

Community discussion: Researching how Clean Air Zones affect our health

Welcome!

Please help yourself to refreshments and write a name tag

The main session will start at 10:35

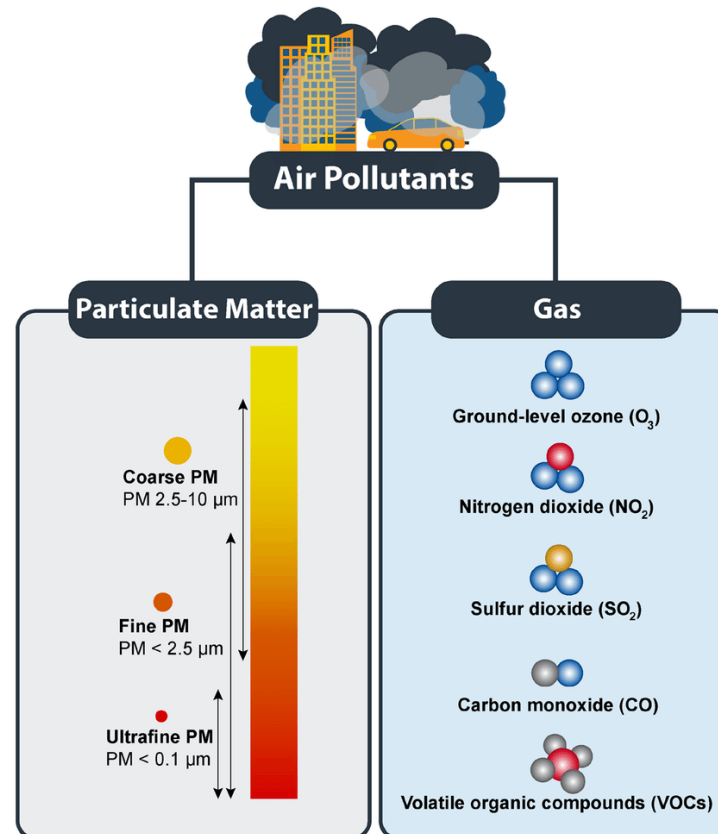
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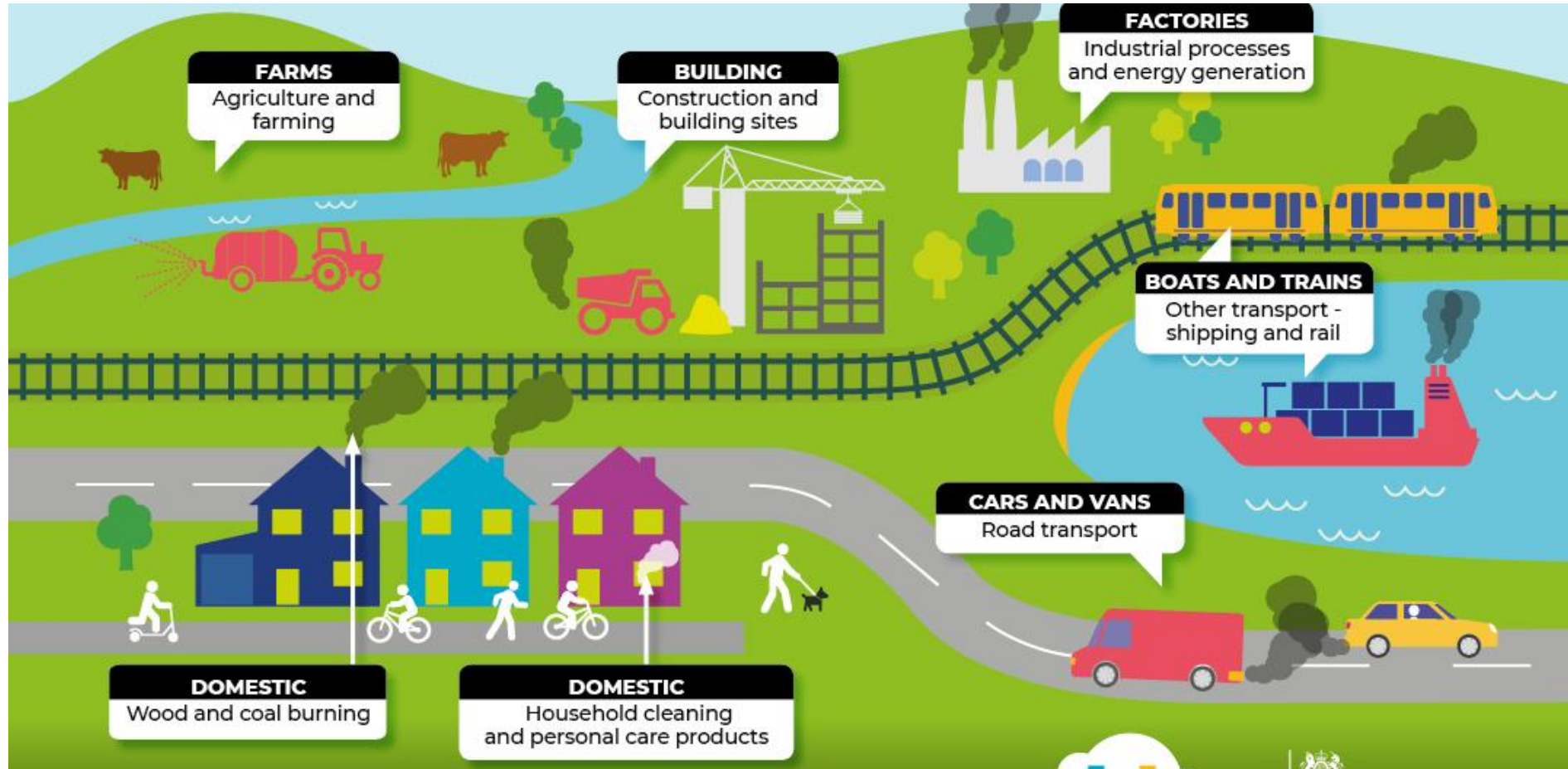
Medical
Research
Council

**Imperial College
London**

What is air pollution?











Can you identify the sources of outdoor air pollution?



Contribution of traffic-related pollution to associated mortality

Contributors to NO₂-related mortality (%)

City	 Transport	 Industry	 Energy	 Residential	 Agriculture	 Shipping	 Aviation	 Other
Bucarest	50.10	6.82	28.57	13.68	0.04	0.45	0.21	0.13
Stockholm	51.71	3.03	17.64	4.57	0.00	21.08	1.18	0.79
Prague	46.70	12.06	15.50	22.64	0.01	0.41	1.86	0.84
Warsaw	30.97	4.00	46.88	15.28	0.02	0.41	1.96	0.47
Barcelona	47.96	14.97	6.59	11.50	0.00	16.47	2.33	0.19
Brussels	62.07	7.65	6.58	15.08	0.00	5.68	2.69	0.25
London	59.55	7.39	8.93	16.08	0.00	3.50	4.12	0.43
Paris	45.91	4.10	11.46	31.86	0.00	1.21	4.52	0.94
Rome	56.21	5.61	1.48	28.07	0.01	3.71	4.59	0.32
Berlin	36.24	10.66	33.85	12.91	0.00	1.39	4.70	0.26
Madrid	71.04	7.35	2.27	13.46	0.01	0.40	5.32	0.15
Amsterdam	35.03	8.70	7.86	8.22	0.00	31.61	7.47	1.10
Lisbon	28.56	26.79	2.33	4.03	0.01	22.03	16.13	0.12

Khomenko et al, The Lancet Public Health, 2023.

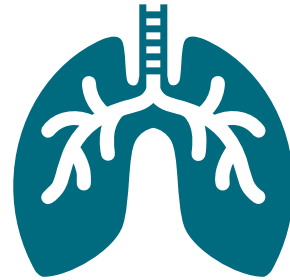
The largest contributor of nitrogen dioxide to associated mortality is our transport system, including diesel and petrol cars

Data from 2015

Air pollution and health – which diseases?



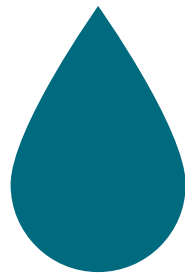
*Birth-related e.g.
low birthweight*



*Lung conditions
(e.g. asthma)*



*Heart disease
and strokes*



Diabetes



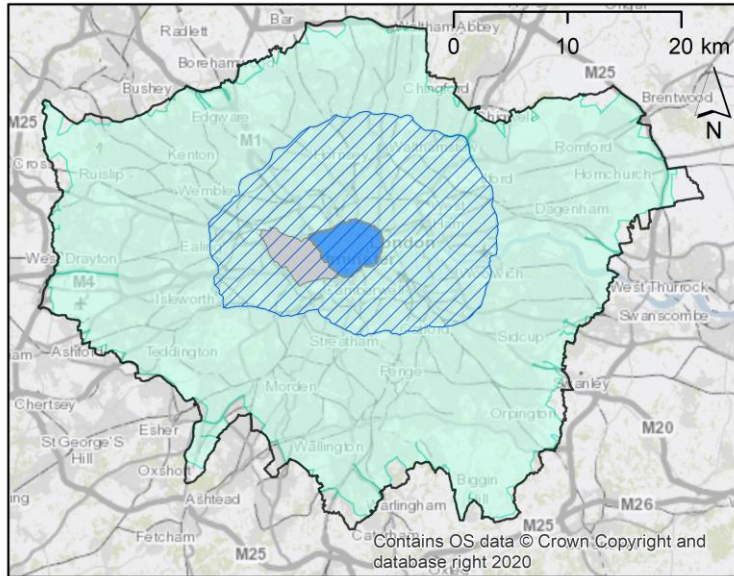
Dementia

What can we do about the problem?

- In London, several policies have been introduced to address traffic-related pollution
- Are you aware of the Ultra-Low Emission Zone (ULEZ)?



What is the Ultra-Low Emission Zone (ULEZ)?



- Greater London
- Low Emission Zone (LEZ)
- Central Ultra Low Emission Zone (central ULEZ) / Congestion Charging Zone (CCZ)
- 2021 ULEZ expansion
- CCZ Western Extension (removed in 2011)

ULEZ / T-charge



Number of the most polluting vehicles



Air pollution (nitrogen dioxide and particulate matter)



Change in health conditions associated with air pollution



Our research: Is the ULEZ linked to changes in health outcomes?

Low Emission Zones and health effects

Review

Health effects of low emission and congestion charging zones: a systematic review

Rosemary C Chamberlain, Daniela Fecht, Bethan Davies, Anthony A Laverty

Low emission zones (LEZs) and congestion charging zones (CCZs) have been implemented in several cities globally. We systematically reviewed the evidence on the effects of these air pollution and congestion reduction schemes on a range of physical health outcomes. We searched MEDLINE, Embase, Web of Science, IDEAS, Greenfile, and Transport Research International Documentation databases from database inception to Jan 4, 2023. We included studies that evaluated the effect of implementation of a LEZ or CCZ on air pollution-related health outcomes (cardiovascular and respiratory diseases, birth outcomes, dementia, lung cancer, diabetes, and all-cause) or road traffic injuries (RTIs) using longitudinal study designs and empirical health data. Two authors independently assessed papers for inclusion. Results were narratively synthesised and visualised using harvest plots. Risk of bias was assessed using the Graphic Appraisal Tool for Epidemiological studies. The protocol was registered with PROSPERO (CRD42022311453). Of 2279 studies screened, 16 were included, of which eight assessed LEZs and eight assessed CCZs. Several LEZ studies identified positive effects on air pollution-related outcomes, with reductions in some cardiovascular disease subcategories found in five of six studies investigating this outcome, although results for other health outcomes were less consistent. Six of seven studies on the London CCZ reported reductions in total or car RTIs, although one study reported an increase in cyclist and motorcyclist injuries and one reported an increase in serious or fatal injuries. Current evidence suggests LEZs can reduce air pollution-related health outcomes, with the most consistent effect on cardiovascular disease. Evidence on CCZs is mainly limited to London but suggests that they reduce overall RTIs. Ongoing evaluation of these interventions is necessary to understand longer term health effects.



Lancet Public Health 2023; 8: e559-74

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Air pollution

Low emission zones are improving health, studies show

Review of research finds particularly clear evidence that LEZs in cities reduce heart and circulatory problems

Gary Fuller
@rgaryfuller
Fri 30 Jun 2023 06:00 BST



Evening Standard

INSIDER THE ESCAPIST THE REVELLER THE OPTIMIST COMMENT TECH ES BEST ES MAG

Restricting private vehicles in cities reduces disease and injuries, study says

Researchers said the review brings together global evidence to help understand how effective LEZs and CCZs are in bringing about benefits to health.



Low emission zones are being increasingly adopted across the UK and Europe (Aaron Chown/PA) PA Wire

Analysis of London data

- We analysed changes in the number of emergency hospital admissions of adults, for specific causes (including lung diseases (e.g. asthma) and heart disease/strokes)
- Toxicity charge and central ULEZ area, Jan 2014 - Feb 2020
- Comparisons to outer London and areas of other English cities



How can we communicate our results?



PHICAZ Science Communication Strategy



How to communicate our results to the public



Future interest in a similar discussion

Thank you!

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