

Energy Action Scotland Advisors Toolkit

Chapter VII. Adequate Heating and Health

1. The Impact of Cold Temperatures on Health
2. Getting the Temperature Right
3. Condensation and Dampness



*“Working to end fuel poverty and achieve warm,
dry homes for all.”*

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The Impact of Cold Temperatures on Health

A World Health Organisation Report in 1985 established that there is a link between poor health and low indoor temperatures.

Some existing conditions can be affected badly by cold and others can be brought on as a result of prolonged exposure to the cold.

Respiratory disorders can be worsened by prolonged exposure to low indoor temperatures. People living in cold homes have an increased tendency to suffer colds, flu, bronchitis and pneumonia.

At temperatures below 12°C blood tends to thicken, leading to an increase in blood pressure and increased risk of heart attack and stroke as the heart works harder to pump blood round the body.

Hypothermia is caused by longer-term exposure to the cold (though longer-term may only be a matter of a couple of hours). The chronically sick, disabled and those with lower mobility levels are particularly at risk from hypothermia.

In addition cold conditions in a home can contribute to condensation dampness and mould growth. These have a detrimental effect on some allergies. Mould spores and dust mites in the air can cause allergic reactions, which in turn can cause problems for people with respiratory illnesses such as asthma.

In Britain, a cold spell during an otherwise mild winter can see the following depending on its duration:

- After two days a sudden rise in heart attacks, by up to a third;
- After five days there is a big rise in the number of strokes;
- And twelve days into a cold spell there is a rise in respiratory illnesses.

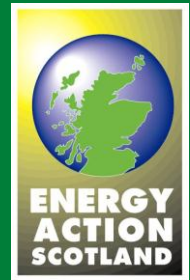
Increased Winter Mortality

In most north European countries more people die in the four months from December to March than during the rest of the year.

This "excess mortality" is considerably higher in the UK at 14% than other countries - typically 4-7% and even Siberia has a lower rate.

There were 2,760 "additional" deaths in Scotland during the winter of 2009-2010, which was less than the 3,510 the previous winter.

Winter cold kills 300 people per day (in the UK) on average, most of them elderly.



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Contributing factors include low income, inefficient heating systems, external temperature fluctuations, and excessive dampness and mould growth associated with poor housing stock.

In Scotland we have long and damp winters which are worse for health.

Factors affecting excess winter mortality are varied and complex, but there is a strong relationship between thermal standards in housing and excess winter deaths.

The UK has much higher winter deaths rates than other countries with more severe winter climates, implying that it is not outdoor exposure to cold that is the key determinant.

It is generally accepted that the majority of excess winter deaths could be prevented if everyone could be kept warm in their homes during the winter months.

Asthma and damp homes

Children are more likely to stay asthmatic if they live in a damp home, according to new research.

A German study, published in the journal Thorax, has found that dampness - long associated with wheezing and coughing - is also a risk factor for asthma, partly because it helps the growth of the house dust mites which irritate asthmatics' airways.

Night-time wheezing and shortness of breath was strongly linked to dampness in the home.

- The UK has one of the highest rates of asthma symptoms in the world
- Around 5.2 million people are diagnosed in the UK (Asthma UK 2008) – 500,000 in Scotland
- The NHS spends £850 million per year treating asthma
- Teenage asthmatics living in damp homes are three times as likely to suffer night-time wheezing.



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Getting the Temperature Right

Low indoor temperatures are connected with a number of health issues and most people spend more than 90% of time indoors. The link between fuel poverty and health has often been examined. Professor Christine Liddell, of the University of Ulster, reported in 2008 that every £1 spent on reducing fuel poverty saved the NHS 42 pence.

Decreasing indoor temperature below the comfort zone progressively influences the respiratory, cardiovascular and thermoregulatory systems and consequently the maintenance of good health.

- 18-24°C** The comfort zone, no risk to sedentary, healthy people
- ↓ **16°C** Increasing risk of respiratory disorders
- ↓ **12°C** Cardiovascular strain, increased blood pressure and viscosity
- ↓ **9°C** Failing thermoregulation and risk of hypothermia, after two hours exposure as the deep body temperature falls.



The start of discomfort is likely to indicate the commencement of health risks, so that the temperatures required for comfort and for health are broadly the same.

For comfort and health, the temperature of the main occupied room should average 21°C. For other areas such as bedrooms, bathrooms and halls 18°C is recommended.

Two groups that may need higher temperatures are the sick and disabled. Restricted mobility inevitably results in more time spent in the home and the reduced level of activity means that a higher temperature is needed to achieve comfort.

An important point to note is that many very old people find it harder to detect temperature changes than other age groups. In some cases, temperatures of **15-16°C may not be experienced as 'cold'** by the old person but will nevertheless be injurious to health.

Ensuring the home is adequately heated is very important. Inadequate heating can contribute to other problems in housing which affect health, namely dampness and condensation: See Factsheet VIII (3).



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Condensation and Dampness

Warm air holds more moisture than cold air. Condensation occurs when warm, moist air comes into contact with a cold surface, such as a single glazed window or an uninsulated external wall. When the moist air comes into contact with the cold surface it turns back into water droplets – condensation.

Everyday activities contribute to the amount of moisture in the air around our homes:

- **Bathing** can result in 0.5 to 1 litre of additional moisture
- **Cooking by gas** over 24 hours can result in 2 to 4 litres of additional moisture
- **Using a bottled gas heater** can result in 4 litres of additional moisture
- **Drying clothes** can result in 3 to 7.5 litres of additional moisture
- **2 people active for 16 hours** can result in 1.5 to 3 litres of additional moisture
- **2 people sleeping for 8 hours** can result in 0.5 litre of additional moisture

Condensation in the home is caused by:

- ☒ **I**nadequate **H**eating
- ☒ **I**nadequate **I**nsulation
- ☒ **I**nadequate **V**entilation
- ☒ **P**roducing **E**xcessive moisture

Human beings produce water vapour - this cannot be avoided. However, condensation dampness is different to other forms of dampness because the inhabitants may be able to exercise some control over the amount of condensation in the home.

Condensation dampness can occur in houses that are insufficiently heated, poorly insulated, or not properly ventilated. Installing loft insulation, cavity wall insulation and draughtproofing measures will reduce and minimise condensation in the home, as will effective use of heating. However, it is equally important to ensure that houses are properly ventilated.

Helpful tips on avoiding/minimizing condensation dampness include:

- Keep lids on pans when cooking
- Dry clothes outside when possible
- Avoid using flueless bottled gas heaters
- Ventilate all the time. Increase ventilation in the kitchen and bathroom when in use
- Maintain a background heat all day in colder weather

See also Chapter III for details on the different physical measures which can be installed to prevent and reduce condensation and dampness.



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