### **GREATERLONDONAUTHORITY**

(By email)

Our Ref: MGLA281118-9302

28 December 2018

Dear

Thank you for your request for information which the GLA received on 28 November 2018. Your request has been dealt with under the Environment Information Regulations (EIR) 2004.

Our response to your request is as follows:

This is a request for information under the freedom of information act. My request relates to the impact of London's low emission zone on air quality and children's respiratory health across London boroughs of Tower Hamlets, Hackney, Greenwich and the City of London.

I would like to be provided with all correspondence and communications that mention or refer to the following study

https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(18)30202-0/fulltext between the 07/11/18 and 21/11/18.

Please find attached the information we have identified as within scope of your request. Please note that some of the content is exempt from disclosure under Regulation 13 (Personal information). Personal information relating to the names and contact information of staff members and constitutes as personal data which is defined by Article 4(1) of the General Data Protection Regulation (GDPR) to mean any information relating to an identified or identifiable living individual.

It is considered that disclosure of this information would contravene the first data protection principle under Article 5(1) of GDPR which states that Personal data must be processed lawfully, fairly and in a transparent manner in relation to the data subject. It is considered that none of the conditions allow the processing of the information apply in this case as the subjects have not consented to the use of their data for an alternative purpose (namely disclosure under the EIR).

If you have any further questions relating to this matter, please contact me, quoting the reference at the top of this letter.

Yours sincerely

### Paul Robinson Information Governance Officer

If you are unhappy with the way the GLA has handled your request, you may complain using the GLA's FOI complaints and internal review procedure, available at:

 $\frac{https://www.london.gov.uk/about-us/governance-and-spending/sharing-our-information/freedom-information}{}$ 

**Paul Robinson** From: @tfl.gov.uk> Sent: 07 November 2018 11:57 To: FW: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Subject: Nov at 23.30hrs UK time Just picking up on the email below about the EXHALE study being published next week... this study shows a link between air pollution and impaired child lung development in London. Just wondered whether you've planned any comms about it and/ or if you want some support doing this? Best wishes, | Public Health Registrar | Active Travel and Health team | Transport for London | 5 Endeavour Square, E15 2DU From: **Sent:** 06 November 2018 18:02 Subject: Fwd: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov at 23.30hrs UK time Hi Can you liaise with and on this? **Thanks** 

Begin forwarded message:

Consultant in Public Health

@tfl.gov.uk

From: C Griffiths < Date: 6 November 2018 at 17:49:02 GMT @tfl.gov.uk" < To: @tfl.gov.uk>, @tfl.gov.uk" @tfl.gov.uk>, @london.gov.uk> @kcl.ac.uk" @kcl.ac.uk>, Cc: @kcl.ac.uk>, @kcl.ac.uk>, @kcl.ac.uk>, @london.gov.uk>, @tfl.gov.uk>, @qmul.ac.uk>, @qmul.ac.uk>

## Subject: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov at 23.30hrs UK time

Dear Yvonne, Charles and

I'm emailing to let you know that the EXHALE evaluation of the LEZ will be published by Lancet Public Health on Wed 14 Nov at 23.30hrs UK time.

I will send you our press release in the next few days. Lancet are also issuing a PR, which I've not yet seen.

With best wishes

Chris

Chris Griffiths Professor of Primary Care

Lead

Barts Institute of Population Health Sciences Barts and the London School of Medicine and Dentistry QMUL

Co-Director

Asthma UK Centre for Applied Research

Principal Investigator

MRC Centre Asthma UK Centre in Allergic Mechanisms of Asthma



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\*

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From: C Griffiths @qmul.ac.uk>

**Sent:** <u>07 November 2018 19:09</u>

To: Cc:

Subject: Re: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14

Nov at 23.30hrs UK time

Thanks , I'd be delighted to present on the 3<sup>rd</sup>.

Let me know venue etc

With best wishes

Chris

**Chris Griffiths** 

**Professor of Primary Care** 

Lead

Barts Institute of Population Health Sciences
Barts and the London School of Medicine and Dentistry
QMUL

Co-Director

Asthma UK Centre for Applied Research

**Principal Investigator** 

MRC Centre Asthma UK Centre in Allergic Mechanisms of Asthma



Twitter: @profcgriffiths

**From:** @london.gov.uk>

**Date:** Wednesday, 7 November 2018 at 18:10 **To:** Chris Griffiths @qmul.ac.uk>

Subject: RE: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov

at 23.30hrs UK time

Hi Chris,

As part of my role at City Hall I co-chair the <u>APRIL network</u>. We have a meeting of the network on Monday 3 December from 14-16.00. The topic of this meeting is schools and we'd love it if you could come and discuss the CHILL study. I know it's still in early stages but I think people will be interested in hearing the plan and what's been done so far. You could also discuss the paper below.

I don't know if you have been to an APRIL meeting before but we meet 3 or 4 times a year and bring in a good crowd of academics, policy makers and professionals.

If you're not available can you suggest a member of your team who might be willing?

Look forward to hearing from you,

From: C Griffiths @qmul.ac.uk>

Sent: 07 November 2018 14:04

To: @london.gov.uk>

Subject: Re: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov at

23.30hrs UK time

Likewise Rosalind - will send shortly

All the best

Chris

**Chris Griffiths** 

**Professor of Primary Care** 

Lead

Barts Institute of Population Health Sciences
Barts and the London School of Medicine and Dentistry
QMUL

Co-Director

Asthma UK Centre for Applied Research

**Principal Investigator** 

MRC Centre Asthma UK Centre in Allergic Mechanisms of Asthma



Twitter: @profcgriffiths

From: @london.gov.uk>

Subject: RE: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov

at 23.30hrs UK time

Hi Chris,

Good to meet you last night a finally put a face to a name. Looking forward to reading the press release when it comes!

From: C Griffiths @qmul.ac.uk> Sent: 06 November 2018 17:49 To: @tfl.gov.uk; @tfl.gov.uk; @london.gov.uk> @kcl.ac.uk; @kcl.ac.uk>; Cc: @kcl.ac.uk>; @kcl.ac.uk>; @london.gov.uk>;

@qmul.ac.uk>; Subject: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov at 23.30hrs

@gmul.ac.uk>

**UK** time

### Dear

I'm emailing to let you know that the EXHALE evaluation of the LEZ will be published by Lancet Public Health on Wed 14 Nov at 23.30hrs UK time.

I will send you our press release in the next few days. Lancet are also issuing a PR, which I've not yet seen.

@tfl.gov.uk>;

With best wishes

Chris

**Chris Griffiths Professor of Primary Care** 

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Asthma UK Centre for Applied Research

**Principal Investigator** 

MRC Centre Asthma UK Centre in Allergic Mechanisms of Asthma



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| From: Sent: To: Cc:   | C Griffiths @qmul.ac.uk> 08 November 2018 17:33  |
|---|--|
| Subject:  | Re: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov at 23.30hrs UK time   |
| Will do, thanks   |  |
| With best wishes  |  |
| Chris   |  |
| Chris Griffiths<br>Professor of Primary                       | Care   |
|   | oulation Health Sciences<br>n School of Medicine and Dentistry   |
| Co-Director<br>Asthma UK Centre fo                            | or Applied Research  |
| Principal Investigato<br>MRC Centre Asthma                    | r<br>UK Centre in Allergic Mechanisms of Asthma  |
|   |  |
| Twitter: @profcgriff  | ths  |
|   |  |
| To: Chris Griffiths Cc:                                       | @london.gov.uk> November 2018 at 17:32 @qmul.ac.uk> @london.gov.uk>, @london.gov.uk> mission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov |
| at 23.30hrs UK tim  | ···  |
| Hi Chris,<br>I am going on lea<br>share with my co<br>Thanks, | ve tomorrow but if the press release comes out while I'm away please can you league  |
| From: C Griffiths < Sent: 06 November : To:                   | @qmul.ac.uk><br>2018 17:49<br>2tfl.gov.uk; @london.gov.uk>   |

| Cc:@kcl.ac.uk;@kcl.ac.uk>;@kcl.ac.uk>;@kcl.ac.uk>;@london.gov.uk>;@tfl.gov.uk>;@qmul.ac.uk>;@qmul.ac.uk>Subject: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov at 23.30hrsUK time |
|--|
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| I will send you our press release in the next few days.  Lancet are also issuing a PR, which I've not yet seen.  |
| With best wishes   |
| Chris  |
| Chris Griffiths Professor of Primary Care  |
| Lead Barts Institute of Population Health Sciences Barts and the London School of Medicine and Dentistry QMUL  |
| Co-Director Asthma UK Centre for Applied Research  |

**Principal Investigator** 

MRC Centre Asthma UK Centre in Allergic Mechanisms of Asthma



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C Griffiths

12 November 2018 07:47

From:

Sent:

Dear

@tfl.gov.uk; @tfl.gov.uk; To: @kcl.ac.uk; Cc: Re: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Subject: Nov at 23.30hrs UK time Attachments: LEZ press release FINAL.docx Dear Please find attached the press release Note embargo ends weds 14th at 23.30, so generally available on Thursday With kind regards Chris **Chris Griffiths Professor of Primary Care** Lead Barts Institute of Population Health Sciences Barts and the London School of Medicine and Dentistry **QMUL** Co-Director Asthma UK Centre for Applied Research **Principal Investigator** MRC Centre Asthma UK Centre in Allergic Mechanisms of Asthma Skype: c.j.griffiths From: @qmul.ac.uk> Date: Tuesday, 6 November 2018 at 17:49 @tfl.gov.uk" @tfl.gov.uk> @tfl.gov.uk" To: @tfl.gov.uk>, @london.gov.uk> kcl.ac.uk>, Cc: @kcl.ac.uk" @kcl.ac.uk>, @kcl.ac.uk>, @kcl.ac.uk>, @london.gov.uk>, @tfl.gov.uk>, Chris Griffiths @qmul.ac.uk>, n@gmul.ac.uk> Subject: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov at 23.30hrs UK time

@qmul.ac.uk>

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Principal Investigator
MRC Centre Asthma UK Centre in Allergic Mechanisms of Asthma



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From:
Sent: 12 November 2018 16:56
To: les

Cc:

Subject: RE: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14

Nov at 23.30hrs UK time

Thanks , very helpful.

**Errom:** @tfl.gov.uk>

Sent: 12 November 2018 10:30

To: london.gov.uk> Cc: @tfl.gov.uk>

Subject: RE: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov at

23.30hrs UK time



Yes this press release is helpful overall I think.

The main technical point I think is that, if there is, as the researchers claim, a direct link between air pollution and lung capacity, then the failure of lungs to respond, despite acknowledged improvements in air quality, rather calls the causative relationship into question. This is an academic rather than substantive point, I would say.

Regarding our involvement in the study, we only provided funding in the very early years. Our involvement has long since ceased.

The one curiosity with the press release is the reference to no improvement in PM. There are a number of things to say here. First, the improvements attributable to the scheme would largely have happened in 2007 – over a decade ago. We did find some evidence of PM2.5 reductions, as reported in Travel in London report 3, chapter 12. And, of course, we are generally below limit values – and LEX will have played a significant part in that.

I will try and get hold of the full article and read it.

Attached a copy of the letter. This was definitely sent, but never acknowledged. At least they let us know first this time – a major gripe last time.

Regards,

From: london.gov.uk]

**Sent:** 12 November 2018 08:34

To:

**Subject:** FW: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov at 23.30hrs UK time

isn't this the final version of the report you weren't happy with back in the day? Do you have a copy of the letter you sent?

The phrasing of the press release is helpful – i.e. you need to do more and ULEZ is a good thing. But don't want them unnecessarily criticising LEZ either.

**Thanks** From: C Griffiths [mailto @gmul.ac.uk] **Sent:** 12 November 2018 07:47 @tfl.gov.uk; @tfl.gov.uk; To: london.gov.uk> Cc: @kcl.ac.uk; @kcl.ac.uk>; @kcl.ac.uk>; Beevers, @london.gov.uk> @kcl.ac.uk>; @tfl.gov.uk>; @qmul.ac.uk>; @qmul.ac.uk> Subject: Re: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov at 23.30hrs UK time Dear Please find attached the press release Note embargo ends weds 14<sup>th</sup> at 23.30, so generally available on Thursday With kind regards Chris **Chris Griffiths Professor of Primary Care** Lead Barts Institute of Population Health Sciences Barts and the London School of Medicine and Dentistry **QMUL** Co-Director Asthma UK Centre for Applied Research **Principal Investigator** MRC Centre Asthma UK Centre in Allergic Mechanisms of Asthma



Twitter: @profcgriffiths

From: Chris Griffiths < @qmul.ac.uk> Date: Tuesday, 6 November 2018 at 17:49 To: @tfl.gov.uk" @tfl.gov.uk>, @tfl.gov.uk" @tfl.gov.uk>, london.gov.uk> Cc: @kcl.ac.uk" @kcl.ac.uk>, @kcl.ac.uk> @kcl.ac.uk>, @kcl.ac.uk>, @london.gov.uk>, @tfl.gov.uk>, Chris Griffiths @qmul.ac.uk>, @qmul.ac.uk>

**Subject:** Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov at 23.30hrs UK time

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I'm emailing to let you know that the EXHALE evaluation of the LEZ will be published by Lancet Public Health on Wed 14 Nov at 23.30hrs UK time.

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With best wishes

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PA: Lynette Edwards



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From: C Griffiths < @qmul.ac.uk>

**Sent:** 13 November 2018 07:11

To: @tfl.gov.uk; @tfl.gov.uk

Cc: @kcl.ac.uk;

Subject: Re: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14

Nov at 23.30hrs UK time

Thanks

Fully agree uLEZ is far more ambitious in its predicted impacts. Be reassured will be emphasising this positive, as well as the positive impact the LEZ itself had on AQ.

Apologies - its difficult to alter the sentence you refer to as its what we set out to look for but didn't find, plus the PR is out. The positive spin on this is that impacts uLEZ will have on air quality and health, which we will emphasise. Agree pre-compliance impact may have occurred.

Happy to speak if this would help.

With best wishes

Chris

**Chris Griffiths** 

**Professor of Primary Care** 

Lead

Barts Institute of Population Health Sciences

Barts and the London School of Medicine and Dentistry

QMUL

Co-Director

Asthma UK Centre for Applied Research

**Principal Investigator** 

MRC Centre Asthma UK Centre in Allergic Mechanisms of Asthma



Twitter: @profcgriffiths

london.gov.uk> From: Date: Monday, 12 November 2018 at 18:15 To: Chris Griffiths @tfl.gov.uk" @gmul.ac.uk>, @tfl.gov.uk>, @tfl.gov.uk" @tfl.gov.uk> @kcl.ac.uk>, Cc: @kcl.ac.uk" @kcl.ac.uk>, @kcl.ac.uk>, @kcl.ac.uk>, @london.gov.uk>, @tfl.gov.uk>, @gmul.ac.uk>, @qmul.ac.uk>

**Subject:** RE: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov at 23.30hrs UK time

Hi Chris

Thanks for sharing this. When this lands I think it will be important to distinguish between LEZ which was an 'evolution' and ULEZ which is a 'revolution' in terms of expected impacts on emissions and the fact that all vehicles are in scope.

Shirley has reviewed and has asked if there is any chance you can reword the following sentence as it reads like LEZ or similar have no impact at all: "Despite these improvements in air quality, there was no evidence of a reduction in the proportion of children with small lungs or asthma symptoms over this period."

On the wider effectiveness of LEZ point: "Following the implementation of London's LEZ, there were small improvements in NO2 and NOx levels, but no improvements in PM10 levels." Charles has flagged that it's important to take into account pre-compliance benefits, i.e. people getting prepared ahead of the start of the scheme. As a result the improvements attributable to the scheme would largely have happened in 2007 – over a decade ago. We did find some evidence of PM2.5 reductions, as reported in Travel in London report 3, chapter 12. And of course we are generally below limit values – and LEZ will have played a significant part in that. He wrote to Frank about this in 2015.

### **Thanks**



@qmul.ac.uk> From: Sent: 12 November 2018 07:47 To: @tfl.gov.uk; @tfl.gov.uk; london.gov.uk> Cc: @kcl.ac.uk; @kcl.ac.uk> @kcl.ac.uk>; @kcl.ac.uk>; @london.gov.uk> @tfl.gov.uk>; @qmul.ac.uk>; @qmul.ac.uk>

**Subject:** Re: Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov at

23.30hrs UK time

Dear

Please find attached the press release

Note embargo ends weds 14th at 23.30, so generally available on Thursday

With kind regards

Chris

**Chris Griffiths** 

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Lead

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Barts and the London School of Medicine and Dentistry
QMUL

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Asthma UK Centre for Applied Research

**Principal Investigator** 

MRC Centre Asthma UK Centre in Allergic Mechanisms of Asthma



Skype: c.j.griffiths

| From:     | @qmul.a                        | c.uk>         |                |
|-----------|--------------------------------|---------------|----------------|
| Date: Tue | sday, 6 November 2018 at 17:49 | )             |                |
| To:       | @tfl.gov.uk"                   | @tfl.gov.uk>, | @tfl.gov.uk"   |
|           | @tfl.gov.uk>,                  |               | london.gov.uk> |
| Cc:       | @kcl.ac.uk"                    | @kcl.ac.uk>,  | @kcl.ac.uk>,   |
|           | @kcl.ac.uk>,                   | @kcl.a        | c.uk>,         |
|           | @london.gov.uk>,               |               | @tfl.gov.uk>,  |
|           | @gmul.ac.uk>,                  | @gmul.ac.uk>  |                |

**Subject:** Low Emission Zone evaluation paper will be published in Lancet Public Health on Wed 14 Nov at 23.30hrs UK time

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Chris

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Co-Director

Asthma UK Centre for Applied Research

**Principal Investigator** 

MRC Centre Asthma UK Centre in Allergic Mechanisms of Asthma



From:

Sent: 13 November 2018 12:58

To:

Cc:

FW: THE LANCET PUBLIC HEALTH: London's low emission zone has improved air quality, but Subject:

not enough to benefit children's lung health



Just sending this over to check you are aware of it.

**Thanks** 



From: @phe.gov.uk> Sent: 13 November 2018 12:05 To: @phe.gov.uk>; @phe.gov.uk>; @nhs.net'; @london.gov.uk>; @london.gov.uk>; @phe.gov.uk>; @phe.gov.uk>; @phe.gov.uk>; @phe.gov.uk>; @nhs.net'; @phe.gov.uk>; @phe.gov.uk>; @phe.gov.uk> @phe.gov.uk>; @london.gov.uk'; @phe.gov.uk; @phe.gov.uk>; @phe.gov.uk>; @phe.gov.uk> Cc: @phe.gov.uk>

Subject: FW: THE LANCET PUBLIC HEALTH: London's low emission zone has improved air quality, but not enough to benefit children's lung health

Dear all, see below for info. Note the embargo.

**Thanks** 



Regional Communications Manager - London Public Health England

@phe.gov.uk

www.gov.uk/phe Follow us on Twitter @PHE London Protecting and improving the nation's health

From: @lancet.com]

**Sent:** 13 November 2018 10:30

To: PHE-Pressoffice

Subject: THE LANCET PUBLIC HEALTH: London's low emission zone has improved air quality, but not enough to

benefit children's lung health

\*\*Embargo: 23.30hrs [UK time] Wednesday 14th November 2018\*\*

Peer-reviewed / Observational study / People

### The Lancet Public Health: London's low emission zone has improved air quality, but not enough to benefit children's lung health

Low emission zones are now in place in 200 cities across Europe, but London findings suggest that interventions that deliver larger reductions in emissions may be needed

The introduction of the low emission zone in London, UK, has only contributed to modest reductions in exposure to nitrogen oxides from diesel vehicles, and these improvements appear to have little effect on the lung health of children, according to an observational study published in *The Lancet Public Health* journal.

The observational study including over 2,000 primary school children (aged 8-9 years) living in highly polluted areas of London's low emission zone confirms that chronic exposure to common traffic-related pollutants is linked with reduced lung function.

Moreover, despite improvements in air quality following the introduction of the low emission zone, the researchers found no evidence of a reduction in the proportion of children with small lungs or asthma symptoms over the 5 years since the scheme was implemented.

The study highlights that despite European air quality policies and local measures, London's air pollution may be putting children at risk of lifelong health problems, and underscores the need for more radical solutions to tackle high levels of air pollution. Early in 2019, London will introduce an Ultra Low Emission Zone, which is predicted to deliver major improvements in air quality.

"In many areas of London, air pollution still remains a major issue," says author Professor Chris Griffiths from Queen Mary University of London, UK. "Some improvements in air quality have been made despite the diesel vehicles emitting higher levels of pollutants in the real world than in tests. Even so, many areas of inner and outer London are still breaching EU air pollution standards and are unlikely to meet them without a substantial tightening of current emission controls." [1]

Air pollution is linked to 7 million premature deaths worldwide every year (of these, 3.7 million are linked to outdoor air pollution). In the UK, air pollution contributes to 40,000 deaths each year, nearly a quarter of them in London [2]. Across Europe, where more than half of new cars are fuelled by diesel, nitrogen oxide has become a major problem, and has been linked to asthma and impaired lung development in children.

Low emission zones have been widely promoted as the best way to tackle traffic pollution, with around 200 in operation across Europe. But little research has been done on the effectiveness of this approach at reducing air pollution and improving public health. London introduced the world's largest citywide low emission zone in stages during 2008 and 2012, requiring diesel vehicles entering Greater London to meet certain emission standards or pay daily charges—and providing a unique opportunity to investigate how effectively the initiative has improved air quality and children's respiratory health. [3]

The study included 2,164 children aged 8-9 years from schools close to air quality monitoring stations in four inner city London boroughs (Tower Hamlets, Hackney, Greenwich, City of London) in breach of EU annual nitrogen dioxide limits (40 µg/m³).

Between 2009-10 and 2013-2014, children were given yearly winter health checks that included measuring the size and function of their lungs by blowing into a machine called a spirometer [4]. Parents were also asked to complete a medical history questionnaire for their child, including questions on respiratory and allergic symptoms (eg, asthma, eczema, hay fever).

Annual average exposure concentrations of nitrogen oxides and particulate pollution (PM 10 and PM 2.5) were measured at the home and school addresses of each child over the 5-year study. The researchers also modelled pollution exposures for the 3 hours (0600-0900h), 24 hours, and 7 days before each child's annual health check. This allowed them look at the effects of both short-term and annual average exposures simultaneously. They also took into account other factors that can affect respiratory health including age, sex, height, body mass index, ethnicity, socioeconomic status, and exposure to environmental tobacco smoke.

Results showed that introduction of the low emission zone had little impact in reducing levels of ultrafine particles (PM2.5) or course particulate matter (PM10) over the study period.

In contrast, levels of nitrogen dioxide at both the roadside and monitoring sites within and surrounding the study area fell by around 1  $\mu$ g/m³ per year (figure 3). Additionally, the proportion of children exposed to the EU annual nitrogen oxides limit fell from 99% (444/450 children) in 2009 to 34% (150/441) in 2013.

Nevertheless, average exposure levels of nitrogen dioxide over the 5-year study remained high (median 40.7 µg/m³)

and the researchers estimate that children's lung capacities were reduced by around 5%. They also noted some evidence of a reduction in rhinitis, but not asthma symptoms over the study period.

"Although changes of this magnitude are unlikely to cause problems in healthy children, we urgently need to know whether these lung deficits will impact lung function and health in later life", says Professor Griffiths. "Until longer-term impacts are known, doctors should consider advising parents of children with clinically significant lung disease to avoid living in highly polluted areas, or to adopt personal mitigation measures to limit their exposure. More research is needed to identify factors that lead to increased susceptibility or protection." [1]

According to lead author Dr Ian Mudway, King's College London, UK: "There is an urgent need to improve our air quality, especially within our congested cities. Policies such as the Low Emission Zone strive to do this, but their effectiveness needs careful and objective evaluation, not only in terms of whether they improve air quality, but more importantly, whether they deliver better health. As the evidence base grows demonstrating that air pollution impacts on the health of children born and growing up in our cities, so the justification for decisive action increases." [1]

Co-author Professor Frank Kelly, National Institute for Health Research (NIHR) Health of Environmental Hazards HPRU, UK, adds: "These new findings linking air pollution and children's lung growth provide further support for the introduction of the ultra Low Emission Zone in London early next year." [1]

The authors note that the study is observational, so no firm conclusions can be drawn about cause and effect. They also point to several limitations, including that the lack of a control group and pre-intervention health data mean that attribution of the changes in air quality and health to the low emission zone, and a direct evaluation of the health impact of the scheme, were not possible. They also note that the study began after the introduction of the initial phases of the scheme so the full effects might have been underestimated.

Writing in a linked Comment Dr Hanna Boogaard, Health Effects Institute, USA, discusses the challenges of conducting research into the health effects of air quality interventions. She concludes: "A key question that remains largely unresolved is whether NO<sub>2</sub> [nitrogen dioxide] is a causal agent or only an indicator of traffic-related air pollution, given that correlations in space and time between concentrations of NO<sub>2</sub> and other traffic-related air pollutants are often high. The study by Mudway and colleagues adds to this quandary, and shows that more stringent measures to improve urban air quality and children's health might be needed."

### **NOTES TO EDITORS**

This study was funded by National Institute for Health Research Biomedical Research Centre at Guy's and St Thomas' National Health Service (NHS) Foundation Trust and King's College London, NHS Hackney, Lee Him donation, and Felicity Wilde Charitable Trust.

- [1] Quotes direct from author and cannot be found in text of Article
- [2] https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution
- [3] London's low emission zone was introduced in stages. Phase 1, introduced in February 2008, applied to diesel-powered heavy goods vehicles (HGVs) weighing greater than 12 tonnes. Phase 2 followed in July 2008 applying to HGVs over 3.5 tonnes. Phases 3 and 4 were introduced simultaneously in January 2012, restricting access to heavier Light Goods Vehicles and mini-buses not meeting the Euro III standard, and increasing the restriction on buses, coaches and HGVs greater than 3.5 tonnes from emission standard Euro III to Euro IV.
- [4] This test determines the lung's forced vital capacity (FVC), a measure of the amount of air you can exhale with force after you inhale as deeply as possible, and forced expiratory volume (FEV), a measure of the amount of air you can exhale with force in one breath.

The labels have been added to this press release as part of a project run by the Academy of Medical Sciences seeking to improve the communication of evidence. For more information, please see: <a href="http://www.sciencemediacentre.org/wp-content/uploads/2018/01/AMS-press-release-labelling-system-GUIDANCE.pdf">http://www.sciencemediacentre.org/wp-content/uploads/2018/01/AMS-press-release-labelling-system-GUIDANCE.pdf</a> if you have any questions or feedback, please contact The Lancet press office <a href="mailto:gressoffice@lancet.com">gressoffice@lancet.com</a>

For interviews with the Article author, please contact: Professor Chris Griffiths, Queen Mary University of London, UK, please contact Joel Winston Public Relations Manager (School of Medicine and Dentistry) Queen Mary University of London: E) <a href="mailto:j.winston@qmul.ac.uk">j.winston@qmul.ac.uk</a> T) +44 (0)20 7882 7943 / +44 (0)7970 096 188

For interviews with the Comment author, please contact: Dr Hanna Boogaard, Health Effects Institute, USA, please contact her directly: E) jboogaard@healtheffects.org

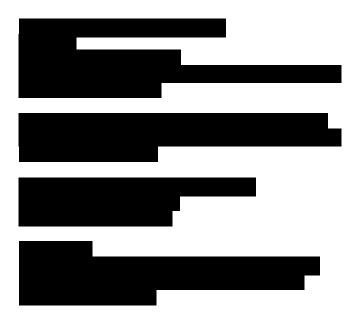
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For embargoed access to the appendix, please see: http://www.thelancet-press.com/embargo/LEZAPPX.pdf

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From: 13 November 2018 15:17

To: economicdesk

Subject: RE: To be aware: Low Emission Zone evaluation paper to be published in Lancet Public Health



Thanks for this – we have BBC London asking for a line – so III get this cleared – and apols for not getting back to you sooner!

Thanks,



Senior Press Officer Mayor of London's Press Office

@LDN\_PressOffice

Out of hours: 020 7983 4000

www.london.gov.uk

**GREATERLONDON**AUTHORITY

From:

**Sent:** 12 November 2018 16:54

To: | Iondon.gov.uk>

Cc: economicdesk <economicdesk@london.gov.uk>

Subject: FW: To be aware: Low Emission Zone evaluation paper to be published in Lancet Public Health

### How about:

"This shocking report is further evidence of how pollution blights young Londoners' lives. I refuse to be a Mayor who ignores this public health crisis and am determined to act. I've already introduced the Toxicity-charge and am cleaning up our bus and taxi fleets. In just under five months' time – in April 2019 – I will introduce the world's first Ultra Low Emission Zone, starting in central London. This will transform the air millions of Londoners breathe. But I can't do it alone – the Government needs to urgently give me the additional powers I need as well as fund a targeted diesel scrappage scheme to take the most polluting cars off the road now."

Sent: 12 November 2018 10:28

To: Shirley Rodrigues < london.gov.uk>; Nick Bowes < london.gov.uk>; Patrick Hennessy < london.gov.uk>; | lo

Subject: RE: To be aware: Low Emission Zone evaluation paper to be published in Lancet Public Health

Thanks Shirley. I will ask if we can amend.

Regarding your query on PM10 improvement, I think this is where we take issue with their methodology. From memory their study only started after LEZ had been introduced when (unlike for ULEZ) we had seen a huge amount of pre-compliance. This meant that the benefits of the LEZ are missed in their study. I am double checking this with TfL.



Subject: RE: To be aware: Low Emission Zone evaluation paper to be published in Lancet Public Health

Thanks. He puts the car industry and central government in the frame and helpful the others say that LEZ alone isn't enough – we need systemic and comprehensive action i.e. ULEZ and and and ... Any chance he can reword the following sentence as it reads like LEZ or similar have no impact at all.

"Despite these improvements in air quality, there was no evidence of a reduction in the proportion of children with small lungs or asthma symptoms over this period."

Where he mentions only small improvements in NOx and NO2 and no improvement in PM10 is the improvement in line with the original LEZ forecast?



Subject: To be aware: Low Emission Zone evaluation paper to be published in Lancet Public Health

Morning all

Please see attached a press release from Queen Mary University London about a new evaluation paper into the LEZ. This is to accompany the publication of the paper in the Lancet, landing Thursday when the Mayor is out doing the LEBZ launch.

Broadly speaking the paper and release are helpful as they highlight the ongoing health impacts on our young people of living in a city with high levels of diesel-linked air pollution. They also make the case for stronger measures like the ULEZ.

We do have a bit of quibbling about the methodology in the paper though and I think they will be a bit negative about the benefits of the original LEZ. As you'll know from our discussions about compliance rates, the ULEZ is a much more transformative scheme and it's important we distinguish the two.

We expect this will get a lot of pick up so we will work with press colleagues to prepare a reactive line (unless we want to do anything more proactively?) and add something to the Mayor's briefing for Thursday.

Please let me know if there is anything else we should be doing.

Thanks so much

### \*\*\* Embargoed until Wednesday 14 November at 23.30hrs UK time \*\*\*

## Study of 2,000 children shows that London air pollution is restricting lung development

Children exposed to diesel-dominated air pollution in London are showing poor lung capacity, putting them at risk of lifelong breathing disorders, according to a study led by Queen Mary University of London, King's College London and the University of Edinburgh.

The research, published in the journal *Lancet Public Health*, shows that whilst traffic pollution control measures have improved air quality in London, they still need significant strengthening to protect children's health.

Air pollution is a leading cause of global mortality, with the World Health Organization estimating over four million deaths annually caused by outdoor air pollution. Children are especially vulnerable and at risk of lifelong breathing disorders, asthma attacks, chest infections and earlier death.

Professor Chris Griffiths from Queen Mary University of London said: "Despite air quality improvements in London, this study shows that diesel-dominated air pollution in cities is damaging lung development in children, putting them at risk of lung disease in adult life and early death.

"We are raising a generation of children reaching adulthood with stunted lung capacity. This reflects a car industry that has deceived the consumer and central government which continues to fail to act decisively to ensure towns and cities cut traffic."

Low Emission Zones (LEZ) restrict or penalise vehicle entry into urban areas to encourage the uptake of lower emission technologies. London introduced the world's largest city-wide LEZ in 2008, roughly contiguous with the M25 orbital motorway and encompassing around 8.5 million residents. But up until now, there has been little evidence on whether LEZs improve air quality or public health.

2,164 children aged 8-9 were enrolled into the study from 28 primary schools in the London boroughs of Tower Hamlets, Hackney, Greenwich and the City of London (all areas which fail to meet current EU nitrogen dioxide limits). The research team monitored children's health and exposure to air pollutants over five years, covering the period when the LEZ was introduced, and found:

- Children exposed to air pollution showed significantly smaller lung volume (a loss of approximately 5 per cent in lung capacity). This was linked to annual exposures of nitrogen dioxide (NO<sub>2</sub>) and other nitrogen oxides (NOx), both of which are in diesel emissions, and particulate matter (PM<sub>10</sub>).
- Following the implementation of London's LEZ, there were small improvements in NO<sub>2</sub> and NOx levels, but no improvements in PM<sub>10</sub> levels.
- Despite these improvements in air quality, there was no evidence of a reduction in the proportion of children with small lungs or asthma symptoms over this period.

- The percentage of children living at addresses exceeding the EU limit for NO<sub>2</sub> fell following the LEZ introduction, from 99 per cent in 2009 to 34 per cent in 2013, but they were exposed to higher levels when at school, many of which were next to busy roads.
- Significant areas of inner and outer London still remain above the EU NO<sub>2</sub> limits.

The researchers warn that, at the current rate of change of pollution levels, full compliance with EU limits for NO<sub>2</sub> for London remains distant, unless there is significant tightening of current emission controls.

In the meantime, they say clinicians should consider advising parents of children with significant lung disease to avoid living in high pollution areas, or to limit their exposures.

lan Mudway from King's College London said: "There is an urgent need to improve our air quality, especially within our congested cities. Policies such as the Low Emission Zone strive to do this, but their effectiveness needs careful and objective evaluation, not only in terms of whether they improve air quality, but more importantly, whether they deliver better health. As the evidence base grows demonstrating that air pollution impacts on the health of children born and growing up in our cities, so the justification for decisive action increases."

**Dr Samantha Walker, Director of Research and Policy at Asthma UK, said:** "It is disappointing that the Low Emission Zone in London has not helped to improve children's lung capacity and shows that a piecemeal approach to reducing air pollution does not work. If children's lungs don't develop properly as a result of air pollution it can increase their likelihood of developing asthma, leaving them coughing, wheezing and at risk of a lifethreatening asthma attack. The Government needs to tackle toxic air by putting in place a new Clean Air Act to keep everyone, especially children, safe."

Frank Kelly from NIHR Health Impact of Environmental Hazards HPRU said: "These new findings linking air pollution and children's lung growth provide further support for the introduction of the ultra Low Emission Zone in London early next year."

The study is a collaboration across the MRC Asthma UK Centre in Allergic Mechanisms of Asthma and the Asthma UK Centre for Applied Research, and was funded by NHS Hackney, the NIHR Biomedical Research Centre at Guy's and St Thomas' NHS Foundation Trust and King's College London with donations from Him Lee and the Felicity Wilde Charitable Trust.

- Ends -

For more information, please contact:

Public Relations Manager (School of Medicine and Dentistry)
Queen Mary University of London

@qmul.ac.uk

Notes to the editor

### **About Queen Mary University of London**

Queen Mary University of London is a world-leading research-intensive university with over 25,000 students representing more than 160 nationalities.

A member of the prestigious Russell Group, we work across the humanities and social sciences, medicine and dentistry, and science and engineering, with inspirational teaching directly informed by our research.

In the most recent exercise that rated research in the UK, we were ranked 5th in the country for the proportion of research outputs that were world-leading or internationally excellent. We offer more than 240 degree programmes and our reputation for excellent teaching was rewarded with a silver in the 2017 Teaching Excellence Framework (TEF) awards.

Queen Mary's history dates back to 1785, with the foundation of the London Hospital Medical College. Our history also encompasses the establishment of the People's Palace in 1887, which brought accessible education, culture and recreation to the East End of London. We also have roots in Westfield College, one of the first colleges to provide higher education to women.

## The National Institute for Health Research (NIHR): improving the health and wealth of the nation through research.

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- funds high quality research to improve health
- trains and supports health researchers
- provides world-class research facilities
- · works with the life sciences industry and charities to benefit all
- · involves patients and the public at every step

For further information, visit the NIHR website www.nihr.ac.uk

### About the NIHR Biomedical Research Centre at Guy's and St Thomas'

The National Institute for Health Research (NIHR) Biomedical Research Centre (BRC) at Guy's and St Thomas' NHS Foundation Trust and King's College London works to develop and deliver new medicines and diagnostics to patients, drive research and innovation into the NHS, and provide national systems leadership for maximum impact to patients.

With our research activity organised into nine themes, each holding an individual Athena Swan Silver award highlighting our commitment to equality and diversity, and supported by our interdisciplinary, world leading infrastructure, we are poised to deliver the next step change for the health and wealth of our nation.

### http://www.guysandstthomasbrc.nihr.ac.uk/

### King's College London

King's College London is one of the top 10 UK universities in the world (QS World University Rankings, 2018/19) and among the oldest in England. King's has more than 31,000 students (including more than 12,800 postgraduates) from some 150 countries worldwide, and some 8,500 staff.

King's has an outstanding reputation for world-class teaching and cutting-edge research. In the 2014 Research Excellence Framework (REF), eighty-four per cent of research at King's was deemed 'world-leading' or 'internationally excellent' (3\* and 4\*).

Since our foundation, King's students and staff have dedicated themselves in the service of society. King's will continue to focus on world-leading education, research and service, and will have an increasingly proactive role to play in a more interconnected, complex world. Visit our website to find out more about Vision 2029, King's strategic vision for the next 12 years to 2029, which will be the 200th anniversary of the founding of the university.

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### **About Asthma UK**

- In the UK, 5.4 million people are currently receiving treatment for asthma: 1.1 million children (1 in 11) and 4.3 million adults (1 in 12).
- Every day, the lives of three families are devastated by the death of a loved one to an asthma attack, and tragically two thirds of these deaths are preventable.
- Asthma UK's mission is to stop asthma attacks and cure asthma. We do this by funding world leading research, campaigning for improved care and supporting people to reduce their risk of a potentially life-threatening asthma attack.
- The Asthma UK Helpline is open weekdays from 9am to 5pm on 0300 222 5800.
- For more information about asthma please visit <a href="www.asthma.org.uk">www.asthma.org.uk</a>

| From: |  |  |
|-------|--|--|
| _     |  |  |

**Sent:** 13 November 2018 17:02

To: Patrick Hennessy; Nick Bowes; Shirley Rodrigues; Rachelle

Laurence

**Cc:** economicdesk; Patrick Feehily;

Subject: RE: To be aware: Low Emission Zone evaluation paper to be published in Lancet Public Health

Thanks Paddy,

Clean version below.

Shirley – Please can you confirm this is OK?

Thanks,



Shirley Rodrigues, Deputy Mayor for Environment and Energy, said: "This shocking report is further evidence of how pollution blights young Londoners' lives. The Mayor and I refuse to ignore this public health crisis and are already taking firm action.

"Sadiq has already introduced the Toxicity-charge and is cleaning up our bus and taxi fleets. In just under five months' time – in April 2019 – he will introduce the world's first Ultra Low Emission Zone, starting in central London. This will transform the air millions of Londoners breathe.

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Senior Press Officer Mayor of London's Press Office 0207 983 4635 07825 865276 @LDN\_PressOffice

Out of hours: 020 7983 4000

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**GREATERLONDON**AUTHORITY

From: Patrick Hennessy

Sent: 13 November 2018 15:56

To: Nick Bowes | london.gov.uk>; | @london.gov.uk>; | london.gov.uk>; | london.gov.u

london.gov.uk>

Subject: RE: To be aware: Low Emission Zone evaluation paper to be published in Lancet Public Health

TICKLE ta

From: Nick Bowes

Sent: 13 November 2018 15:53

To: @london.gov.uk>; london.gov.uk>;

**Shirley Rodrigues** london.gov.uk>; Patrick Hennessy london.gov.uk> london.gov.uk> london.gov.uk>; Cc: economicdesk < economicdesk@london.gov.uk >; Patrick Feehily london.gov.uk> london.gov.uk>; london.gov.uk>: london.gov.uk> Subject: RE: To be aware: Low Emission Zone evaluation paper to be published in Lancet Public Health Fine for me From: Sent: 13 November 2018 15:52 london.gov.uk>; Shirley Rodrigues To: london.gov.uk>; Nick london.gov.uk>; Patrick Hennessy **Bowes** london.gov.uk> london.gov.uk>; london.gov.uk> Cc: economicdesk <economicdesk@london.gov.uk>; Patrick Feehily london.gov.uk> london.gov.uk>; london.gov.uk> london.gov.uk> Subject: RE: To be aware: Low Emission Zone evaluation paper to be published in Lancet Public Health Hi all, We have BBC London asking for a line on this. Can you let me know if OK to offer the following? Thanks, Shirley Rodrigues, Deputy Mayor for Environment and Energy, said: "This shocking report is further evidence of how pollution blights young Londoners' lives. The Mayor and I refuse to ignore this public health crisis and are already taking firm action. "Sadig has already introduced the Toxicity-charge and is cleaning up our bus and taxi fleets. In just under five months' time – in April 2019 – he will introduce the world's first Ultra Low Emission Zone, starting in central London. This will transform the air millions of Londoners breathe. "But we can't do it alone – the Government needs to urgently give \*REMOVE \*me\* the Mayor additional powers as well as fund a targeted diesel scrappage scheme to take the most polluting cars off the road now." Senior Press Officer Mayor of London's Press Office @LDN PressOffice Out of hours: 020 7983 4000 www.london.gov.uk **GREATERLONDON**AUTHORITY From: **Sent:** 12 November 2018 09:15 To: Shirley Rodrigues london.gov.uk>; Nick Bowes london.gov.uk>; Patrick Hennessy london.gov.uk>; london.gov.uk>

london.gov.uk>;

london.gov.uk>

Cc: economicdesk <economicdesk@london.gov.uk>; Patrick Feehily

london.gov.uk>;
london.gov.uk>;

**Subject:** To be aware: Low Emission Zone evaluation paper to be published in Lancet Public Health

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Broadly speaking the paper and release are helpful as they highlight the ongoing health impacts on our young people of living in a city with high levels of diesel-linked air pollution. They also make the case for stronger measures like the ULEZ.

We do have a bit of quibbling about the methodology in the paper though and I think they will be a bit negative about the benefits of the original LEZ. As you'll know from our discussions about compliance rates, the ULEZ is a much more transformative scheme and it's important we distinguish the two.

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Please let me know if there is anything else we should be doing.

Thanks so much

From:
Sent: 15 November 2018 07:37
To: Media Summaries

**Subject:** NEWS: Times (p4) Inner city children's lungs stunted by diesel pollution

## Inner city children's lungs stunted by diesel pollution

### **Chris Smyth**

Air pollution is creating a generation of children with damaged lungs according to a study that found urban primary school pupils have lower breathing capacity than expected.

Attempts to curb toxic air have not been enough to protect children and diesel will have to be banished to prevent decades of poor health, scientists concluded. More detailed measurements of city children's lung capacity than ever found that it was five per cent lower than normal on average by the age of nine, with a clear link between breathing volume and pollution levels.

Concern about air pollution has been mounting as evidence builds that it damages the body from before birth to old age, contributing to heart attacks, cancer, dementia and other diseases.

Diesel vehicles are a main source of pollutants, such as the toxic gas nitrogen dioxide (NOsubscript2) and particulate matter, and ten years ago the London low-emission zone banned the most polluting vehicles.

Now a study of 2,164 children aged eight and nine in inner London has found that it did have an impact.

In 2009, 99 per cent of children studied lived at addresses where NOsubscript2 levels exceeded safe limits, falling to 34 per cent by 2013. However, while their average exposure at home and school fell from 45 micrograms per cubic metre to 40 over the study period, this was still above EU limits and particulate levels did not fall.

Children's average lung capacity did not increase over the period and was consistently about five per cent lower than it should have been for this age group, according to results published in The Lancet Public Health.

Chris Griffiths of Queen Mary University of London, senior author of the paper, said: "Diesel-dominated air pollution in cities is damaging lung development in children, putting them at risk of lung disease in adult life and early death. We are raising a generation of children reaching adulthood with stunted lung capacity."

lan Mudway of <u>King's College London</u>, lead author of the paper, said it was likely that repeated inflammation of the airways caused by regular exposure to pollutants was affecting how children's lungs grew.

He said: "If this is sustained or gets worse you're going to have reduced lung function in adulthood; that really matters. It has an impact on how long you're going to live and your susceptibility to diseases in old age." He added; "It's the same problem in Newcastle, Sheffield, Nottingham, Leicester, Manchester — anywhere where you have a high density of traffic."

Samantha Walker of <u>Asthma UK</u>, said: "If children's lungs don't develop properly as a result of air pollution it can increase their likelihood of developing asthma and risk of a life-threatening asthma attack. The government needs to tackle toxic air by putting in place a new Clean Air Act to keep everyone safe."

A Defra spokeswoman said: "While air quality in the UK has improved since 2010, more needs to be done. We have introduced a £3.5 billion plan to reduce harmful emissions and a Clean Air Strategy, which has been welcomed by the World Health Organisation."

Mayor of London's Press Office

@london.gov.uk

City Hall, The Queen's Walk, London, SE1 2AA

Follow the Mayor of London's Press Office on Twitter: @LDN\_PressOffice

From:

**Sent:** 18 November 2018 07:51

To: Media Overview

Subject: NEWS: Observer (page 11) - Air pollution levels 'forcing families to move out of cities'

# Air pollution levels 'forcing families to move out of cities'

As diesel emission fears mount, a growing number of parents now consider clean air the main factor when choosing a school

**Jamie Doward** 

Sun 18 Nov 2018 06.00 GMT

Shares

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A study reported in the Lancet found children 'lost about 5% of lung capacity' from diesel pollution in cities. Photograph: Tony Margiocchi/Barcroft Media

An increasing number of parents are shunning good schools because of the local air quality while some are even looking to move out of cities altogether, as fears over the effects of diesel emissions on health mount.

Last week a major study published in the *Lancet* found that pollution from diesel vehicles was stunting the growth of children's lungs, leaving them damaged for life.

The research, conducted with more than 2,000 schoolchildren in <u>London</u>, was the first study in a city where diesel pollution is a significant factor.

"It found that children lost about 5% of their lung capacity," said Sarah Macfadyen, head of policy and public affairs at British Lung Foundation, which, along with the environmental law group, Client Earth, has established the <a href="Clean Air Parents">Clean Air Parents</a>' Network, a campaign group calling on politicians to improve air quality in towns and cities. "That's something they won't get back," she said. "Something that throughout their lives will put them at risk of infections and breathing problems, all because of the air that they were <a href="Dreathing">breathing</a> to and from school, to the park, just generally being out and about with their families."



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A welter of emerging data, including discussions in online forums, surveys of parents and anecdotal evidence from health charities, suggests that concerns among parents are becoming so prevalent that many now consider pollution the main factor when choosing a school, while a small but increasing number are eschewing urban environments altogether.

"It is incredible that in 21st-century Britain parents are having to think about moving their families to escape illegally polluted air which is harming their children," said Andrea Lee, senior campaigner at

ClientEarth. "This is what happens when you have a government unwilling to commit the resources and political will to clean up what has become a public health crisis."

Ben Paul, an architect who lives with his wife in Bloomsbury, central London, said he first became concerned about air pollution after the birth of their son nine years ago. "We were wiping down the walls and they were coming down black."



### FacebookTwitterPinterest

Parents and children stage a die-in protest against pollution in London. Photograph: Anadolu Agency/Getty Images

Paul joined a number of clean air campaign groups including CAPN and started monitoring air quality. "Pretty much everywhere in our area was above the EU limit," he said.

Now what he sees as failures by local and national government to ensure <u>London meets anti-pollution</u> <u>targets</u> have left him contemplating a future outside the city: "We are at that stage where we are thinking seriously about where my son will go to school next.

"Do we want to stay in this area, which has not seen any serious reduction in pollution in the last five years? Some measures the mayor is bringing in will make a bit of a difference but I'm sceptical."

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Earlier this year, the charity Living Streets <u>delivered a report</u> to the transport minister, Jesse Norman, asking for urgent action to improve the walk to school. The charity, which claims more than 2,000 primary schools are in pollution hotspots, shared polling data with the *Observer* that showed air pollution as the main concern for 10% of parents when choosing a school and a factor for almost one in four.

<u>A survey by Mumsnet</u> found some parents so concerned they have considered moving home because of it. Almost four in 10 parents in Greater London had contemplated leaving, compared to 28% in urban areas overall. In a typical recent post on Mumsnet, a mother explained that she and her husband were looking to send their child to one of two private schools in south-west London, one of which took 12 minutes to reach by bus and the other 45 minutes. She explained that they were drawn to the closer one but had been put off by local pollution surveys.

Macfayden said an increasing number of parents living in urban areas were sufficiently concerned about the issue to consider moving out. "It's something we hear anecdotally and it's clear people are increasingly worried about it," she said. "This trend may be something we see more of in the future."



# Smog in the cities: the truth about Britain's dirty air

### Read more

A series of legal battles brought against the government for failing to tackle air pollution had pushed the issue to the top of people's consciousness, Macfayden suggested.

Scandals such as those <u>involving carmaker VW</u> had also focused minds – as had the use of technology: canny parents are now using apps to see where a city's main polluted streets are so that they can avoid them on the walk to school.

"Air pollution is a really [information-] rich area," Macfayden said. "We know now for sure that air pollution is a causative factor in lung cancer for people with lung condition. It puts them at greater risk of attack. New papers are coming out linking air pollution to different types of cancer, to diabetes, Alzheimer's and obesity."