

AIR QUALITY

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BULLETIN

ECONOMICS

Air impacts are large

A high level Government report points out that air pollution costs rank alongside congestion, traffic accidents and obesity.

The claim was made in a Cabinet Office-led report into urban areas endorsed by transport minister Sadiq Khan. The report says: "The measurable costs to society of poor air quality and road accidents in urban areas are each similar to those of congestion. The evidence shows that the measurable costs of urban transport of congestion, road accidents and poor air quality are each in the region of about £10 billion per annum. Transport policy can also make a positive impact to reducing the £10 billion cost of physical inactivity and obesity."

The paper spells out the policy implications for this: "In the past there has been a tendency for urban transport policy to be broadly based upon reducing congestion reflected in the DfT's urban congestion targets and the Transport Innovation Fund. This partly reflected the economic analysis of the marginal cost of transport and concerns about reducing the barriers to economic growth.

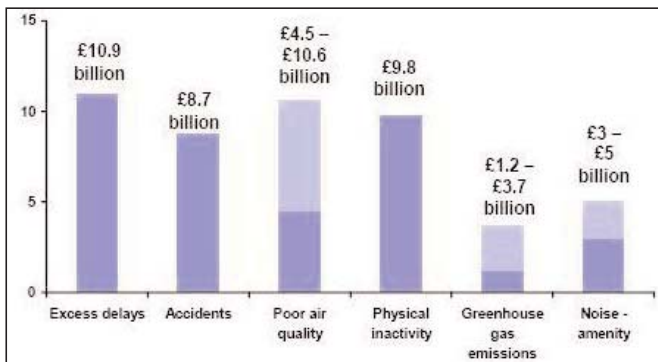
"The cost estimates presented in this paper demonstrate the wider costs of transport are large in urban areas and of comparable size to the costs of congestion. This supports the department's view that the five goals for transport as set out in *Delivering a Sustainable Transport System* are of equal intrinsic weight."

But the paper then warns that this does not mean that air quality should get more money: "The conclusion that the costs of excess delays, poor air quality, accidents and physical inactivity are of comparable size does not mean that similar amounts should be invested in

each objective. However, in a world of tight fiscal constraints, interventions which contribute towards each objective may particularly offer high value for money."

DfT's Iain Forbes, speaking at a recent conference said: "This is an important report and will influence our policy objectives. In particular, the evidence that air quality impacts are as much as congestion will help us develop strategies."

● The Cabinet Office report *The wider costs of transport in English urban areas in 2009* can be viewed on www.dft.gov.uk/pgf/regional/policy/urbantransport



Wider costs of transport in English urban areas (£bn per annum)

LONDON

Assembly to scrutinise Heathrow condition

The London Assembly is to scrutinise environmental conditions on possible expansion at Heathrow airport to see if they are sufficient to deal with concerns about noise, air quality and climate change.

It will make an assessment of the proposed conditions and is calling witnesses including John Stewart of Hacan and Val Beale, air quality officer for the London Borough of Hillingdon. The Committee will also

gather written evidence before publishing a report of its findings early next year.

● The meeting can also be viewed via webcast at: <http://www.london.gov.uk/assembly/webcasts.jsp>

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IN BRIEF

Defra told to open up

Air quality campaigner Simon Birkett is "jubilant" that Defra has been ordered to reveal emails on discussions between itself and the London Mayor. As *AQB* went to press, however, Defra looks set to appeal the decision.

The Information Commissioner's Office (ICO) accepted Campaign for Clean Air in London's (CCAL) complaint that the government should release full details of its meeting with the Mayor of London on air quality matters in January.

Birkett said: "CCAL complained to the ICO because the briefing papers and communications involved may seriously call into question the good faith or truthfulness of statements made by central or London government to the European Commission in relation to air quality.

"The ICO's almost unprecedented judgment, in less than a month and fully upholding CCAL's complaint, highlights how wrong the government was to withhold all this information and the time-critical nature of it. CCAL urges the government to release the full package of information immediately.

"The government's desperation to salvage its application for a delay to comply with laws for dangerous airborne particles in London can be no excuse for it willfully and blatantly breaking another environmental law."

UK and other dirty states await fate

A decision from Europe on whether the UK will be granted an extension to PM₁₀ objectives is imminent.

UK is among only three states where a decision is still due – the other two are Poland and Bulgaria. The UK submitted its plan which relied on policies in London that have subsequently been withdrawn or amended (*AQB* May p1).

IN BRIEF

Scotland goes mobile



Scottish air quality is now available on a mobile.

The mobile pages give access to:

- Latest overall level for Scotland;
- Personalisation of the pages – you can save your location so you always see the levels where you are;
- Forecast information;
- AQ information;
- Access to information about all the monitoring sites in the network, including a location map.
- www.scottishairquality.co.uk/mobile

Bonfire night dissected

AEA has released a report describing bonfire night in 2007.

Bonfire night in 2007 fell on Monday night, most celebrations occurred over the weekend preceding bonfire night, which also coincided with a large high pressure and light winds over some parts of England. Moderate, high and very high pollution due to PM₁₀ were recorded in many areas.

AEA added: “2007 afforded the first opportunity to examine measurements of both volatile and non-volatile PM₁₀ from Teom FDMS instruments. In all cases the majority of the PM₁₀ was found to be in the non-volatile fraction. Despite the relative infrequency of these events in recent years, bonfire night may still cause a significant air quality problem under certain conditions.”

● *Air pollution forecasting report: Bonfire night 2007* can be viewed on www.airquality.co.uk/reports

MAYOR'S STRATEGY

Disquiet on London strategy

Responses are trickling in to the London Mayor's draft air quality strategy. The watered-down strategy was released for limited consultation last month (*AQB November p8*).

The London Assembly has warned Boris Johnson that the draft strategy is “missing key information and needs considerable work to make it into a robust and effective plan”. It wants to see included:

- The health benefits of the strategy;
- Costings for the strategy's proposals;
- Timescales agreed with key partners which recognise the need for urgency;
- Projections for pollutant concentrations;
- Projections for scenarios with and without the implementation of the strategy.

Camden councillors are seeking reassurance that London strategy measures will be funded given they do not currently appear in the budget: “A definitive business plan needs to accompany the strategy in order to guarantee that measures proposed will be implemented.”

They add: “The strategy states that NO_x emissions must be lowered by 80% to guarantee compliance with NO₂ by 2014. However the measures proposed only anticipate NO_x reductions of 35-40% by 2015. The council would welcome clarification of these statistics and how the remaining 40-45% reductions in NO_x will be achieved.”

It asks for extensive studies into the value of street sweeping as a way of tackling non exhaust transport sources.

The City of London says: “In light of the very tight timescale

in which to develop and implement effective measures, the City of London would like to register its concern over the apparent lack of proposals at this late stage, and hopes to work with the Mayor in the very near future on the development of effective measures to reduce PM₁₀ in the specified areas in the City.

“The Mayor has made a proposal to delay phase 3 of the Low Emission Zone (LEZ) to 2012. This is too late for compliance with the PM₁₀ limit value and is therefore a concern. The City would like the strategy to be clear about which additional measures in the strategy are likely to achieve the equivalent reduction in PM₁₀ emissions by the 2011 deadline.

“The City is concerned that the Mayor's commitment to many proposals in this draft appear vague, due to the choice of language such as ‘will consider’ and ‘seek to ensure’. The strategy would benefit from firmer proposals for some of the more uncertain measures in the next draft.

“Although increasing the amount of street vegetation is very desirable, the impact of vegetation on air quality appears to be largely unquantified and consequently should not be relied upon to achieve the limit values.

“The strategy states that a 15 year age limit will be introduced for taxis from 2012. The City understands that this approach has been proposed as the abatement equipment fitted to taxis to make them Euro 3 compliant has not been very effective. The City would like further information and clarification on this particular

policy, as the existing taxi emission strategy already requires all taxis to meet Euro 3 emission standards for PM₁₀ and NO_x. A 15 year age limit in 2012 would take us back to 1998 when taxis were only required to be Euro 2.

“Euro 2 standards are not as tight as Euro 3, so it appears that this policy would not achieve anything.

“The strategy suggests that London boroughs may wish to develop their own low emission zones, in addition to the Londonwide LEZ. This approach seems impractical and potentially very confusing. For a city like London, a LEZ would need to cover a wide area to be effective. The City would like the next strategy draft to explain why a central / inner London LEZ covering, for example the congestion charge zone, or within the north / south circular was discounted.”

The City continued: “The strategy also says that, in order to avoid confusion across the country about standards, and minimise compliance cost for operators, the Mayor will lobby central government to introduce a common framework for LEZ scheme across the country. This appears to go against the proposal for small borough-led LEZs, which would inevitably be tighter than the London scheme.”

The Environment Agency is understood to be uncomfortable with the London strategy as much of it is based on modelled reductions in pollutants that are not born out by measurements.

There is scepticism that vegetation produces a 20% drop in PM₁₀, the impact is more likely be ‘marginal’.

CONFERENCE

RSC to air concerns about compliance

As the EU legislation covering air quality starts to bite, many problems with compliance are emerging, claims ERG's Gary Fuller.

Fuller is helping organise a conference for the RSC this month that will focus on these major current challenges and how technology and regulation

should be adapting to address the challenges of the future.

“Our Royal Society of Chemistry conference will be introduced by internationally recognised experts to set the scene at the national and European level. It will bring together leading scientists and policy makers, and will provide

a broad and up-to-date survey of regulatory and scientific issues, including health effects and future perspectives.”

● The conference will take place on Wednesday 9th and Thursday 10th December 2009. www.londonair.org.uk/london/asp/news.asp?NewsId=AAMG Meeting

GOVERNMENT POLICY

Fines to be shared with councils?

Environment minister Jim Fitzpatrick has given a veiled warning that councils who fail to take their air quality duties seriously may share EU fines.

At the recent air quality summit, there was a lot of talk about the imminent decision by Europe on whether the UK's plan for PM₁₀ will be accepted and an extension granted or a fine levied on the UK government for infraction. One council asked whether government would pass the fines on to local authorities, Fitzpatrick said: "If we are going to be hit by fines from Europe, why should the taxpayer pay when there are local authorities not doing what they should be doing on air quality. Why should we all pay if councils are not doing what the good guys are doing?"

"I don't know whether there is a mechanism to pass the fines



Air minister Jim Fitzpatrick

on, but I will be very surprised if government lawyers are not looking at it."

TfL low emission zone strategy manager Michele Dix was asked what she would like to see resulting from the conference. She said she would like £70m-£100m from central government to implement air quality policies in London, confounding critics that suggested the recent London strategy was uncoded.

Lacors leader Paul Bettison said: "The UK risks incurring

huge EU fines if we don't meet targets on time. Local government has a key role in improving air quality, but we cannot solve the problem alone. We often lack the controls to improve air quality. Simply imposing additional duties on local government without the necessary powers and funding is pointless. We need greater levers over road traffic sources such as buses and roads currently outside our control.

"The threat of EU fines makes the case for investing in improving air quality now. Additional funding for public transport improvements, low emission zones and public awareness campaigns are required if we are to make significant improvements.

"There is also a challenge for there to be more joined up working across councils as well as central government."

Editor's comment:

The summit was intended to show councils that Defra and DfT were working together to improve air quality – and that it was time for the worst councils to follow the lead of the best to unlock action on air quality.

This was a laudable aim, somewhat undermined by Defra and DfT ministers nipping in and out so quickly that they couldn't simultaneously sit on the same podium (as might be expected at a summit).

Hit by repeated criticism of the Highways Agency, DfT minister Sadiq Khan and officials both claimed that DfT and Defra worked closely together on environmental issues, and they urged councils to make contact with the Highways Agency. A Rushmoor councillor interjected that his authority had plenty of contact, but no engagement, which says it all.

Michele Dix, responsible for the London low

emission zone for TfL, looked as though she wanted to be somewhere else, as well she might given the weakening of the low emission zone. But she defended that.

Politicians delivered stirring speeches and exhortations, but ultimately the lack of any solid policy announcements from ministers and officials was disappointing. This contrasted heavily with the enthusiasm of local authorities present who had come to share good practice.

Sadly, it goes without saying that local authorities that can't be bothered to do anything about air quality didn't bother to attend. While central government wouldn't have inspired them, their active colleagues in other authorities might have done. If the laggards keep their heads firmly in the sand, they may miss the early warning signs that they might be in trouble.

REGIONAL POLLUTION

Transboundary report up for consultation

Experts have undertaken a review of transboundary air pollution. Defra commissioned the Centre for Ecology and Hydrology (CEH) to coordinate a group of scientific experts to produce a *Review of transboundary air pollution* (RoTAP) which will feed into future policy. The review focuses on the main chemicals causing acid deposition, eutrophication, ground level ozone and heavy metal pollution in the UK, namely

SO₂, NO_x, ammonia, aerosols (particulate matter), heavy metals, nitric acid and ozone.

The report is among many of the voices now warning about the divergence of emission predictions and real life: "There is a noticeable change in the concentration trend from 2006 onwards, with a decreasing trend changing to a slight increase. In contrast the emission estimates show a continued decrease. Whilst the increased concentrations may be

caused by unusual meteorological conditions, this seems unlikely across the three years of data that are available. It may be that the emissions inventory is underestimating emissions from the more modern vehicles in the fleet, and this results in the divergence of the emissions and concentration trends with time."

● *A review of acidification, eutrophication, heavy metals and ground-level ozone in the UK* www.rotap.ceh.ac.uk

IN BRIEF

Mark moves on



Sheffield air quality boss Mark Daly is moving jobs.

Daly, front man for South Yorkshire's Care4Air campaign and previous winner of the AQB 'bottom' award, is moving to climate change within the council.

He will still have some involvement with air quality and Care4Air, however he will relinquish the chair of the lapsc air quality conference organisation.

● **Editor's comment:** if one were to rank individuals that have made a real difference to air quality, Daly would be right up there. His contribution will be sadly missed. Who will be the next air quality champion?

Mcerts for Turnkey

Turnkey Instruments has been awarded Mcerts certification for two of its particulate monitors.

Turnkey's Topas and Osiris products have been approved by the Environment Agency's scheme. Turnkey says: "Mcerts ensures that the public receive reliable information about air quality from businesses and regulators can feel confident that equipment is recording accurate data. Companies investing in the products know that they are complying with UK regulations, and that they are demonstrating a commitment to environmental issues.

● www.turnkey-instruments.com

Low emission office

Government has launched the cross-Whitehall Office for Low Emission Vehicles.

● website www.dft.gov.uk/pgr/sustainable/olev/

IN BRIEF

Kaizen box from SupportingU

Monitor support firm SupportingU has launched its new monitor housing which it has named the Kaizen. In a promotion launched at Epuk's recent conference, it is offering a box for just 1p.

Richard Wyatt says the enclosure was designed to fulfill criteria that SupportingU felt were not being met by the other options in the industry.

He told *AQB*: "Our guidelines for design were that the enclosure should present ease of use for the local site operator, should provide an easy solution for servicing and repairs, have a small footprint and be built with environmental issues in mind."

● www.supportingu.co.uk

Cleantech showcased

Rushlight Award entrants and other firms are exhibiting at a Clean Technologies conference in London on 28th January. Rushlight Awards will be announced at a gala dinner with various clean tech categories including air pollution.

● www.rushlightawards.co.uk

Register goes live

The European Commission and the European Environment Agency has launched a comprehensive new European pollutant release and transfer register – E-PRTR.

The register contains information about the quantity and location of pollutants released to air, water and land by industrial facilities throughout Europe.

It includes annual data for 91 substances and covers more than 24 000 facilities in 65 economic activities (covering nearly all non-transport NO_x emissions and 76% of SO₂ emissions). It also provides additional information, such as the amount and types of waste transferred from facilities to waste handlers both inside and outside each country.

● The European Pollutant Release and Transfer Register can be viewed on <http://prtr.ec.europa.eu/>

EPUK AIR UPDATE CONFERENCE HELD IN BIRMINGHAM LAST MONTH

NO_x and NO₂ off the rails?

Leeds University's David Carslaw warned Epuk's conference held in Birmingham last month that official NO_x and NO₂ projections may be "pretty optimistic".

There has been growing questioning of Defra assumptions and forecasts on NO₂ and NO_x. Defra has assumed – for both macro and local forecasts – that NO₂ would fall along with predicted vehicle emissions. But this has not happened and Defra has been accused for "deceit" for continuing to rely on flawed assumptions (*AQB May p3*).

Carslaw revisited data used in 2005 by Aqeg to formulate policy on NO₂ and subsequently by Defra to formulate the air quality strategy.

At Marylebone Road in 2005 there were 800 exceedences of the 200µg/m³ hourly NO₂ limit, and these were predicted to have dropped to about 200 by now, along with a 5% annual reduction in NO_x. Carslaw said the "sting in the tail" is that there had been little change in NO_x concentrations in the past five to seven years (as well as NO₂).

"We should be targeting NO_x concentrations rather than

specifically NO₂. NO_x is the key to regional ozone, secondary particle formation, acid deposition and climate impacts."

If NO_x is key, said Carslaw, then evidence from York is very worrying. He cited remote sensing measurements taken from 6,000 vehicles which show that while petrol NO emissions have dropped dramatically, diesel NO emissions haven't (remote sensing measures NO rather than NO_x or NO₂).

Carslaw adds: "The measurements show that diesel NO_x emissions have not changed over 15-20 years. Modern technology diesels look like they may be emitting more, not less NO than Euro 1 and older vehicles. This has not been anticipated and could be fundamental to the issue of why concentrations are not falling in line with predicted emissions."

ERG's Gary Fuller added: "2010 is practically tomorrow and the predicted reductions have not happened. Really our 2010 predictions should just look like 2004. If we continue to make optimistic assumptions then nothing is going to happen."

Gwyn Jones of AEA said:

"Looking ahead to 2015, we cannot continue to rely on technology for improvements."

Steve Crawshaw of Bristol made the point that measurements disagreed with projections contained in technical guidance (TG(09) Box 2.1): "Our environment team is asked to comment on development proposals which can be accommodated within the continually reducing predictions of emissions. But we are not seeing the reductions in concentrations."

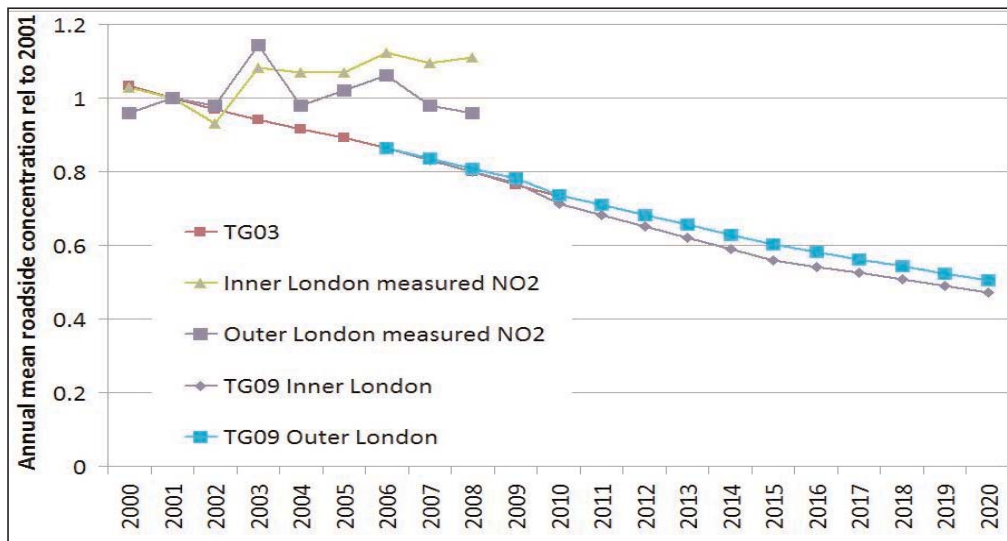
His point was that developers are citing the dramatic reductions in emissions in the future, allowing headroom for a development to take place in areas where pollution is currently a problem, or avoiding the need to require mitigation. But the necessary concentration reductions are unlikely to happen given recent measurement trends. We have to refuse or grant planning permission based on these predictions."

Defra's air quality manager Robert Vaughan admitted to the conference that projections were optimistic. He added that trends "so far don't reflect that optimism".

● More on NO_x/2 next month.

TRENDS

Is NO₂ falling as was predicted by guidance?



Developing the argument raised by Bristol's Steve Crawshaw (see above), ERG's Gary Fuller has kindly prepared this graph for *AQB*. It shows actual NO₂ measurements in London between 2000 and 2008, and the predictions made in 2003 technical guidance. The gap between predicted and actual is clear. Defra and local authorities are supposed to plan ahead based on these projections.

EPUK AIR UPDATE CONFERENCE HELD IN BIRMINGHAM LAST MONTH

Five chosen as good examples

Five local authorities have been chosen as good examples of air quality action planning.

AEA's Gwyn Jones told the Epuk conference that the five councils had been chosen to showcase effective action. The case studies will be posted on the air quality action plan website. The chosen five are:

- **Neath Port Talbot** for managing fugitive emissions from the steelworks site (*AQB January 2008 p3*). Notable actions include:
 - Treating site as single entity engaging all operators along with council and Environment Agency;
 - Targeted monitoring;
 - Proactive: good practice followed on site;
 - Reactive: monitoring based alert system triggers additional actions (eg text alerts if monitoring signifies a problem);
 - Investigative: regular and post-episode review;
 - Good communication.
- **West Sussex:** LTP air quality reporting;
- Commitments to air quality

strategy and measures in the LTP. (LTP8 target is linked to air quality action plan);

- Produced air quality report in 2008 with current AQ and LTP information;
- Progressed to targeting some measures within the AQMAs – traffic management, smarter choice and technology, capacity building;
- Adoption of evaluation principle. i.e. reporting progress of a wide range of measures via direct or intermediate indicators.

● **Mid Devon:** Supplementary Planning Document (*AQB September p1*);

- The council took a realistic view of the funds required to implement the action plan and role of developers;
- Environmental protection and development planning worked together;
- Crucial target that 50% of funds to be raised from developments;
- Developers in the AQMA should assess cumulative impacts and design in the low emission strategy;

- Differentiate contributions according to scale of development and use;
- An adopted SPD and plan helps both developers and the authority.
- **Leicester:** Managing congestion through urban traffic management and control:
 - Managing traffic and congestion since 1972 with big investment in technology;
 - Building an increasingly integrated and flexible system;
 - Building an evidence base of the success in reducing congestion;
 - Starting to evaluate impact on emissions and air quality.
- **Oxford:** Assessment and policy support (*AQB July p2*):
 - Congested urban centre with large share of bus activity and many significant developments;
 - Building on transport models to develop detailed inventory and air quality assessment;
 - Engagement across county & district two tier government;
 - Using capability to influence development and bus service policy via quantitative analysis.

Nitrogen dioxide is no problem, says Ayres

Comeap chairman Jon Ayres claims that he remains unconvinced that nitrogen dioxide is a significant health problem.

Speaking to the Epuk air quality conference, he repeated assertions from earlier this year that he felt concerns about NO₂ were overdone (*AQB May p2*). Talking personally rather than as chairman of Comeap, he

accepted his views may be considered 'heresy'.

"The toxicological evidence to support health effects of NO₂ is underwhelming, the sort of levels we are seeing are irrelevant from a health effects point of view. But I do accept that NO₂ is useful because it can be measured and because it reflects traffic."

Ayres has been working on

chamber studies which appear to show few health effects on volunteers subjected to ambient levels of NO₂.

Earlier this year Ayres also questioned the role of NO₂, prompting the Health Protection Agency's Bob Maynard to ponder why the role of NO₂ was so heavily questioned when it was such a good index for traffic pollution (*AQB May p2*).

Berlin LEZ achieves pollution drop

Berlin has achieved a 5-10% reduction in pollution in the city as a result of its tough low emission zone. Unlike London, the zone controls cars as well as commercial vehicles.

Speaking at the Epuk air quality update conference, Berlin Senate's Martin Lutz told delegates: "Including cars within the scheme was the right thing to do." He presented graphs which showed similar trends to that in London – in particular little decline in NO₂ concentrations.

The LEZ led to a significant

change in the vehicle fleet with 70% fewer older cars, and 55% fewer old commercial vehicles. Modelling showed a 24% cut in overall PM₁₀ emissions, and 16% cut in traffic derived NO_x emissions. Passenger cars make a significant contribution, said Lutz. The London low emission zone has no plans to be extended to cover cars.

In terms of air quality concentrations, PM₁₀ annual mean levels have dropped 3%, with four fewer exceedence days. NO₂ levels were cut by between 5 and 12%, while black

carbon levels were down between 14 and 22%.

Lutz outlined research carried out looking at ways of tackling traffic problems. He said: "Local scale traffic restrictions merely shift problem in other roads, while short-term temporary traffic restrictions are not effective during pollution episodes." This assertion directly conflicts with the Mayor of London's plans for policies in London needed to replace the postponed phase three of the London low emission zone covering vans.

IN BRIEF

NO₂ no problem?

Comeap still cannot find a problem with NO₂.

The Committee on the Medical Effects of Air Pollution has repeatedly looked at NO₂ and failed to agree on a numerical coefficient of health effects that can be fed into cost benefit studies. Many believe that NO₂ standards are overcautious and not backed up by medical evidence.

In the latest review, Comeap was asked to come up with a coefficient as the UK prepared its arguments for an extension to European deadlines on NO₂. But Comeap has once again said it can find no evidence that NO₂ by itself causes health effects – more likely it acts with other traffic-derived pollutants such as particles to cause problems – so it cannot justify putting a figure on health effects.

Comeap says: "Members agreed that the studies provided some evidence of an association between outdoor air pollution, in general, and of traffic-related air pollution in particular, on respiratory morbidity in children.

"Members agreed that whilst, on the basis of epidemiological evidence, a direct effect of NO₂ on respiratory morbidity in children could not be clearly identified (because the possible adverse effects of NO₂ could not be disentangled from those of the other pollutants in the urban mixture), a small effect could not be ruled out. Overall, members concluded that it was not possible to quantify the direct effects of NO₂ on respiratory morbidity in children."

Comeap was also asked to look at evidence supporting the long term limit value for NO₂ of 40µg/m³ adopted by Europe and endorsed by the World Health Organisation. It said that it needed more time to form a view on this.

● *Statement on the quantification of the effects of long-term exposure to nitrogen dioxide on respiratory morbidity in children* can be viewed on www.dh.gov.uk/ab/comeap/index.htm

IN BRIEF

Monitor help

Monitor specialist Phil Jones is still here!

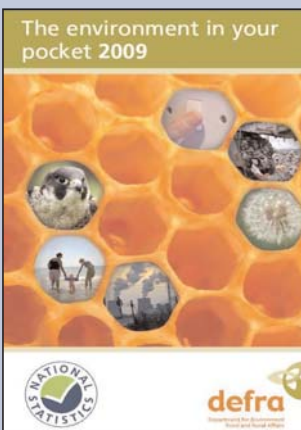
Against a backdrop of cuts among monitoring firms, Jones told *AQB*: "With companies pulling out of the air quality business and others cutting back on support services, it can be reassuring to know that there is an alternative backup for assistance for the hundreds of air quality monitoring systems across the country."

"For backup for the office and data logger software packages in use, AQ Data Services offers a unique UK service with qualified and independent support for many of the software systems in use today."

Jones continued: "AQ Data Services has been established for over seven years, built on very practical experience of over 30 years in systems design, gas analysis, data processing, data management etc. It has a proven track record for problem solving, especially where traditional data downloads have given erroneous results."

● phil.jones@aqdata.co.uk

Pocket facts



The thirteenth edition of *The environment in your pocket* annual publication is out. It is a handy, free of charge, pocket-sized distillation of around 60 key data series including air quality indicators.

● *The environment in your pocket 2009* can be downloaded from www.defra.gov.uk/evidence/statistics/environment/eiyp

POLICY

Defra ponders LAQM review

Defra will shortly reveal feedback from local authorities gleaned as part of its recent LAQM review. UWE is sifting through over 200 responses from councils who have responded to Defra's call for comments (*AQB November p3*) It is expected to report early next year.

Leicester City Council has already made its thoughts known. It told *AQB*: "There should be a formal national framework of local authority powers and obligations, linked to a nationally recognised package of interventions. Progress between comparable authorities should be benchmarked."

"The reality is that current local authority powers are inadequate to make a real difference to air quality in the medium-term. The legal, fiscal

and political conditions are simply not in place. This is compounded by lack of political will in some areas. To put this in perspective, where nitrogen dioxide from traffic is the key issue, a reduction of the order of 10% in current traffic flows would be required to make any difference at all to annual mean values. At locations where annual means are considerably in excess of the objective criterion, we calculate that reductions in traffic volumes of considerably more than 50% would be required."

"An honest and realistic appreciation is needed of the huge level of intervention needed to meet the air quality objectives. This implies rigorous evaluation of policy options at national and local level. The tendency of Government to devolve

technically challenging and politically unpopular decisions to local authorities, under the pretext elevating local choice to a political principle, is merely a cloak for inaction. There has been little government-led debate on potential, radical interventions and therefore little public understanding or acceptance."

The council's Ewan Davies added: "The reality is that radical, unilateral action equates to economic and political suicide for local administrations. This is perfectly illustrated by the grim political fate of recent proposals to introduce road charging in Manchester and Derby. Until a lead is set by Government in identifying, promoting and implementing specific interventions at national level, there will be little progress."

DMUG CONFERENCE

DMUG told of DMRB traffic data woes

MNA Advisory's Matt Ireland raised concerns about proposed revisions to the DMRB air quality screening model.

Speaking at the recent Dispersion Model Users Group meeting held in London, Ireland suggested that recent proposed revisions could prove tricky to use in practice.

Ireland said: "DMRB is saying that to model air quality you need hour by hour traffic data. I have trouble getting

annual average daily traffic flows, let alone hour by hour data, I think this will be hard."

"I will be very interested to know if this revision of DMRB will be used as I believe the traffic modelling requirements are just too much."

He added that DMRB makes numerous references to ADMS Roads dispersion model. "If you keep highlighting that DMRB is acting like a particular model, then why not use that particular

model?"

Ireland also warned that lawyers could decide to nit-pick on the wording of the EU directive. "Some may suggest that you only need to comply with the directive in areas were you measure. If you were a lawyer, you might say that as you are guided not to measure in streets less than 100m long or within 25m of a junction, you don't need to comply. This may exclude a lot of hotspots."

Exposure assessed for London population

AEA's John Stedman told the Dispersion Model Users Group (DMUG) meeting held in London about a recent study looking at the effect of commuting on exposure.

Exposure assessment, for practical reasons, is usually based on exposure at the home address. However many residents go to work, in London this can be some distance from the home address, leading to possible exposure misclassification.

AEA's PCM model is usually used to calculate annual mean concentrations but was adapted to provide hourly estimates for

each hour of the day reflecting varying met conditions and traffic data. (PCM – a pollution climate model – a GIS-based model that estimates concentrations based on emission inventories and dispersion modelling).

Census data was used to find out where people lived and worked in a bid to calculate whether assuming 24 hour residential exposure over- or underestimated their actual exposure. No account was taken of commuting exposure, Stedman said they were assumed to "teleport" between home and work.

London has 7.1m inhabitants, 236,000 live in London and work outside, 3.1m live and work in London and 722,000 live outside London and work inside London, a net inflow of 486,000. Exposure models not reflecting this commuting pattern suggest that there are 969 deaths brought forward due to air pollution, when the commuting patterns are taken into account, this rises to 1022.

This is less than might be expected as there is a large regional PM₁₀ impact which is common to both London and its surroundings, explained Stedman.

INDUSTRY

Steelworks: yet another study

The UK's largest industrial PM₁₀-prompted air quality management area near Port Talbot steelworks has been the subject of another report.

The area is one of the few industrially-prompted AQMA's in the country. Numerous studies have been carried out by the local authority (Neath Port Talbot), Environment agency Wales and the Welsh Assembly Government. The latter commissioned the latest report from Enda Hayes of UWE.

A feature of many of the previous reports has been a failure to pinpoint the sources of PM₁₀ sources (*AQB January 2008 p3*). Dusty haul roads have been blamed, as have stockpiles and ship unloading.

The latest report is intended to review all the previous reviews, and concludes that Neath Port Talbot was correct in declaring an AQMA, and the need for an AQMA remains. It adds: "There appears to have been substantial effort and resources concentrating on options not directly associated with the main source of PM₁₀ emissions, (ie the steelworks sources). While these options are commendable in terms of background pollution concentrations and general public health, they may bring about minimal reductions in PM₁₀ concentrations and minimum improvements towards attaining the air quality objectives.

"There is limited attribution of responsibility for meeting the

agreed actions therefore specific departments should be clearly identified for the implementation options to reduce any ambiguity in terms of accountability."

Dozens of conclusions focus on the wide ranging nature of PM₁₀ sources, and dozens of recommendations suggest further research into solving the alleged puzzle.

● *An independent review of monitoring measures undertaken in Neath Port Talbot in respect of particulate matter (PM₁₀)* can be viewed on <http://wales.gov.uk/topics/enviro nmentcountryside/epq/airquality/pollution/southwaleszone/portaltalbotpm10/?lang=en>

Editor's comment: Nobody can accuse the authorities of not spending money studying the

pollution problem at Port Talbot.

Report after report has looked at what many might consider to be the 'elephant in the room' – ie that the steelworks might be to blame for the steelworks-prompted PM₁₀ AQMA.

It appears that the authorities simply do not have the political will to spell out the obvious. Maybe they are mindful of the Stewartby Brickworks case. After the UK was in trouble due to SO₂ exceedences there, the solution was to close the brickworks. Forcing extra mitigation expenditure on the Port Talbot steelworks site in the current climate may well be considered suicidal, maybe authorities are accepting the embarrassment that reports are being misused to avoid action.

LAW

Dust problem prompts legal challenge

Lacors reports on a case that has tested the definition of 'summary proceedings' in the courts.

A claimant appealed against an abatement notice served by the London Borough of Barking & Dagenham because of nuisance dust from a waste processing site, claiming that it was invalid as section 79(10) required them to seek the consent of the Secretary of State before it could be served. The district judge rejected this argument and the claimant sought a judicial review on the issue of whether "summary

proceedings" means proceedings instituted in the magistrates' court or whether it also includes the service of an abatement notice, prior to any proceedings in the magistrates' court. The High Court rejected the judicial review and upheld the district judge's ruling that "summary proceedings" does not include service of an abatement notice and hence consent is not required.

● Lacors reports the Ethos Recycling v. Barking and Dagenham judicial review on www.lacors.gov.uk

IN BRIEF

ET goes to Uni

Air quality monitoring specialist Enviro Technology and the University of Leeds' Institute of Transport Studies are collaborating to provide bespoke vehicle emissions monitoring for councils.

The service allows fleet characterisation and provides emissions profile information on a per-vehicle basis. Benefits include the ability to identify the number and significance of high-emission vehicles as well as segmentation of data by vehicle type (e.g. car, bus, HGV), age and emission standard.

Data is gathered by Enviro Technology's remote Accuscan system to measure NO_x, CO, CO₂, HC and the 'smoke factor' of vehicles on a real-time, per-vehicle basis. Coupling this with an automatic number plate recognition camera ensures detailed information is captured for each vehicle passing the monitor beam.

Data is analysed by Institute of Transport Studies providing comprehensive information to help shape vehicle emissions management strategies.

● www.et.co.uk

Care4air educates

South Yorkshire's Care4Air website is being used to teach secondary school pupils across the UK after being endorsed by the National Curriculum *Twenty First Century Science* project on their website www.21stcenturyscience.org.

Over 900 schools in England and Wales are using *Twenty First Century Science* resources to teach pupils.

Since *Learn to Care4Air* was first launched in March, over 500 visits to the sub-site have been recorded.

The site contains information on air pollutants, using diffusion tubes, comparing and interpreting air quality data, greenhouse gases and the greenhouse effect, calculating a carbon footprint, fine particles, nitrogen dioxide, sulphur dioxide and ozone.

● www.care4air.org & www.21stcenturyscience.org

Laxen's 'journey': 60 years and counting

Duncan
invites you to join him to celebrate his 60th birthday, and his journey through the ages...

1979 1982 1985 1990 2006

Congratulations to Air Quality Consultants' Duncan Laxen on reaching 60. If you weren't invited to his party (we weren't either), you can at least enjoy his beautifully designed birthday party invite....

IAQM on planning significance

The Institute of Air Quality Management has tried to reach a consensus on the issue of air quality significance

In summer, dozens of air quality professionals converged on London to discuss the meaning of air quality significance.

The key question was to try and agree a standard framework for describing air quality changes that result from new development. The meeting was long and convoluted, IAQM has done well to try and summarise the mood of the meeting in a six page document, now released.

The paper sets out a proposed methodology for describing significance of air quality impacts. The methodology (well, that which could be agreed) is likely to be incorporated into Epuk's forthcoming revamped air quality and planning guidelines.

Before we launch into the detail of what IAQM is saying, its worth revisiting some of the issues thrashed around at the summer IAQM meeting (*AQB July p9*).

When looking at the impacts of a new development, a small worsening (in $\mu\text{g}/\text{m}^3$ terms) may be significant if it is in an area at or near the objective threshold – but irrelevant if an area is well below that threshold (for instance with a threshold pollutant such as nitrogen dioxide). For a pollutant like PM_{10} , although objectives don't reflect this yet, any increase or decrease can be significant as there is no health-based threshold.

There are pitfalls in representing changes in percentage terms, rather than $\mu\text{g}/\text{m}^3$. For instance if an area has low concentrations, eg $10\mu\text{g}/\text{m}^3$, then describing a predicted $1\mu\text{g}/\text{m}^3$ increase as a 10% rise makes it sound a lot, but it may not be significant.

There are some who don't like use of numbers to represent significance. They would rather leave it to professional judgement. There is an agenda, for better or worse, of trying to restrict who can make significance judgements – for instance by insisting on membership of the IAQM. This may boost the ranks of the IAQM, but misses the point that it is likely to be non specialists who have to juggle varied impacts to come to an overall decision.

In the event, IAQM settles on: "An appreciation of the relative reliability and limitations of methods and data is required to produce credible conclusions. The significance of air quality impacts should always be undertaken by a suitably qualified person."

Those are the issues that stood out when IAQM discussed the matter in summer. IAQM now suggests changes for improving use of descriptors, but stops short of making

recommendations for overall significance (something Epuk may still do).

IAQM's position paper starts by spelling out what it can be used for:

"Describing the nature of air quality impacts and then assessing the significance of the associated effect; and reviewing the adequacy of an impact assessment and the validity of the conclusions for inclusion in the wider decision making process."

Speaking at the recent Dispersion Model Users Group meeting, Scott Wilson's Garry Gray listed the aims of the new advice:

- To provide a citable resource for those developing methods for assessing air quality impacts;
- To attempt to develop consistent terminology that can be used in a broad range of impact assessments;
- To promote the effective use of professional judgement to demonstrate the overall significance of air quality impacts; and
- To promote transparency within the assessment process and a willingness to justify professional judgements.

IAQM is keen to standardise terms. It says: "There is considerable benefit to the credibility of the air quality profession as a whole in attempting to develop a consistent terminology to describe the magnitude of impacts, and the sensitivity of receptors."

It proposes a table setting out the generic basis to define impacts for changes in concentrations as a percentage of the objective limit (see table below).

It adds: "By defining the magnitude as a percentage of the assessment level it is possible to apply a common approach to

Absolute Concentration in Relation to Objective/Limit Value	Change in Concentration		
	Small	Medium	Large
Increase with Scheme			
Above Objective/Limit Value <i>With Scheme</i> ($>40 \mu\text{g}/\text{m}^3$)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Objective/Limit Value <i>With Scheme</i> ($36-40 \mu\text{g}/\text{m}^3$)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value <i>With Scheme</i> ($30-36 \mu\text{g}/\text{m}^3$)	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value <i>With Scheme</i> ($<30 \mu\text{g}/\text{m}^3$)	Negligible	Negligible	Slight Adverse
Decrease with Scheme			
Above Objective/Limit Value <i>Without Scheme</i> ($>40 \mu\text{g}/\text{m}^3$)	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Just Below Objective/Limit Value <i>Without Scheme</i> ($36-40 \mu\text{g}/\text{m}^3$)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value <i>Without Scheme</i> ($30-36 \mu\text{g}/\text{m}^3$)	Negligible	Slight Beneficial	Slight Beneficial
Well Below Objective/Limit Value <i>Without Scheme</i> ($<30 \mu\text{g}/\text{m}^3$)	Negligible	Negligible	Slight Beneficial

IAQM impact descriptors for changes to annual mean NO_2 at receptor

assessments of impacts for any pollutant. The use of 1% as the threshold for an imperceptible change provides consistency with existing screening methods promoted by the Environmental Agency and Natural England."

Once the magnitude of the change is known, the next step is to describe the impact at each relevant receptor. IAQM has modified Epuk's 2006 descriptor table for single receptors (see table above) but warns that this should not be used as a generic significance matrix.

Gray took this point further: "When an overall significance descriptor is required, this should be based on the professional judgement of suitably trained and experienced professionals and should take full account of site specific considerations."

IAQM's paper adds on overall significance: "If desired, the overall impact can be expressed in terms of: 'insignificant', 'minor', 'moderate', 'major', or other standard terms being used within the Environmental Impact Assessment.

"The overall significance should be described separately for the impact of emissions related to the development on existing receptors and for the impacts of emissions from existing source(s) within the surrounding area on new exposure being introduced within the development."

IAQM's paper is set to become included in the front end of Epuk's replacement for its *Development control: planning and air quality guidance*, a draft of which is set to be released in January.

- *Position on the description of air quality impacts and the assessment of their significance* can be downloaded from www.iaqm.co.uk/text/News/IAQM_PS_significance_16_11_2009.pdf

Impact magnitudes	
Magnitude of Change	Annual mean
Large	Increase/decrease $> 10\%$
Medium	Increase/decrease $5-10\%$
Small	Increase/decrease $1-5\%$
Imperceptible	Increase/decrease $< 1\%$

Watch out for new regs

Defra will forgo £684m of health benefits for the UK population by adopting the EU directive. And this is progress, asks Jack Pease?

Having agreed the European air quality directive, it needs to be transposed into UK law.

The directive was finalised last year (*AQB May 2008 p1*) merging the previous 1996 framework directive and three daughter directives into one. It introduces objectives for PM_{2.5} and allows countries to apply for flexibility on existing objectives and subtraction of sea salt from reported particle concentrations.

Member states must transpose the directive through domestic regulations, and Defra is now consulting on those, along with some heavy metal provisions (from the fourth daughter directive) which it is anticipating will be agreed by Brussels shortly. It is in the Government's interest to adopt the directive as there are few new burdens and plenty of relaxations.

The most talked about weakening is the ability to apply for extensions to deadlines. These allow member states an exemption from the obligation to apply the attainment date for the PM₁₀ limit value until 2011 and to postpone that for NO₂ and benzene until 2015.

Defra's PM₁₀ plan was published earlier this year (*AQB February p1*) and it will consult on NO₂ flexibility early in 2010. As we speak the UK is expecting to hear whether it will get its extension to the PM₁₀ deadline (see news, page one).

Defra has carried out its usual cost benefit analysis comparing the status quo with adopting the new regulations. These are presented upside down in that health benefits of reducing pollution to objective levels (£684m) are presented as costs, and expenses involved in reducing pollution are presented as benefits (£1,559m).

In other words if the UK were to comply with existing laws by quickly introducing initiatives to meet the objectives it should already have met, it would cost £1,559m and yield £684m in health benefits, a net cost of £875m. But by adopting the directive, the UK thinks it can avoid the rushed implementation and save itself £875m in costs.

Government is assuming it will be granted flexibility, which is by no means certain. If it doesn't get the flexibility on PM₁₀, it then faces having to take quick action – presumably costing a good part of the £875m outlined in the cost benefit analysis. If it wasn't for the embarrassment, it may decide that paying the mooted £300m infraction fine is better value for money.

What is in the proposed regulations? The Directive introduces new controls for PM_{2.5}. These aim to minimise the exposure of the whole population to PM_{2.5} – this new 'exposure reduction' approach is focused on driving down concentrations across urban background areas.

Certain elements of the new controls are mandatory – the limit value, and the exposure concentration obligation. The PM_{2.5} *limit* value of 25µg/m³ applies everywhere from 2015 and aims to ensure a minimum standard of air quality for all people. There is also a PM_{2.5} *target* value of 25µg/m³ to aim for from 2010.

The exposure concentration *obligation* applies across UK urban background areas. It must be attained by 2015 – and will be calculated as the three year mean concentration averaged over the relevant sampling points for 2013–15.

The national exposure reduction *target* is a percent reduction in average concentration in UK urban background locations, to be achieved by 2020 by taking measures not entailing disproportionate costs. The target hasn't been confirmed but it is expected to be 10%.

Defra admits that projections in the 2007 air quality strategy that measures would lead to a 16% reduction in PM_{2.5} between 2010 and 2020 were an overestimate – the figure is now a 6% reduction, due to changes in model inputs. In other words there is now a 4% gap.

Defra says: "Though there are considerable uncertainties attached to projections of PM_{2.5} concentrations, our current assessment is that both the limit and target values and the legally binding 2015 exposure concentration obligation in urban areas will be achieved under business as usual (BAU) measures."

The regs also incorporate provisions of the fourth daughter Directive (2004/107/EC) relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.

The directive makes provisions for short term action plans to cope with high exceedences. Unlike the Mayor of London, the Government is having none of it: "Short-term action plans are intended as rapid-response policy tools aimed at reducing the immediate risk of a predicted, short-lived exceedence of a limit value, target value and/or alert threshold.

"These are now discretionary which reflects our view that, in practice, there are very few circumstances in which the

adoption of a short-term action plan will make any significant difference to the improvement of air quality or public health achieved through other, longer-term means, as set out in the relevant air quality plans.

It explains in more detail: "In the case of urban, non-industrial sites, exceedences of the limit values for particulate matter show that short-term events are driven mainly by secondary pollutants and, in particular, secondary aerosols originating from outside the UK, and that the contribution of pollutants from local sources is small.

"For a short-term action plan to be effective, emissions from all the contributory sources (including those outside the UK) need to be addressed. A short-term action plan for exceedences reported in the urban, non-industrial sites would therefore need to address emissions across a disproportionately large area. In addition, emissions which result in transboundary secondary inorganic aerosols will have been emitted anything up to several days before the exceedence occurs and no short-term action plan would be able to affect these.

"In general terms, compliance with annual average limit values is not conducive to short-term action plans. Compliance with the NO₂ limit value, for example, will require concerted action over a long time period so, by definition, any action plan cannot be short-term. For these reasons, our general approach will be not to adopt short-term action plans for urban, non-industrial sites."

A throwaway clause in the consultation suggests changes afoot for local air quality management: "The LAQM framework across the UK is currently subject to review. Subject to the recommendations from that, it is our intention to explore at a later date the scope for and implications of simplifying both sets of provisions into one legislative framework, to streamline the relationship between EU limits and the Environment Act 1995 regime.

"The question of whether the intention in the national air quality strategy in 2007 to establish a new PM_{2.5} objective should be enshrined in legislation will be one issue for consideration. We would also need to consider local authority duties in relation to PM_{2.5}."

● Air Quality Standards Regulations 2010: Consultation on the transposition of Directive 2008/50/EC, and supporting documents, www.defra.gov.uk/corporate/consult/airquality-transposition

SCIENCE SHORTS

Agriculture effects

US researchers have reviewed the effects of agriculture on air quality emissions and climate change.

They say: "Given the serious concerns raised regarding the amount and the impacts of agricultural air emissions, policies must be pursued and regulations must be enacted in order to make real progress in reducing these emissions and their associated environmental impacts."

Effects of agriculture upon the air quality and climate: research, policy and regulations, Viney Aneja et al, *Environmental Science and Technology*, 2009, Vol. 43, pp4234-4240.

Shipping news

US researchers have compared air pollutant impacts from various shipping policies.

Global modelling was used to compare baseline no action policies with various control options. They found that if no control measures are taken, near surface sulphate increases by about 10-20% over the main transoceanic shipping routes from 2002 to 2012.

A reduction of the maximum fuel sulphur content allowed within 200 nautical miles of coastal areas to 0.5% or 0.1% results in a significant reduction in near surface sulphate from shipping in coastal regions compared with the year 2002.

The model results also show that if emissions of nitrogen oxides (NO_x) remain unabated, a reduction of the fuel sulphur content leads to a strong increase in aerosol nitrate (NO₃) which could counteract up to 20% of the decrease in sulphate mass achieved by sulphur emission reductions.

Assessment of near-future policy instruments for ocean going shipping: impact on atmospheric aerosol burdens and the earth's radiation budget, Axel Lauer et al, *Environmental Science and Technology*, 2009, Vol. 43, pp5592-5598.

ASTHMA INCIDENCE

Traffic pollution causes asthma

A huge European study suggests that traffic pollution can cause asthma.

The traditional view is that pollution can worsen existing asthma, but not cause it in the first place. Researchers cannot agree on this point.

Multinational researchers used findings from the SAPALDIA (Swiss Cohort Study on Air Pollution and Lung Diseases in Adults) population based cohort which was followed up 11 years later.

Researchers say: "The ability to assign space, time and source specific exposure to traffic

related pollution to each individual is a strong feature of the study."

Of 2,725 never-smokers, 41 reported asthma onset in 2002, the incidence of asthma was related to traffic-related PM₁₀.

They then conclude: "This study suggests that traffic-related air pollution has a role in the development of adult onset asthma among never-smokers. The consistency between our findings and observations made in children suggests that similar mechanisms may be involved in both early life asthma and adult onset asthma.

"Results suggest that traffic related local pollutants contribute to asthma development and, even more importantly, that reductions in these pollutants decrease asthma risks as well.

"Given the widespread exposure to traffic pollution, we recommend studies to investigate the mechanisms of adult onset asthma and identify the most susceptible subjects."
Traffic related air pollution correlates with adult onset asthma among never smokers, N Kunzli et al, *Thorax*, 2009, Vol. 64, pp664-670.

HEALTH EFFECTS

PM₁₀ reductions estimated by Sapaldia

Improvements to health have been estimated due to reduced PM₁₀ exposure.

As part of the large Sapaldia study of 7,000 Swiss residents, air pollution and illness symptoms were measured in 1991 and followed up in 2002.

Researchers found: "Residential exposure to PM₁₀ was lower in 2002 than in 1991 (mean decline 6.2 µg/m³). Estimated benefits (per 10,000 persons) attributable to the observed changes in PM₁₀ - levels were: 259 fewer subjects with regular cough, 179 fewer subjects with chronic cough or phlegm and 137 fewer subjects with wheezing and breathlessness.

Researchers comment: "Data from our population based cohort study confirms for the

first time that sustained improvements in ambient PM₁₀ levels can lead to decreases in respiratory symptoms among adults. Not only did decreases in PM₁₀ reduce the incidence of respiratory symptoms, but they also increased the likelihood of recovery in persons symptomatic at baseline.

"Similar results on improvements in respiratory conditions as a result of reduction in air pollution have only been known for children so far, and most of these studies relied on local central monitoring, where this study uses a validated dispersion model to estimate individual exposure.

"Some of the benefits are substantial, eg a 45% reduced risk of regular cough, indicating

that reductions in particle concentrations could have substantial benefits within a few years even in areas with moderate to low levels of air pollution.

"Moreover they suggest that efforts to reduce particulate pollution should be sustained irrespective of improvements already achieved, as the potential for reversibility of symptoms was even higher at lower initial exposure levels in our study."

Improvements in PM₁₀ exposure and reduced rates of respiratory symptoms in a cohort of Swiss adults (Sapaldia), Christian Schindler et al, *American Journal of Respiratory and Critical Care Medicine*, Vol. 179, pp 579-587.

EXPOSURE MEASURES

Italians compare three exposure measures

Italian researchers have compared three different types of exposure measures in a bid to see which ones were best.

Over 2,000 secondary age children from 40 schools in Rome were assessed for respiratory symptoms and allergic reactions (skin prick tests). Lung function measurements were taken on 1,400 of the children.

Three indicators of traffic related air pollution were assessed: self reported heavy

traffic outside the child's home; the distance between the child's home and busy roads; and the residential NO₂ levels estimated by land use regression models.

There was found to be a strong association between estimated NO₂ exposure and lung function, especially respiratory flows. Other exposure indicators showed similar but weaker associations. Associations appeared stronger in girls, older children, more well-off children and children

with parents who smoke.

Researchers note that distance can be a reasonable proxy for residential air pollution exposure. Predicted NO₂ levels was the method that produced the most reliable results of the three.

Traffic related air pollution in relation to respiratory symptoms, allergic sensitisation and lung function in schoolchildren, M Rosenlund et al, *Thorax*, 2009, Vol. 64, pp573-580.

SCIENCE SHORTS

ACTION PLANNING

Street sweeping cuts PM₁₀

Spanish researchers have found that sweeping streets can cut PM₁₀ levels by 10% (by up to 5 µg/m³).

The study was set up to evaluate the effectiveness of mechanical sweeping/water flushing treatments in mitigating urban road dust resuspension and to quantify the real benefit in terms of ambient PM₁₀ concentrations.

A pilot was carried out on a busy road in central Barcelona which has high PM₁₀ and low rainfall. Several streets were washed with mechanical sweepers and pressure water during night in all traffic lanes and sidewalks. PM₁₀ levels were simultaneously compared at

four reference urban background air quality monitoring stations to interpret any meteorological variability.

At the downwind measurement site, PM₁₀ concentrations registered a mean daily decrease of 8.8 µg/m³ during the 24 h after street washing treatments. However 3.7-4.9 µg/m³ of the decrease was due to the meteorological variability detected at the upwind site, as well as at two of the reference sites.

This reveals that an effective decrease of 4-5 µg/m³ (7-10%) can be related to street washing efficiency.

“Mitigation of road dust

resuspension was confirmed by investigating the chemical composition of PM₁₀ filters. Concentrations of metals and mineral matter decrease significantly compared to concentrations of elemental carbon, used as tracer for exhaust diesel emissions.”

Given these results, it can be concluded that street washing represents a non technological strategy to mitigate ambient kerbside PM₁₀ concentrations.”

Evaluating urban PM₁₀ pollution benefit induced by street cleaning activities
Fulvio Amato et al,
Atmospheric Environment
2009, vol. 43, no29, pp. 4472-4480.

TRAFFIC MANAGEMENT

Oxford research assesses traffic management

Health impacts of localised traffic management proposals have been studied.

Traffic changes were monitored as part of the inputs into the Oxford Transport Strategy (see news, *AQB July p1*). Oxford City Council (with environmental health responsibilities) and Oxford County Council (with transport responsibilities) used the research to agree on the shape of the Oxford Transport Strategy to improve traffic pollution in the town.

1,400 primary school children were studied and were visited two to three times a year for five day periods between 1998 and 2000. Peak flow was measured, and respiratory symptoms recorded.

Researchers point out that traffic levels in Oxford overall are not particularly high,

however they vary greatly by geographical area.

Across 220 modelled segments, traffic flows varied between from 240 to 33,000 vehicles per day.

After the introduction of the transport strategy, there was a slight overall fall in traffic levels but this masked individual street changes. Increases of 9,749 vehicles per day were seen on some segments while falls of 17,424 vehicles per day were also seen. Traffic reductions were mainly seen in the city centre.

The changes in traffic observed across the city were reflected in children's exposure, and health impact. When pre and post strategy levels were compared, there was a small but significant improvement in children's peak flow lung function.

Researchers added: “The scope of the intervention make the study unique and its findings valuable to traffic planners and public health officials alike. Our results suggest – but do not confirm – that improvements in the respiratory health of young children may be observed after major city wide traffic changes. Any changes are small but probably valuable when applied to a large population with children with asthma and from less advantaged homes may gain greater benefits.

The researchers say that the findings offer potentially valuable guidance to other cities planning large scale traffic intervention, particularly those with historic centres.”

Childhood peak flow and the Oxford Transport Strategy S
MacNeill et al, *Thorax*, 2009, Vol. 64 pp651-656.

HEALTH EFFECTS

Asthma sufferers breathe more particles

Particle uptake is higher among those with mild asthma, say North Carolina researchers.

Ten patients with mild asthma and eight patients without asthma were subjected to radio-labelled sulphur colloid particles. More was absorbed by the mild asthmatics.

Researchers concluded: “Enhanced uptake and processing of particulate antigens could contribute to the pathogenesis and progression of allergic airways disease and may contribute to the increased risk of disease exacerbation associated with particle

exposure.”

In vivo uptake of inhaled particles by airway phagocytes is enhanced in patients with mild asthma compared to normal volunteers, J Lay et al, *Thorax*, 2009, Vol. 64, pp313-320.

Rain reduced

Air pollution is reducing the amount of rain in China

Air pollution in eastern China during the last 50 years has led to a reduction in the amount of light rainfall of almost a quarter.

In some parts of eastern China the number of days with rain has diminished by 23% in 50 years and there may be a direct connection with high concentrations of air pollution.

In the current study the researchers discovered that where there was a high aerosol content, the raindrops were considerably smaller – in some cases only half the normal size.

Heavy pollution suppresses light rain in China: Observations and modelling, Y Qian, *Journal of Geophysical Research*, Vol. 114 pp1029

Ozone effects

US researchers have studied the effect of ozone.

Data was taken from the huge American Cancer Prevention Study which allowed air pollution data from 96 cities to be compared with health data on nearly half a million subjects, and 120,000 deaths.

Researchers said: “In this large study, we were not able to detect an effect of ozone on the risk of death from cardiovascular causes when the concentration of PM_{2.5} was taken into account. We did, however, demonstrate a significant increase in the risk of death from respiratory causes.”

“For every 10ppb increase in ozone, we observed an increase in the risk of death from respiratory causes of about 2.9% in single pollutant models and 4% in two pollutant models. The risk of dying from a respiratory cause is more than three times as great in the metropolitan areas with the highest ozone concentrations as in those with the lowest concentrations.”

Long term ozone exposure and mortality, Michael Jerrett et al, *New England School of Medicine*, Vol. 360, pp1085-95.

Modellers are usually fairly realistic about the accuracy of their models, but check out this brutal analysis from RoTAP (Review of Transboundary Air Pollution) modelling experts.

In their draft report they say: "Models are always incomplete and contain a large number of uncertainties. Uncertainties are introduced into models through the simplifications made in building them, involving the processes of generalisation, distortion, deletion and neglect."

Someone should mention this to Defra, who are defying science and reality by standing by their own absurdly optimistic future pollutant projections.

It's a moot point whether academics are more suspicious of this magazine or vice versa. We're certainly not made welcome at some academic gatherings.

We despair of academics as they seem to sit on knowledge which would be really useful to practitioners. The excuse we're given is that they cannot go public until their work is published, which could be months or years. By the time many academics are willing to talk, it's old news and of declining relevance.

Research body NERC itself notes that it can be ten years or more between

research activity and impact, and our prejudices were reinforced somewhat when NERC was asked whether it published activity reports produced by air quality researchers. No, it said, such reports are not appropriate for public consumption. Yehh, right, its okay to burn up millions of public money for research, but not okay for the public to judge for themselves what is happening.

There are exceptions to rule, one is Leeds University's David Carslaw, who over the years has proved himself extremely helpful to the air quality community. And he talks sense: "If you are trying to disseminate information and engage the public, publishing in academic journals is the last place you should consider." Quite.

We remain deeply sceptical at the London Mayor's sawn-off air quality strategy released last month.

The GLA's new girl Rachel Conti explained the proposals at the recent DMUG conference. Hopes of gleaning any detail on the plans were in vain – Conti admitted, for instance, that no analysis had been made to compare the outcomes of the new and the old strategy. AQB has certainly found it impossible to find any projections that

enable a comparison to be made between what was promised in 2002 and what is now promised.

There was more. Conti suggested the new strategy represented a move towards considering exposure rather than concentrations. She noted that there is a school of thought that high pollution should be accepted along busy traffic arteries and that it would be better to remove the exposure (ie people) than cut emissions.

Bold realism or total copout?

Forget Marylebone Road, Cromwell Road, Bexley or Hillingdon... the world's highest NO₂ is in... Lambeth!

Leeds University's David Carslaw made the claim during his talk at Epuk's conference in Birmingham last month. Annual mean NO₂ concentrations reached 217µg/m³ in 2008 – with 4015 exceedences of the hourly limit.

Phew. Well at least Lambeth environmental health officers will have the reassurance of that the London Mayor's air quality strategy will be to the rescue. Plant a few trees, buy a few electric vehicles and encourage a bit of cycling, and wait for the dramatic air quality improvements to kick in.

Or just remove the people.

AIR QUALITY EVENTS 2009/2010

9-10th December

MONITORING AMBIENT AIR 2009 AIR QUALITY – THE MAJOR

Challenges, AAMG conference to be held in London website <http://rsc-aamg.org/Pages/Meetings/MAA2009.html>

2010

28th January

RUSHLIGHT CLEAN TECHNOLOGIES SHOW

Conference, workshops and exhibition showcasing clean/low emission technologies to be held in London website www.eventuremedia.co.uk

13th-14th April

2010 INDOOR AND OUTDOOR AIR POLLUTION RESEARCH

Meeting to be held at Cranfield, website www.cranfield.ac.uk/health/researchareas/environmenthealth/ieh/page19562.jsp

21st-22nd April

AIR QUALITY SPRING WORKSHOP

Epuk air quality spring workshop to be held in the Midlands. www.environmental-protection.org.uk Carry Key 01273 878776

18th-19th May

18TH INTERNATIONAL SYMPOSIUM TRANSPORT AND AIR

Pollution Conference to be held in Zurich www.empa.ch/plugin/template/empa/*/%86139/---/1=2

1st-4th June

HARMO13

13th International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes to be held in Paris, website www.aria.fr/harmo

21st-23rd June

AIR POLLUTION 2010

18th International Conference on Modelling, Monitoring and Management of Air Pollution to be held in Kos, Greece. For more information, see www.wessex.ac.uk/air2010cfp.html.

12-16th September

15TH WORLD CLEAN AIR & ENVIRONMENTAL PROTECTION

Congress to be held in Vancouver, <http://iuappa.com/index.htm>.

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AIR QUALITY

BULLETIN

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Jack Pease