

Media release

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Primary school children exposed to 30% more toxic pollution than adults while walking to school

- ***Clean Air Day is calling on parents to walk or cycle their children to school along quiet routes in order to protect their health***
- ***The 2.3 million primary school children who are driven to school are exposed to double the amount of particulates and NO_x pollution inside vehicles compared to those who walk***
- ***However primary school children are exposed to 2.5 times more pollution when walking a busy route to school compared to a quiet route***
- ***Research has found that air pollution is associated with both reduced lung growth in childhood, severity of asthma and pneumonia***
- ***As part of Clean Air Day, which is backed by Defra and 180 other organisations, thousands of people are expected to participate in the day; around 400 clean air events are also planned to take place across the UK***

New research by Global Action Plan, coinciding with this year's Clean Air Day, 21 June, found that primary and nursery school children were being exposed to 30% more particulate pollution compared to adults when walking along busy roads, due to their closer proximity to vehicle exhaust fumes. The research found that pollution levels from petrol and diesel vehicles were 2.5 times lower for children walking along quiet roads.

For those 50% of children being driven to school, the situation is in fact worse. They are exposed to double the pollution inside a vehicle compared to those walking on busy streets.

The experiments conducted across 4 UK cities, in Manchester, Leeds, Glasgow and London among primary and nursery school children, illustrates the dangerous impact that journeys in cars, and on busy roads in particular, are having on the health of 5.8 million children every day of the year. Research by Professor Jonathan Grigg has found that air pollution is associated with both reduced lung growth in childhood, severity of asthma and pneumonia.

For the general population air pollution increases the risk of some serious illnesses, and can make existing conditions, like respiratory disorders, worse. "All of the organs in the body seem to be affected in some way by breathing in air pollution," says Professor Frank Kelly, Director of the Environmental Research Group at King's College London.

For example, research has also found that being exposed to air pollution for a long time is also bad for your heart and blood vessels. It is linked to a number of cardiovascular diseases in adults, such as furring of the arteries. It is estimated that as many as 40,000 early deaths each year are caused by the air we breathe when we are out and about.

With traffic-free streets pollution levels dropped by 89% during the London Marathon this year. Imagine what could be achieved if more people left the car at home every day and instead walked, cycled or took public transport to school or work - we would all suffer far fewer health problems from air pollution.

Clean Air Day, which is supported by Defra and 180 organisations, is calling on UK residents and parents to leave their car at home on the 21 June to address the UK's significant problem of air pollution, and where practical walk on quiet routes to reduce exposure to pollution.

In 2018, Clean Air Day is set to engage thousands of people in pollution-busting activities, with over 400 clean air events also planned across the country.

Thermal imaging carried out by Global Action Plan with FLIR, the thermal imaging experts, makes visible the invisible danger of air pollution around children, and how children are exposed to more air pollution than adults due to being closer to vehicle exhaust emissions than adults. FLIR's GF343 infrared camera uses CO₂ as a tracer gas to startlingly visualise [exposure to harmful substances](#) such as NO_x, NO₂ and diesel particulates.

Chris Large, Senior Partner, Global Action: Global Action Plan's research found that the millions of children in the UK that are walking to school along busy roads are potentially being exposed to 30% more pollution than their parents. A simple solution for parents would be to choose quieter back routes to walk or cycle their children to school, away from the traffic, thereby reducing their exposure to unnecessarily high levels of damaging air pollution."

John Bynorth, Glasgow, parent of 2 children: “I wasn’t aware that my children could be more exposed to air pollution but looking at the facts – it is obvious. They are small and so much closer to fumes. The results of this research are quite shocking really and something needs to be done about air pollution for the sake of our children. Children are too young to speak up about air pollution so the adults have got to do something about it now.”

Professor Jonathan Grigg, Professor of Paediatric Respiratory and Environmental Medicine, and Fellow of the Royal College of Paediatrics and Child Health: “Children’s lungs are especially vulnerable for those at primary school and younger, as they are still developing. It’s critical that we protect the health of our children’s lungs from air pollution, in order to prevent lasting damage. My research has shown that exposure of young children to higher amounts of air pollution from traffic, has a major impact on their lungs. Although parents can reduce this impact by walking on less polluted roads and taking public transport, the UK government must take further steps to reduce toxic emissions from all roads.”

Environment Secretary Michael Gove: “This troubling new research is a further demonstration of why we need to take strong action now to improve air quality. Our new Clean Air Strategy sets out how we will be the first major developed economy to reduce air pollution in line with World Health Organisation limits and we have invested £3.5bn to reduce harmful emissions. But Clean Air Day reminds us that by taking simple steps, like leaving the car at home for the school run, we can work together to reduce air pollution and protect our health.”

This Year’s Clean Air Day will show us the steps we can all take to protect ourselves and our families from air pollution and how we can improve the air that we breathe. 2018’s [Clean Air Day](#) on 21 June will create a groundswell of action bringing thousands of people together to make the air in UK cities, and our homes, cleaner and healthier. Already 430 events have been organised across UK towns and cities. The day will provide guidance on the things people can do today to reduce the air pollution they create, and advice on what they can do to protect themselves and their families in the future.

Notes to Editors

- Global Action Plan, a charity inspiring practical action for our environment, are the organisers of Clean Air Day. For more information on Clean Air Day please see below
- Media interviews - please contact:
 - Kate Hinton – kateahinton@gmail.com / 07714 708416
 - Zoe Sobol – zoe@snowballpr.co.uk / 07971066034
 - Scotland media enquiries: john.bynorth@ep-scotland.org.uk / 07803 970346/ 0141 333 6655

- Media resources:
 - 430 events are being held in cities across the UK. For some examples of city events please see below.
 - Pollution thermal images illustrating the exposure to air pollution of a child compared to an adult –
<https://www.cleanairday.org.uk/Handlers/GetImage.ashx?IDMF=eab1bc84-e2ce-4cc9-8451-018893e11215&w=611&h=457>
 - Methodology calculating the number of children exposed to pollution levels according to journey type – please see below
 - Children vs adult pollution exposure monitoring methodology – please see below
 - Photographs and quotes from the parents and children taking part in the children vs adult pollution exposure monitoring experiment
 - Individuals suffering from air pollution available for interview – please find below examples
 - Background to Global Action Plan
 - Background to FLIR
 - Expert commentators are also available from British Lung Foundation
 - Information on the health impacts of air pollution -
<https://www.cleanairday.org.uk/health-impacts-of-air-pollution>
<https://www.cleanairday.org.uk/air-pollution-and-children>
<https://www.cleanairday.org.uk/faqs-on-air-pollution-and-childrens-lungs>
 - Clean Air Day has now gained the support and partnerships with 180 organisations, including health bodies, and Defra please see - www.cleanairday.org.uk/supporters
 - Low pollution routes - CityAir App the tool that lets parents plan low pollution routes in London –<http://cityairapp.com/>

Expert commentators available

- **Professor Jonathan Grigg** - Professor of Paediatric Respiratory and Environmental Medicine, and Fellow of the Royal College of Paediatrics and Child Health
- **Professor Frank Kelly** - Professor of Environmental Health, Director of Environmental Research Group, Deputy Director of the MRC-PHE Centre for Environment and Health
- **Professor Stephen Holgate** - Medical Research Council, Professor at the University of Southampton and co-Chair of the recently formed RCPCH/RCP Working Party on Indoor Air Pollution and Children's Health

Examples of events taking in cities across the UK

Brent London: Festival at the Civic Centre with stands (Bike It campaign - smoothie making, sustainable travel, FORS and major developers who are building high-rise buildings in the area). Local MPs and councillors will be in attendance to sign a pledge wall

York City centre: 21 local schools signed up for Walk to School week over Clean Air Day. Cllrs will be talking to parents at the school gate and giving out leaflets and stickers on Clean Air Day. A no-idling campaign will take place at York Station and at numerous local bus stations as well as at the hospital

Glasgow City Centre: Glasgow City Council is sealing off George Square – and the road outside the City Chambers. UKHACC are holding a Clean Air Day health conference in the square. Festival includes demonstrations of electric bicycles, electric vehicles (EVs), cycling stands and stalls

Southampton City Centre: Clean Air Day Festival with music, activities, bike doctors, electric bikes, EVs, cargo bikes, pledges. Health experts from the local university will be showcasing air quality/pollution monitoring equipment. Case study option includes: St Johns primary school, which is campaigning to permanently close the road at peak times

Transport for Greater Manchester: Various broadcast opportunities exist with: Lung dome (health checks), electric bike taster sessions, rolling road bike speed challenge, electric cars on display – Exchange Square, Manchester city centre. Lung checks and health advice – Manchester Royal Infirmary and Wythenshawe Hospital. Free tram travel across the Metrolink network before 7am and after 7pm on Clean Air Day.

Edinburgh City Council: The Mound will be closed for the morning of Clean Air Day, with temporary landscaping and park benches for people to enjoy sitting on in place of cars. Traffic will also be barred from the eastern section of George Street for most of Thursday and up until noon on Friday, with a whole host of activities including yoga, cycling, dance and walking activities to promote clean air and raise awareness of the city’s Low Emission Zone. Sciennes Primary School will also be involved for case studies – students will be walking to school through meadows carrying air quality placards on 21 June

FLIR Images of pollution

<https://www.cleanairday.org.uk/Handlers/GetImage.ashx?IDMF=eab1bc84-e2ce-4cc9-8451-018893e11215&w=611&h=457>

Methodology for calculating numbers of children exposed to pollution on the school run

The calculation of the number of children at risk of increased exposure to air pollution is based on the total number of primary school children in England, Scotland, Wales and Northern Ireland, and the percentages of those children who walk to school based on national travel survey responses.

Method of travel to primary school

	<i>% of primary school pupils using this mode of transport</i>			<i>Number of primary school pupils using this mode of transport</i>		
	<i>Walk</i>	<i>Car</i>	<i>Public Transport</i>	<i>Walk</i>	<i>Car</i>	<i>Public Transport</i>
<i>England</i>	<i>51%</i>	<i>41%</i>	<i>3%</i>	<i>2,530,839</i>	<i>2,028,485</i>	<i>138,049</i>
<i>Scotland</i>	<i>59%</i>	<i>30%</i>	<i>9%</i>	<i>234,583</i>	<i>120,494</i>	<i>35,227</i>

Wales	45%	54%	6%	29,975	35,970	3,997
Northern Ireland	25%	65%	9%	45,863	119,244	16,511
	Averages			Totals		
	50.7%	41.1%	3.5%	2,841,260	2,304,194	193,784

Data sources:

- www.gov.uk/government/statistics/schools-pupils-and-their-characteristics-january-2017
- www.gov.scot/Publications/2017/12/3099/downloads
- gov.wales/docs/statistics/2017/170726-school-census-results-2017-en.pdf
- www.education-ni.gov.uk/publications/school-enrolments-school-level-data-201718
- www.gov.uk/government/collections/national-travel-survey-statistics
- www.transport.gov.scot/publication/26-september-2017-transport-and-travel-in-scotland-2016
- gov.wales/docs/statistics/2018/180130-active-travel-walking-cycling-2016-17-en.pdf
- www.infrastructure-ni.gov.uk/news/publication-method-travel-tofrom-school-by-pupils-northern-ireland-20162017

Pollution monitoring methodology:

Air quality experiments took place in 4 UK cities – London, Glasgow, Manchester and Leeds. The experiment tested the pollution exposure of an adult and child travelling along a variety of routes:

- Walking along a quiet route (low traffic flow, away from main road) – 10 min
- Walking along a busy road (high traffic flow on a main road) – 10 min
- Journey in a car stuck in traffic along busy route – 10 min
- Bus journey – 10 min

The parent and child both carried an air pollution monitor at roughly shoulder height. The adults typically carried theirs and the children put theirs in a small backpack with the monitor sticking out. The meters were therefore carried at heights of approximately 1 metre for the children and 1.7m for the adults (depending on their height).

The equipment used in the London, Leeds and Manchester experiments was a micro-aethalometer for black carbon provided by Dr Stettler from Imperial College London. The monitor AE51 is a pocket-sized, lightweight device (117 x 66 x 38 mm) (0.28 kg). The instrument took a reading every minute.

Research support and equipment used in the Glasgow experiment was provided by Melissa Nikkhah-Eshghi, based at the Scottish Universities Environmental Research Centre (SUERC) in East Kilbride.

The un-peer reviewed analysis of air pollution data was carried out by Dr Stettler, Imperial College London

The following families were involved in the pollution monitoring.

Glasgow - John Bynorth with Daisy and Mitzi , East Kilbride, South Lanarkshire They live on a quiet housing estate in a semi-rural area on the outskirts of East Kilbride. Their typical journey in the morning is around 7.3 miles and takes around 15-20 minutes. It starts along a rural road which links the estate to a nearby village, before they drive on to the East Kilbride Expressway.

“Because of my job with an environmental charity, I’m aware of air pollution and how poor air quality from exhaust tail-pipes feeds through a car’s ventilation systems to the driver and passengers. However, I was completely taken aback to learn that Daisy (who was sitting behind the driver on the roadway side of the car) was exposed to more pollution than Mitzi, who was on the left, near to the pavement. I didn’t have a clue that where you sat in a car made a difference to the amount of air pollutants you inhaled,” said John Bynorth.

London Flora and Fred Fyfe-Graham

Flora and Fred’s family don’t own a car. The school and nursery are a walk away; sometimes they use a cab, for example to help them get to swimming lessons.

“As parents, you try to protect your children from all sorts of dangers but air pollution is something that is impossible to protect them from, because it’s everywhere as you walk to the shops or to school,” said Flora Fyfe-Graham

Manchester Jennie and her daughter

Jennie and her family live in a leafy residential area on the outskirts of the city centre. She tends to walk her children to school nearby, and take them in the car to after-school clubs. *“I’ve always subconsciously avoided traffic and busy streets, not directly because of air pollution but because of traffic itself. I prefer to walk with the children along quiet roads but if I have to visit busy roads for shopping, say, I prefer to take the car, even for short journeys,” said Jennie*

Leeds -Mala and Ariyan Kapoor

“Since having Ariyan I have been more concerned about health and well-being, though I was shocked to hear that children are more exposed than adults to air pollution from exhaust fumes. When going out I do try to take more back routes [avoiding the most polluted routes]. It might take me a couple of minutes longer but if it reduces Ariyan’s exposure to air pollution, then it’s worth it. I recently bought a new car that is safer and more environmentally friendly (it’s one that switches its engine off when idling) so that’s a big change that I made to reduce air pollution,” said Mala Kapoor.

FLIR thermal imaging

FLIR Systems is a world-leading maker of sensor systems that enhance perception and protect the environment. FLIR leverages thermal imaging to provide innovative, intelligent solutions for security and surveillance, environmental and condition monitoring, outdoor recreation, machine vision, navigation, and advanced threat detection. One of those solutions is the GF343 infrared camera. The FLIR GF343 is an

optical gas imaging camera that lets you see CO₂ leaks quickly, easily, and from a safe distance. This technology can be used to show the impact of pollutants such as NO_x, SO_x, NO₂ and diesel particulates on local environments, by using CO₂ as a tracer gas to observe how those substances disperse into the atmosphere. More information - www.flir.co.uk/home

Sufferers from air pollution

We have the following people available who suffer health impacts from air pollution:

- 1) **Joe, schoolkid, asthma sufferer, Manchester.** Joe, aged 14, lives in Manchester and has asthma. Sometimes, he says, when the pollution in the city is bad, it's best that he stays indoors. Joe is articulate about the effects of air pollution on people's health, and young people in particular. Last year, he made a film about air pollution in Manchester (<https://www.youtube.com/watch?v=eIOv3zNd5wM&t=50s>). He's still in school, so would only be available for interview outside school hours, or for pre-record on request.
- 2) **Martin, 72, has a chronic lung condition, London.** For the past four years Martin has been in and out of hospital with breathing problems and finally got diagnosed in February 2018 with a chronic, incurable lung condition that is only going to get worse. Apparently it is a genetic condition that gets turned on/triggered by irritants such as air pollution. He can't cycle long distances any more. He now has to take regular breaks out of London to ease his breathing. But after about a week of being back in London his breathing gets bad again. His consultant has suggested he move out of London to avoid the air pollution.
- 3) **Bo, dad, on behalf of his 3-year-old daughter, who gets regular pollution-related chest infections, London.** At the age of 2 Bo's daughter developed regular chest infections and breathing problems. They have even found her slumped on the sofa struggling for breath and have had quite a few A&E visits. Bo has been told by the doctor that it is likely to be pollution-related (but there is no proven link). Her proneness to chest infections seems to be exacerbated by air pollution. On the children's ward in hospital Bo says almost every child in there had breathing problems/chest infections. When he spoke to the ward doctor about it, the doctor said it was always like this and has got so much worse in the last 10 years – he puts it down to air pollution, but there is no empirical evidence. Bo avoids taking their daughter into central London where the pollution is even worse.