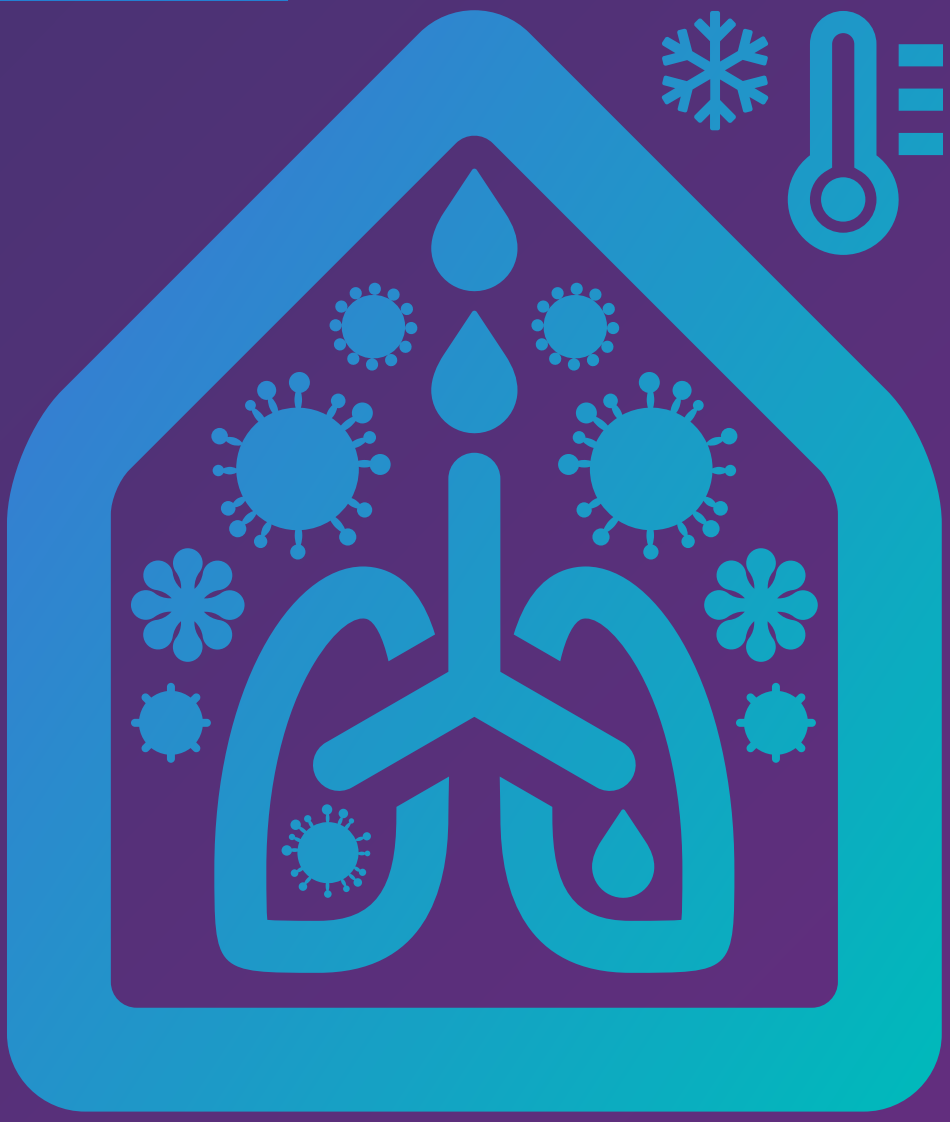
Mould and damp prevention in new and existing homes

A Practical Guide



Guide

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Foreword

by George Clarke

Architect, Writer, TV Presenter and Ecodan Ambassador

A home should be a place where we feel safe, happy and healthy.

But that's not the case for some families whose flats and houses are riddled with damp and mould.

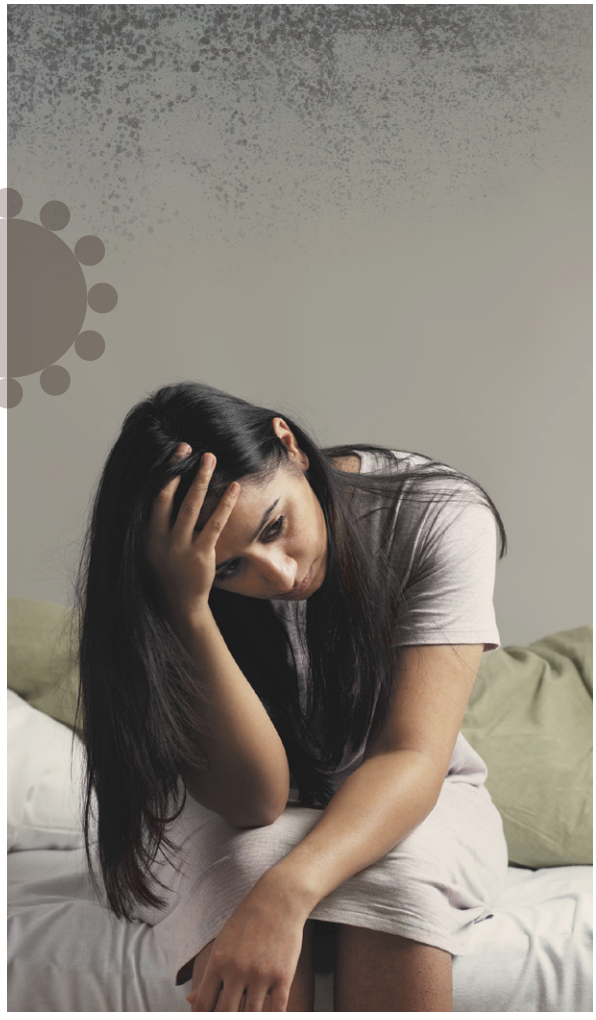
It’s a combination that can cause various physical symptoms from itchy skin to deadly lung disease. Perhaps even more insidious is that living in these conditions is known to impact mental health, causing depression and anxiety.

Damp and mouldy homes are a cost to all of us - the NHS spends an estimated £1.4 billion annually on treating illnesses associated with cold or damp housing. The World Health Organisation says that mould is so dangerous that it doesn’t set minimum ‘safe’ levels.

Good heating and ventilation are essential to healthy homes, but they must be affordable and useable for householders. The tragedy of high energy prices is that people turn off their heating, increasing the risk of damp and mould.

The good news is that we already have the tools to make the improvements that could save lives - and make these homes better places to live.

This guide from BESA and Mitsubishi Electric highlights how landlords can tackle the problems of damp and mould at the source with straightforward steps to improve the indoor environment.



Mould and damp - the silent hazards in our homes

It's usually easy to spot when a home has a mould problem, although some types of mould are not visible. Typically, it appears as a dark stain or black growth around windowsills, walls and ceilings. But mould doesn't just look unsightly - **it's also bad for your health, and for some people, it can be deadly**.

Once mould spores are airborne, they can be inhaled, causing respiratory infections and long-term illnesses.

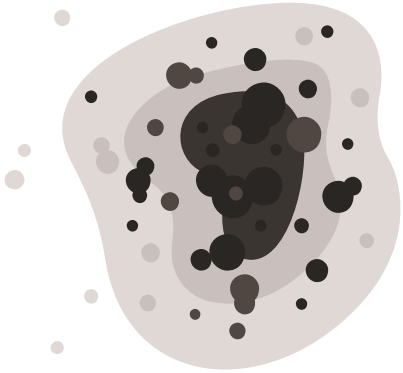
The NHS[1] recognises that mould causes significant health issues, including infections, allergic rhinitis, and asthma. Some individuals are particularly vulnerable to the effects of damp and mould, including children, people with allergies and older people. Symptoms can range from itchy skin and runny nose to asthma attacks and deadly lung disease.

A House of Commons report for the UK government[2] highlighted the impact of damp, mouldy homes on the health service: "The NHS spends an estimated **£1.4 billion annually on treating illnesses associated with cold or damp housing**. When wider societal costs are considered, such as healthcare, that figure rises to £15.4 billion."

The report also says that problems go beyond physical illness: "Cold or damp conditions can have a significant impact on mental health, with depression and anxiety more common among people living in these conditions." Mould is so potentially hazardous that there is no UK-based guidance on a 'safe' level of mould growth in homes.

The World Health Organisation (WHO)[3] advises against setting 'minimal levels' because damp and mould should be prevented, and if they do occur, they should be dealt with immediately.

What is mould and where does it come from?

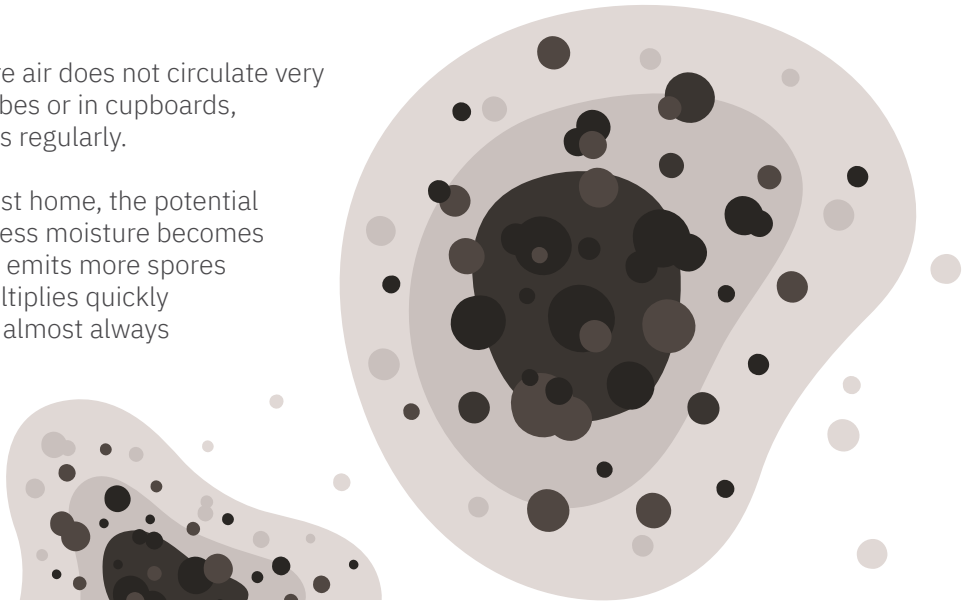


Mould is a microscopic fungus resulting from two ingredients: damp and microbes. WHO says that once damp builds up, the dust and dirt in most indoor spaces provide sufficient nutrients to start mould fungus developing and growing.

There are hundreds of species of mould spores potentially in the air in our homes, many of them entering from the outside but often produced indoors. Mould fungus breaks down dead organic materials found in carpets and even wallpaper.

It can also build up in spaces where air does not circulate very much, for example, behind wardrobes or in cupboards, so it's important to air these spaces regularly.

Because of this, even in the cleanest home, the potential for mould is always there once excess moisture becomes a factor. And when mould grows, it emits more spores into indoor air. So, the problem multiplies quickly and without proper intervention, it almost always gets worse.

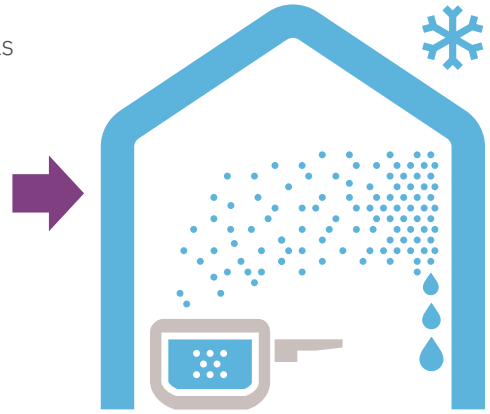


Why do homes become damp?

Damp in a home can be caused by several factors. Some of these can be structural, for example, leaking pipes or rain seeping through a roof. Rising damp can also be a problem where a damp course has been breached, for example, if the ground level around the house has been raised above the existing damp course for a patio or extension.

Unfortunately, dampness is also caused by everyday home activities such as bathing and showering, cooking on the stove or drying clothes on a rack. Even sleeping occupants in bedrooms exhale moisture.

The water vapour from these daily routines can collect on cold surfaces such as walls, windows and sills - this is known as condensation.



Condensation forms on walls and other surfaces more quickly when it's cold indoors. So, using the heating less in cold weather can lead to more problems with long-term damp conditions. What's more, excessive indoor moisture makes a house feel colder and humid walls lead to a coldness that makes more heating necessary, increasing energy bills.

When the UK experienced high energy prices in 2022, it was reported[4] that 25% of householders intended to leave the heating off because of problems paying higher energy bills. Not only do these householders face uncomfortable living conditions, but they are also more at risk of starting or adding to mould problems.

A study by WHO Europe[5] noted that between 10% and 50% of the places where humans live, work and play are damp. The excess moisture is not only harmful to people, but it can also lead to the degradation of materials in furniture, paint and other coatings, causing expensive damage.

> **"Measures to prevent or reduce moisture are the main way to limit the development of mould and any microbial growth: Without water - no mould!"**
>
> The World Health Organisation

Four steps to mould-free homes

Most people's first instinct when dealing with mould is to clean it away. But although it's possible to scrub mould from walls and tiles, this is only a temporary solution unless more is done to stop it returning.

Painting over the mould is also ineffective in the long term. Getting rid of mould permanently means removing the conditions that encourage it to grow.

There are four recommended steps for tackling damp and mould - and making sure they don't return.

Step 1: Tackle sources of dampness around the building

Check the building for a damaged damp course, rising damp or roof and window leaks where water may enter the home.

Step 2: Improve ventilation

It is vital to provide methods to remove moisture from indoor spaces. This means installing extract fans in kitchens and bathrooms, and providing occupants the usable means to ventilate the whole home.

It is important to consider ventilation for areas such as bedrooms since mould is often found here. People exhale moisture as they sleep, and if the bedroom has a closed door and windows, this can quickly build up. Trickle vents on windows are helpful, but may not be installed as standard on older homes. Ventilation is vital because it removes moisture and other indoor pollutants, which can lead to mould.

Step 3: Improve heating

One of the factors in the formation of condensation is that warm, damp air touches cold surfaces, releasing moisture onto the surface. Removing the damp from the air is one important step, but increasing the indoor temperature is also crucial to preventing mould. Warming surfaces such as walls and windows reduces the conditions for condensation to form.

Improving warmth in homes can include improving insulation levels. But it is vital to ensure that this does not have unwanted side effects. For example, part F of the Building Regulations[5] which deals with ventilation, notes that many existing homes are ventilated through 'infiltration'. This is the exchange of air between the inside and outside of a building through gaps and cracks. Energy efficiency measures that reduce this infiltration will leave the home 'under-ventilated'.

For example, loft or wall insulation improvements or new draught-proof windows will keep a house warmer and save energy, but the extra insulation can also trap moisture indoors, increasing the likelihood of mould. Therefore, if insulation is added to an existing property, ventilation must also be considered as part of the refurbishment. Research shows that people living in well-insulated and adequately ventilated homes are less likely to visit their doctor or be admitted to a hospital due to respiratory conditions than those living with damp.

Step 4: Make a home that people can live in

We must acknowledge that people living in homes use showers and cook food. They also need to dry clothes in cold and wet weather. Landlords must make provision for the moisture that is produced from these activities.

Too often, tenants are asked to 'cut back' on normal household activities, such as taking shorter showers or only drying clothes in a tumble dryer. However, there are limits to what can be done - even short showers in a cold home will produce excess moisture, and householders may feel that operating a tumble dryer is expensive.

While householders have a responsibility to reduce moisture in the air as much as they can, it's also crucial for landlords to make the link between low indoor temperatures, poor ventilation and long-term dampness. Without usable and affordable ventilation and heating systems in place, there is little that occupants can do on their own to improve conditions. Some are driven to buy products which seem to provide a solution, such as 'films' or dehumidifying bags that claim to reduce condensation on windows. At best, these work briefly, addressing a symptom but not the problem. Preventing excessive moisture and the mould that can result from it needs a whole-home approach that addresses damp and mould sources along with adequate and affordable ventilation and heating.

Ventilation strategies and technologies

Building Regulations recognise the importance of ventilation in homes.

In England and Wales, Part F (Volume 1) of the Building Regulations (2021)6 covers ventilation in dwellings and requires that ‘adequate’ ventilation is provided in all homes, whether they are new-build or existing.

Scotland's Building Standard Technical Handbook (Annex 3) also deals with ventilation, stating that: **"Ventilation of a dwelling is required to maintain air quality and so contribute to the health and comfort of the occupants."** In addition, control of humidity is specifically required to prevent mould. In Northern Ireland, Part K of the Building Regulations covers the issue of ventilation, and again the requirements are to limit the accumulation of moisture that could lead to mould growth.

Although there are different regulations on ventilation across the UK, they generally agree on the primary purposes and methods of ventilation for homes. **The three main ventilation strategies are:**

Extract ventilation

Applied in rooms where water vapour or pollutants are most likely to be released, for example, bathrooms and kitchens. Extract fans can be intermittent or continuous.

Whole dwelling ventilation

Provides outdoor air to the home, diluting and dispersing indoor pollutants and water vapour (which hasn't been extracted by other means).

Purge ventilation

Removes high concentrations of pollutants and water vapour. It is used intermittently and required only occasionally, for example, to remove fumes from painting. It can be delivered simply by opening windows or doors.

In addition, the regulations identify three main approaches to delivering these strategies:

- **Natural ventilation**
- **Mechanical ventilation**
- **A combination of both of these**

Extract fans are a mechanical means of ventilation, and they are commonly applied in kitchens and bathrooms. In existing homes, they can be retrofitted.

For whole dwelling ventilation, there is a broader range of options for ventilation systems, depending on the type of home and its location. For example, new homes and apartments can be designed to use natural ventilation, which harnesses airflow around a building to remove unwanted moisture and other air pollutants.

Natural ventilation has the benefit of using very little-to-no energy with minimal maintenance needed. However, it's usually challenging to take this approach in existing homes as it requires buildings to be designed and constructed specifically to use it. Also, for homes in city centres, natural ventilation (such as opening windows) can allow excess noise and pollution to come into the house. There are also security issues; some householders may not feel it is safe to leave windows open during the day or at night.

The alternative to natural ventilation is **whole dwelling mechanical ventilation**. This uses fans and ducts to provide a low-level rate of continuous ventilation throughout the home, supported by extract ventilators in kitchens and bathrooms.

One of the benefits of mechanical ventilation is that the rest of the house can be made more airtight to reduce infiltration without the worry of indoor moisture build-up. This helps to keep the indoor temperature more comfortable year-round and reduces the formation of condensation on cold surfaces.

Another important point is that mechanical ventilation can be installed with filters to ensure that the air introduced into the home is free from outdoor pollutants. This is also a requirement of Part F and can help to reduce mould-forming bacteria and fungi entering a house from the outdoors.

One of the most critical factors in providing good ventilation to homes is that the system is straightforward to use and doesn't impact the comfort of occupants. If extract ventilators are too noisy or regarded as too costly to operate, then householders are less likely to use them. Extract ventilation systems must also be easy to maintain, as a build-up of dirt makes them less efficient at removing humid air. It's therefore important to find ventilation solutions that are effective, efficient and affordable.

Making homes healthy and affordable

This approach continuously supplies outdoor air to the home and, at the same time, extracts stale air and moisture.

Where these two streams of air cross over each other, heat is transferred, and the incoming air is warmed with **'free'** heat energy. When the outdoor temperatures are low, this heat recovery protects occupants from cold draughts and reduces the need for extra heating to compensate for cold incoming air. MVHR can be used alongside extract ventilators in kitchens and bathrooms to remove excess moisture.

A benefit of MVHR is that it is ideal for use in projects where energy efficiency improvements are being made. For example, part L points out that the efficiency of MVHR systems should improve as the home becomes more airtight. This means that MVHR can be part of a packaged solution to upgrade existing houses, not only to be less prone to damp and mould but also to provide more energy efficient heating - and better indoor air quality.

It is sensible to note that installing MVHR in existing homes will involve some installation of ductwork. This can be boxed-in, generally within a small 10cm by 10cm enclosure. This would be a minor cosmetic change for the householder that significantly improves indoor air quality while preventing dampness and mould. Once installed, an MVHR system operates quietly and delivers predictable ventilation levels around the home (to at least Building Regulation requirements). Householders can carry out basic housekeeping, such as dusting room terminals and checking filters once a year to remove dust build-up. It is also important to schedule regular ductwork cleans with a ventilation specialist to ensure the system continues to work effectively.

When looking at preventing damp and condensation in homes, it is helpful to consider the heating system - the other side of the condensation equation. When walls, windows and even furniture become colder than the indoor air, moisture condenses on these surfaces - creating the conditions for mould growth.

If we can improve heating systems in tandem with ventilation, we can make even more progress on removing mould -friendly conditions and make the home a better place for people to live. Unfortunately, the homes that most need to use heating are often those where energy costs are of greatest concern and where the heating is most likely to be left off for a large part of the day to reduce household bills.

One solution is to consider a new approach to heating as part of an overall home retrofit. The government encourages heat pump installations and provides grants to cover many of the costs.

Heat pumps are not only more energy efficient than gas boilers, but they can also help to alleviate some of the issues that lead to condensation. Gas boilers use bursts of heat to deliver hot water to radiators. Once the air in the room reaches the required temperature of, say, 20°C, the boiler stops. As the air temperature falls, the boiler will fire again. As a result, the gas boiler system raises the indoor air temperature quickly, but walls and windows take longer to warm up. This means warm air meets cold surfaces, leading to condensation.

In contrast, heat pumps produce hot water constantly to supply radiators. Once the air temperature reaches the required 20°C, the heat pump will continue to operate to maintain that constant level. This allows the temperature of the walls and floors to rise gently and at the same rate. As a result, the house is not only warmer for longer, but condensation is far less likely to form, reducing the likelihood of damp on walls and windowsills.

Improving lives - preventing damp and mould

The death of two-year-old Awaab Ishak in a Rochdale Boroughwide Housing flat brought the health hazards of mould to national headlines[7] in 2022.

But this is not an isolated story.

The most recent English Social Housing Survey[8] shows that rented homes in the social and private sectors are most likely to suffer from damp and mould. Around 37% of households, just over 9 million, are in rented accommodation. The figures collected in 2021 point to over 900,000 homes with damp problems. In the private rented sector, 11% of homes are damp, compared with 4% in the social housing sector. The figure falls to 2% in owner-occupied dwellings.

Across Scotland, Wales and Northern Ireland, figures tell the same story - people living in rented accommodation are more likely to suffer from cold and damp at home. The Scottish Housing Regulator has published a briefing note on damp and mould for social housing practitioners[9].

In November 2022, Michael Gove, Secretary of State for the Department of Levelling Up, Housing and Communities, said: **"Let me be perfectly clear, since some landlords apparently still need to hear this from this House: every single person in this country irrespective of where they're from, what they do or how much they earn, deserves to live in a home that is decent, safe and secure."**

The UK government is introducing legislation to improve the condition of social housing through the Social Housing Regulation Bill[10]. An addition to this is **'Awaab's Law'**, which requires social landlords to fix hazards such as damp and mould in their homes within set time frames.

Under the Bill, the Regulator can impose uncapped fines on social housing landlords who breach standards. Other steps include strengthening the Housing Ombudsman Service* so that social housing tenants have somewhere to turn to if landlords are not providing help.

Tenants will be able to complain directly to the ombudsman rather than waiting for eight weeks while a case is handled by an MP or other 'designated person'.

Social housing landlords will also be inspected by the Regulator, who will have the power to issue unlimited fines if standards are not met. The Ombudsman will also have the power to order social housing landlords to pay compensation to residents. Some tenant protection is already in place because social and private landlords have statutory duties to maintain their rented properties.

The Homes (Fitness for Human Habitation)[11] came into force in March 2019 and applies to private and social landlords. It requires that rented accommodation is kept: **"free of hazards which are so serious that the dwelling is not reasonably suitable for occupation in that condition"**.

However, many social and private occupants still need help with these problems despite existing rules and regulations. One of the issues, particularly in the private rental sector, is that tenants who complain about living conditions may face retaliatory evictions - or they may simply not be aware of their rights. But the private rented housing sector is also set for a shake-up.

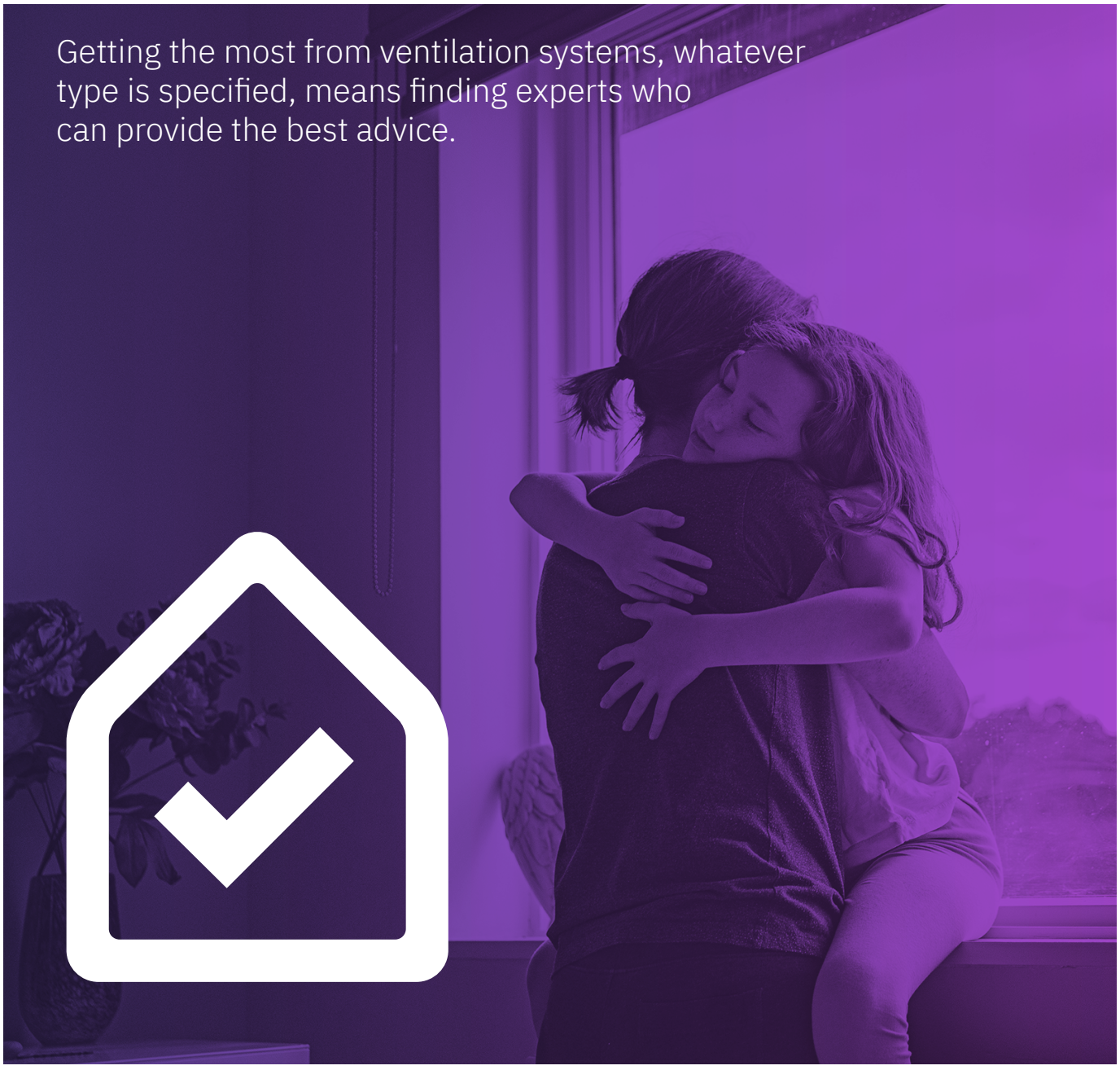
The government is looking into extending the Decent Homes Standard into the private sector and making it legally binding on landlords. The Renters Reform Bill[12], introduced to Parliament in May 2023, also removes private landlords' ability to evict tenants without a legitimate reason. Private landlords will also have to register with a new Ombudsman for the private rented sector, who will also provide an independent complaints investigation system.

With these changes underway and a new focus from the government on making improvements, landlords will have to make significant changes to their approach to damp and mould problems.

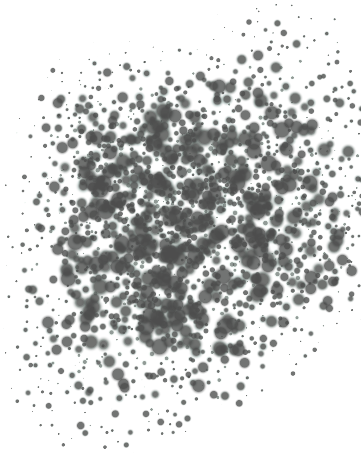
While these issues pose a challenge for the housing sector, they also provide the impetus to combine improved ventilation, better insulation and more efficient heating systems in retrofit projects.

When it comes to mould, prevention is better than cure. Investing in a whole-home approach can produce optimised outcomes by lowering the likelihood of damp and mould while also reducing energy costs for occupants - and making homes much more comfortable and healthier places to live. For landlords, there is an opportunity to invest so that properties are easier to maintain with better protection of interior walls and ceilings from the ravages of damp and mould.

Making homes healthy and affordable



Working with **BESA members**, for example, means you can be assured that they are correctly trained and certified to deliver high-quality installations that provide the best outcomes for people using the systems.



Ventilation experts can help to identify the causes of mould in a property and then advise on suitable equipment to alleviate the problem and prevent its return.

There are many products on the market, such as dehumidifiers, air purifiers, and ventilation systems. It is vital to select the right product for the best outcomes. BESA members can also advise on cleaning regimes for ventilation systems to maintain good indoor air quality for households.

If you would like to find a BESA member to help address problems with damp and mould in your property, **then check out our online directory:**

BESA Membership | Find A BESA Member Search Tool (thebesa.com)

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https://www.gov.uk/guidance/guide-to-the-renters-reform-bill

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