

# AIR QUALITY

April 2008 Issue 24

BULLETIN

## PLANNING

# Dundee dumps boiler plan

Plans for a large biomass boiler to support a new greenfield development have been rejected by Dundee City Council because of pollution fears.

The decision underlines an explosion in the number of biomass boilers being promoted by developers – and then rejected on air quality grounds. Biomass boilers linked to school developments in Edinburgh were recently rejected (*AQB January p1*) leaving biomass enthusiasts scrabbling to issue reassurances that not all biomass should be rejected because of air quality (see p4).

The latest Dundee proposals centred on a commercial development in a science park which included a large biomass plant with 20m high stack. An ADMS dispersion modelling report carried out by Bureau Veritas says that for the worst

case stack height option, emissions contribute a maximum 8% to the NO<sub>2</sub> annual mean air quality objective, and 4% to the Scottish PM<sub>10</sub> annual mean objective.

Environmental health officers at Dundee City Council said that while the development would not lead to a breach of air quality standards, the increase was significant, and in the case of particles, the lack of a health effects threshold would make the plant detrimental to the health of local citizens.

“Although this proposed plant in isolation would not breach standards, it would contribute to the cumulative effect should other businesses in the area follow suit and install biomass combustion plant. A decision to deliberately increase the level of pollution in an area where there already exists a cleaner

alternative fuel source (ie. gas) is perhaps questionable.”

Planning officers initially dismissed environmental health fears, saying: “It is considered that as the applicants have fully demonstrated and secured agreement that the stated emissions from the flue fall within government guidelines, the additional concerns expressed by the council’s Environmental Health and Trading Standards are not sufficient, in their own right, to outweigh the provisions of the development plan.”

Many have suggested that for biomass to be acceptable in urban areas, control of fuel quality will be needed alongside control of the appliance itself. Dundee environmental health officers said that if the plant was

● Continued page 4

## URBAN POLLUTION

# Sharp increase in NO<sub>2</sub> in Avon questioned

The Bradford on Avon Preservation Trust is highlighting the dangers of increasing NO<sub>2</sub> in the town.

In echoes of problems emerging in many urban areas, predicted drops of NO<sub>2</sub> have not taken place. Heathrow objectors are citing this trend as why modelling for the fifth runway cannot be relied on (see feature, page 8).

The Bradford on Avon Preservation Trust commissioned consultant Capita Symonds to see whether assumptions in the West Wiltshire District Council action plan that NO<sub>2</sub> levels would drop were valid. Diffusion-tube

measurements made in the town by West Wilts suggest that instead of an expected reduction of about 23% in the level of NO<sub>2</sub> in Masons Lane over the period from 2000 to 2006 there has actually been an increase of the order of 32%. The most recent data for 2007 indicate that this trend is continuing.

Bryan Harris told *AQB*: “Predictions of future traffic pollutant levels that were made in, say, 2000, on the basis of best available knowledge and data are increasingly suspect. I assume the pattern of what is happening in Bradford on Avon is being repeated throughout the UK.

“It is clear, therefore, that it is now necessary to revisit both the air quality action plan and any air-quality calculations that have been submitted with recent planning proposals. No decisions that rely on computer modelling can now be considered safe. I would like to know what Defra and the modelling community is going to do about models which seemed to be giving reasonable answers seven years ago, but clearly no longer do.”

● Bradford on Avon Preservation Trust’s report is available on its website [www.airquality.boapt.talktalk.net](http://www.airquality.boapt.talktalk.net)

## IN BRIEF

### Low emissions

A pre-consultation version of a guide on reducing emissions from developments was launched at the Epuk workshop. It was produced by the Beacons Low Emission Strategies Group coordinated by Ogo Osammor at Sheffield City Council (*AQB October 2007 p2*).

It forms a package of policies and measures to mitigate the transport impacts of development by accelerating the uptake of low emission transport fuels and technologies in and around a new development secured through a combination of planning conditions & legal obligation.

It aims to support wider adoption of low emission strategies by planning authorities and to encourage the use of both well-established and more innovative measures and is intended for use by local authority planners and those, who work closely with them such as environment, transport planning and sustainable development teams. More details next month.

● *Low emission strategies – using the planning system to reduce transport emissions* can be viewed on [www.cenex.co.uk](http://www.cenex.co.uk)

### 5-yr term for AEA

AEA has won a further five year extension to its UK contract to manage air quality forecasting, emissions and data services.

The £4.7m contract, which AEA has held for more than 10 years, involves the quality assurance and assessment of UK air quality data for England, Scotland, Wales and Northern Ireland through the Automatic Urban and Rural Network (AURN).

### Sorry we’re late ...

...due to staff holidays and a large number of conferences to attend! The May issue will appear when it should ie. early in the month.

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## NEWS FROM THE RECENT EPUK AIR QUALITY SPRING WORKSHOP HELD IN WARWICK

### Biomass rethink

Defra is currently modelling the potential air quality impacts of widespread national uptake of biomass.

Modelling was prompted by London Councils' findings that biomass could have a significant impact in urban areas. Speaking at the recent Epuk spring workshop, Defra's Jonathan Lartice said the results would be ready in September.

He accepted concerns that there might be the need for improved controls on biomass – but said that it was unclear whether new primary or secondary legislation would be needed to do that. "We're aware that the Clean Air Act provisions are not really fit for purpose, however we are more worried about commercial installations than domestic ones, especially within air quality management areas."

Gordon Clamp of Mott MacDonald said that large developments were coming forward now with biomass provision: "We need to know about what to tell clients now. By the time Defra gets its results from national modelling and issues advice, a lot of biomass will have gone in." Lartice replied that the biomass issue had "crept up on us" – "My advice is that biomass shouldn't go in where it worsens air quality."

Tim Chatterton of UWE, responsible for offering advice to local authorities via the air quality helpdesk, said: "The best advice on biomass is rather than just saying no, insisting on the right technology in the right place."

Peter Coleman of AEA pointed out that emissions performance of installations varied hugely – some small domestic biomass boilers have excellent emissions performance, some large commercial boilers have very poor performance.

He said: "At the moment we have no means of forcing use of the better boilers. When applications come forward, planning permission should stipulate emissions performance and make sure that developers don't then install a dirtier appliance."

## Defra to seek exemption

Defra has confirmed that the Government fully intends seek an extension to EU deadlines for meeting objectives.

Defra's Jonathan Lartice told the recent Epuk spring conference: "Subject to consultation, UK expects to submit plans to secure compliance flexibilities to the Commission." While Lartice refused to link this statement with Heathrow – or indeed talk about Heathrow at all, it is almost certain that Heathrow will be the prime reason why the UK would need to seek exemptions.

Any member state seeking such 'compliance flexibilities' would need to state why, and where, Lartice says: "We anticipate that the UK will need to demonstrate action beyond that agreed in the national air quality strategy to achieve full compliance with EU limit values."

This is an important statement. The air quality strategy was released last year amid criticism that it was too weak (*AQB August 2007 p1*). While the strategy did not claim that it would solve all the UK's air quality problems, Defra frequently relies on the strategy when it has to explain to the European Union why it is not meeting EU objectives and Lartice's comments appear to be the first official admission that the UK will have to do more

than is set out in the strategy if it is to apply for exemptions.

In terms of the expected application for a Heathrow derogation, the UK could argue that Heathrow is a special case as predicted emission improvements are eventually expected to lead to compliance at Heathrow (although the certainty of this decline is disputed by local authorities, see p8). If a derogation is sought, it could apply to a large zone, eg the whole greater London agglomeration.

The London Borough of Richmond had anticipated Defra's request for a derogation in its written response to the expansion of Heathrow.

It said: "This makes a mockery of the health based standards for air quality, and detracts further from the regard which the public have for policy making by Government."

Epuk had also anticipated the desire for a derogation in its response: "We do not support the seeking of any such derogation, and would like to highlight that any such derogation would be conditional upon submission of mitigation plans and programmes, which are not in evidence in this consultation."

Hillingdon also considers the Government is mis-applying the EU limit value in this question. "As it currently stands, the EU limit must be met in 2010. Any

derogation for a five year extension is still to be negotiated in Europe and there will be strict guidelines as to where it can be applied."

Hillingdon believes that the area around Heathrow, with plans being promoted to substantially increase emissions at relevant receptors, is contrary to the EU air quality legislative framework for the granting of derogations and will therefore be in breach of EU law in 2010.

Hillingdon contests that the environmental condition that should be adhered to is the EU limit set for annual mean nitrogen dioxide in 2010 and not 2015.

"The Government has not put any specific plans in place to alleviate residents who will be exposed to levels above the limit in 2010 in areas around the airport even without any airport expansion.

"It is irresponsible, and could be deemed unlawful, to promote a substantial increase in emissions in an area where the current environmental limit cannot be met even in current conditions. It should be noted that the consultation document clearly states there will still be exceedences in 2015."

In response to Hounslow's Rob Gibson's question, Lartice confirmed that there would consultation when the Government applied for the flexibilities.

### POLICY

## More updates on Defra air quality intentions

Jonathan Lartice is currently acting as head of local air quality following the departure of Sarah Dudgeon from Defra's Air Quality Programme (*Editor's comment: Defra has phased out the word 'division' in favour of 'programme' – yugh!*). He outlined a number of issues including:

- New research let to AEA to find the best way of monetarising benefits of low emission zones and charging schemes. "This will allow local authorities to establish whether a scheme is cost beneficial – and at what point when cost effectiveness ceases to be proportionate. Our emphasis

will be on 'could not should' for local authorities thinking of taking up low emission zones."

- Defra had supported an incentive scheme to encourage the early uptake of Euro 5 vehicles which would have been announced in the recent Budget, but there were 'last minute' concerns from Treasury on European Union anti competitiveness legislation. It was retained for vans;

- There were concerns that the new air quality indicator for local authorities would penalise those that had already made an effort to reduce emissions. John Coates of Richmond commented that there was little

incentive for any authority to be green this year given it will be the basis for future emission reductions. Val Beale of Hillingdon pointed out that her authority had already made a big effort to cut emissions (*AQB March p2*). If the first year is to be a baseline and the authority has already cut its emissions, then it would be unfairly penalised by being required to cut them by the same amount as other less progressive councils.

Jim Storey of the Environment agency pointed out that it would be very easy for Defra not to have had the air quality indicator: "At least we've got something."

**NEWS FROM THIS MONTH'S EPUK AIR QUALITY SPRING WORKSHOP HELD IN WARWICK**

# Medics outline expert action

The EPUK spring workshop was brought up to date on the work of the Committee on the Medical Effects of Air Pollution (Comeap)

Comeap is nearing completion of its major report on quantification of effects of pollutants on health. The headline 6% 'risk factor' was rush-released in order to feed into the air quality strategy last year (*AQB August 2007 p1*), the detail of the report is set to follow.

The draft report *Risks of mortality in adults following long-term exposure to particles* only looks at PM<sub>2.5</sub>. Head of the quantification subgroup Fintan Hurley told Epuk: "We are only looking at PM<sub>2.5</sub> knowing that it isn't really a single mix, but there is insufficient evidence to separate the pollutants out."

The key issues covered in the report are presented as a series of questions:

- Is the effect of long-term exposure best quantified as an effect of particles? (Yes.)

If yes, what index of particles? (PM<sub>2.5</sub>);

- What is the percentage change in deaths per 10µg/m<sup>3</sup> increase in annual average PM<sub>2.5</sub> (6%);

- Given that the effects of PM<sub>2.5</sub>

are to be quantified, should we quantify effects of other pollutants (e.g. sulphur dioxide, NO<sub>2</sub>, ozone)? (No, though a case can be made for SO<sub>2</sub>);

- Should the effect of PM<sub>2.5</sub> be adjusted for example sulphur dioxide? (No);

- Is there a threshold ('safe level') for the effect of PM<sub>2.5</sub>? (No evidence of one; so assume no).

Heather Walton of the Health Protection Agency (an agency of the Department of Health which runs Comeap) said of the report: "This will be a challenging report but very important on the quantification of long term exposure and morbidity."

A robust discussion then ensued with Iarla Kilbane-Dawe, formerly of Cerc and now pushing air quality and health forecasting systems for AEA asking: "We have a big problem getting these alerts into the medical profession because they are so sceptical about the health impacts of air quality."

"By the time Comeap makes up its mind that air pollution is bad for you, the problem will be solved in any case because we will all be driving electric cars."

William Bird of Natural England echoed this – he

recounted a forecast of violent thunderstorms that would lead to a very high risk to asthmatics. Warnings were issued to hospitals – some ordered extra nebulisers while others ignored the warnings. When the storm arrived, asthmatics overwhelmed local casualty departments, those that had ordered extra nebulisers were able to keep their casualties running, those that hadn't weren't. "The profession feels these are one-off events and the issues do not apply to them."

In later questioning, Fintan Hurley of the Institute of Occupational medicine said: "There is indeed a bit of a difference between what Comeap puts out and what the medical profession perceive."

HPA's Walton defended Comeap's actions, and explained that Comeap was thinking about publishing more in more learned journals and presenting to wider audiences such as the British Thoracic Society.

Kilbane-Dawe once again reiterated the need to cascade information down from Comeap and questioned whether these actions were likely to make a sufficient difference quickly.

## Emission factors

TRL's Ian McCrae told the Epuk spring workshop audience about efforts to improve the accuracy of emission factors.

Emission factors are estimates of the emissions of the entire UK fleet and are derived by estimating individual vehicle emissions and multiplying by the number of those particular vehicles across the fleet.

They are important because they are used to underpin forecasts for new developments, air quality reviews and assessments and UK conformance checks for EU directives. However to date they have often proved wrong with newer vehicle emission factors underestimating what has happened in practice.

McCrae defended the factors: "It is not true to say that emission factors are wrong, rather they are just not up to date. The current emission factors were derived in 2001, we will have a new set of emission factors later this year that will include LPG cars, SUVs, black cabs, more truck bands, Euro 6 and more two wheeler bands (mopeds, and six sizes of motorcycles). We will also include new pollutants such as primary NO<sub>2</sub>, aromatics and size-specified PM emissions."

It has been the failure to understand the importance of primary NO<sub>2</sub> emissions that has caused many urban areas to log increases in NO<sub>2</sub> concentrations as opposed to the reductions that they had been promised through the factors.

McCrae also admitted that factors would still be based on average speed functions – inaccuracies in modelling can occur where there is heavy congestion and stationary traffic.

## Iapsc looms

The 11th June IAPSC meeting will include topics on emergency response to incidents affecting air quality, transport and local air quality management (including biomass).

- More details [www.iapsc.org.uk](http://www.iapsc.org.uk)

## RESEARCH

# Aqeg's ozone report nears publication

The Air Quality Expert Group (Aqeg) is set to conclude its draft report into ground level ozone in the next few weeks.

The report is set to be Aqeg's last report in its current form. Chairman Mike Pilling is retiring, and a new chairman has yet to be appointed as Defra has commissioned consultants to carry out a review of the group. "We hope it will be allowed to continue," said Pilling.

Last year the Expert Panel on Air Quality Standards (Epaqs) was rolled into Comeap (*AQB May 07 p4*).

Aqeg has carried out a number of high profile reports since its inception six years ago, Defra is under extreme cost pressures and with many of the key air pollution questions now answered, some believe that it is action that is now required

rather than further research.

Aqeg's forthcoming draft report on ozone is based on a series of questions posed by Defra and is expected to confirm that annual mean ozone in urban areas is increasing as emission controls reduce NO<sub>x</sub> formation. NO<sub>x</sub> has the effect of inhibiting ozone levels. Changes in rural areas are less marked, there remain episodes, but background precursor emissions are being reduced due to various international agreements.

Pilling explained that while UK action can be beneficial, effective control of ozone concentrations in the UK requires emission reductions to be implemented throughout Europe and increasingly the entire northern hemisphere.

"Control of NMVOC emissions will almost always

lead to an improvement in ozone air quality and a reduction in population exposure.

"Additional benefits result from concerted international action and from focussing the emission control on those source sectors making the largest contributions. Methane mitigation is seen as a cost-effective strategy in international ozone management, bringing multiple benefits for air quality, public health, agriculture and the climate system," Pilling concluded.

Another report on ozone is due to be completed by the Royal Society, although this will focus on a 50-100 year timeframe, as compared to Aqeg's probe which concerns a 20 year period.

## IN BRIEF

### Home fires burn

Over half of organic air pollution in Europe during winter comes not from fossil fuel burning, but from domestic chimneys, bonfires and agricultural burning according to new results published by the EU-funded Carbosol project.

Researchers say restricting these sources of manmade emissions could cut pollution significantly, with immediate benefits to public health and a positive impact on climate change.

French and Austrian investigators found that pollution from residential wood burning was surprisingly high during winter months, with between 50-70% of carbon in the atmosphere derived from burnt cellulose. Researchers said this impact has so far been underestimated, adding: "Addressing these sources of emissions throughout Europe, using a combination of legislation and technological advances, could cut air pollution considerably."

● Carbosol project weblink [www.vein.hu/carbosol](http://www.vein.hu/carbosol)

### Lacors bio-fears

Lacors has written to the Government to call for a full review into the impact of biofuel use on air quality after research showed it could be doing more harm than good.

Lacors says: "It is good news that the Renewable Fuels Agency will be conducting a review of biofuel production but we are disappointed that the wider impacts of biofuel use, specifically the potential effects on air quality, are not being investigated. It is vital that all potential impacts of biofuel use are part of the debate to make sure we find a 'win-win' situation for both climate change and air quality.

"We strongly urge the Government to take this opportunity to review the air quality impacts of different types of biofuel. This would fit with the Government's own recommendations that air quality and climate change should be considered together."

## BIOMASS

### Dundee dumped (from page one)

approved, a condition should be included on the quality and composition of the wood (in particular the moisture content) to minimise pollution impacts.

But planning officers disagreed once again: "The imposition of a condition controlling the fuel source would be inappropriate as conditions attached to planning permissions should not duplicate the effect of other

legislative controls."

However in the event at committee stage, the proposal was rejected on sustainability rather than air quality grounds: "The proposal fails to comply with Policy 1 (vibrant and sustainable communities) of the Dundee local plan review 2005 by virtue of the failure of the applicants to conclusively demonstrate that the chimney emissions from the biomass

facility will not be to the detriment of local air quality. As a result, the applicants have failed to demonstrate that the proposals will not have a significant adverse impact on environmental qualities for local residents."

● Planning documents can be viewed on <http://idoxwam.dundeeccity.gov.uk/WAM133/finCaseFile.do?apptype=DC&appNumber=07/00226/FUL>

## BIOMASS

### Epuk counters that biomass has its place

Epuk (ex NSCA) and the Renewable Energy Association have joined forces to defend biomass against recent adverse publicity.

They say that biomass heating and combined heat and power (CHP) systems can make a valuable contribution to reducing urban CO<sub>2</sub> reductions if the equipment is selected carefully, and the full environmental impact assessed. Fuel quality and maintenance also need to be of a high standard.

"Like any energy technology, biomass has a number of pros and cons in terms of its impact", said Epuk's Ed Dearnley. "Air

quality, transport and climate change impacts need to be considered as well as the area planned for development. What is suitable in a rural area may not be in a city with poor air quality".

"Biomass heating and CHP for urban areas provides a major opportunity for those wishing to reduce their carbon footprint and reliance on fossil fuels, if carried out sensitively", said Gideon Richards of the Renewable Energy Association. "It is important, however, that the industry does its part in providing information and support to council officers and, likewise, they [council officers]

do not reject biomass projects on the basis of assumed potential accumulated affects. These issues should be managed at a more macro level."

Epuk and the REA say that the report by London Councils "focused upon a very ambitious increase in the number of biomass units in a city with existing air quality problems".

They are now working with other stakeholders to develop and promote practical advice and guidance for developers who are considering how to meet renewable energy requirements, and local authorities to assist their planning functions.

## BIOMASS

### Small biomass is not necessarily beautiful

Biomass impacts have been studied not just during burning, but also in production by the University of Manchester.

Researcher Patricia Thornley analysed whole-life pollution costs from burning of willow and miscanthus grass. She modelled the emissions of carbon monoxide, NO<sub>x</sub>, particulates and volatile organic compounds from eight biomass-based power generation systems, using different methods and scales of transport, drying and burning for either willow or miscanthus.

She found that carbon monoxide and hydrocarbon emissions arose primarily at the conversion plant but that up to 44% of NO<sub>x</sub> and 70% of particulate emissions could be released earlier in the process, mainly by crop harvesting and

tractor haulage. Improved practices such as using lower emission engines and avoiding tractor haulage, where practical, in favour of larger purpose-built haulage vehicles, could help lower these emissions.

"An interesting finding was that the smaller systems which are frequently preferred by local communities frequently perform worse in terms of overall airborne emissions than do large centralised plants – even taking into account long lorry trips to bring material to the centralised facility."

Thornley's work was part of the Supergen bioenergy consortium, which focused on production of electricity from biomass. The consortium has now been renewed for a further four years. "We will be exploring a range of technical,

economic, environmental and social implications for a wider range of bioenergy systems, including heating – from domestic scale upwards – and production of transport fuels," she said.

"This promises to bring a whole new set of questions to answer: are there significant local air quality impacts associated with widespread deployment of wood-fired domestic boilers, which types of biofuel are most likely to have negative social impacts in production countries and how can biomass help the UK meet its carbon reduction targets in the power, heat and transport sectors most economically?"

● *Environmental Research Letters* website <http://environmentalresearchweb.org/cws/article/futures/33527>

## WASTE

## Agency drafts waste permits

The Environment Agency has proposed draft standard permits aimed at regulating waste activities.

There have been concerns that such permits could downgrade the importance of air pollution however it appears new controls on air quality have been included. For instance there is a requirement that no part of the waste site should be in an air quality management area or closer than 500m to an SSSI.

This requirement will prove interesting for some local authorities who have declared

their entire area an AQMA.

The Agency told *AQB*: "The draft permit is to cover where there are already local air quality issues. The upshot of this is two-fold. If an AQMA is designated where an applicant wants to locate and operate a particular activity, they may not be able to apply for a standard permit. Instead they will have to proceed through the full rigour of the bespoke permitting process and site-specific risk assessment which will determine the appropriate level of operational controls.

"Similarly, if there is a change in the local environment after the permit is issued i.e. a specified AQMA is designated, then the operator will potentially be required to upgrade the operation to a standard sufficient for the changed environment or apply to change to its bespoke permit."

● The draft permit for household, commercial and industrial waste transfer station with treatment (no building) can be viewed on [www.environment-agency.gov.uk/commondata/acrobat/sr4\\_1853523.pdf](http://www.environment-agency.gov.uk/commondata/acrobat/sr4_1853523.pdf)

## WASTE

## Best practice mooted for waste site dust

The Apple (Air Pollution Planning and the Local Environment) group is working with the Environment Agency to draft a code of best practice to minimise the air pollution arising from waste management sites.

Apple is keen that the code of practice is based on evidence and experience and is therefore seeking examples of best management and mitigation practice. Specifically it is interested in hearing about examples of:

- Waste site dust suppression and control both by design, by enclosure for example;
- Reduction of PM<sub>10</sub> or nuisance dust from waste sites by the fitting of abatement measures. The group is

especially interested in any cases where the effect of abatement has been quantified by ambient air monitoring;

- Monitoring of dust and PM<sub>10</sub> around waste management sites;
- Section 106 agreements that have included dust or PM<sub>10</sub> monitoring;
- Examples of planning applications for waste management sites that have been refused on air quality grounds;
- Examples of where planning, environmental health or other agencies have taken enforcement action for non-compliance with air quality / dust mitigation conditions.

Gary Fuller of ERG told *AQB*: "When asked about air pollution around waste sites, I

often reply that the measurements speak for themselves. The highest PM<sub>10</sub> concentrations in London are not measured alongside major roads but are found on residential roads around waste management sites.

"We have measured around 200 days per year with mean concentrations about 50µg/m<sup>3</sup> near some waste management sites. This is clearly important for air quality management and for the communities that live in these areas.

"However we don't know that all waste sites cause PM<sub>10</sub> problems and we are therefore seeking examples of best practice from all over the UK."

● Please email comments to [jon.fox@bexley.gov.uk](mailto:jon.fox@bexley.gov.uk)

## RESEARCH GRANTS

## New funding stream may be used for air

Air quality is included as a theme in a £10m research and development initiative by the Technology Strategy Board.

The government-funded Technology Strategy Board is to invest £10 million to encourage British companies to research and develop innovative data-gathering technologies that could be rapidly configured and deployed by users such as the police forces, fire and rescue services, local authorities, utility companies and many others.

Data includes a wide range of

sources including pollution monitoring, traffic management, healthcare and building management.

The Technology Strategy Board explained: "The ability to gather information in complex or difficult environments is vital for organisations such as the emergency services, transport authorities and power companies."

It continued: "Many UK companies have particular strengths in sensing, instrumentation and imaging technologies, and in

telecommunications and intelligent systems. Bringing this expertise together would give the UK the capability to offer complete tracking and monitoring solutions, and to exploit the worldwide demand for such technology."

Applicants must register their intention to apply for funding, the final closing date for applications is 8 May 2008.

● Further information is available at the following website: [www.technologyprogramme.org.uk](http://www.technologyprogramme.org.uk)

## IN BRIEF

### NI 194 finalised

Air quality indicator NI 194 has been finalised following a consultation earlier this year (*AQB Dec 2007 p1*).

NI 194 is among 138 indicators which were finalised early to allow authorities an early start.

Measurement against this indicator will require each local authority to calculate their PM<sub>10</sub> and NO<sub>x</sub> emissions from analysis of the energy and fuel use in their relevant buildings and transport, including where these services have been outsourced.

● The tool to be used to calculate these emissions is available at: [www.defra.gov.uk/environment/airquality/local/indicator.htm](http://www.defra.gov.uk/environment/airquality/local/indicator.htm)

Further help will be included in the update of the technical guidance later in 2008.

### LAPC charges agreed

Defra has announced that LAPPC and LA-IPPC fees and charges for 2008-2009 will increase by 3%.

Additionally there will be, an increase of £190 in the application and the subsistence charges for vehicle refinishers; a one-off additional fee amounting to £55 for each risk-assessed facility and £16 for each reduced-fee activity to cover the transitional costs of transferring from PPC to the Environmental Permitting Regulations (EPR); an additional fee of £285 for permit applications for combined LAPPC and waste sites; and fees of £95, £143 and £190 to cover subsistence of low, medium and high risk facilities where, under EPR, LAPPC and waste Installations form part of the same installation and are regulated by a local authority under a direction; an additional fee of £95 for each LA-IPPC and relevant LAPPC installation to cover councils' new reporting responsibilities under the European Pollutant Release and Transfer Register Regulations (E-PRTR); and a requirement for operators to reimburse costs in advertising a permit application.

● [www.defra.gov.uk/environment/ppc/localauth/fees-risk/fees.htm](http://www.defra.gov.uk/environment/ppc/localauth/fees-risk/fees.htm)

## NEWS FROM GREENWICH'S BEACON PLANNING AND AIR QUALITY EVENT HELD ON THE THAMES

### Woolwich s106

Greenwich is involved in yet another high profile planning case that is including tight air quality conditions.

Greenwich pioneered the systematic use of section 106 planning agreements to push developers to pay for air quality measures ranging from monitoring to cleaner vehicle fleets. The borough is home to much building activity prompted by redevelopment of the Greenwich Peninsular and the Dome.

Based on its success in attracting developer funding, the council won Beacon status, and as part of that programme last month gathered air quality EHOs and planners to spread good practice. Greenwich chief planner Steve Merrifield told the conference of the latest development subject to stiff air quality conditions in Woolwich town centre.

The Love Lane mixed-use development includes 960 dwellings and 1,172 car parks in a whole-borough air quality management area declared on NO<sub>2</sub> and particulates. Planning agreements demand provision of a car club, emission based charging of residents' parking, electric vehicle charging points, and 50% of delivery vehicles and 50% of home delivery vehicles to meet Euro V by store opening and 100% biofuel use in five years.

The developer must also pay £160,000 a year for ten years towards Greenwich Council's monitoring costs.

### Budget measures

A series of measures were included in last month's Budget that impact on air quality.

These include higher VED for gas guzzlers and lower VED for low polluters, a delay to the planned 2p rise in fuel duty, incentivising "only the most sustainable biofuels", and a measure giving a VED incentive for early take-up of cleaner Euro V diesel vans ahead of mandatory introduction in 2011.

● [www.hm-treasury.gov.uk/budget/budget\\_08/report/budbud08\\_repindex.cfm](http://www.hm-treasury.gov.uk/budget/budget_08/report/budbud08_repindex.cfm)

## Guidance weak says Bull

Arup air quality expert Michael Bull says that air quality action plans and guidance are not tough enough.

Speaking at the recent London Borough of Greenwich Beacon day promoting planning and air quality, Bull said that given the importance of air quality in planning, there should have been more planning refusals. He cited only five refusals since guidelines were first introduced 10 years ago (one being the recent decision in Halifax *AQB March p1*).

Bull explained the reasons why current guidance was failing to halt developments for a number of reasons including:

- Cumulative impacts: "Local planning authorities may be faced with numerous individual, small planning applications which separately might not be considered to have a significant impact on air quality but which cumulatively would have a significant impact. Each planning application should be determined on its individual merits in accordance with the development plan unless material considerations indicate

otherwise.

"In practice, this should mean that individual small-scale applications that accord with the development plan may well continue to receive approval until there is a danger an air quality objective may be breached."

- NSCA's (now Epuk's) guidance on air quality applies significance criteria to developments recommending refusal for a significant impact. But Bull said: "Most air quality issues in the UK are due to exceedence of nitrogen dioxide concentrations and this requires very substantial changes in traffic to result in changes in concentrations greater than 15%."

He added that it is very unusual to predict changes in concentrations that would be described as more substantial than a 'small' change under the NSCA example.

Bull said: "If air quality is that important in the planning system then you'd probably expect to have seen far more refusals. Current guidance and policy makes it difficult to sustain an air quality objection –

especially when based on numerical standards.

He added: "More importantly, with the rather bland action plans you see. I've not come across one plan where a development didn't comply. Whilst you wouldn't necessarily get more refusals, you could get a lot more consideration of air quality if the action plans had some teeth."

Gary Mahoney from Sefton agreed: "I have never seen an air quality assessment saying that there will be a significant change in air quality. Are we shooting ourselves in the foot by demanding impact assessments that rarely stop us doing anything?"

Arup's Bull responded: "There is value in requesting an assessment as it puts air quality on the agenda. But for as long as the emphasis is on numbers, numbers can be manipulated to show no significant change. We should look at the Dundee decision (see news, page one) where a biomass plant gave concern on air quality grounds but was rejected on wider sustainability grounds."

### PLANNING

## Croydon suggests alternative tack

Steven Potter of Croydon told the Greenwich Beacon planning event of an alternative way of tackling air quality given the weakness of current guidance in reducing emissions.

Potter said that the council was currently consulting on a code that will see developers pledge to cut on-site emissions to levels 10% lower than the previous land use. "It seems to make sense not just to use the planning system to stop things getting worse, but also to make things better," he told *AQB*.

The council has just completed consultation on a draft *Issues and options report for the Croydon Metropolitan Centre Area Action Plan (CMC AAP)* which sets out the vision for the town centre which is a popular shopping and commercial location with substantial remaining development opportunities.

The plan accepts that much of the town centre has poor air quality and suggests the use of traffic control zones and residential development bans where pollutant levels are breached.

Option 21c is: "ensuring that new development is more accountable for its contribution towards air quality by requiring it to reduce emissions compared to what was previously produced by the site".

"The aim would be to deliver improvements to air quality and to take better account of the cumulative impacts of new development. These options could require new developments (or those over a certain size) in the centre to reduce emission levels by a certain percentage compared to the previous land use associated with the site."

Other options include requiring the design and layout

of new buildings in the centre to protect occupiers and users from air pollution: "This option could enable development for sensitive land uses such as housing to be in areas of the centre where it may otherwise have been refused."

"Design solutions such as building facades can be used as a screen against pollution, while gardens, courtyards and balconies can be located on the opposite side of the building from the road. High rise developments can place non-residential uses at lower levels where exposure can be eliminated."

A key goal of the consultation is to allow airing of views at a preliminary stage before they are set in stone and unable to be changed.

● The report can be found on the planning section of [www.croydon.gov.uk](http://www.croydon.gov.uk)

FUNDING

# 08/09 grant guidance released

Defra has released details of the latest air quality grant programme.

The grant (which replaced SCA funding) is popular and is usually three-times oversubscribed leaving many authorities disappointed (*AQB Sept 07 p4*). 2008/09 grant will be targeted towards:

- Authorities who have drafted or published an action plan;
- Those with proposals for measures to improve local air quality;
- Authorities who have designated or will be designating AQMAs and are undertaking further assessments

and implementing air quality action plans;

- Authorities which have been designated as “neighbourhood renewal fund” areas;
- Authorities who have identified the need to undertake further expenditure in respect of significant additional work, eg. to carry out a detailed assessment; and
- Authorities with monitoring stations measuring PM<sub>10</sub> which are affiliated to the Automatic Urban and Rural Network (AURN), or with monitoring stations measuring PM<sub>10</sub> identified by the Department for affiliation into the AURN,

whose particle monitors are not equivalent to the EU reference method.

Grant will be restricted to bids for monitoring equipment, dispersion modelling software, emission inventories and projects aimed at developing or implementing elements of air quality action plans (such as consultation workshops, public information campaigns) and measures which authorities might wish to take to improve local air quality for which there is no other source of funding.

- [www.defra.gov.uk/environment/airquality/local/aqgrant/index.htm](http://www.defra.gov.uk/environment/airquality/local/aqgrant/index.htm)

MONITORING

## Defra chooses Aetholometers for smoke

Air Monitors is to supply Defra with 22 units of dual-wavelength Aethalometers for installation into the UK black smoke monitoring network.

Integration of the Aethalometers into the network will be performed by Air Monitors along with NPL.

In 2006, Defra made a decision to expand and convert the existing black smoke network with instruments with more accuracy, but consistent with the traditional 8-port manual sampler. Seven commercial instruments were selected for comparison at a monitoring site on Marylebone Road in Central London overseen by ERG and NPL.

Two methods were found to be suitable, including the Magee

Scientific AE21 Aethalometer which matched EC thermal measurements (slope of 1.00), and provided useful correlation to the historical black smoke



On the stands at the recent Epuk spring workshop, it emerged that Steven Hoskin has left Enviro Technology and will join Air Monitors in June

index measurements.

Air Monitors boss Jim Mills said: “The Magee Scientific AE21 Aethalometer was found to be reliable over the continuous two-month evaluation period, providing continuous, real-time information about the black carbon mass concentration (primarily from diesel traffic emissions), and indications of aromatic organic presence from wood and biomass combustion using the instrument’s UV channel.”

To enable collection of data in real time and to facilitate the remote checking of instrument parameters Air Monitors will integrate a “data enabler” module into the instruments.

- More information [www.airmonitors.co.uk](http://www.airmonitors.co.uk)

PUBLIC HEALTH

## HPA consults on children’s health

The UK Health Protection Agency (HPA) has set out how it aims to improve child public health.

The new consultation follows UK agreement to take forward the WHO’s *Children’s environment and health action plan for Europe* (CEHAPE) which proposes action plans to improve child health, including improving air quality.

The HPA’s consultation aims to sum up what it is doing and should be doing to improve public health. Recommended areas for improvement include

addressing pollution-prompted asthma and the disproportionate burden of disease experienced by children in lower socioeconomic groups.

The consultation sets out a number of goals, including preventing and reducing respiratory disease due to outdoor and indoor air pollution, for instance by cutting emissions of outdoor air pollutants from transport-related, industrial and other sources.

It adds: “Outdoor air policy and legislation focuses on

achieving health based air quality objectives in all areas where populations are exposed. Action plans developed by local authorities could prioritise susceptible groups, including children, within the general population, and guidance could be provided on what actions are available and effective.

“However, evidence in this area is sparse, and care must be taken not to displace poor air quality so that other sensitive or vulnerable groups are disadvantaged.”

- [www.hpa.org.uk/cehape](http://www.hpa.org.uk/cehape)

IN BRIEF

### Tube changes

A number of changes have taken place to the diffusion tube database since the last release in February 2008. The latest version (v. 03/08) can be found on [www.uwe.ac.uk/aqm/review/diffusiotube310308.xls](http://www.uwe.ac.uk/aqm/review/diffusiotube310308.xls).

- The diffusion tube precision summary figure has also been updated at [www.uwe.ac.uk/aqm/review/tube\\_precision\\_2007\(Mar\\_08\).pdf](http://www.uwe.ac.uk/aqm/review/tube_precision_2007(Mar_08).pdf).

### Bus subsidy reform mooted

Bus subsidies may be reformed finally addressing criticism that fuel grants discourage operators from greening their fleets.

Local bus operators are currently given a duty rebate on diesel of 41p per litre (against the current duty of 51p per litre). As the Bus Services Operators Grant (BSOG) is currently paid per litre of diesel burned, so the less fuel efficient the bus the higher the subsidy payment (and the higher the pollution).

In particular, DfT has included proposals for a cap on payments for services with high average fuel consumption, a new rate for low carbon buses and support for the Safe and Fuel Efficient Driving demonstration project, known as SAFED (which has shown fuel savings of up to 12%).

- Local bus service support – options for reform can be viewed on [www.dft.gov.uk/consultation/s/open/bussubsidy](http://www.dft.gov.uk/consultation/s/open/bussubsidy)

### Porsche files case

Porsche officially applied for a judicial review challenging the Mayor’s £25 charge congestion charge in the High Court.

Porsche believes that the increase of the congestion charge from £8 a day, or £0.80 for residents, to £25 is unfair, disproportionate, will increase congestion and damage air quality in London.

- [www.porschejudicialreview.co.uk](http://www.porschejudicialreview.co.uk)

# Heathrow: sceptical response

Air quality responses are emerging following the Government's consultation on the expansion of Heathrow

**D**Ft released the consultation which proposed building of a third runway, sixth terminal and ending of runway alternation last year (*AQB December p1*). Responses from local authorities have focused on noise, air quality and climate change.

On air quality, a pledge contained within the Aviation White Paper that expansion could not be supported if it led to a breach of NO<sub>2</sub> proved the key issue at stake. The Government says it believes this condition will be met having convened a working group (the Project for the Sustainable Development of Heathrow (PSDH)) which concluded pollution would be below limits.

That process echoed that which took place on the noise side to remove objections. A Government study commissioned in 2002 looked set to conclude that there was considerably more public annoyance at aviation noise than officially recognised – until ‘peer reviewers’ were commissioned with their report discounting the findings, clearing the way for expansion as desired by the Government. On air quality, Hagan and others have subsequently used the Freedom of Information Act to extract emails written during PSDH which they say suggest the DfT could have influenced the air quality working group’s findings.

The air quality assumptions and findings have given local authorities much to work on. Modelling is an imprecise science at the best of times, so any conclusion that the EU NO<sub>2</sub> limit will be breached or met can lead to many arguments.

PSDH involved the country’s best aviation and modelling brains and their technical conclusions may be hard to challenge. It is the inputs that are most vulnerable, especially for road traffic where there appears to be some significant concerns about the quality of forecasts.

Protesters are driven by the intuitive feeling that a near-doubling of the throughput of the airport and the increase in vehicle numbers cannot possibly allow reductions in concentrations – especially given recent evidence that NO<sub>2</sub> levels have not been falling as fast as had been predicted.

Responses from councils include:

**Wandsworth** says: “It is fair to say that Wandsworth, which is fortunate to have access to technical input, has nevertheless experienced great difficulty in its efforts to understand the technical detail contained in the 1,000+ pages of material. In the time available, we have simply not been able to commission the kind of work needed to

understand fully the detailed modelling prepared by officials and BAA.

“The consultation claims that expansion can be achieved within EU air pollution limits taking effect in 2010. Yet the Government is already seeking a derogation until 2015 because it knows this requirement cannot be met. Even at this later date, the consultation still shows these limits being breached.

“The consultation is simply not credible in its optimistic assumptions on future improvements in pollution concentrations, aircraft fleets and road traffic vehicles. The lack of any sensitivity analysis is a critical weakness. The forecasts of future emissions levels cannot be considered robust. Neither is there evidence of any independent scrutiny of the data supplied by BAA and other stakeholders. Given the fundamental importance of air quality and noise tests to this consultation, these failings are unforgivable.”

The **London Borough of Richmond** says in its response: “It was a requirement of the Air Transport White Paper that a third runway at Heathrow should only go ahead in the timescales envisaged if air quality could meet the necessary legal standards. The council is not confident that the pace of technical improvements will continue at the necessary pace for emissions to reduce as required.”

It continues: “The consultation primarily focuses on the emissions from the airport operation and does not appear to include emissions from the local road network. Whilst the airport might not want to take responsibility for emissions produced outside its boundaries, it is not appropriate or fair to ignore them. The air quality forecasts would not be so confident if these emissions were included. An expanding airport will obviously result in increasing emissions, both within the airport and also from traffic accessing the airport.”

The council thinks it is wrong that an evaluation of pollution from the surrounding road network has been excluded, and claimed to be compliant by ignoring the pollution that is there. “If the Government is convinced that it can meet air quality limits, it is because the modelling is based on very optimistic assumptions about the emissions from future fleets. The council is not convinced that all emissions in the Heathrow area will be so improved as to give the headroom to allow the expansion to take place.”

Richmond notes that BAA would need to regulate activity on the airport in the event of approaching the environmental limits.

The difficulty here would be that some years are ‘bad’ years for, eg. NO<sub>2</sub>. So to be sure of not breaching the limit in any year, sufficient headroom would need to be left for a ‘bad’ year, as otherwise the airport will be in breach. This is on top of the uncertainties in modelling which will make it difficult to stay the right side of the limit, especially as BAA wants to fill the headroom with extra capacity rather than share the benefits of clean air with the community.

It is perhaps the **Environment Agency’s** response that is most notable. It is understood that this response took the Government by surprise – while Defra has been leaned on and prevented from speaking its mind about the impacts, the Environment Agency is not so easily influenced and was able to produce what is perhaps the most powerful statement against expansion (billed in the Sunday papers as a leak but actually posted on its website).

The Agency says: “We do not think that the evidence presented is sufficiently robust to conclude that the proposed Heathrow development will not infringe the NO<sub>2</sub> Directive limits, bearing in mind the uncertainties that need to be addressed. This is because the assessment of air quality pays insufficient attention to these uncertainties and to the range of possible future scenarios for issues like road traffic, meteorological variability, climate change, background air quality and atmospheric chemistry.

“We note that the impacts of worsening air quality (even within the identified limits) from expanding Heathrow are not yet monetised, and we urge DfT to complete this analysis as a priority since this may affect the overall economics of the options, given the potential for increased morbidity and mortality over a dense local population.

“On emissions, there is uncertainty in the performance of emission control technology for road vehicles in the future. One cannot be certain, for example, of the vehicle mix. Little information is provided on the emissions inventory for the road transport emissions outside the airport and how this may change in future.

“There is no rationale for the choice of 2002 as a representative year for air quality. In fact air pollution levels were higher in 2003 which it could be argued is the hotter, more photochemically active year which may become more common in the period under discussion, 2030 and beyond.

“The key finding of the study is that future road traffic growth will be offset by technological improvement so that NO<sub>x</sub> contributions from this sector declines

markedly allowing headroom for Heathrow development.

“In view of the importance and uncertainty of traffic emissions it is surprising that there is not a spread of future scenarios covering different plausible projections of road transport emissions, with which to test the robustness of the conclusions.”

The view from **Lacors** echoed that of the Environment Agency, namely that vehicle emission reductions could not be assumed.

Lacors says in its response: “The consultation suggests that improvements in air quality in the Heathrow area will be achieved primarily through increasingly stringent emissions controls on road vehicles. Though this may indeed be the case, the consultation fails to sufficiently address the emissions of air pollutants from the airport itself – both in terms of aircraft and ground operations. This is effectively allowing the aviation industry to pass on its emissions responsibilities to the road traffic sector. This is not in line with the widely accepted ‘polluter pays principle’, which forms the basis of the majority of pollution policy and legislation.”

**Epuk**, formerly the NSCA, said the lack of sensitivity testing for the modelling casts “serious doubt on the results”. “Figures from DfT show that the modelling predicts that a significant number of neighbouring properties will only just be under the 40µg/m<sup>3</sup> limit by 2020. This means that small departures of actual concentrations from the modelling will result in breaches of the air quality limits. We are also concerned that the consultation document appears to assume that a derogation (to 2015) will be obtained for NO<sub>2</sub> limits under the as yet un-finalised new EU Air Quality directive, and that even then breaches will still be occurring after 2015.

It adds: “Insufficient attention has been paid to variables and ranges of future scenarios, primarily regarding:

- Road traffic forecasts;
- Meteorological variability;
- Background air quality;
- Climate change effects (both on meteorological conditions and background air quality);
- Atmospheric chemistry (particularly background ozone).

“Furthermore we understand that the air quality case relies very heavily upon technological improvements in road vehicle NO<sub>2</sub> emissions making ‘headroom’ for aircraft emissions to increase. Previous tightening of the Euro emission standards have failed to deliver the scale of NO<sub>2</sub> reductions envisaged at the time of the

legislation, and expectations for further Euro standard improvements need to be subject to a range of scenarios.

Epuk wasn’t the only one to find one of the Government’s questions odd (Can mixed mode be introduced by 2015 and be compatible with compliance with the air quality limits in the vicinity of the airport?). Epuk says: “The consultation document estimates that exceedences of the NO<sub>2</sub> objective will still occur in 2015 making the inclusion of this question in the consultation rather puzzling.”

It cites the 2007 Aqeg nitrogen dioxide study which reported that concentrations of NO<sub>2</sub> were not falling as fast as concentrations of NO<sub>x</sub>: “Aqeg’s modelling work predicts almost constant, or even slightly increasing, values for urban NO<sub>2</sub> emissions over the period 2002-2005 and slight falls over the period 2005-2010. Beyond 2010 the report noted ‘currently available predictions of future primary NO<sub>2</sub> emissions percentages are subject to considerable uncertainty’.”

**TRL** was commissioned by the **2M** group of local authorities most affected by the plans. It starts off robustly: “Whilst it is accepted that the DfT consultants have attempted to undertake an appropriate assessment, it is apparent that the consultation documentation raise a large number of wide ranging questions. In general terms the documentation is not written in a style which might be easily understood by the general public – who are those that might be directly impacted by the proposed developments. In addition, the consultation documentation fails to provide sufficient background information to allow an in-depth evaluation of the robustness of the Government’s assessment and conclusions.”

**Air Quality Consultants’ Duncan Laxen** is a veteran of the long running Terminal 4 inquiry, and has advised Hounslow and Hillingdon. He submitted a list of detailed questions which were answered late, and DfT refused to allow him technical meetings to ask further questions: “The delayed response from DfT on some critical issues, and their refusal to allow a meeting between experts, has, in our opinion, significantly hampered this appraisal process.”

Laxen notes that current Defra technical guidance suggests models may be systematically under predicting NO<sub>x</sub> concentrations by 3.3% and NO<sub>2</sub> concentrations by 4.4% in 2002. This implies that exceedences of the annual mean objective for nitrogen dioxide could

potentially occur at modelled concentrations above about 38µg/m<sup>3</sup>.

For the 2015 scenarios, the number of properties exposed to concentrations above 38µg/m<sup>3</sup> significantly increases with the introduction of mixed mode when compared with segregated mode. Even with “roads mitigation” there are still 116 properties exposed to concentrations above 38µg/m<sup>3</sup>; and for the 2030 scenario, there are 115 properties exposed to concentrations above 38µg/m<sup>3</sup>.

Laxen believes that NO<sub>2</sub> concentrations have shown little decline: “Indeed, the concentration in 2007 is the same as in 1997. To achieve the predicted concentrations in 2010 and beyond would thus require a substantial ‘step change’ that appears wholly inconsistent with the empirical evidence to date.”

The consultation notes that “during full mixed mode, there will still be residual areas of exceedence which could be addressed by potential alternative measures”. Such measures could include “lower speed limits, possible traffic management measures and the use of proprietary photo-catalytic surface treatments which can help absorb NO<sub>2</sub>”. Laxen says no detailed information regarding these measures is provided – for example, how much area would need to be covered in these photocatalytic surface treatments in order to reduce NO<sub>2</sub> concentrations to an acceptable level.

Laxen concludes: “Whilst the technical reports provided by DfT to support the consultation document recognise the many uncertainties that are associated with the assessment, the evidence that is presented lacks transparency in many critical areas, and fails to provide plausible scenario tests that could have been used to demonstrate confidence in the outcomes. This is a critical weakness, given the reliance the Government has placed upon the expected improvements in emissions from both road traffic and aircraft. In addition, the assessments fail to take full and proper account of one of the principal recommendations arising from the PSDH report, that the sensitivity of the model output should be tested against the likely ranges in model input. This has only been partly achieved in some areas, disregarded in others.

**Wandsworth’s** conclusion sums up the mood in West London: “Our clear impression is of a rushed consultation, conducted with the sole purpose of delivering a decision on expansion that has in effect already been announced.”

## SCIENCE SHORTS

### Semen DNA damage

Pollution can affect DNA, Czech researchers suggest.

Researchers recruited young men and took regular semen samples for analysis during periods of high and low pollution.

A significant association was found between high pollution and fragmented DNA which could affect male fertility.

**GSTM1 genotype influences the susceptibility of men to sperm DNA damage associated with exposure to air pollution, Jiri Rubes et al, *Mutation Research* Vol. 625 (2007) pp20-28.**

### Offspring effect

Pregnant mice exposed to diesel exhaust were found to be particularly susceptible to allergic responses.

Mice inhaled both diesel particles and inert control particles and their allergic responses measured. Non pregnant mice had the expected minimal response to inert titanium oxide, while pregnant mice showed 'robust and persistent' acute inflammation to both the inert particles and diesel.

Researchers then found that the offspring of those exposed both to the inert and diesel particles had asthma susceptibility.

**Pulmonary exposure to particles during pregnancy causes increased neonatal asthma susceptibility A Fedulov et al, *American Journal Respiratory Cell Molecular Biology*. 2008 Jan 38(1):57-67.**

### Piles of dust

Dust piles emit less nuisance particles if they are of a medium size, French researchers suggest.

Using modelling techniques of differing stockpile configurations, a large quantity of smaller stockpiles led to less dust than a smaller number of large stockpiles. This was because smaller stockpiles protected each other from much of the wind effect.

**Effect of aggregate storage piles configurations on dust emissions, T Badr et al, *Atmospheric Environment*, Vol. 41 pp360-368.**

## OLYMPICS

# Beijing road blocks not enough

US researchers do not believe that local road closures will sufficiently improve air quality for the forthcoming Chinese Olympics.

China has planned many interventions in a bid to improve the notoriously bad air quality for the games. Some athletes say they may wear face masks during athletic events to reduce the chance of lung

damage and improve performance. The most drastic interventions planned include draconian road closures in Beijing during the games.

But the US researchers say: "Based on EPA models, some 34% of PM<sub>2.5</sub> and 35-60% of ozone during high ozone episodes at the Olympic stadium site can be attributed to sources outside Beijing.

Neighbouring districts can contribute 50-70% of Beijing's PM<sub>2.5</sub> and 20-30% of ozone, controlling only local sources in Beijing will not be sufficient to attain the air quality goal set for the Olympics."

**Air quality during the 2008 Beijing Olympic games, David Streets et al, *Atmospheric Environment*, Vol. 41 pp480-492.**

## PARTICLES

# Protein content in particles

US researchers have analysed ambient particles to see how much protein they contain. Such proteins could be responsible for various health effects such as allergic reactions.

300 samples were taken of air in the PM<sub>2.5</sub> range and PM<sub>2.5-10</sub> range. Total protein mass was

used as an all inclusive indicator of biologically based aerosols. The source could be pollen, mould, bacteria, insect debris, faecal matter or dander which may induce irritation, allergic, infectious and chemical responses in exposed individuals. Between 1% and

4% of mass for the coarse particles was down to protein, while between 1-2% of fine particles were protein.

**An evaluation of the protein mass of particulate matter, M Menetrez et al, *Atmospheric Environment* Vol. 41 pp8264-8274.**

## URBAN HEALTH

# Black smoke and SO<sub>2</sub> still important

Current low levels of black smoke and sulphur dioxide still represent a health risk, Imperial College London researchers claim.

A small area study was carried out at ward level comparing black smoke, sulphur dioxide and deaths. 63 wards were studied.

Researchers concluded: "Significant associations were found between black smoke and SO<sub>2</sub> concentrations and

mortality. The effects were stronger for respiratory illness than other causes of mortality of the most recent exposure periods (shorter latency times) and most recent mortality period (lower pollutant concentrations)." Increased risks of death were found to be 3.6% per 10µg/m<sup>3</sup> increase in black smoke, 13.2% per 10ppb increase in SO<sub>2</sub> – higher for the most recent four year period studied.

They conclude: "These findings add to the evidence that air pollution has long term effects on mortality and point to continuing public health risks even at the relatively lower levels of black smoke and sulphur dioxide that now occur."

**Long term associations of outdoor air pollution with mortality in Great Britain, Paul Elliott et al, *Thorax*, Vol. 62 pp1088-1094.**

## EXPOSURE

# Moving to clean air can help

Even old people can benefit from moving to an area with cleaner air, Swiss researchers say.

The conventional view was that once the lung had formed, moving to cleaner areas would not heal the lung by a significant amount – only children would benefit from making such a move.

The Swiss researchers looked at nearly 10,000 adults aged to 60 and measured their lung function and local air quality results. The group were then

revisited eleven years later when pollution levels had declined.

Researchers explained: "The net effect of a decline of 10µg/m<sup>3</sup> in PM<sub>10</sub> over an 11 year period was to reduce the annual rate of decline in the lung measure FEV1 by 9% and FEF25-75 by 16%. Decreasing exposure to particulates appears to attenuate the decline in lung function related to exposure to PM<sub>10</sub>, with a stronger effect for small airway function.

"Our findings provide further

support for a causal role of exposure to air pollution in respiratory health. Relatively small reductions in exposure to PM<sub>10</sub> have measurable benefits for lung function, suggesting that a decline in air pollution, even from low levels, may have positive consequences for public health."

**Reduced exposure to PM<sub>10</sub> and attenuated age related decline in lung function, Sara Downs et al, *New England Journal of Medicine* Vol. 357, pp2338-47.**

SCIENCE SHORTS

**TRAFFIC POLLUTION**

**Could pollution lead to diabetes?**

Traffic pollution could increase the incidence of diabetes, US researchers suggest.

It has been suggested before that pollution could worsen the condition of diabetes sufferers, this study suggests long term exposure to traffic pollution could increase the risk of having diabetes in the first place.

Nearly 8,000 respiratory patients in Toronto and Hamilton were studied and their exposure to nitrogen dioxide (considered to be a marker of traffic pollution) was established.

Researchers found that for each 1ppb increase in nitrogen dioxide exposure in Toronto and Hamilton there was a 5.5% and 3% respective increase in risk of having diabetes.

Across the interquartile range (about 4ppb), there was a 17% increase in risk for women to have diabetes after adjusting for confounders such as age, body mass and income. There were no positive associations for men.

The Toronto researchers conclude: "Diabetes is a major cause of worldwide morbidity

and mortality and the increased prevalence of diabetes in Ontario has already passed WHO projections for 2030. These results suggest that common air pollutants are associated with diabetes and warrant more investigation to determine if this is a cause and effect relationship."

**The relationship between diabetes mellitus and traffic related air pollution, Robert Brook et al, *Journal of Occupational and Environmental Medicine*, 2008, Vol. 50, pp32-38.**

**URBAN POLLUTION**

**Pollution affects London walkers**

Pollution exposures differ markedly when walking on busy streets or near a park, London researchers have found.

60 adults with mild or moderate asthma walked for two hours along Oxford Street and on a separate occasion, Hyde Park with real-time exposure and physiological measurements.

Walking for two hours along Oxford Street induced reductions in FEV lung function (by 6.1%) and FVC (5.4%). The effect was greater for those with moderate asthma than mild asthma.

The Oxford Street walk also led to higher levels of sputum inflammation and airway acidification, with changes most consistently linked to exposures to ultrafine particles and elemental carbon.

Researchers said: "Previous studies of the direct effects of diesel exhaust on asthma in humans have been conducted under laboratory conditions with fresh diesel from which gaseous components may have been removed. Our observations serve as a direct demonstration and explanation of the epidemiological evidence that

associates exposure to diesel traffic with the severity of asthma and of the symptoms that many patients with asthma report after exposure to diesel exhaust.

"We do not believe that these findings should deter most patients with asthma from visiting or working in busy urban environments," researchers concluded.

**Respiratory effects of diesel traffic in persons with asthma, James McCreanor et al, *New England Journal of Medicine*, Vol. 357 pp2348-58.**

**PERSONAL EXPOSURE**

**Journey time exposure compared in Leicester**

Personal journey time exposure to pollutants has been measured by a group of Leicester researchers.

Samples of total suspended particles, PM<sub>10</sub>, PM<sub>2.5</sub> and PM<sub>1</sub> were simultaneously collected by personal light scattering monitors during walking and car journeys. 33 pairs of measurements were made using a standard circular route.

Average exposures were higher for walking – 1.2 times higher than car occupants for coarse particles, 1.5 for PM<sub>10-2.5</sub>, 1.3 for fine particle PM<sub>2.5-1</sub> and 1.4 for ultrafine (PM<sub>1</sub>). Exposures while walking were

70% higher than nearby fixed site monitoring would suggest, while in-car exposures were 25% higher. PM<sub>2.5</sub> exposures, both for walking and in car, were highly correlated with a rural fixed site monitor located 30km south of Leicester.

Researchers commented: "This study has measured exposures simultaneously while waking and travelling by car along the same urban route. Results show that exposures to particles while walking may be substantially higher than those experienced in a car by a factor of up to 50% or more.

"This appears to be largely

because a car acts as a semi-sealed environment that does not respond quickly to changes in ambient concentrations."

They add that exposure to fine and ultrafine fractions appears to be dominated by regional particles.

They point out that if the results apply to other cities, there are major policy implications as exposures may not be readily controlled by local policy interventions.

**Journey time exposure to particulate air pollution, John Gulliver et al, *Atmospheric Environment* Vol. 41 pp7195-7207.**

**Asthma and pollen**

Canadian researchers have compared hospital admissions for asthma and levels of ambient air pollution and pollen.

57,000 emergency hospital admissions for asthma were compared to concentrations derived from fixed-site monitors and pollen samples between 1996 and 2002.

Positive associations between admission levels and air pollution were found between April and September but not for the rest of the year. Effects were strongest among young children, for example an interquartile increase in NO<sub>2</sub> and CO led to a 50% and 48% increase in admissions for those aged 2-4yrs. A strong effect was also seen among those 75 and older, and ozone and particulate matter were also associated with admissions.

Air pollution impacts remained after adjustment for aeroallergen levels.

**Outdoor air pollution and emergency department visits for asthma among children and adults, a case crossover study in Northern Alberta, Canada, P Villeneuve et al, *Environmental Health*, 2007, Vol. 6. (1) 40.**

**Puertollano pollen**

Spanish researchers have found that pollen-sensitive residents are at higher risk from pollutants such as PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub> and ozone.

**Air pollution and seasonal asthma during the pollen season, a cohort study in Puertollano and Cuidad Real, Spain, F Feo Brito et al, *Allergy*, Vol. 62. pp1152-1157.**

**Brain damage**

Pollution can damage the brain, Canadian researchers believe.

Rats were exposed to particles and ozone which were found to change the behaviour of genes involved in the brain and pituitary gland function.

**Air pollution alters brain and pituitary endothelin-1 and inducible nitric oxide synthase gene expression, EM Thomson et al, 2007 *Environmental Research* Vol. 105(2):224-233.**

As is customary, the Epuk spring workshop uncovered plenty of grievances to throw in the direction of Defra.

Poor old Jonathan Lartice was dumped with the task of fielding local authority angst. And all credit to the guy, like Defra air quality notables before him (Furness and Minotti) he hung around in the bar to tie up loose ends rather than scurrying back to the Big Smoke as some of his colleagues are apt to do.

In his public presentation, he made it clear that he (being piggy in the middle) was not able or willing to talk about Heathrow, instead muttering: "Feel free to email me on the Heathrow questions – if you must!"

As Heathrow is so central to air quality policy, this caused difficulties for many who wanted answers. Various tactics were employed to breach the Lartice defences, which remained unbroken, perhaps because Defra really has no say in what is going on there.

Serial Hounslow troublemaker Rob Gibson introduced a self imposed £1 fine every time he mentioned the H-word. By the end of a five minute soapbox session, Epuk boss Phil Mulligan's charity marathon fund was several pounds richer.

Also traditional at the EPUK workshop is the handing-out of the *Jack Pease Bottom Award*.

Your editor had been keeping a low profile during the event hoping that the award (conceived by loyal readers to reward frequent mentions in *AQB*) would be forgotten, not least because Mark Daly of Sheffield would win it once again. But in the true 'bottom up' spirit of the trophy, readers applied pressure for the bottom to be handed to someone.

So to avoid giving it to Daly again, we simply made up some new rules. What about awarding the bottom to the best stonewallers? Ian McCrae of TRL would be a front-runner for persistently refusing to say what the impact of the new emission factors would be, Jonathan Lartice of Defra was of course a contender but let-off as it's not his fault Defra is being bullied on Heathrow. We understand Lucy Parkin of the GLA was expecting a mention within this category, but heck, GLA's muzzling of open discussion is yesterday's news.

What about a troublemakers award? Well it was no accident that Rob Gibson of Hounslow and Val Beale of Hillingdon were sitting next to each other, no doubt plotting some new angle of attack on the airport. Newcomer to this column is Iarla

Kilbane-Dawe now of AEA, who had earlier mounted a blistering attack on Comeap (for endlessly talking amongst themselves rather than pushing the perils of air quality (well it takes them over a year to get their minutes out so give 'em a break with anything more weighty!)).

We settled on a 'sticking your neck out for the good of air quality' award – and once that was accepted, there was one clear winner. Step up a somewhat speechless Ruth Calderwood of the City of London to accept the bronzed bottom.

Calderwood deservedly wins the award for standing up against the single-minded promotion of biomass boilers whatever the cost to air quality.

The shipping lobby has recently got off its backside and started to defend itself from the charge of being a gross polluter.

Naturally it requires a degree of creativity to defend an industry that appears to revel in burning sludge. But it takes a leap of faith to believe its claim that diesel will become 50% more expensive if it is forced to clean up its act.

Shipping, along with aviation, sees itself as too big and powerful to bother with domestic pollution trivia, however, the bigger they are, the harder they fall.

## AIR QUALITY EVENTS 2008

**15th-16th April**

**THE ELEVENTH ANNUAL REVIEW MEETING ON OUTDOOR AND** indoor air pollution research conference held by the Institute of Environment and Health conference to be held at Cranfield University, Website [www.le.ac.uk/ieh](http://www.le.ac.uk/ieh)

**14th May**

**ANNUAL AIR QUALITY FORECASTING SEMINAR**

organised by AEA to be held in London contact Iarla Kilbane-Dawe email [I.Kilbane-Dawe@aeat.co.uk](mailto:I.Kilbane-Dawe@aeat.co.uk)

**11th June**

**INVESTIGATION OF AIR POLLUTION STANDING CONFERENCE**

Iapsc conference to be held at the SOAS Brunei Gallery in London. Website [www.iapsc.org.uk](http://www.iapsc.org.uk)

**23rd-25th June**

**12TH CONFERENCE ON COMBUSTION GENERATED NANOPARTICLES**

to be held in Zurich [www.lav.ethz.ch/nanoparticle\\_conf/index](http://www.lav.ethz.ch/nanoparticle_conf/index)

**22nd-24th September**

**AIR POLLUTION 2008**

The 16th International Conference on Modelling, Monitoring and Management of Air Pollution will take place in Skiathos, Greece. [www.wessex.ac.uk/conferences/2008/index.html](http://www.wessex.ac.uk/conferences/2008/index.html)

**24th-25th September**

**INHALED PARTICLES**

to be held in Manchester [www.bohs.org/standardTemplate.aspx/Home/Events/InhaledParticlesXConference2008/Programme](http://www.bohs.org/standardTemplate.aspx/Home/Events/InhaledParticlesXConference2008/Programme)

**29th-30th September**

**13TH EIONET AIR QUALITY MANAGEMENT AND ASSESSMENT**

workshop to be held in Brussels. website <http://air-climate.eionet.europa.eu/announcements/ann1202829655>

**15 October**

**AIR QUALITY UPDATE**

EPUK conference to be held in Birmingham, [www.environmental-protection.org.uk](http://www.environmental-protection.org.uk)

**16/17th December**

**MONITORING AMBIENT AIR 2008: SPECIATION AND AMBIENT**


air quality, RSC AAMG conference to be held at the Society of Chemical Industries, London, website <http://rsc-aamg.org/Pages/Meetings.html>

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## CREDITS



**Editor: Jack Pease**

tel 01737 642283 (fax 0870 135 8189)

email [jackpease@empublishing.org.uk](mailto:jackpease@empublishing.org.uk)

Marketing: Jackie Luff tel 01737 645348

email [jackie.luff@empublishing.org.uk](mailto:jackie.luff@empublishing.org.uk)

Website: [www.air-quality-bulletin.org.uk](http://www.air-quality-bulletin.org.uk)

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