London's Health
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Report

London Health Commission and the Environment Committee of the Assembly

Health Impact Assessment – Draft Air Quality Strategy

Contents

1 Framework for the HIA

At the London Health Commission meeting of 27 February 2001, it was agreed that plans should go ahead to carry out, jointly with the Environment Committee, a policy appraisal health impact assessment of the draft Air Quality Strategy.

The London Health Commission had already commissioned a review of selected research evidence relevant to the draft Air Quality Strategy.

A central element of the HIA was the policy appraisal workshop held on 12 March 2001, at which participants – stakeholders from a variety of sectors – had the opportunity to:

- bring their own experience and knowledge to bear on key questions about the draft strategy, and to share their views with other participants
- explore evidence linking air quality and health and, where appropriate, to relate this to their own experience and recommendations.

The 'headline' findings of the workshop, and the priorities identified there, were debated further by the Environment Committee on the day after the workshop. A draft report presenting the process to date was reviewed by the London Health Commission at its meeting on 22 March 2001. The present document is the final revised report for the Mayor and the Air Quality Strategy Development Team to feed into the strategy development process, and will be presented in final form to the Environment Committee on 5 April.

What is the Air Quality Strategy trying to achieve?

The objective of the Mayor's Air Quality Strategy is to reduce the damaging effects of air pollution on London's health and to create a city with air that is pleasant to breathe. In particular, The Strategy aims to:

- meet the National Air Quality Objectives
- meet the EU air quality limit values.

In order to achieve these goals, the Strategy sets out policies intended to:

- reduce the impact of activities, including transport, on air quality, consistent with promoting economic growth
- promote good quality, practical, pleasant and clean methods for transport of people and goods
- promote good environmental quality throughout London
- reduce emissions of air pollution.

Shape and focus of the policy appraisal workshop

The workshop took place on 12 March at GLA South, SE1.

The model of health used during the workshop was that contained in the constitution of the World Health Organisation:

Health is a state of complete physical, mental and social well-being, and not merely the absence of disease or injury.

The focus of the workshop was to enable participants to explore the following questions and go on to make recommendations on the basis of their findings:

- Which determinants of health are likely to be affected by the strategy?
- How may health determinants change as a result of the strategy?
- How might the expected changes affect the health of people?
- What might be the outcomes for health?

(adapted from Cave and Curtis, 2001)

Who attended, and what did they do?

Approximately 40 people attended, drawn from a range of sectors and levels of seniority. (See Annex 2 for a full listing of the participants who attended this workshop and the workshop on the draft Biodiversity Strategy, held on the same day.)

An initial plenary meeting included a presentation on the draft Strategy by David Vowles, from the GLA Air Quality Strategy team, and an overview by public health specialists of the evidence they had assembled at the request of the London Health Commission. Participants then moved into small groups to discuss clusters of policies and proposals from the Strategy. The groups structured their discussion round four key questions:

- What are the major health benefits of the draft Air Quality Strategy?
- What actions are needed to achieve these?
- What are the health hazards of the Strategy?
- How can the health hazards of the Strategy be mitigated?

The groups were also asked to think about which population groups would benefit/suffer from the health impacts identified; and to indicate why and how they believed that the different factors they identified would impact on health.

The groups shared their thoughts and recommendations in a final plenary, offering a range of key points in response to the Strategy. These form the basis of the recommendations presented in the following section.

Participants filled in an evaluation form distributed at the end of the workshop. Most indicated that the goals of the workshops had been very satisfactorily achieved for them, and that they had found the session very useful. Many offered additional helpful insights and comments. A breakdown of responses is available on request from Liza Cragg (email liza.cragg@london.gov.uk).

Several people who would have liked to attend the workshop, but were unable to do so, later submitted their key points in writing. These submissions appear in Annex 1.

2 Main findings and recommendations

The main findings and recommendations of the HIA on the draft Air Quality Strategy are outlined in this section.

The key points from the policy appraisal workshop, grouped together here in themes, ranged from over-arching 'analysis points' to practical suggestions for action. These key points were further explored and tested at meetings of the Environment Committee and the London Health Commission. In the process, the key points were shaped into focused recommendations or amendments to existing proposals.

These are outlined below. The broad 'analysis points' are linked to the relevant chapter in the main body of the Strategy document. Where focused suggestions for action are made, specific proposals are shown for amending existing proposals or creating new ones.

Where there is supporting evidence for the recommendations, references are made to:

- the summary of the evidence commissioned by the London Health Commission (section 3.1 of the report)
- additional evidence used in drawing up the report (section 3.2 of the report)
- submissions from individuals (Annex 1)
- additional evidence referred to during the workshop (to be found in the second part of Annex 1).

2.1 Prioritise the need to change transport modes – and reduce the need to travel

1 Acknowledge clearly that sustainable reductions in vehicle emissions depend on changes in the social and economic spheres – not just on the potential use of new technologies to filter out pollution

- *see overall Strategy and Policy 2*

2 Facilitate these changes through action with relevant organisations to improve choice, desirability and accessibility of different modes of transport. (For example, see Box 1.)

- see *Chapter 3, Linkages and Partnerships, and Policy 2*

Box 1 Developing School Travel Plans

Hopefully links will be made to our recommendations on the Transport Strategy: I would favour targets to be adopted by local education authorities for reductions in numbers of school vehicle journeys per day. This could be achieved through School Travel plans with dedicated walk to school and cycle to school routes which would reassure on personal safety because all the walking children and cycling children would use a few routes (safety in numbers). This would link to improved air quality and therefore an improved walking and cycling environment. Getting a change of attitude among children is obviously the best way to change attitudes in the long term.

Source: Elizabeth Manero, Chair, London Health Link.
(See Annex 1 for full submission.)

3 Encourage Londoners to change from private cars to other forms of travel with practical proposals which contribute to reducing vehicle emissions in the atmosphere and which, crucially, also offer some of the benefits of exercise *eg* public transport or cycling. Consider the following, for example:

- examine ways to promote a mixed use of public transport eg making trains, tubes and buses accessible to wheelchair users, people with pushchairs and cyclists
- improve accessibility of all public transport for groups with special needs *eg* older people, wheelchair users, partially sighted, and people with pushchairs
- explore sources of sponsorship for a fund that partly reimburses employers for expenses incurred in developing facilities for cyclists (secure parking and showers)
- address the needs of people who have concerns about safety on public transport

- *additional action proposals – Chapter 4, Policies and Proposals and Policy 2*

4 Examine how to capture the benefits which flow from reducing levels of traffic (eg reduced community severance, increased levels of exercise) and recognise that 'technical fixes' to air pollution will have more limited effects.

- *expand paragraph 2.9 to stress that all members of the community can benefit from the increased exercise associated with using alternative forms of transport*
- Evidence supporting this recommendation is provided by submissions in Annex 1

5 Indicate how joint action with the Transport, Economic Development and Spatial Development Strategies could reduce Londoners' need to travel. Consider the following, for example:

• work with renewal and regeneration programmes and with employers in public, private and voluntary sectors to encourage home working and to develop facilities such as community teleworking centres.

- *additional action proposal – Policy 2*

6 Promote education initiatives for drivers, including bus drivers, about courteous/respectful behaviour on the road in order to encourage people to walk, cycle or take public transport

- *expand Proposal 44*
- *expand Proposal 19 to include specific reference to bus drivers*
- Evidence supporting this recommendation can be found in section 3.2.

2.2 Deliver the air quality strategy through the actions underpinning other Mayoral strategies

7 Identify the issues and areas key to improving air quality which are covered by other Mayoral strategies (see Box 2 below) and specify key actions in each area which will bring significant benefits.

- *see Chapter 3 Linkages and Partnerships*
-

8 Develop plans with nominated lead organisations to work together on these actions

- *see Table 5 Proposal Summary*

Box 2 Examples of links with other Mayoral strategies

- the transport strategy promotes increased use of public transport rather than the private car
- the economic development strategy encourages the enhancement of local employment and services, thus reducing some need to travel at all
- the biodiversity strategy encourages the conservation of green spaces and the planting of trees (particularly valuable as trees reduce carbon dioxide levels).

2.3 Address the different types of concern expressed by Londoners

9 Acknowledge and plan how to work with others to meet the need for further scientific research into the health impacts associated with air quality – for example, into the role of fine particulate matter.

- *see Chapter 3, Linkages and Partnerships, and expand Proposal 61*
- Supporting evidence for this recommendation can be found in Annex 1

10 Acknowledge that most Londoners make a strong connection between the whole experience of living in London and the quality of the air we breathe, and that these feelings need to be heard. Therefore consider ways of developing a dialogue among politicians, experts and the public at large about air quality – and providing a forum for Londoners to get information about the state of London's air quality and to address concerns about air quality and related issues.

- *additional action proposal – Chapter 4, Policies and Proposals, and expand Proposal 42*

11 Plan to develop and make widely available information and education initiatives which help people understand how they affect air quality through the use and maintenance of their vehicles (whether privately owned or as part of a fleet).

- *additional action proposal – Chapter 4, Policies and Proposals, and expand Proposal 42*

2.4 Focus on how the strategy will reduce, and not increase, inequalities while delivering its targets

12 Review how the proposals in the strategy will contribute to reducing inequalities between London's communities. For example:

- How will the proposals benefit people living beside arterial roads?
- How will congestion charging affect people in areas outside the charging zone? For instance, will traffic displaced from central London move in increased streams through poorer inner London?
- *see overall Strategy and expand Proposal 61*
- see section 3.2 for evidence relating to air quality management and social deprivation

13 Enhance the monitoring role of the strategy to include a focus on deprived areas.

- *additional action proposal – Chapter 6, Policies and Proposals, and expand Proposal 8*

14 Conduct roadside testing outside air quality management areas.

- *additional action proposal –Chapter 4, Policies and Proposals*

15 Review the feasibility of delivering the national air quality standards and objectives with the present proposals, given the current timetable for introducing congestion charging and possible low emission zones.

- *see Chapter 4, Policies and Proposals, and expand Proposal 7*

2.5 Consider for inclusion in the Strategy…

16 Examine sources of air pollution other than road traffic – for example, commercial, industrial or retail activities. It has been argued that sources of this kind are responsible for a substantial proportion of emissions in London's atmosphere and the negative effects impact heaviest on poorer communities

17 Include proposals addressing indoor air quality in public places. Smoke Free London articulate a widespread concern about the effects of passive smoking in public places, such as restaurants and pubs. Consider, for example, the implementation of the Health and Safety Executive's code of practice on smoking in public places

- see section 3.2 for evidence relating to environmental tobacco smoke and health

18 Consider including proposals relating to reduction in the atmosphere of fine and ultra-fine particulates

- Supporting evidence for this recommendation can be found in Annex 1

3 Summaries of core evidence used in the recommendations

3.1 Health effects of each pollutant included in the Strategy

This section was prepared by Steve Hajioff (NHSE) and Linda Sheridan (GLA). It summarises a collation of evidence prepared by Jenny Mindell (Mindell, 2001), Department of Epidemiology & Public Health, Imperial College School of Medicine.

It may be noted that the recommendations outlined in section 2 contain few explicit links to this evidence. Those preparing the report believe that this is because participants in the policy appraisal workshop fully acknowledged the health impacts of the individual pollutants. They tended to concentrate instead on social and economic factors influencing the levels of these pollutants in London's atmosphere.

Health effects of each pollutant included in the strategy

PM_{10}

Acute changes in PM_{10} levels cause premature deaths, primarily from cardiovascular and respiratory causes, and extra and early emergency hospital admissions. There is also some evidence that chronic exposure to raised levels of particulates have important effects on mortality and on increasing the likelihood of developing respiratory disease. Studies of acute effects have found linear relationships, with no threshold down to $<20\mu g/m^3$ PM_{10} in London.

Nitrogen dioxide (NO_2)

Acute rises in ambient NO_2 are associated with short-term changes in total mortality, though much of this relationship is probably due to confounding by other pollutants. Ambient NO_2 is probably causally related to cardiovascular deaths and to emergency hospital admissions for ischaemic heart disease, acute myocardial infarction, chronic obstructive pulmonary disease (COPD) in older people and asthma at all ages, as well as increasing symptoms, medication use, and medical consultations, predominantly in people who already have COPD or asthma. Long-term exposure to raised NO_2 may affect lung function and increase the risk of respiratory infection. Epidemiological studies have not shown a threshold for these effects, although most experimental studies on healthy individuals or those with predominantly mild asthma have found effects only at much higher levels.

Carbon monoxide (CO)

The main effects of CO are reduction in the ability of the blood to carry oxygen to the tissues and blockage of biochemical reactions in cells. This mainly affects those with ischaemic heart disease (eg angina) and the unborn child.

Sulphur dioxide (SO_2)

Sulphur dioxide is a cause of asthma symptoms in those with pre existing disease. There appears to be a synergistic effect with particulate matter leading to increased mortality.

Benzene

Although the risk of leukaemia is small, the risk continues to decrease as levels of benzene fall because this is a genotoxic human carcinogen, for which there can be no absolutely safe level. The main source of population benzene exposure is tobacco smoke.

Ozone

Ozone at ground level is implicated in the exacerbation of asthma amongst those with pre-existing disease. It is also a component of the outer atmosphere that is vital for human health.

Health effects of pollutants with important health effects not included in the strategy

Some, such as PAH, will be included in future air quality strategies, pending national or international reviews.

Indoor air quality

The main indoor source of air pollution is tobacco smoke, which produces 4,000 chemicals, including benzene and CO, mentioned above. Environmental tobacco smoke (ETS) provokes asthma attacks in susceptible individuals and has detrimental effects on the unborn child. It increases the risk of ischaemic heart disease (heart attacks) and lung cancer to a similar extent as active smoking <10 cigarettes per day. It increases the risk of respiratory infection requiring hospital admission in infants and of middle ear infection, associated with hearing problems, in children. ETS also causes eye, nose and throat irritation.

Dioxins

Dioxins produce skin problems at high doses and are also harmful to health, development and reproduction at relatively low levels. There is also some (inconclusive) evidence of dioxins having a role in the causation of cancer.

Cadmium and heavy metals

Cadmium is a known cause of emphysema and of lung cancer. It also causes kidney failure. Whilst the effects of cadmium are known from occupational exposure, because of the absence of a lower threshold it is possible that similar effects may follow environmental exposure.

Chromium is a cause of dermatitis and of lung cancer, although at environmental levels, the risk is likely to be low.

Nickel is unlikely to be toxic directly at environmental levels, however some of its inorganic compounds can cause cancer. Allergy to nickel is relatively common.

Lead poisoning is well known and is a cause of irritability and disruption of short term memory. There are also generalised toxic effects.

$PM_{2.5}$

Whilst there is increasingly a belief amongst toxicologists that ultrafine particulates are important in the causation of disease, evidence for this remains inconclusive to date.

CFCs

Chlorfluorocarbons are used as propellants in aerosols and as refrigerants. They are implicated in damage to the ozone layer, and thus may contribute to ultra-violet light caused diseases such as skin cancer.

Carbon Dioxide (CO_2)

Whilst carbon dioxide is harmless to humans at atmospheric concentrations, it is an important greenhouse gas and contributes to global warming. This, in turn, could lead to the emergence of diseases, such as malaria, currently little seen in the UK.

Health impacts of the draft air quality strategy proposals

Proposal / Policy	Effect on determinants of health	Beneficial effects on health	Adverse effects on health	
			Effects	Possible mitigation
Traffic reduction	Reduced air pollution	Fewer deaths brought forward, less morbidity from cardiovascular and respiratory diseases; improved well-being; less global warming		
	Reduced noise pollution	Improved well-being; less sleep disturbance?		
	Reduced community severance	Improved access to goods, services and social networks, leading to improved well-being and health?		
	Increased physical activity	Less heart disease and strokes, diabetes, raised blood pressure, obesity, diabetes, osteoporosis, depression, cancer. Improved well-being.		
	Increased use of streets as social areas	Increased self-esteem and social contact		
	The strategy claims measures to produce marked traffic reduction would have negative economic impacts but produces no evidence for this assumption.		A negative economic impact could lead to eg increased unemployment	Improving access for employees and customers by enhanced public transport, walking and cycling facilities
	Depends on whether journey time savings are through less time at junctions or faster travelling speeds	Reduced injuries?	Increased injuries?	Road reallocation Lower speed limits Enforcement of speed limits

Proposal / Policy	Effect on determinants of health	Beneficial effects on health	Adverse effects on health	
			Effects	**Possible mitigation**
Traffic reduction … *continued*	Reduced congestion leads to: ▪ reduced air pollution ▪ economic benefits	As above		
		?increased household income		
Improved public transport	Better access of the less advantaged to goods, services, employment, and social networks	Increases in equity		
		Improved well-being		
		Potential for less poverty, improved nutrition and self-esteem, and thus improved health.		
Promoting cleaner vehicles	Reduced air pollution	Fewer deaths brought forward, less morbidity from cardiovascular and respiratory diseases; improved well-being; less global warming	No effect on, or possibly increase in, CO_2 (greenhouse gas) emissions, contributing to global climate change.	Measures to reduce distances travelled, increase walking and cycling and public transport use, and increase average vehicle occupancy.
	Generates jobs	Reduced poverty; increased self-esteem		
Low emission zone for lorries, buses, coaches & taxis	Reduced air pollution	Fewer deaths brought forward, less morbidity from cardiovascular and respiratory diseases; improved well-being; less global warming	No effect on, or possibly increase in, CO_2 (greenhouse gas) emissions, contributing to global climate change.	Measures to reduce distances travelled, increase walking and cycling and public transport use, and increase average vehicle occupancy.
	Economic impacts?	?	?	HIA should be integral part of DETR / GLA/ ALG study
Driver education	Reduction in fuel use	Less global warming		
	Reduction in fuel costs, leading to reduced costs of products or increased employment?	Benefits for households in inverse proportion to income		
	Reduction in collisions	Reduced injuries and deaths		

Proposal / Policy	Effect on determinants of health	Beneficial effects on health	Adverse effects on health	
			Effects	**Possible mitigation**
Bus driver education	Reduction in fuel use	Less global warming		
	Reduction in fuel costs enabling cheaper fares or more employees?	Benefits for households in inverse proportion to income		
	Reduction in collisions	Reduced injuries and deaths		
	Awareness of the needs of older people; Smoother travel	Less disincentive against bus use; fewer injuries to passengers	Slightly longer time stationary for passengers to board and get off safely	Bus priority schemes to reduce travel delays between stops
Bus priority schemes	Reduced air pollution	Fewer deaths brought forward, less morbidity from cardiovascular and respiratory diseases; improved well-being; less global warming	No effect on, or possibly increase in, CO_2 (greenhouse gas) emissions, contributing to global climate change.	Measures to reduce distances travelled, increase walking and cycling and public transport use, and increase average vehicle occupancy.
	Better access of the less advantaged to goods, services, employment, and social networks	Increases in equity		
		Improved well-being		
		Potential for less poverty, improved nutrition and self-esteem, and thus improved health.		
	Increased reliability of buses makes it a more appealing option, contributing to traffic reduction	See "traffic reduction"		
Clear zones / Home zones	Reduced noise pollution	Improved well-being; less sleep disturbance?		
	Reduced community severance	Improved access to goods, services and social networks, leading to improved well-being and health?		

Proposal / Policy	Effect on determinants of health	Beneficial effects on health	Adverse effects on health	
			Effects	**Possible mitigation**
Clear zones / Home zones … *continued*	Increased physical activity	Less heart disease and strokes, diabetes, raised blood pressure, obesity, diabetes, osteoporosis, depression. Improved well-being.		
	Increased use of streets as social areas	Increased self-esteem and social contact		
	Reduced road traffic collisions	Reduced injuries and deaths		
Benzene objective of 1.66ppb by 2010	Higher than UK revised strategy indicative level of 1ppb by 2005	Further reduction in risk of leukaemia compared with 5ppb target for 2003	Less reduction in risk of leukaemia compared with 1ppb target for 2005	(Very small additional risk)
Guidance for building design	Reduced energy use saving money for individuals and businesses	Increased household disposable income; less hypothermia		
	Reduced air pollution	Fewer deaths brought forward, less morbidity from cardiovascular and respiratory diseases; improved well-being; less global warming		
	Less housing that is damp, difficult to heat, or poorly ventilated	General health benefits; improved well-being; less hypothermia		
Waste – encouraging the "Proximity Principle"	Reduced distances waste transported	As above	Remains significant use of transport	Encouraging re-use and recycling
Vehicle roadside testing	Reduced air pollution	As above		
Idling vehicle legislation	Reduced noise and air pollution	As above		
Planting of more trees	Reduced air and noise pollution	As above	Potential for increased pollen	Increase in symptoms of asthma and hayfever
	Visual amenity	Enhanced well-being		

Health impacts of other options for improving air quality that are absent or downplayed from the strategy and would have a positive health impact

Other options	Effect on determinants of health	Beneficial effects on health
Adoption of HSE's Approved Code of Practice on passive smoking	Reduction of employees' exposure to environmental tobacco smoke	Long-term: Reduced risk of ischaemic heart disease & lung cancer
		Short-term: Reduced risk of provoking asthma attacks
		Short-term: Reduction in cigarette consumption
		Medium term: Reduction in smoking prevalence
More consideration of reducing the need to travel (some mention for freight, eg reducing "empty journeys", but not for individuals) More consideration of reducing the distances travelled, eg by land use planning	Reduced air pollution	Fewer deaths brought forward, less morbidity from cardiovascular and respiratory diseases; improved well-being; less global warming
	Reduced noise pollution	Improved well-being; less sleep disturbance?
	Reduced community severance	Improved access to goods, services and social networks, leading to improved well-being and health?
	Increased physical activity	Less heart disease and strokes, diabetes, raised blood pressure, obesity, diabetes, osteoporosis, depression. Improved well-being.
	Increased use of streets as social areas	Increased self-esteem and social contact
	Reduced costs	Benefits for households in inverse proportion to income

Other options	Effect on determinants of health	Beneficial effects on health
More frequent testing of taxi drivers and their vehicles or some similar measure addressing taxi driving and maintenance: It is said that many taxi drivers tune their engines correctly before vehicle testing then retune them for greater acceleration the rest of the time.	To reduce fuel use and emissions of pollutants	See air pollution

3.2 Additional evidence

Children's independence, traffic and the urban environment …

- Children's mobility is restricted through town-planning, road- and other safety information and, importantly, the priority given to motorists in law. Children's psychological development may be impaired by a curtailment of their sense of independence and personal mobility. Children's play territory has been reduced as roads and pavements become more and more dangerous (Hillman 1990 cited in Cave and Curtis *et al*, 2001).

Cycling and health

- A review found the gains related to cardiovascular health and longevity from cycling far outweigh collision risks (British Medical Association 1992 cited in Cave and Curtis *et al*, 2001).
- A review of road traffic accident risks for cyclists in North America found that accident risks from cycling are several times those for driving in the US, Canada, Germany, Netherlands and the UK. The authors noted that little has been done to educate motorists about cyclists' rights or to enforce traffic laws that allow cycling. A key to increased cycling may be polices that compel motorists to respect non-motorized users of roadways (Pucher *et al* 1999 cited in Cave and Curtis *et al*, 2001).

Community severance and traffic

For links between community severance and traffic see the HIA of Mayoral strategy for transport *On the move* (Watkiss *et al*, 2001)

Annex 1 Written submissions and additional evidence

Written submissions
… received as part of the policy appraisal health impact assessment of the Air Quality Strategy

Additional evidence
… referred to in the report of the policy appraisal health impact assessment of the Air Quality Strategy

Submission from Elizabeth Manero
Chair, London Health Link

Transport: the policy of concentrating acute (health) services onto fewer sites necessitates more travel. Instead of the doctor travelling (one journey) all the patients in a clinic session, say 25 people, have to travel (25 journeys). In addition the length of journeys for staff is likely to be increased: if they took a job at a particular NHS

facility on the basis that they could travel there easily and then had their job moved to a different location, it is quite possible that their journey would be extended.

These changes may well increase pollution and congestion. This is an example of the NHS making its own work.

Housing: the increase in housing costs in London leads to more Londoners moving out, whilst London weighting encourages them to carry on working in London, leading to more journeys and more pollution and congestion. This amounts a financial incentive to commute into London, getting the hike in salary from working in London, while not actually paying London living costs. This is theoretical but it seems logical to me.

The quality and location of housing is also important. Poorer people may live on main roads and experience poorer air quality and consequent ill health. There are inequalities in air quality as in everything else.

Indoor air quality issues also need to cover CO_2 emissions from faulty heating appliances. This is seen as big issue by some elderly groups. The symptoms caused are similar to flu so there is potential for considerable underdiagnosis. This can be screened for by a simple blood test but I gather is rarely done. There is a pilot in Brighton by an new charity established to find volunteers to go into the home so elderly people and fit CO_2 monitors to their heating appliances. It is now moving to other areas, the contact for the Carbon Monoxide and Gas Safety Society is stephanie.trotter@ukgateway.net

Hopefully links will be made to our recommendations on the Transport Strategy: I would favour targets to be adopted by local education authorities for reductions in

numbers of school vehicle journeys per day. This could be achieved through School Travel plans with dedicated walk to school and cycle to school

routes which would reassure on personal safety because all the walking children and cycling children would use a few routes (safety in numbers). This would link to improved air quality and therefore an improved walking and cycling environment. Getting a change of attitude among children is obviously the best way to change attitudes in the long term.

I am waiting for an opportunity to raise the work of BREAM on sustainability of buildings. I know I mentioned it to you a long time ago but it is relevant to so many of these strategies and I want to make sure that the GLA is aware of it. It covers assessing buildings for things like ratio of green space, distance to a transport node *etc*. It assesses the contribution a building makes to a community by even assessing the numbers of people taken off the employment register as a result of the building and its use. It is funded by the DETR and I was very impressed with it emerging methodology. If people are not aware of it, the contact is Deborah Brownhill on 01379 664319 at the Centre for Sustainable Construction.

Submission from Dr Jenny Mindell,
Honorary Clinical Lecturer in Public Health
Department of Epidemiology and Public health
Imperial College of Science, Technology and Medicine.

Foreword

(also para 2.10) For pollutants where there is no known threshold of effect, air quality can only have "*no risk to health or quality of life"* if air pollutant levels are zero. As it is not feasible to reduce levels to zero, it is pointless to have an aim of *"improving air quality… to the point where it poses no risk to health or quality of life."*

Executive summary

(also para 2.16) There is a significant difference in meaning between the phrase "A few cities such as… measure similar levels.", as stated in the Appendix, and "Few cities…", as written in the Executive summary and text of the draft strategy. The Appendix also points out, which the summary and text do not, that London is substantially larger than other cities in Europe.

On page 3, under the map of projected NO_2 levels in 2005, there is the statement *"It is thought that NO_2 especially increases the lung's susceptibility to infection and fine particles introduce cancer-causing chemicals deep into the lungs(reference)."* In the text, paragraph , the latter sentence ends *introduce allergens deep into the lungs.* I suggest this entire section is rewritten following the health impact assessment, as some of those invited to contribute are world experts on the health effects of air pollutants.

2 Challenges – the context

Fig 1 is of concentrations while fig 2 is of emissions. It would also be helpful in a black and white version to use dotted lines for one of the pollutants in each graph! How about putting fig 9 from appendix 4 here? (NB In final version need to number the figures consecutively – fig 7 is currently before fig 1!)

Para 2.9 final sentence is wrong. Air pollution has the greatest effect on the very young and on those with pre-existing cardiorespiratory disease, who are predominantly the elderly. While younger and fitter members of the population take more exercise than older people and those with health problems, it is not true to say the former get most benefit. For example, older and less fit people are more likely to walk at a speed that has health benefits for them while younger, fitter people need to walk so fast to gain that health benefit they may not achieve it. Although it is true that for any individual, being vigorously active three times a week is of most benefit, most of the recent evidence has shown the greatest population benefits to accrue from decreasing the number of people who are physically inactive by encouraging them to take some exercise. Walking and cycling a little can do this, while regular walking or cycling to school or work can fulfil the current recommendations for physical activity.

3 Linkages & Partnerships

Surely "best practice" (para 3.2) is not using vehicles and purchasing cleaner vehicles or applying after-treatments to existing vehicles is second-best practice?

Equalities (para 3.11) – the comments made in the appraisal of the transport strategy apply. It is not only air pollution where the adverse health effects fall primarily on those without cars but also most aspects of car use – injuries, noise, community severance – while the benefits of access and transporting people and things accrue disproportionately to car users.

Para 3.16 I hope that the words *"and car travel"* after *"prioritising underground, national rail, bus"* in the penultimate line were inserted in error as cars are not *the most efficient methods of moving large volumes of people around the city.*

Submission from Dr. Anthony Kessel
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Summary

Overall this strategy is upbeat and forward thinking, with some clear examples of ways to improve a complex problem. Sadly, however, the strategy is not particularly radical, and continues to reflect the shallow environmentalism that has characterised a century of air pollution policy.

More detailed comments

Major

2.1 (p3) Report comments that there are no figures for London, but our calculations for the health impact of air pollution in Barking and Havering Health Authority could be quoted. [In addition, the Department of Health recently funded an epidemiological study of the relationship between air pollution levels and a number of health outcomes in London (including deaths, respiratory hospital admissions, A&E attendances, GP consultations), although this may have been a time-series correlational analysis rather than an impact assessment – Prof. Ross Anderson could clarify.

2.2 (p3) Those most susceptible to air pollution are indeed the most vulnerable including the young, the old and the infirm, but this is mainly because those at risk are those with existing chronic lung disease. To withhold saying this is therefore a little misleading. To mention instead that those on lower incomes are also disproportionately affected, while technically true misses the point that this is again because of additional chronic lung disease in this group, mediated through factors such as high smoking levels.

2.10 (p5) It is incorrect to say (as the draft does repeatedly) that the Standards set pose no significant risk to health or quality of life, and that this is based solely on medical and scientific evidence. Pollutant levels below those set in the Standards continue to pose health risks, especially to those most susceptible, but to a lesser – although still significant – degree. The Objectives, in particular the recent raising of the number of allowed exceedences of some pollutants, are weak, as it is at the times of these exceedences when the vulnerable are at most risk. The Objectives do of course reflect what is practicable and economic as the document later qualifies, which has sadly been the history of air pollution policy in the UK over the past 130 years - shallow environmentalism.

5 (p48) This section should say something about the importance of boroughs working with health authorities and other health organisations in researching the links between air pollution and health locally, exploring the public's understanding of air pollution and health, and in promoting healthier lifestyles.

Minor

2.6 (p4) Smogs continued beyond the 1960s.

Table 2 (p6) No figures for motorcycles.

2.23 (p11) What are the penalties for boroughs failing to meet Objectives, despite the setting up of air quality management areas?

6.3 (p51) The draft says that "we cannot affect the weather", when in fact humans have become remarkably good at affecting the weather – greenhouse warming, acid rain.

Submission from Dr Giovanni Leonardi
Research Fellow in Environmental Epidemiology
London School of Hygiene and Tropical Medicine,
WC1E 7HT

My single comment centres on the role of fine particulate matter. I noticed an apparent discrepancy between the message given in the main text and the Appendix. Reading in Chapter 2 "Challenges", page 4 paragraph 2.7 it would appear that the time trend for fine particulate matter in London is of a decrease over the years , for example "Figure 1 shows the reduction in sulphur dioxide and black smoke (fine sooty particles) concentrations since the 1950s". However, the message given in Appendix 10, page 83, paragraph 8.23 appears to contradict the above, as it is stated that "... Despite these differences, the annual average concentrations [of particles] in most individual cities in central Europe was falling. The only increases were seen in London, Liverpool, Manchester, Sheffield and Leeds in the UK and Stuttgart (Germany) ....". No reference was provided for this.

I am not an expert in air quality measurements, and I am not familiar with the work alluded to in either paragraph 2.7 or the Appendix. From the perspective of a lay person reading this document, the message given by the two sections of the strategy is confusing. Are fine particles increasing or decreasing in London over time?

I believe that an effort ought to be made to achieve as much clarity as possible as to what is the main message. I recognise that the composition of particles is a complex topic, however my impression is that there is an unnecessary oversimplification of the issue as presented in Figure 1.

I have conducted some epidemiological work on the health effects of particulate matter, and reviewed the work of others in this field. In terms of health impact of particulate matter, the fine fraction has been shown to be more strongly associated with health effects, than other fractions. (I can provide recent references to this, including my own recently published work on children). Therefore I think the trend more relevant to the HIA for London is that for the fine particles, not for smoke. I would welcome some clarification of the apparent contradiction between Chapter 2 and the Appendix. If, as I suspect, the contradiction derives from the fact that smoke concentrations havebeen falling over the years, but the fine particulate matter fraction has not, then I would much happier if the document could publish a figure in the main text for the trend in estimated concentration of fine particles, as this is the one more relevant for the health impact estimation.

The draft document states (Executive Summary page vi) "PM10 and NOx do not currently meet and are not predicted to meet the National Air Quality objectives by the required dates." .and also that "Meeting the targets for these two pollutants is the primary concern of this Strategy, but it is recognised that to do so will be extremely challenging". The healthy realism of this statement would be better supported by an illustration of a health-relevant trend for fine particles in the direction opposite to that found for smoke. The latter, currently present in the main document as Figure 1, may give the false impression that the situation will adjust itself spontaneously if given sufficient time. The reality may be that fine particles produced largely by heavy goods and other diesel vehicles travelling across London have increased over time, and these pose an increasing challenge to planners concerned about health impacts, not a decreasing one.

Nature and health: the relation between health and green space in people's living environment

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Introduction People living in a more natural area are believed to be more healthy than others. This relationship has been suggested to be one possible explanation for the fact that rural populations are often found to be more healthy than urban populations. It is also an important issue in current environmental policy. In this presentation we examine relation between living in a natural environment and indicators of self-reported health.

Methods We used data from the 1989 Dutch National Survey of General Practice (N=11,300) combined with data on land use within a three kilometres radius around the centre of the neighbourhood where respondents lived. To rule out selection effects of wealthier (and thus healthier) people living in more attractive (more natural) environments, we controlled for socio-economic background variables, together with demographic characteristics. Health indicators included self reported health, number of health complaint; and likelihood of psychiatric morbidity. Multilevel analysis was used in order to appropriately assess the effects of individual and neighbourhood level characteristics.

Results People living in a greener environment report fewer health complaints, have a better perceived general health and a better mental health. The relationship between urbanicity of the place of residence and indicators of health disappeared after introducing the indicators of land use. We did find some evidence of a stronger relationship for house wives and elderly persons, who are supposed to spend more time near their home, but no. for children. Finally, the positive association between health and green space seems to exist predominantly among lower socio-economic groups.

Conclusion There appears to be some evidence of a positive relation between health and a natural environment. Future studies could benefit from a more precise operationalisation of people's environment as well as using more specific health indicators.

Analysis of Air Pollution and Social Deprivation

A report produced for the department of the Environment, Transport and the Regions, The Scottish executive, The National Assembly for Wales and Department of Environment for Northern Ireland.

Katie King, John Stedman.
December 2000

This was a pilot analysis undertaken in a number of areas around the UK comparing deprivation levels at ward level (postcode sector in Scotland) with air pollution measurements and proposals for reductions in air pollution. The analysis aimed to look, in particular at:

- The links between the environment and inequality and, in particular, on whether environmental problems impact most heavily on the most vulnerable;
- The extent to which policies which seek to improve air quality will bring disproportionate benefits to the more vulnerable members of society.

The study considered measurements in 1997 and the predicted levels in 2004/5 following implementation of policies to reduce air pollution which had been proposed up to April 2000. Further study could be undertaken to consider the effects of more recent policies.

National indices of deprivation were used which differ between countries of the UK. All indices include unemployment and overcrowding, but the other features of the indices were different.

The locations chosen for analysis were:

- Greater London (all London Boroughs)
- Birmingham City district
- Glasgow City district
- Belfast and surrounding districts (North Down, Carrickfergus, Newtownabbey, Lisburn and Castlereagh)
- Neath Port Talbot district

In London, there was a linear relationship between NO_2 and PM_{10} levels recorded in 1997 and deprivation indices by ward. The only area in which there was little relationship between pollution and deprivation was the Neath Port Talbot district. When policies to reduce pollution were considered, a positive correlation was found between the overall size of predicted reductions in pollution and the deprivation levels, which indicated

that policies could reduce the apparent inequity in exposure to air pollution found in some areas. With regards to the individual indicators of the deprivation indices, the strongest pattern of correlation between air pollution and the indicators occurred for 'households with no car' and 'unemployment'. In all of these the correlation was stronger between the indicators and NO_2 levels.

An analysis of social class data showed no trend.

The following general conclusions can be drawn from the pilot area analysis:

- There is tentative evidence for a general positive correlation between background air pollution (NO2 and PM10) and deprivation index in London, Belfast and Birmingham but in Glasgow there is an inverse relationship.
- A similar positive relationship is found between social deprivation and NO2 concentrations at the roadside and background locations in London, but in Glasgow the roadside NO2 analysis did not show a relationship with social deprivation.
- Analysis of the possible confounding factor of population density shows that there is a possible over estimate of PM10 emissions in some cites but that this is unlikely to have influenced the final results.
- Air quality maps are also compared with social class data. This analysis does not show a pattern. Although this could imply little relationship between air pollution and social deprivation, it is more probably because the social class indicator (based on generic occupation classes) is a poor proxy of real socio-economic conditions.

As a result of these conclusions for London, Belfast and Birmingham, it is likely that carefully targeted policies to reduce air pollution concentrations in areas where they are highest could impact marginally more beneficially in the more deprived communities, and therefore move some way to reducing this apparent inequity. In the case of Glasgow, further analysis is required to more fully explain the pattern found.

Annex 2 Participants in policy appraisal workshop

Draft Biodiversity and Air Quality Strategies
Health Impact Assessment Workshop

Date **12th March 2001**

CONFIRMED ATTENDANCE

London Health Commission

Dr Sue Atkinson	NHSE London
Mark Brangwyn	Association of London Government
Liza Cragg	Health Development Agency/Greater London Authority
Janet Fyle	Royal College of Midwives
Antony Jacobson	Barnet Health Authority
Dr Zarrina Kurtz	Freelance Public Health Consultant
Hilary Samson-Barry	Greater London Authority
Bolanji Bank-Anthony	Race on the Agenda

Assembly's Environment Committee

Samantha Heath	Greater London Authority - Assembly
Louise Bloom	Greater London Authority - Assembly

Public Health and HIA Contacts:

Dr Anthony Kessel*	London School of Hygiene & Tropical Medicine – Honorary Lecturer
Dr Jennifer Mindell*	Imperial College School of Medicine - Dept. of Epidemiology & Public Health
Dr Chris Watts*	Barking & Havering Health Authority - Director of Public Health
Steve Hajioff	NHSE
Dr David Woodhead	King's Fund
Linda Sheridan	GLA
Diana Lowe	Department of Health

* Air quality (morning session) only

Clive Blair-Stevens	NHS Executive – London RegionalOffice
Clifford Davy[+]	British Trust for Conservation Volunteers
Dr Catherine Brogan[+]	Brent & Harrow Health Authority – Director of Public Health & Policy
Lucy Furlong	London First – Project Executive
Iain Corbyn	Berks, Bucks, Oxon Wildlife Trust
Ben Armstrong	London School of Hygiene
Peter Fiddeman	GOL
Ben Cave	Queen Mary, University of London
Gary Fuller	King's College London
James Farrell	Greater London Authority

Stakeholders

Moy Cash	Parks & Open Spaces
Cathy Maund	Federation of City Farms & Community Gardens
Mike Manuel	British Waterways
Esther Collis[+]	London Biodiversity Partnership
Ransini Beveridge	Maternity Alliance
Ian Wingrove	Green Group
Teresa Laport	Greater London Forum for the Elderly
Inspector John Gibson	RSPCA

GLA Strategy Leads

David Vowles*	Air Quality
David Hutchinson*	Air Quality
John Archer[+]	Biodiversity
Julia Brownbridge[+]	Biodiversity

[+] Biodiversity (afternoon session) only

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