

UKHSA towards IAQ solutions

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Exposure to indoor air pollution across socio-economic groups in high-income countries:

A review of the literature and a modelling methodology

Ferguson L, Taylor J, Davies M, Shrubsole C, Phil Symonds, Dimitroulopoulou S (2020)



1. Introduction

The presence of harmful substances such as gases, particulates or biological malecules in the Earth's atmosphere is known as air pollution (Leorets et al., 2013). Human expansive to air pollution has serious in little on equivalent exponences in indose air pollution, despite population, despite populatio implications for builds: Short term exposure may exacerbate asthmaand be responsible for hospital admissions (22erog et al., 2015), whilst long term exposure to ambient air pollution is repeatedly associated with a higher incidence of cardiovascular and respiratory diseases (Pope et al., 2011: Atkinson et al., 2016: COMEAP, 2016a), birth defects (Padula et al., 2013) and neuro-degenerative disorders (Moulton and Torg. 2012). The Committee on the Medical Effects of Air Pollution (COMEAP) have estimated that ambient air pollution is responsible for between 28,000 and 36,000 deaths each year in the UK (COMD/P), mental rids across populations, whereby disadvantaged sub-groups are

201833. While there is a significant body of international highlighting evidence of the appriation of areas of low spele-presentation status (SES) with high levels of outdoor air pollution (Clark et al., 2014) Millejevic et al., 2007; Pinault et al., 2016; Fairburn et al., 2009), there lations in developed countries spending the majority of their time indoors. The induce environment is everlooked in the environmental health discourse, despite the considerable health risks that can arise (Bernstein et al., 2006). Thus, understanding variations in populatio exposure to air pollution across socia-sconsmic groups, in both indoor and autdoor environments, is critical in reducing existing and future health inequalities. Environmental health equity is the equal distribution of environ

induce exposures, mudelling approaches may provide apportunities to quantify exposure disparities due to

iours across populations of different socio-economic status.

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- > Households of low socio-economic status experienced higher levels of indoor PM, NO₂, VOCs and ETS
- Higher radon concentrations were found in homes with a greater material wealth
- Inequalities in exposures may arise via
 - Poor quality housing
 - A lack of education regarding the harm of indoor second-hand smoke
 - Location near congested roads
 - Higher occupant density resulting in greater re-suspension of particles
 - Radon in homes is principally explained by geological variables
- > A holistic approach to improve indoor air quality (IAQ) is required by transforming existing cities through sustainable building design, clean household fuels and reduced dependency on cars

10.1016/j.envint.2020.105748 (doi.org)

FUVN system mapping

- Early FUVN activity
- Mapped
 - Health determinants
 - Inter-relationships
- Framed
 - Discussions
 - Ventilation survey
 - Webinar topics
- Health inequalities...
 - ...based on exposure
 - ...based on vulnerability



Systemic inequalities in indoor air pollution exposure in London, UK

Ferguson L, Taylor J, Zhou K., Shrubsole C, Symonds P, Davies M, Dimitroulopoulou S (2021)

Systemic inequalities in indoor air pollution exposure in London, UK

URBAN SYSTEMS FOR SUSTAINABILITY AND HEALTH SYNTHESIS

BUILDINGS

SPECIAL COLLECTION

11 ubiquity press

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ABSTRACT

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POLICY RELEVANCE

There is investing public and publical measurems of the impact of our publicities are public health. Strong scientific evidence helps approach to an publicities with motiodity and martiality. Deprined communities may be more effected, however, with limited actions at how depresent integr influence their peraind exposure to or publicity. Linux Register Institute for Divisionmenta Geologic and Englishering, University Costena London

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YO CTIL Terri ANTIELE: Repution L, Taylor, J, 2004, 4, Dividitious, C, Symoolos, F, Dover, A, & Dividition/priority, 5 (2021). Spharmic Respublic mission of production approach missio Deprivation affects personal exposure to air pollution:

- More time is spent indoors
- More pollution-generating activities are undertaken indoors
- Outdoor air pollution is higher in deprived areas
- Poor quality housing can increase exposures
- Underlying health issues increase adverse impacts
- > Systems frameworks can highlight areas of systematic inequality
- Low-income households have limited opportunities to improve their indoor air quality
- Potential systematic interventions include improving outdoor environments, improving housing quality and urban form, and changing the behaviour of occupants
- Indoor air pollution exposure disparities are under-researched

https://doi.org/10.5334/bc.100

UKHSA collaboration: Sector guidance on the health impacts of damp and mould

- Awaab Ishak, Prevention of future deaths report
 - Matter of concern: lack of health information for housing sector on risks of damp and mould
 - Contrast with legionnaires and gas safety campaigns
- OHID to lead on response in partnership with UKHSA and DLUHC
 - Review of existing guidance (UKHSA)
 - Engage with interested parties
 - Publish guidance for landlords end of July 2023
- Inequalities: housing and indoor quality, structural (defining and resolving housing-related issues)
 - Action targets housing standards and practices



Awaab Ishak: Mould in Rochdale flat caused boy's death, coroner rules



was share to have been been been the movie several times to Rochdate Boroughweet Housing

By Phil McCann & Lynette Horsburgh



Standards and guidelines: the current state of play

- Addressing specific pollutants
 - Volatile Organic Compounds, low level carbon dioxide (UKHSA)
 - Open database for international and national guidelines (ISIAQ) <u>www.ieqguidelines.org</u>
- Addressing building characteristics
 - Building regulations: Approved Document F Ventilation / Appendix B: Performancebased ventilation
 - A Decent Home: Definition and Guidance for Implementation
- Addressing regulation and interventions
 - Housing Health and Safety Rating System (DLUHC)
 - Portable air purification: impacts on indoor air quality and health (UKHSA)