●●	●●●●
Rutland CC	●●	●●	●●●
EAST OF ENGLAND REGION			
Bedfordshire CC	●●	●●●	●●●
Cambridgeshire CC	●●●	●●●●	●●●
Chelmsford DC	●●	●●●	●●
Hertfordshire CC	●●	●●	●●
Norfolk CC	●●●	●●●	●●●●
Luton Borough Council	●●	●●	●●●
Peterborough City Council	●●●	●●●	●●●
Southend District Council	●●	●●	●●●
Suffolk County Council	●●	●●●	●●●●
Thurrock District Council	●●	●	●●
SOUTH EAST REGION			
Bracknell Forest DC	●●	●●	●●●
Brighton & Hove Council	●●	●●●	●●
Buckinghamshire CC	●●●	●●●●	●●●
East Sussex CC	●●	●●	●●●●
Hampshire CC	●●	●●	●●●
Isle of Wight Council	●●	●●	●●●
Kent County Council	●●	●●●	●●
Medway District Council	●●	●●●	●●
Oxfordshire CC	●●	●●	●●
Portsmouth City Council	●●	●●●	●●●
Milton Keynes DC	●●	●●●	●●●
Reading Borough Council	●●●	●●●●	●●●
Windsor and Maidenhead RB	●●●	●●●●	●●●
Slough District Council	●●●	●●●●	●●●
Southampton City Council	●●	●●●	●●
Surrey County Council	●●	●●●	●●●
West Berkshire DC	●●	●●	●●●
Wokingham DC	●●	●●●	●●●
South West			
SOUTH WEST REGION			
Bournemouth District Council	●●	●●●	●●●
Bristol City Council	●●	●●●	●●●
Cornwall County Council	●●●	●●●●	●●●
Devon County Council	●●	●●●	●●
Dorset County Council	●●●	●●	●●●●
Gloucestershire County Council	●●	●●	●●●
North Somerset	●●	●●●	●●●
Plymouth City Council	●●	●●	●●●
Poole Borough Council	●●	●●●	●●●
Somerset Borough Council	●●	●●●●	●●●
South Gloucestershire DC	●●	●●●	●●●
Swindon Borough Council	●●	●●●	●●●
Torbay Council	●●	●●●●	●●●
Wiltshire County Council	●●	●●●	●●●

NSCA ponders its future

NSCA has seen some upheaval in the last year or two – two new chiefs and changes among the Indians. What does the future hold, asks Jack Pease?

NSCA has been through some difficult months with staff uncertainties and worries about funding and membership. It is currently consulting members on what it should do now.

Richard Mills left the organisation early in 2005 – while Martin Joseph took the helm for a year until his unexpected resignation last summer. Over the last years the organisation has lost the ‘two Tims’ – Tim Brown and Tim Williamson – both had rock-solid policy confidence that underpinned the organisation.

Rob Pilling looked set to take forward that confidence – but also left a few months ago. New chief Phil Mulligan arrived last autumn and shortly thereafter the organisation lost long-serving finance chief Peter Mitchell and conference organiser Sally May. A quick look at the accounts show that on top of all this – money is not flowing in as quickly as might be hoped.

The scale of the staff and cash challenges might leave most organisations crippled – but NSCA has an exceptionally strong ‘intangible’ – the strength of support from its members. And its members are unlikely to let it die a quiet death.

Phil Mulligan is honest about the challenges he now faces. Mulligan, unlike the two previous incumbents, comes from an NGO background rather than the air and environment quality division of Defra.

Mulligan told *AQB*: “My background is in international development, academia/teaching, managing NGOs and working with volunteers. Although I’ve been an environmental activist – crew on Rainbow Warrior, and conservationist – environmental policy is new – but thankfully NSCA members have experience of this in abundance. But I *am* experienced in managing organisations which have uncertain finances and work in a tight fiscal environment and I can look at NSCA with a

fresh pair of eyes “

Mulligan styles himself as ‘acting CEO’ and sees himself as a “facilitator of change to take NSCA through a fundamental strategic and organisational review”. So if anyone imagined that a non-tie wearing green evangelist would be a soft touch they can think again. He recounts a tale that might provide some enlightenment: “I inherited a similar position to the one I am in now when I took over as country director for VSO Indonesia. The programme was unfocused and not very strategic. We were working predominantly in teaching, which is what had always been done in that country. All the programme staff were ex-volunteers. I therefore had to come in as an outsider and make some difficult and unpopular decisions.”

At this point Mulligan gets all corporate and starts talking about ‘vision’, ‘mission statements’, ‘focus’ and other management gobbledegook cooked up in endless meetings and consultations. But his aims make very good sense – he wants to make sure the NSCA:

- Has a clear long term vision and is focused;
- Achieves long term financial sustainability;
- Has a modern management system;
- Has an accountable, transparent and effective system of governance.

He says: “NSCA has a formidable reputation, with strong and proud tradition, the UK (and world), has a lot to thank NSCA for over the years. But it is not very forward looking, is not very responsive, streamlined or modern. My challenge is to try and retain the strengths (credibility, reputation, access, expertise, hardworking members and staff etc) while losing those things that are holding us back.”

Key problems will getting finances shipshape again, getting industry back in again and tackling declining local authority involvement: “The external world has changed from when NSCA was created, there is a more competitive market place for environmental groups, communications and access to information have changed radically and new issues, such as climate change, have emerged. The agenda is now so wide that that no organisation can hope to cover everything. I believe NSCA needs to identify key issues and focus if we want to have meaningful impact.

“The Good Governance Working Group is a key part of our strategic review. This

CRISIS? WHAT CRISIS?

What's happening?

NSCA consults its members in a “strategic review”

What's the bad news?

Loads of staff have left, finances are tight, membership is slowly dropping

And the good news?

NSCA members remain active and a valuable resource – and new chief Phil Mulligan is on a mission to knock NSCA into shape for the future

What might happen?

Closure isn't on the cards. Everything else is, including repositioning and renaming

When?

Mulligan plans to outline options in March

group is due to propose changes in March and these could be quite radical and fundamental. Not everyone will be happy but I hope everyone will feel the process has been transparent and inclusive.

“One issue that has proved controversial when it has been looked at in the past is that of a possible change of name. My view is that we should establish what it is that we want to do first and then we assess whether our name and brand are going to help us deliver that or whether we need to consider changing them to make us more effective.”

Mulligan is hoping to have agreed the new direction by April and continues to tour the regions explaining what is happening and listening to reactions.

Editorial comment

NSCA is simply too precious to lose – and all credit to its new chief Phil Mulligan that he is prepared to make difficult decisions to tackle the problem.

NSCA is by no means in danger of an early death – rather if things carry on as now, it might suffer a slow and prolonged demise as air quality becomes relatively less important to other environmental issues such as noise, contaminated land and global warming.

It's a scary thought. Without NSCA, who could Defra turn to for sensible and unbiased advice? Certainly not industry bodies or green pressure groups such as Greenpeace. The trouble is that sense and balance don't grab public support or industry funding. Local authorities are being squeezed and polluting heavy industry being cleaned up or closed down.

So Mulligan has his work cut out. He has made a good start and is doing all the right things. He'll need support – because if he fails, there's little else left to do and NSCA might as well call it a day.

Then who will there be to keep the politics out of pollution?



Mulligan: man on a mission

New face for www.airquality.co.uk

AEA has upgraded the huge www.airquality.co.uk website – and Kings ERG has produced an interesting local pollution website for Hillingdon

Defra and the devolved region's air quality website (www.airquality.co.uk) has received its first major facelift for four years.

Jon Bower, project director at AEA Energy and Environment (previously Netcen), introduced the changes: "We felt the old design was getting a bit stale, and that improvements were needed to improve the user interface of the website, provide simpler navigation for users and make key

information available more rapidly and intuitively. Ease of data access is vitally important for a website of this scale and coverage, and we hope that both expert and public end-users will now find the new site easier to use. We hope that they will also agree that it looks better!"

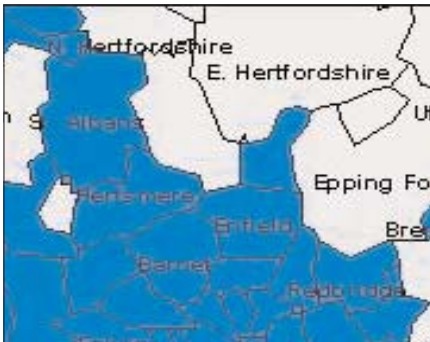
One particularly useful feature is a text directory of the 200 air quality management areas. The uniform blue, texty feel of the old site has been swapped to dark blue and yellow with colour photos (somewhat random) to brighten up the pages. Bower said that while the user interface had been improved, nothing had been lost and he pointed out that "we have taken the opportunity to launch a new and comprehensive one-stop information resource covering all of the UK national air quality monitoring programmes".



The new face of www.airquality.co.uk

Bower hopes that it will be possible to introduce some "exciting new functionalities" to the UK air quality website in the coming years.

Following widespread technical and public consultation – a new air quality website for Scotland will be appearing in 2007. This joins and completes the family of national air quality resources currently including the UK, Welsh (www.welshairquality.co.uk) and Northern Ireland (www.airqualityni.co.uk) websites.



As well as the familiar rather clunky map, the website includes a more useful text list of AQMAs

ERG PRODUCES LOCAL POLLUTION SITE FOR HILLINGDON

ERG's emissions team has developed new web based service to host local authority information relating to industrial sites – essentially an online public register.

Working with the London Borough of Hillingdon, ERG has designed a website to provide a user friendly interface for accessing permits, inspection reports and a wealth of other information relating to industrial sites in the borough. The website meets the public disclosure requirements of both the Pollution Prevention and Control (PPC) Regulations and the Environmental Information Regulations. Additional information for the general public explains how the PPC regime works and what risk assessments mean. For site operators there is access

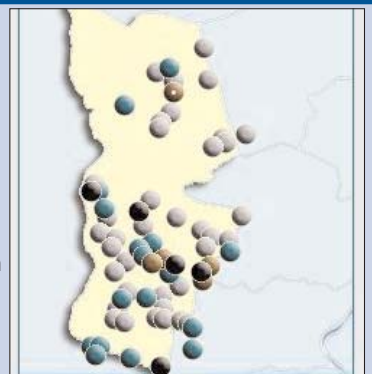
to downloadable application forms, Defra guidance notes and an online questionnaire to help them find out if they need a permit. An air quality tab opens up a live link to information from the LAQN monitoring sites.

For the public, once a process is selected, one can view the installation permit, reports of the inspections carried out and other documentation, including a timeline of what has happened with each installation. Complaints can be made online.

ERG's Gary Fuller told *Air Quality Bulletin*: "Most websites are focused on air quality measurement and management, but there is very little information about Part B processes out there. This is a bit of a Cinderella service – at best council web sites have a page with some background text and maybe some downloadable forms.

"This website provides an important resource for local residents and site operators and anyone else with an interest in industrial emissions in the area."

• website www.emissions.hillingdon.gov.uk



Select a risk assessment level to view by clicking on the dots below



Borough wide processes mapped

Description	Site plan
Process for the cremation of human remains in gas or electric fired cremators. Each cremator is fitted with its own continuous monitors for particulate matter, oxygen and carbon monoxide.	
Registered owner	Address
Breakspear Crematorium	Breakspear Road, Ruislip, Middlesex, HA4 7SL
Process Guidance note(s)	Risk assessment score
PG 3/02 (04) Crematoria	45
Reference number	Regulation type
EPA/B1/08	B

Residents can find out about processes – and file a complaint

SCIENCE SHORTS

Ozone cuts birthweight

Ozone exposure in the second and third trimester of pregnancy and carbon monoxide exposure in the first trimester affects birthweight, says California researchers.

Birth outcomes and prenatal exposure to ozone, carbon monoxide and particulate matter, results from children's health study, Muhammad Salam et al, *Environmental Health Perspectives*, Vol. 113 no 11, Nov 2005 pp1638-1644.

Tunnel air affects DNA

Air in the Stockholm underground system has the potential to cause DNA damage.

Researchers from the Karolinska Institute say: "Most particles do not remain in the underground for any length of time. However, particle levels are often very high."

To build up a picture of which particles are the most harmful, the researchers compared how particles from a variety of sources affect cultured lung cells. The results show that particles from the Stockholm underground (which contain large quantities of iron particles from brake linings of rolling stock) are much more damaging to cellular DNA than the other sources tested (e.g. wood smoke and cars).

The findings echo those gathered by University College London researchers who studied the high particle concentrations in London tube tunnels.

Breath a good marker

Exhaled nitric oxide may be a more sensitive marker of particle exposure than traditional health outcomes, Washington researchers suggest.

They add that black carbon is the most suitable metric to measure health effects.

Associations between health effects and particulate matter and black carbon in subjects with respiratory disease, Karen Jansen et al, *Environmental Health Perspectives*, Vol. 113, no 12, pp1741-1746.

TRANSPORT POLICY

Road projects worsen pollution

Imperial College researchers have shown that new roads can worsen pollution.

The Government, the Highways Agency and many councils justify road improvements on the basis that reducing congestion improves pollution. But researchers say that increased traffic generated by the improvements quickly

uses up any pollution benefits.

The effect might be worsened by improving vehicle technology. In the past there was a short period after a new road opened when the emissions would be reduced as congestion improved, after which increased traffic cancelled out the benefits. With new vehicles, the emission improvements are

virtually nonexistent – unless there are substantial numbers of malfunctioning high polluting vehicles in the fleet.

Flow improvements and vehicle emissions: effects of trip generation and emission control technology, Robert Noland et al, *Transportation Research Part D* (2006) pp1-14.

PARTICLE METRICS

Surface area threshold for particles?

German researchers suggest there may be a threshold of effects of particles.

Latest thinking is that ultrafine particles have no threshold – in other words health effects are directly related to dose and that there is no level that can be considered absolutely safe.

Researchers instilled different types of particles in mice and lung fluids were studied 24 hours later for inflammation.

At a particular mass dose, ultrafine carbon, flame soot, Printex particles, petrol particles and then diesel particles caused increasing amounts of damage.

Surface area proved to be a good measure for effects of the ultrafine particles – and researchers demonstrated a threshold for the particle surface area at an installed dose of approximately 20 sq cm, below which no proinflammatory responses could be detected in

the mice.

"Therefore particle surface area may be the most appropriate parameter to predict possible adverse health effects of ultrafine ambient particles."

Instillation of six different ultrafine carbon particles indicates a surface area threshold dose for acute lung inflammation in mice, Tobias Stoeffer et al, *Environmental Health Perspectives*, Vol. 114 no 3 2006 pp 328-333.

VEGETATION

Ozone affects growth of holly

Researchers at Staffordshire University have found that ozone causes holly to fail.

After subjecting young holly plants to a typical summer dose of ozone for 28 days they found these plants lost their leaves up to four months earlier, lost more water through their stomata and had shorter roots and shoots, than plants subjected to clean air.

There were also serious carry-over effects to the plants with the following year's new leaves being lost up to two months earlier and significantly fewer leaves being produced in the following three years after ozone exposure.

The first study also indicated a reduction in frost tolerance with more leaves being lost over the winter period, so the

second study using the same method as before, then placed holly plants in special refrigerated cabinets which dropped down to -5/-10/-15 C at night. The plants subjected to ozone had significantly higher loss of electrolytes from their cells at all temperatures and had up to 30 % reduction in winter survival.

● www.staffs.ac.uk

FINE PARTICLES

Rats provide fine particle link

Canadian researchers believe they are among the first to provide direct evidence of how fine particles cause damage.

By instilling rats bred to have susceptibility to diabetes ROFA (fuel ash), they have shown under what conditions the particles induce reactions in the heart wall.

Researchers say: "It is clear that bioavailable constituents of fine particulate air pollution derived from the combustion of heavy oil can alter vascular function and induce hyper

reactivity preferentially in aorta of prediabetic insulin resistant rats." Effects are not only influenced by the underlying status of the vascular system but also on recent exposure history.

"There are large numbers of individuals with insulin resistant status in the population, and there is evidence of subgroups with genetic and/or disease related susceptibility to vascular dysfunction. In this context, the demonstration of a direct link between the prediabetic insulin

resistant state and cardiovascular sensitivity to PM_{2.5} contributes to the growing weight of evidence that fine particulate air pollution represents a significant public health risk."

Hypersensitive of prediabetic JCR:LA-cp rats to fine airborne combustion particle induced direct and noradrenergic mediated vascular contraction, Spencer Proctor et al, *Toxicological Sciences*, Vol. 90 (2), pp385-391 (2006).

TRAFFIC POLLUTION

Bad morning breath for Manchester commuters

Studies have shown that Manchester commuters receive a larger dose of air pollution during the morning rush hour.

A team from the Centre for Atmospheric Studies at the University of Manchester took measurements in 2005 and 2006 along busy routes. Initial results appear to show that harmful particles produced by vehicles stay trapped near to ground level during the am peak.

Researchers have observed that in the middle of the day, warm bubbles of air rise up from the city streets. This warm

air lifts particles from vehicle exhausts away from the built environment. But earlier in the morning the air is too cold to rise and the particles remain trapped at street level.

They hope to discover how and when particles are exported away from Manchester, what factors affect their distribution, and if chemical and physical reactions in the atmosphere affect the toxicity of the particles.

The CityFlux project has been run in conjunction with the Centre for Ecology and

Hydrology (CEH) in Edinburgh. CityFlux is a three-year study (2004–2007) funded by the UK government through the Natural Environment Research Council (NERC). The project builds on the success and techniques developed in a previous NERC-funded study called Sources and Sinks of Urban Aerosol (SASUA). That study ran from 1999–2002 and involved the same groups making measurements in Edinburgh. **weblink** <http://cloudbase.phy.umist.ac.uk/people/longley/Cityflux.htm>

DISPERSION MODELLING

CFD models may prove suitable for Glasgow

Modellers suggest that computational fluid dynamics (CFD) models may prove useful for air quality dispersion modelling.

Working with the example of the Glasgow air quality management area, University College London researchers say that CFD modelling (as opposed to the more usual Gaussian modelling) has an enormous potential in assessing and improving natural ventilation in built up areas.

“An urban air quality model of the Glasgow AQMA has been developed by integrating

traffic flow data for urban road networks, traffic pollutant emission data and a three dimensional CFD dispersion model of a complex configuration of street canyons.

“The results are in good agreement with field measurements taken during the continuous monitoring campaign, and show that a general CFD code has indeed the potential for regulatory use. It is observed that small differences in monitor positioning may yield significant variations of the measured mean concentration due to large

values of horizontal and vertical local concentration gradients.

Although at this stage the accuracy of the developed Glasgow urban air quality model is highly dependent on the experience of its users, it is believed that use of a CFD code (eg Phoenix) could benefit urban planners, architects and others interested in public health.”

Integrated air quality modelling for a designated air quality management area in Glasgow, D Mumovic et al, *Building and Environment*, Vol. 41 (2006) pp1703-1712.

HEALTH EFFECTS

Traffic density a good surrogate measure

Despite lowering levels of tailpipe pollution, health effects remain high for those living near roads.

US researchers say this suggests that distance from a road may be a better predictor of health effects than conventional measures – and that health effects may well be from sources such as brake dust and tyre wear rather than engine emissions.

Researchers compared traffic density, ambient air quality and mortality among 70,000 male army veterans between 1976

and 2001. They say: “Our epidemiological studies of a cohort of US military veterans indicate that traffic density is a better predictor of survival than either population or housing density, even though all three measures of congestion are highly correlated. Density effects may be more important than any single measure of local ambient air quality with the possible exception of ozone.

There have been only modest changes in traffic related mortality risks over time from 1976–2001 despite the decline

in regulated tailpipe emission per vehicle since the 1970s.

This suggests other environmental effects may be involved such as particles from brake, tyre and road wear, traffic noise, psychological stress and spatial gradients in socioeconomic status.”

Traffic density as a surrogate measure of environmental exposures in studies of air pollution health effects: long term mortality in a cohort of US veterans, F Lipfert et al, *Atmospheric Environment* Vol. 40 (2006) pp154-169.

SCIENCE SHORTS

Lung function grows

Lung function of children from the two sides of Germany has become similar.

High particle loads in the former Eastern Germany led children under the age of six having a poorer lung function. But after unification and industrial plants were cleaned up, that pollution dropped and east German kids' lung function improved. But the improvements were less marked in those east German children that lived near major roads as traffic levels and finer particle pollution increased in the eastern side.

The influence of large scale airborne particle decline and traffic related exposure on children's lung function, Dorothy Sugiri et al, *Environmental Health Perspectives*, Vol. 114, no 2, 2006 pp282-288.

Cost benefit compared

QALYs – quality adjusted life years – may not be suitable for cost benefit analysis of air pollution effects.

Cost benefit analysis of air pollution policies is increasingly important due to the need to justify actions to Governments. Increasing use is made of the QALY measure.

“Compared to a cost benefit approach, the QALY framework gives more weight to reduction in incidence of chronic disease relative to reductions in premature mortality risk, especially when the mortality risk reductions occur in older populations. Use of monetised QALYs in cost benefit analysis is not recommended.

“In cases where mortality provides the majority of a regulation's impacts, QALY based cost-effectiveness-analysis and willing-to pay based cost benefit analysis may not differ in their conclusion. However in cases where morbidity or non health outcomes are significant, cost effectiveness and cost benefit analysis may result in different evaluations of the efficiency of the regulation.”

Implementing QALYs in the analysis of air pollution regulations, Bryan Hubbell, *Environmental and Resource Economics*, (2006), Vol.34, pp365-384.

Our story last month about Bromley refusing to declare until it was given control of its traffic lights caused much merriment.

One amused onlooker pointed out a clause in Bromley's minutes asking whether "nitrous oxide pollution was causing detrimental effects to the health of residents in that area as it was not mentioned in the report".

It probably wasn't mentioned as nitrous oxide is laughing gas, prompting one neighbouring EHO to quip: "So that's why the decision was laughable."

AQB has been poking fun at Netcen's rebranding exercise.

Check out its new logo, complete with random squiggle....



We're assured that the squiggle has been recycled from another division. Good, we'd hate to think AEAEAE paid consultants loads of money for that. But who signed off the 'from the AEA Group' style?. AEAEAE from the AEA Group? Yugh.

We really never understood what Netcen

was all about, granted. But at least we could say it – do we now all have to say AEAEAE? Is that Aaay-eeee-aaay-eeee-aaaa-eeee?

Can't we just go back to calling them the Atomic Energy Authority?

Defra's Tim Williamson hasn't changed since he left the NSCA. Someone should tell him that civil servants are supposed to be dull and grey!

He referred to the New Air Quality Directive requirements as NAQD in the pre-Christmas monitoring meeting held by AAMG. "Sometimes referred to as knackered. Which is how I feel at this time of year."

Iapsc is not the most zippy of names for a conference (its even worse when its spelled out in full – the 'Investigation of Air Pollution Standing Conference') – but despite its soporific-sounding name the conferences are usually quite interesting.

This year's was no exception – but the first speaker – Bureau Veritas's Richard Maggs – was accompanied by a loud snoring sound coming through the PA system. But this was 10am – not the post-lunch 'graveyard' slot where many snatch a

piece of shut-eye. Was someone trying to tell Maggs something about his presentation?

But before Maggs could take it personally, the noise accompanied the following speakers with equal intensity – and our curiosity was satisfied when it was explained that it was a fire alarm signal being picked up by the radio mikes.

Time for a New Year caption competition. No prizes, but if there are any good ones we'll print them.

Now what we have here is a well known industry regulator chap (fresh from raising a shed load of cash for charity. Email us your best efforts.



Agency cutbacks leave staff moonlighting over the festive period....

AIR QUALITY EVENTS 2007

2007:

January 19th

The 2007 London Air Quality Network seminar
conference to be held in London organised by ERG.
website www.londonair.org.uk

January 22nd

Getting the health message out there

Sussexair conference to be held in Brighton, registration is via the website: www.sussex-air.net

January 24th

Indoor air quality

IAQM/IES meeting on Indoor Air Quality to be held at BRE Watford. Contact Lyndsay Glanfield email l.glanfield@ies-uk.org.uk

January 25th

Air Quality and Climate Change

NSCA South West division/UWE conference to be held at Bristol Zoo. Contact David Muir 0117 922 3407

March 27th-29th

6th International Conference on Urban Air Quality

to be held in Cyprus. website www.urbanairquality.org

April 25/26

Air quality spring workshop

NSCA spring workshop to be held in the Didcot. Contact Lucy Salter NSCA, 01273 878770

April 25/26

Mcerts Air & Emission Monitoring Conference, Exhibition

and Workshops, Bretby Conference Centre, Burton upon Trent, Staffs, website www.mcerts.uk.com

May 1st-2nd

Annual air pollution research meeting

Institute of Environment and Health meeting to be held at Cranfield website www.silsoe.cranfield.ac.uk/ieh

July 2nd-5th

11th International Conference on Harmonisation

within Atmospheric Dispersion Modelling for Regulatory Purposes conference to be held at Queen's College Cambridge, website www.cerc.co.uk/HARMO11/index.htm

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AIR QUALITY

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