

# Why Ventilate?

...Because Air Matters!



Did you know...



50% of all illnesses are either caused or aggravated by poor indoor air quality



New Horizons Project DO3-  
Technical Report ODPM

## Because Air Matters

The effect of not having good quality air in the home is dramatic.

The average person spends 90% of their time indoors and 70% of this time is spent in their own home. The indoor living environment is therefore crucial to the health of the occupants.



Modern housing has become increasingly energy conscious. In order to save energy we have blocked chimneys, insulated, draught proofed, double glazed etc and progressively sealed our homes from an essential supply of fresh air.

This may save energy and make our homes more comfortable, however we pay the penalty by living in and breathing in this stale, contaminated, humid air for 70% of the time. That is why our homes are making us ill.

## What is in our homes?

In addition to general moisture build-up created from washing, bathing, cooking and breathing, a large concoction of other pollutants and contaminants is present within the indoor air in our homes and at work. This is having a detrimental effect on our health and the fabric of our homes.

The effects of this poor air quality can lead to a number of ailments such as headaches, fatigue and respiratory illnesses.



*This is why we do what we do, we are passionate about providing good indoor air to everyone!*

We inhale and exhale approximately 17,000 times a day. By sealing up our homes we are breathing in a viral soup of many contaminants and pollutants consisting of:

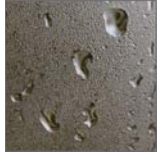
- Volatile Organic Compounds (VOCs) created from the use of aerosols and formaldehydes found in furniture and carpets
- Carbon monoxide from smoking and combustion appliances
- Humidity created from cooking, showering, washing and ironing amounting to 16 pints a day in an average family home
- Mould spores found in household dust
- Odours from cooking and pets
- Allergens from house dust mites
- Carbon dioxide from household appliances and people

## Condensation

### What is condensation?

Condensation forms on a surface when the temperature of that surface is below the dew point of the surrounding air.

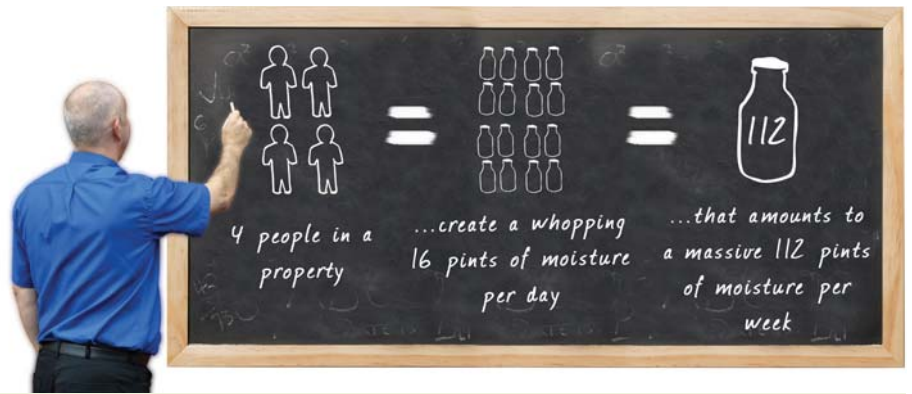
As air is cooled, its relative humidity rises until it reaches a point where it is saturated and can no longer hold on to all the moisture in the atmosphere. The temperature at which this occurs is the dew point and it will vary according to the initial moisture content of the air.



When you take a bottle of milk out of the fridge you will immediately see droplets of water forming on the outside of the bottle. This is condensation. As air passes over the surface of

the can or bottle its temperature is reduced and it can no longer hold on to all the moisture so it deposits it on the cold surface. When this process happens the air has reached its dew point.

This is why when temperatures drop in an occupied property, the air can no longer hold onto all the moisture that has been generated so it will migrate to the coldest parts of the house and condense onto the windows and walls.



### So how does condensation occur?

To understand the solutions to condensation the causes have to be identified.

In a property of 4 people, each will contribute approximately 4 pints of moisture per day through showers, baths, boiling kettles, cooking etc. This adds up to well over 100 pints of water vapour per week - a huge volume of moisture, which must go somewhere.

Add the other airborne contaminants which exist in a typical home - dust, tobacco products, exhaust gases - even chemical emissions from furnishings and building products - it's not difficult to understand the scale of the problem.

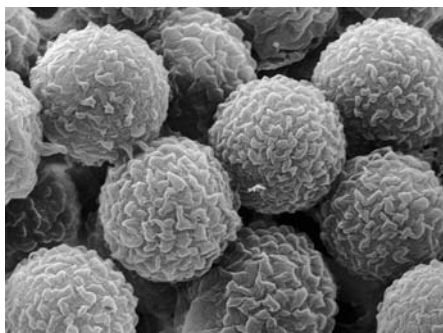
In the past there would be a natural escape for this hot, damp and poor quality air through ill-fitting windows and doors, uncarpeted floor boards, lofts without insulation and so forth. As the stale air left the building it would be replaced by fresher, albeit colder air - draughts!

Now, with improved building features such as cavity wall insulation, double-glazing and draught proofing, 'natural ventilation' is prohibited. Stale, humid air is trapped, making the condensation problem in the dwelling worse, causing streaming windows, which will inevitably lead to musty smells, dampness and ultimately mould growth.

## Mould

### Mould Spores

Mould spores make up a significant portion of household dust and are known allergens. Their microscopic spores are often powdery and become airborne at the slightest disturbance. These microscopic spores are then inhaled by humans and have been attributed (along with the dust mite) to being a trigger for asthma, dust allergies and hay fever. During growth, fungal colonies can produce gases known as 'volatiles'. These are musty mildew-like odours, that you may associate with damp basements. Exposure to these gases have been associated with a number of symptoms from headaches to nausea and fatigue



Mould Spores

### What is mould growth?

The three basic ingredients to start a colony of mould comprise of the following:

- Organic material (wood, wallpaper, carpet etc)
- A fungal spore
- Water

The vast majority of products used to build and furnish homes are made from organic materials. Fungal spores are microscopic and are present in any indoor or outdoor environment; they can easily enter any dwelling undetected. The main source of water for mould is from the air around it, so if relative humidity is high the mould will thrive. Therefore, to reduce the risk of mould growth in a property you must reduce the relative humidity.

*Don't paint over the problem... it will only come back!*



Richard Williams  
Our Healthy Homes Director

Because Air Matters

## Dust Mites

### The House Dust Mite

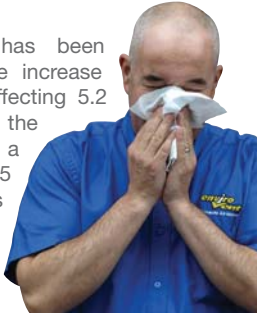


Dust mites have 8 legs and are related to the spider. You are probably sharing your bed with thousands of them!

Their main breeding ground is in bedding and carpets. They feed on microscopic scales of skin, which we all shed. Their only source of water is from the air, so they prefer to live in areas where relative humidity is high. The higher the humidity, the quicker they are able to breed.

### The Effects

The dust mite has been attributed with the increase in asthma (now affecting 5.2 million people in the UK, equivalent to a staggering 1 in 5 households) plus other bronchial and skin problems.



### Main Triggers

Dust mites and their droppings are known allergens. When their rotting carcasses and droppings come into contact with our skin or are inhaled they may cause an allergic reaction. Researchers estimate that these particles may be a trigger for up to 80% of asthma attacks and are responsible for countless cases of eczema.

### So how do we get rid of dust mites?

No matter how clean our home is, dust mites cannot be totally eliminated. However, to live and breed, dust mites require the following:

- Microscopic scales of skin shed by humans and pets
- A continuous supply of humid air

If there are high levels of relative humidity in an occupied dwelling then you will find a breeding ground for dust mites. The quickest and most effective way in reducing the population of dust mites in a home is by reducing relative humidity by providing adequate ventilation.

### NHS Sefton

In a recent Sefton Council project set up to support families with children suffering from asthma, EnviroVent units were chosen to be installed in sixteen homes to improve indoor air quality and dust allergies. After the units had been installed questionnaires were sent out to the families to monitor the effectiveness of the units.



The results were overwhelming. The majority of families involved in the project experienced positive improvements in the health of their children and in the indoor air quality. Not only that, all the problems with mould and condensation had disappeared.

To view the project evaluation report, visit [www.envirovent.com](http://www.envirovent.com)



## Volatile Organic Compounds

### Did you know?

Did you know that there are up to 900 chemicals in indoor air?



Source: Scientific Committee on Health and Environmental Risks (SCHER).



According to a recent NHBC report, indoor air can be found to be significantly more polluted than outdoor air. As our homes are being built tighter and becoming well sealed, airborne contaminants called Volatile Organic Compounds (VOCs) are released into the indoor air and are dispersed much slower than in a 'leaky' home. VOCs can cause tiredness, headaches, allergic reactions, respiratory problems and other illnesses.

VOCs are found within many consumer products including household cleaning products and aerosols. They are also present within the fabric of the building such as in adhesives, solvents and treatments. New furniture and finishings release a pollutant called formaldehyde. This is now classed as one of the more harmful VOCs which can irritate the mucus membrane and can make people feel irritated and uncomfortable. With

good ventilation the concentration of VOCs is reduced. A variety of methods can be used from bathroom or kitchen extract fans, which remove contaminants directly from the room, to whole house mechanical ventilation systems such as positive input or heat recovery that bring fresh air into the property.



# Radon



## What is it?

Radon is a naturally occurring radioactive gas, which can enter your home from the ground, exposing you to doses of radiation. According to the National Radiological Protection Board (NRPB), health studies from around the world have linked exposure to Radon to increased risk of lung cancer.

## How does it affect you?

Radon is produced by the natural breakdown of uranium found in rocks, sediments and water. It then permeates up through the ground and in open air dilutes to harmless levels in the atmosphere. However, when it enters our homes and work places it decays into minute solid particles known as Radon's Daughters. These particles then become trapped and can accumulate to dangerously high levels. When they are breathed in they can be deposited on the surface of the lungs, where they decay further, emitting harmful radiation directly into the lungs.



## Could your area be more at risk?

Radon penetration occurs in many thousands of British homes, particularly in the East Midlands and the South West but there are pockets of it just about everywhere in the UK. It is common in and around granite and other igneous rocks where the gas is transferred through the pores in the rock. The NRPB has advised the Government that the action level for Radon in homes should be 200 bq/m<sup>3</sup> (becquerel per cubic metre) and that Radon levels at or above the action level should be reduced to as low as reasonably practical. However, according to Brian Ahern, Chairman of the Radon Council, even an exposure to 200 bq/m<sup>3</sup> over an 8 hour period per day will be receiving the equivalent to 90 chest x-rays per year\*.

The EnviroVent Positive Input Ventilation Systems have proved to be effective in significantly reducing Radon levels, creating a healthy atmosphere in which to live, free from the harmful effects of Radon gas. They are continuous running ventilation units, which imperceptibly supply filtered air throughout your home. This process changes the airflow direction within the property to gently force the contaminated air out of the home.

\*Chest x-ray extrapolation provided by The Radiological Protection Institute of Ireland, based on an average of 8 hours exposure per day.

## The solution is correct ventilation

It's staggering to realise that all of these nasty things can be lurking in our homes, which cause us to suffer from all kinds of side effects.

EnviroVent has a solution for every kind of home, whether it be apartment, flat, bungalow, house or castle! With our wide range of eco-friendly and innovative ventilation systems, manufactured here in the UK, you can be assured that not only will your indoor air quality be dramatically improved, but so will your health and your heating bills\*.

\*Space heating cost savings incurred through PIV and Heat Recovery systems



Because Air Matters