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Media release

Nearly half of UK homes have high indoor air pollution as a result of dangerous levels of formaldehyde and other pollutants - new report

- ***A fifth of homes showed more than double the amount of safe levels of formaldehyde***
- ***45% of homes had significantly increased levels of Volatile Organic Compounds (VOCs) - with 28% of householders in homes with high VOC readings reporting multiple respiratory difficulties***
- ***98% of householders didn't identify chipboard furniture as one of their top sources of pollution - chipboard is a major source of formaldehyde***
- ***Leading authority on air pollution reveals health conditions linked to indoor air pollution, including asthma, cardiovascular disorders, thyroid disease, diabetes, impaired cognition and cancer.***

A new report on the state of air pollution in UK households has found that our homes are experiencing dangerous levels of indoor air pollution. The report, analysing data from 47 homes in Birmingham, London and the Home Counties, is being launched in partnership with the Clean Air Day campaign, and was undertaken by indoor air experts Airtopia.

Formaldehyde, among other air pollutants, was identified as one of the most toxic pollutants prevalent in UK homes. Formaldehyde is a human carcinogen and can be found in adhesives in wood products such as MDF, carpets, furniture, paints and varnishes. Health effects of formaldehyde include sore throats, rhinitis, nasal irritation and breathlessness. **A fifth of UK homes** showed significant levels of formaldehyde with **13% of properties exceeding World Health Organization (WHO) guideline limits.**

The report also identified that **45% of homes had levels of Volatile Organic Compounds (VOCs)** that exceeded healthy levels, with **17% reporting high-to-serious levels of VOCs.*** VOCs are a group of

chemicals that readily evaporate into the air and have been linked to nausea, fatigue and headaches; some are also carcinogenic.

In this report, **28% of homeowners with high VOC readings reported multiple respiratory difficulties.** The report identified that these high levels of indoor air pollution were mainly caused by the occupants' day-to-day behaviour. Sources of VOCs include paints, varnishes, alcohol products such as cleaning solutions, hand sanitisers, air fresheners, personal care products including deodorants, perfumes, hair dye, nail varnish, and scented candles.

Airtopia's report also identified that a large proportion of households were unaware of the simple things they can do to reduce indoor air pollution – **with 47% of households surveyed confirming that they never ventilate their homes at night.**

In addition, Opinium market research, commissioned by Clean Air Day organisers Global Action Plan, identified that while **71% of people feel that their health is affected by indoor air pollution**, levels of awareness among households as to the main sources of indoor air pollution were also incredibly low: when asked to select the three biggest sources of indoor air pollution from a list we provided, **16 % of people were unable to give an answer**; meanwhile **only 2% identified chipboard furniture as a top source of pollution** - chipboard is a major source of formaldehyde.

Remarkably few people reported doing things to reduce the level of VOC air pollution in their homes. For example, **only 13% reported using low-emission (labelled low VOC) paints, varnishes and glues** when decorating or crafting, and **only 4% of respondents had opted for low emission carpets or furniture.**

This research has been launched ahead of an interdisciplinary Working Party review, funded in part by Airtopia, into the effects of indoor air pollution on children and young people's health. This is being carried out by the Royal College of Paediatrics and Child Health (RCPCH) in collaboration with the Royal College of Physicians (RCP).

One of the lead authors, Professor Stephen Holgate, a leading health and air pollution expert, said: "The data in this report reveals the scale of the indoor air pollution challenge. Indoor air pollution is being linked to many adverse health effects including asthma, cardiovascular disorders, thyroid disease, diabetes, impaired cognition and cancer. With these multitude of potential health effects it's essential that more research is undertaken into this area to fully understand the health impacts and what needs to be done to keep people safe."

Tim Robinson, Head of Science at Airtopia, said: "There are literally hundreds of chemicals polluting our indoor air and this research from our Home Health Checks shows how important it is that householders understand this. It's time we gave people more information to protect their health, and that is just what Airtopia is working to do."

Chris Large, Senior Partner at Global Action Plan, the charity behind Clean Air Day, said: "Indoor air pollution is a major issue that needs to be urgently addressed so this year the Clean Air Day campaign is putting the spotlight on air pollution indoors as well as outdoors."

“This research highlights the need for more public information and advice on indoor air pollution, and measures like better product labelling so that people can make informed choices. There is an alarming lack of awareness of indoor air pollution and the simple things householders can do to protect themselves, such as buying low VOC labelled products, using fragrance-free, milder cleaning products, ensuring they source MDF that meets European standards, and opening windows.”

James, one of the people who took part in Airtopia’s study, lives in a one-bedroom, new-build flat in Surrey. He can suffer from migraines and knew that these might be intensified by what he was breathing in at home. The Airtopia survey revealed, among other things, a VOC level five times higher than the acceptable range, and formaldehyde at two times normal levels.

“We expected high levels of VOCs,” said James, “because it was a new flat, but our formaldehyde rating has made us think about what furniture to buy in the future - wood, not MDF, and quality soft furnishings.”

Ahead of Clean Air Day, taking place on 20 June, Global Action Plan has released a range of advice and information on what households can do to reduce their exposure to indoor air pollution.

ENDS

Notes to Editors

Further information and media interviews

Please contact Kate Hinton kateahinton@gmail.com / 07714 708416 or Zoe Sobol zoe@snowballpr.co.uk / 07971 066034

Imagery

An infographic of pollution sources in the home, plus photography of three UK homeowners (see case studies below), are available please see dropbox link -

<https://www.dropbox.com/sh/vydw6cov2g0y892/AABJtSA7taugyTpEufxZU4Hua?dl=0>

Expert commentary available

Professor Stephen Holgate Professor Stephen Holgate is Medical Research Council Clinical Professor of Immunopharmacology and Honorary Consultant Physician in Medicine at the University of Southampton.

Tim Robinson Tim Robinson is Airtopia’s Head of Science.

Top tips on how to improve indoor air quality at home

1. Choose paints and varnishes that are labelled low volatile organic compounds (VOCs).
2. Check the origin of building products such as MDF and laminate flooring prior to installing them in your home to ensure they meet the European standards for formaldehyde content.
3. Use fragrance-free, milder cleaning products and use creams rather than sprays wherever possible.
4. Avoid artificial scents in personal care products, such as shampoo, deodorant and soaps.
5. Only use your wood burning stove, open fire or barbeque when absolutely necessary, and burn only smokeless fuel or dry, well-seasoned wood.
6. Get your boiler serviced regularly to eliminate any risk from carbon monoxide poisoning.
7. Open windows or use the extractor fans, especially when decorating, cooking or using cleaning products, but close windows near busy roads during rush hours.
8. Book an indoor air quality audit for your home.

Case studies - photographs available

- **James** lives in Surrey in a new-build, one-bedroom flat. Airtopia's survey found high levels of formaldehyde in his home. Though Airtopia couldn't see any mould, tests revealed high levels of microscopic mould. VOC levels from fragrances were also high.
- **Katie Millet** lives in London in a Victorian terraced house. Katie has two young children, one of whom suffers from asthma. Airborne pollutants were quite low in Katie's home, though the total level of airborne chemicals from actively growing mould was concerning. This is likely to be caused by Katie drying her laundry indoors.
- **Shaukat Qureshi** lives in a six-bedroom detached bungalow in Birmingham. He has a large family, some of who have allergies. Airtopia's survey of his home was generally positive, but there was high humidity and high levels of carbon dioxide - both of which could contribute to allergy symptoms.

Airtopia research

- The tests were carried out in Birmingham, London and the Home Counties.
- The tests were carried out in the final quarter of 2018 and the first quarter of 2019.
- The test sample of 47 properties was consistent and rigorous with instrumentation and chemical analysis for volatile organic compounds (VOCs) to international standards.

WHO formaldehyde limit values:

http://www.euro.who.int/_data/assets/pdf_file/0009/128169/e94535.pdf

<http://www.hse.gov.uk/woodworking/faq-mdf.htm>

VOC limit values:

http://www.euro.who.int/_data/assets/pdf_file/0009/128169/e94535.pdf

Extracts from the Airtopia report:

- 21% showed significant levels of formaldehyde in their home, with measurements greater than double what we consider normal background for indoor air. Just under 13% scored our poorest rating – E. This means that those households are living with formaldehyde concentrations over the WHO recommended maximum daily exposure limit, that is 100 ug-m³. 13% (six properties) of Airtopia's indicative study of 47 properties had levels of formaldehyde over the WHO limit.
- 45% of homes had VOCs measured at above 1,000 ug-m³. 1,000 is the level that most modern homes now typically exhibit but it is also the level at which certain individuals, usually with a vulnerability or sensitivity, will begin to experience symptoms. Only a small proportion of these homes had had any significant refurbishment completed in the past year, suggesting that day-to-day behaviour drives this domestic contamination.
- Typically, the inhabitants of these properties reported some level of respiratory problem that affected them on a daily basis. 28% of homes with high VOC readings reported multiple respiratory difficulties. 17% of homes tested reported ratings of D and E on our scale. This represents high-to-serious levels of contamination. The research identified that these levels were mainly caused by day-to-day behaviour driving these levels of indoor air pollution.

Further information on formaldehyde

- Formaldehyde is an indoor air pollutant
- Sources of formaldehyde – adhesives in wood products, carpets, furniture, paints and varnishes, heating, cooking, candles or incense burning
- Levels of formaldehyde in the home vary depending on a number of factors including the age of the home (levels decrease with time), temperature, humidity, and how well the home is ventilated.
- Health effects include sore throat, rhinitis, nasal irritation and breathlessness. Formaldehyde is a human carcinogen.
- Actions to reduce exposure: use low-emitting building materials (less MDF) and products (low VOC paints/varnishes, second hand furniture), and reduce combustion emissions from log burners, cooking and ventilate.

- In 2010, the World Health Organization (WHO) established an indoor air quality guideline for short- and long-term exposures to formaldehyde (FA) of 0.1 mg/m³ (0.08 ppm) for all 30-min periods at lifelong exposure.
- 13% (6 properties) of Airtopia's indicative study of 47 properties had levels of formaldehyde over the WHO limit.

Sources:

Public Health England (PHE), 2017

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/582279/Formaldehyde_toxicological_overview.pdf

WHO

http://www.euro.who.int/_data/assets/pdf_file/0009/128169/e94535.pdf

Further information on VOCs

Non-methane volatile organic compounds (NMVOCs), to give them their proper name, are a very large group of organic compounds, which differ widely in their chemical composition but can display similar behaviour in the atmosphere.

NMVOCs are emitted to air as vapour arising from petrol, solvents, air fresheners, cleaning products, perfumes and numerous other sources, often when products are used at work or in the home. The diversity of products and processes which emit NMVOCs is huge. A particularly important NMVOC is formaldehyde, which can be released from furniture, finishes and building materials, such as laminate flooring, kitchen cabinets and wood panels, and is also formed in chemical reactions in the air between other NMVOCs and chemicals generated from combustion processes, such as smoking, heating, cooking or candle burning.

Other sources of NMVOCs include furnishing, carpets, and upholstery, products for cleaning and polishing, air fresheners, and personal care products, for example fragrance, deodorants, and hair styling products.

Opinium research

Clean Air Day partner Opinium carries out a regular UK-wide survey of public attitudes, knowledge and action related to air quality, on behalf of Global Action Plan, the environment charity behind Clean Air Day. This is known as the Clean Air Public Insights Tracker (CAPIT).

Based on 2,000 adult respondents, CAPIT poses a regular set of questions, repeated each quarter, to track changes over time. Each quarter, the data and summary report is made available for free on the [Global Action Plan website](#). Global Action Plan is the environment charity that coordinates the Clean Air Day air pollution campaign.

The most recent CAPIT survey was carried out between 19 and 21 March, and included a sample of 2,002 nationally representative adults. The findings show:

When asked about the sources of indoor air pollution:

- Only 2% of respondents selected chipboard furniture, and only 1% selected sofas as one of the biggest contributors to indoor air pollution (see table below).
- Only 9% of respondents thought that personal care products were one of the biggest contributors to indoor air pollution.
- Only 15% of the population thought that paints and varnishes were one of the biggest contributors to indoor air pollution, such as VOCs.

Which of the following, if any, do you think are the biggest contributors to indoor air pollution in the UK? Please select up to three options.	Total
Smoking	56 %
Mould	31 %
Indoor open fire	26 %
Cleaning products	26 %
Solid fuel stove	16 %
Paint and varnish	15 %
Central heating boiler	14 %
Gas oven or hob	12 %
Candles	9 %
Personal care products	9 %

Carpets	4 %
Plastic toys	4 %
Chipboard furniture	2 %
Sofas	1 %
Other (please specify)	0 %
Don't know	16 %

When asked about the impacts of indoor air pollution:

- Overall 71% of respondents felt that their health was impacted by indoor air pollution in some way.
- 11% of respondents felt that indoor air pollution had a major impact on their health.

About Clean Air Day

[Clean Air Day](#) is the UK's biggest air pollution campaign. It's a chance to find out more about air pollution, share information, and make the air cleaner and healthier for everyone. Clean Air Day, which this year takes place on 20 June, is coordinated by environment charity [Global Action Plan](#) and is supported by more than 200 organisations, including Public Health England, British Heart Foundation, British Cycling, Royal College of Physicians, DEFRA, UNICEF, Asthma UK, Great Ormond Street Hospital and many NHS trusts and local authorities.

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About Airtopia

Clean Air Day partner Airtopia is a social enterprise that specialises in air quality audits of people's homes. 0800 0588590 www.airtopia.co.uk

*There are a number of guidelines issued on VOCs, including BREEAM and the building regulations (part F). A total VOC of 1,000 ug/m³ is the level at which certain individuals may begin to experience “symptoms” as a result of the poor air quality; however this is dependent upon the individual in question and the exact chemicals present. Vulnerable groups such as those suffering from asthma or other respiratory conditions will be at greater risk. This level does not relate to any particular standard, however it has been derived from international guidelines published in the Chemosphere journal.