

REDUCING MOISTURE AND CONDENSATION

ECO-DESIGN ADVISOR SERIES NO.3



NO BASTION OF COMFORT

It's a sad fact that many New Zealand houses are cold, damp places. For proof, look at the incidence of asthma and respiratory infections among the very young and very old (Kiwi kids have one of the world's highest asthma rates). These conditions are strongly linked to damp living conditions.

Because mould thrives in a cold, damp environment, making your home warm and dry will necessarily inhibit its growth. The other key measure is ventilation (which is why modern, airtight homes can also be prone to moisture problems). See below for more details.

A house that is cold or hard to heat could be the result of range of factors – poor design or construction, inadequate ventilation, dampness creeping up from under the floor or leaking in through walls and the roof. Often mould appears because occupants do not adequately heat the house. It is the habit of many to put on another layer of clothing rather than turn up (or even on) the heating. During winter, temperatures in the bedrooms and living rooms of many New Zealand homes are frequently well below the World Health Organisation's suggested minimum of 16 and 18°C respectively.

Inside the house

- Keep beds and furniture at least a hands width away from external walls.
- Wipe condensation off windows as soon as you see it. ("Weeping" windows are a manifestation of moisture in the air condensing because of the difference in temperature on either side of the pane of glass. Double glazing eliminates this problem.)
- In problem rooms, open windows very slightly (less than an inch will do) to increase ventilation and at the same time heat the room a little.
- Leave wardrobe doors ajar to allow air to circulate. (Mould hates free-flowing air.)
- Check for mould, especially in hard-to-reach corners or behind curtains where it often builds up unnoticed, and remove immediately.
- Spray a mixture of 70 per cent white vinegar and 30 per cent water on affected surfaces, leave for an hour and then scrub with a brush. (An old toothbrush works perfectly.) Be sure to rinse off the

vinegar with a sponge. This is extremely important. Mould spores floating in the air love vinegar, regarding it as a source of nourishment, and will grow back on any vinegar residue with even greater vigour.

- Dry-clean or wash affected curtains.
- Installing insulation will keep your house warm and help it to resist mould. See Eco-design advisor factsheet nos. 1 and 7 for full details on insulation.
- Fit seals between windows and window frames so curtains are more efficient at keeping in heat.

Outside the house

- Periodically inspect the basement or beneath the floor for mould. (A ground vapour barrier such as heavy-grade polythene sheeting will combat rising damp.) While you are there, check for leaking water pipes.
- Check the ground around the outside of the house, looking for water runoff from paths and gardens. If water is draining under the house, put in permeable surfaces such as stones, which encourage immediate draining into the ground, or alternatively, divert runoff away from the house with drainage pipes.
- Carry out regular maintenance. Check gutters do not fill up with leaves. (Depending on the way the house is built, rainwater can overflow from gutters into the wall cavity.) Promptly fix broken windows and any holes in walls through which moisture can enter.

Dehumidifiers

- If you follow all these tips, you are unlikely to need a portable dehumidifier. (Besides, they fix symptoms rather than causes.) Some rooms, however, may never be totally satisfactory, in which case a dehumidifier matched to the size of the room will

turn an acceptable room into a good room. (Don't bother using dehumidifiers in open-plan spaces – they're too inefficient and costly to run)

Indoor activities

It's surprising how much of the humidity (airborne moisture) in our houses is a result of everyday household activities such as cooking and washing. Here are some simple steps to lessen humidity:

- Always use bathroom fans. If a bathroom has no fan, throw open the windows when you shower or run a bath. And don't forget to close the door. That way, moist air goes out the window, not into the rest of the house.
- Choose extractors with good volume of air flow, and consider connecting them to a light switch or timer, or install one with a humidity detector, to make their operation more automatic.
- Keep showers short – it keeps down the steam (and the power bills).
- Use your kitchen extractor fan on a low setting when pots simmer rather than not all at. You'd be surprised how much steam they give off. And don't forget to keep pot lids on - it's more efficient as well as minimising steam.
- If you have to replace your rangehood, get one that is bigger than the stove top or gas hob so it covers all the hotplates/gas burners. A useful feature on rangehoods is a lip to direct steam. Also, choose a quiet rangehood, you can get ones now with the motor in the wall, which means you'll use it more often. Alternatively, a roof, window or wall vented extractor may be quieter, if slightly less efficient.
- Shut bedroom doors while cooking – bedding and clothing absorb moisture easily and your eye or touch will probably not detect it.
- Ensure you vent your dryer outside, but only use it if there's no alternative (i.e. it's been raining for weeks)
- Don't dry clothes inside beside a heater or fire. Hang washing on a porch or landing, use a dryer or wait until washing can go on the line.
- Fish tanks and house plants add their share of moisture. Be sure to put a cover over the first and choose the second carefully (go for varieties that don't need much water).

Heating

Unflued gas heaters are not recommended. They give off a lot of water vapour as well as toxic gases. Flued gas heaters are perfectly acceptable.

Ventilation

Ideal relative humidity is between 30 per cent and 65 per cent.* Anything higher encourages growth of mould and other known asthmatic triggers like dust mites. Good ventilation helps to regulate humidity and air temperature, plus remove air pollutants and stale air.

All the air in your house should be changed at least twice a day if possible. Good placement of doors, windows, vents and other openings should let fresh air circulate freely through your house. Open windows and doors for 10 to 20 minutes a day to let stale air out and fresh air in. During the cold months, the most practical time to do this is the middle of the day when it is warm. The worst thing you can do is leave your house closed up all the time and the second to worst thing you can do is have uncontrolled ventilation (draughts) by leaving windows ajar all day. Air changes must occur daily as required, not continuously.

Only consider a positive pressure or dilution ventilation system as a last resort. They are not suitable for all houses and can cause more problems than they solve.

* Relative humidity is a way of expressing how much water is in the air for a given temperature (warm air can hold more moisture than cold air). It is expressed as a percentage of the amount of moisture that would saturate the air at that temperature. A relative humidity of 100 per cent means the air is saturated and can hold no more moisture at that temperature

More information

For further information, contact the council's eco-design advisor on 570 6666 – a source of free, independent advice on how to include sustainable features in your building or renovation project

Useful links:

- Hutt City Council (www.huttcity.govt.nz)
- Smarter Homes (www.smarterhomes.org.nz)
- Sustainable building authority Level (www.level.org.nz)
- Energy Efficiency and Conservation Authority (www.eeca.govt.nz)
- Building Research Association of New Zealand (www.branz.co.nz)
- Eco-Design Advisor (www.ecodesignadvisor.org.nz)
- Ministry of Business, Innovation and Employment (www.dbh.govt.nz)