Report on Action taken to alleviate Mould / Fungal growth in Council Dwellings

Following complaints to the Council by tenants of mould growth due to reported dampness, systematic investigations were undertaken to identify the causes of the reported dampness in approximately 50 dwellings. The survey was completed in April/May 2010. The inspection protocol is enclosed for your information.
The primary cause of the reported dampness in the dwellings inspected was identified as being caused by excessive condensation in the dwellings, caused by a number of factors:-

- Inadequate or blocked vents
- Absence of a normal ventilation control by tenants
- 'cold bridging' in fabric due to reduced / absent insulation
- Moisture being produced in the dwelling by excessive washing / drying / cooking / overcrowding combined with inadequate ventilation
- Intermittent ingress of water from the fabric
- Leaks from service installations

The existence of condensation is largely indicative of not only the conditions for mould growth but also of poor air quality in dwelling, as the absence of ventilation will invariably affect the quality of air available.

Tenants in the dwellings affected were advised on the causes of condensation and effective ways of reducing the impact of excessive condensation, and mould growth in their homes. The explanatory leaflet issued is enclosed.
Repairs/Remedial works were carried out to units in 2010 where the dampness was caused by intermittent water ingress from an either external source via the fabric or internal services. The remaining units subject to complaints of dampness were identified as having condensation generated within the units. When the cause of the condensation was acerbated by 'cold bridging' in the fabric, the cold spots were insulated removing the 'cold bridge'. The excessive condensation problem did not occur to any significant degree in house / terrace / semidetached or duplex type units and was largely confined to apartment type units. The apartment units identified were primarily ground floor units where cross ventilation is limited by security considerations or by layout.
A number of dwellings continued to have persistent problems with excessive condensation following the above interventions.
Research was undertaken on the available solutions to achieve an adequate air change within the units to reduce condensation to acceptable norms. The Architect's Department reported that while there were many systems available on the market. Many were either excessively expensive, required frequent maintenance or monitoring, required electronic sensors, or consume an unacceptable level of energy. A system by Aereco Limited was identified as easy to install, requiring low maintenance, and is responsive without the need to wire and install electronic sensors, and operates at a low economic energy level.

The Architect's Department, in view of the research, recommended a pilot project to a number of units with identified condensation problems that had not been resolved by the direct remedial actions outlined above.

Accordingly, Energy Ratings Direct Limited were appointed to pilot a prototype installation for Supply Demand Ventilation to 11 identified units. The installations were carried out during January to March 2011.
The dwellings were selected from the higher risk / most affected dwellings and evenly distributed throughout the county wide housing stock.
All dwellings selected on the above criteria were ground floor apartments, excepting one two storey house were one of the occupants has a respiratory condition and other determining factors existed.
The fact that ground floor apartments appear to have significantly greater problems with condensation may be reasonably explained by the following factors:

- The apartments are normally smaller two bed units.
- The units have a smaller cubic volume of air to absorb and dispel free moisture created by normal household activity such as cooking / washing, breathing, additional visitors / occupants and drying of clothes in wet weather.
- Ventilation required to refresh air quality and dispel free moisture created by household activities is sometimes comprised by security issues and the concerns on heat conservation.
- Tenants in those circumstances may not be aware that that in any of the above circumstances that air quality needs to be maintained by increasing ventilation and thereby also reducing condensation.
- If the possibility of securely providing adequate air changes cannot be achieved by standard ventilation the provision of ‘supply demand ventilation’ should be considered to ensure air quality is maintained.

Post installation inspections were carried out and in all cases the installation has prevented the re-establishment of mould and fungal growths, reduced condensation to below normal levels and provided an enhanced quality of air within the dwelling. The project was funded as a pilot project. There is no provision in current budgets to for further installation.

The conclusions of the pilot study are as follows:

1. A through investigation is required to confirm the reasons mould or fungus has become established in a dwelling.
2. All leaks and or water ingress require to be removed.
3. All ‘cold bridging’ in the insulation of the fabric requires to be addressed.
4. The sources of free moisture identified within the dwelling require be identified and reducing to normal levels.
5. In many cases the dwelling requires to be dried by through airing or dehumidification.
6. All affected parts of the dwelling require cleaning of the existing growths and spores to reduced the risk of the growths being re-established with easily.
7. If, following the above action the conditions for mould growth persist then consideration should be given to a

'supply demand ventilation system' with due regard to the overall factors related to the particular dwelling.

8. Units that have been insulated to Part L 2005 standards and onwards, with low air-change rates and excessive free moisture being generated within the dwelling are similarly vulnerable. It is essential that all causative factors identified be addressed prior to considering the expense of installing a supply demand system to a dwelling affected by an attack of mould / fungal infection.
9. Is essential that tenants are made aware of the contribution that they may be making to decreasing the levels of condensation in their homes and the resultant increase in air quality and health of the home environment. This is particularly important where tenants have a vulnerability to respiratory conditions or where there such conditions may develop as a result of increased levels of condensation and mould growth.
10. The existence of condensation may be indicative of poor air quality in dwelling as the absence of ventilation will invariably affect the quality of air available.
11. Conservation of heat may also be a contributing factor to the reluctance of tenants to open windows for ventilation during prolonged cold spells.
12. The above factors apply not only to social housing stock but to all dwellings.

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Enclosures

- Protocol for investigation condensation / dampness
- Inspection Form [outlines main investigation focus of Inspection
- Advice to tenants on condensation / dampness
- Photographs of typical retrofit ventilation system

South Dublin County Council – Architects Department

Procedure for investigation and resolution of Dampness / Condensation:

'Dampness' or Condensation reported to Council by tenant

- Report sent to Maintenance or Architects for action.
- Input by Customer Services required on initial details of problem.

Dwelling Inspection – General check on structure and fabric

- Check carried to, to detailed inspection form, to establish the existence of –
- External damp penetration
- Internal leaks from service pipework or source
- Extraordinary source
- Significant cold bridges in structure

Dwelling Inspection – condensation

- Check / record - typical condensation damage – staining, mould etc and record locations.
- Check / record - if ventilation in dwelling compliant with regulations- windows, window vents, wall vents, extract [as appropriate].
- Check / record – are all vents free of obstruction or compromised in any way.
- Check / record – humidity including internal external temperature and any other factors relevant to condensation generation.
- Check / record – sources of free moisture in the dwelling-.

Post Inspection

Structure / Fabric -

- If any leaks or defects exist arrange making good or remedial work as necessary.

Condensation problem identified- action required

- Advise tenant of result of inspection and issue advice sheet noting health risks.
- -follow up inspection with action as required
- If problem persists following standard remedial action reinvestigate and recommend additional course of action.

Inspection of unit for Condensation / Damp – INSPECTION FORM

Tenant name:				
Unit Address:				
Tenant contact details:				
No of Persons resident in Unit:		No of Bed-spaces assigned to Unit:		
Character of dampness reported by tenant:				
Unit Type: apartment / owndoor apartment / terrace / semi-detached / other				
Storey / storey height:				
Date of inspection: Access facilitated:				
Inspector [s]:				
Inspection Equipment used: moisture meter / hydrometer / thermal camera				
EXTERNAL CHECK				
Items	Area examined	Comment	yes	no
Rising damp	Dpc in place			
	Ground above dpc			
	Surface water Drainage intact			
	No Gullies blocked			
	other			
Roof	Roof covering intact			
	Flashing intact			
	Rwps in good repair			
	other			
Walls / fenestration	In good repair			
	Panelling / windows / doors			
	Opes / vents intact			
	other			
INTERNAL CHECK				
Humidity Levels Normal = yes	Living area			
	Kitchen			
	Bathroom			
	Bedrooms			
Adequate Ventilation – windows	Living area			
	Kitchen			
	Bathroom			
	Bedrooms			
Adequate Ventilation –vents	Living area			
	Kitchen			
	Bathroom			

	Bedrooms			
Moisture readings normal	Living area			
	Kitchen			
	Bathroom			
	Bedrooms			
No Cold bridging -walls -ceiling / floor -components -party wall / adjacent unit	Living area			
	Kitchen			
	Bathroom			
	Bedrooms			
	other			
No Tenant Alterations -plumbing -fittings -kitchen	Living area			
	Kitchen			
	Bathroom			
	Bedrooms			
	Other			
Plumbing Heating System intact / unaltered, working - no leaks - levels ok	Living area			
	Kitchen			
	Bathroom			
	Bedrooms			
	Other			
Attic	Insulation intact			
	Pipework insulated			
	Water tank installation			
	Ventilation to roof void			
	Correct insulation			
	Leaks / stains			
	Trap door			
	Living area			
	Kitchen			
	Bathroom			
	Bedrooms			
	Other			
Ancillary items				
White goods / tenant appliances / no supersur or supplement equipment	Living area			
	Kitchen			
	Bathroom			
	Bedrooms			
	Other			
Unit Condition – -good	Living area			
	Kitchen			

-dry -free of mould	Bathroom			
	Bedrooms			
	Other			
Report conclusions				
	Cause of dampness evident			
	Cause of condensation evident			
Inspection Recommendations & Remedial action required				

Guidance Note to Tenants

Guide to Understanding Condensation:

What is condensation & Why do you get condensation?
Condensation happens when warm moist air meets a cold surface.
The air we breathe can hold varying amounts of water vapour, depending on its temperature. If warm moist air drops in temperature when the heating is no longer on, or is cooled by a cold surface, such as a window or external wall, it is then no longer able to hold the same amount of water vapour. The air-borne moisture turns into droplets of water and collects on the cold surface. This is called condensation. Condensation occurs mostly between September and March when there is the greatest difference between internal and external temperatures.

When is it a problem?
Every home gets condensation at some time. Daily activities such as - cleaning, clothes washing, bath times, -when a main meal is being cooked, generates lots of moisture and steam in a short space of time. Daily living activities of a family of four can add more than 80 Litres of water a week to the air in your home. Constant over crowding can also aggravate the problem.

Window condensation can be a warning sign. It may mean that you are creating excessive moisture in your home. Increasing indoor humidity to a high level may be damaging to you and your families health.

Condensation is usually at its worst during the winter. It often results in mould and mites growing on walls and other surfaces. Mites feed on moulds, and both can increase the risk of respiratory illnesses in some people.

Mould can spoil wall finishes and furnishings and can make your home unhealthy. The best way of tackling mould is to reduce the condensation levels and prevent it growing in the first place.

Most experts agree that relative humidity, the amount of moisture in the air, can affect your health. They suggest maintaining indoor humidity levels between 30% and 50%. According to the World Health Organization, at levels higher than 65%, upper respiratory illness may occur in people suffering from asthma and allergies.

Condensation is caused by:
- Excessive moisture production–steam in the kitchen and bathroom, drying laundry, steam / water producing appliance.
- Inadequate or inappropriate ventilation–the moist air can't escape
- Inadequate heating– the temperature of your home

What can you do about it?
- Produce less water vapour or steam in your home.

- Don't let the water vapour and steam that is produced spread all round the house.
- Don't leave kettles and pans boiling longer than necessary.
- Do not hang wet washing on radiators all round your home – doing so is very likely to cause condensation problems. If you need to dry clothes inside make sure the room is ventilated and the moisture to not spread to the rest of the house.
- Keep you home warm at an average 20 - 21°c. Overheating warms the air. Warmer air holds more water vapour, so the air in your home could become even wetter and condensation will be greater when the air cools down at night.
- Keep your home ventilated
- Never block air vents or trickle vents in windows.
- Never completely block chimneys.

Produce less water vapour / moisture:

- Cover pans when cooking
- Don't leave kettles and pans boiling longer than necessary.
- If you use a tumble dryer, vent it to the outside.
- Dry or part dry, washed cloths outside whenever you can.
- When filling your bath, run the cold water first then add the hot - it will reduce the steam by 90% which leads to condensation.
- Avoid using paraffin or bottled gas heaters – they produce a lot of moisture

Don't let it spread:

- Close kitchen and bathroom doors to prevent the moisture escaping into the rest of the house.
- When washing / bathing, washing dishes, cooking, or washing / drying clothes ventilate the room well.
- Ventilate your kitchen and bathroom for about 20-minutes after use by opening a small top window.
- Ventilate your kitchen when cooking, washing up or washing by hand. A window slightly open is sufficient allow the moist air to escape outside.

Where Condensation normally Occurs:

- Bathrooms.
- Unheated rooms with cold surfaces, e.g. bedrooms.
- Cold corners, cupboards and un-vented areas such as behind wardrobes.
- Kitchens.

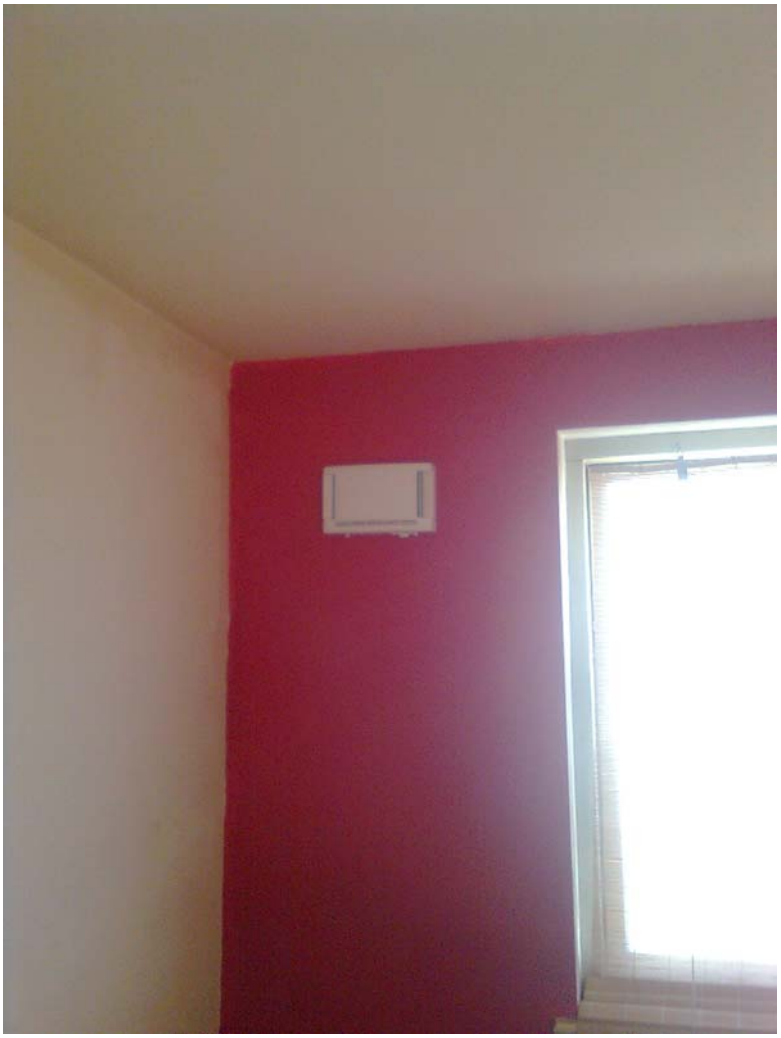
To Help Avoid Condensation and Dampness:

- Try to heat every part of the home for some part of the day.
- Try to vent every room for short periods of time on a regular basis.
- Help to reduce condensation that has built up overnight by 'cross ventilating' your home - opening to the first notch a small window downstairs and a small one upstairs. (They should be on opposite sides of the house, or diagonally opposite if you live in a flat).
- Positioning wardrobes and furniture against internal walls

Other Causes of Condensation and Dampness:

It is possible that condensation may be caused by a leak or water penetration into the dwelling from an external source or by a leaking pipe internally. This is rare and the effect is normally localized. If a leak occurs from a roof, gutter, downpipe or other source the problem should be reported immediately to the council.

Photographs of Typical Installation



Typical moisture sensitive wall vent with draft-proof cover

Duct and moisture / odour sensitive vent

Typical retro fit ducting to low energy / low noise fan.