

Condensation forms when warm moist air meets a cold surface (eg window panes). This effect is just like the dew forming on the grass on a cold night. Inside the house windows are the coldest surface (about the same temperature as the outside air) and when they cool down below the “dew point” of the air inside the house, condensation forms – “crying windows”. There are two main ways to avoid or reduce this condensation – reduce the amount of moisture in the house and/or raise the temperature of the air and internal surfaces. Practically this can be achieved by a combination of the following:

- Producing less moisture in the house from household activities
- Reducing the amount of moisture getting inside from outside
- Ventilation, Insulation, Heating, or Double glazing

Mechanical ventilation systems introduce “outside” air into the house. This outside air is almost always drier than internal air and tends to force wet internal air out through gaps in the building. However, ventilation systems cost serious money, perhaps \$2000 - \$3000. HEAC strongly recommends addressing the causes before spending money on an appliance you may not end up needing. Ask for a fact sheet on moisture issues from the HEAC advisor.

### **Produce Less Moisture Inside the House**

We all produce moisture during our everyday activities in the home (breathing, washing etc) and it would be impossible to prevent all moisture, but you can reduce the amount you produce by:

- Dry your clothes outside. If you use a clothes dryer, make sure that it is vented outside
- If you must dry your clothes inside, do this in a well ventilated room with doors closed to the rest of the house
- Close the doors to the bathroom and kitchen when you are bathing or cooking
- Wipe excess moisture from windows - moisture collecting on the frame which may cause rotting. It may also re- evaporate during the day, raising humidity levels and making condensation worse when the room cools down.
- Use extractor fans in “wet” areas such as bathrooms, kitchens, and laundries

### **Moisture from Outside**

Moisture can enter the house through gaps in the ceiling envelope – leaky homes are an example of moisture entering the building. Check that all gaps and pipe penetrations are sealed against the weather, that rain guttering is not leaking and that it directs water away from the house. If your under floor or basement is damp, and there is inadequate ventilation, laying a polythene vapor barrier will reduce the amount of moisture entering the house through the subfloor. Ventilation is really important. Air moving in from the outside is drier than air on the inside. - even on a rainy day, opening two or more windows a small amount to encourage a cross draught will reduce the buildup of internal moisture. Fixing security stays to the windows may allow you to leave windows open while you are out.

And lastly, heating and insulation are key. If your house is warmer then there is less likelihood of moisture condensation. Warm air can hold a lot more moisture than cold air, but remember that if you don't reduce moisture or ventilate your home, the moisture in the air will condense on cooler surfaces.

Double glazing is also an option. This reduces condensation in two ways – The internal glass is warmer (and therefore less likely to attract condensation) than a comparable single glazed window. This is because it is insulated from the outside air. Double glazing reduces the overall heat loss in a home thus reducing the likelihood of condensation.

### **Other Options**

And if everything fails, try a dehumidifier (but be sure windows are closed when you use it) and last of all request an inspection by a company who deal with mechanical ventilation systems. But call the Home Energy Advisor first, we could save you a lot of money and worry by troubleshooting the basics first.