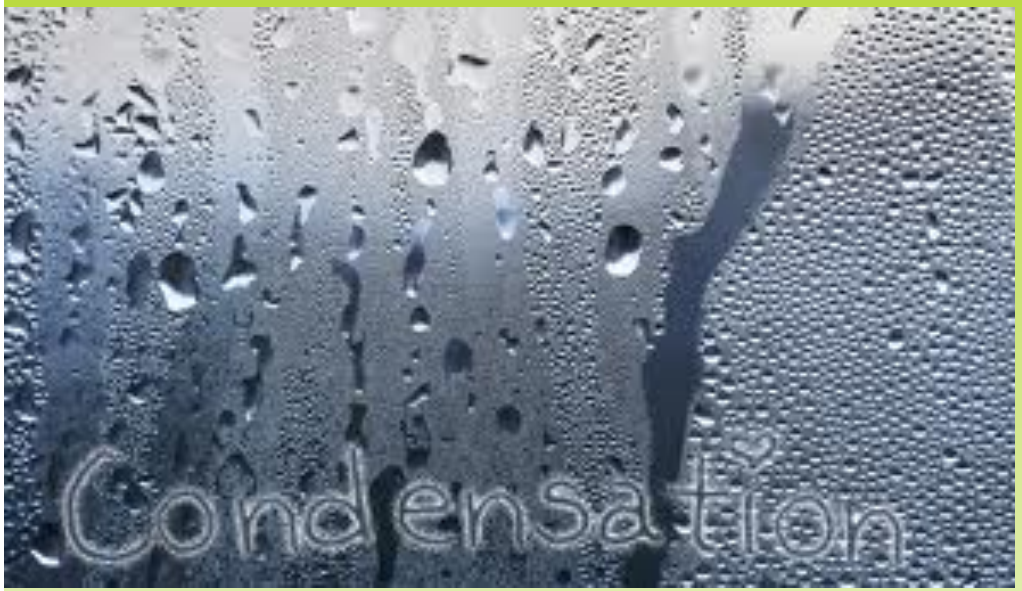
Eco Design Advisor

Welcome to this presentation

Moisture and condensation in your home



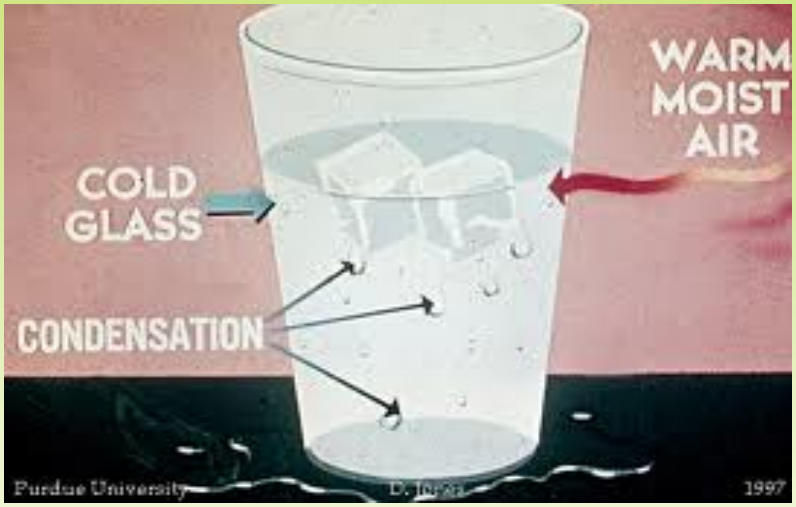
Today we will look at:

- **What is condensation?**
- **Why does it happen?**
- **What can we do to reduce the risk of it happening?**

Condensation occurs when the temperature of a surface drops to below the point that the air can hold all the moisture.

This temperature varies depending on a number of factors

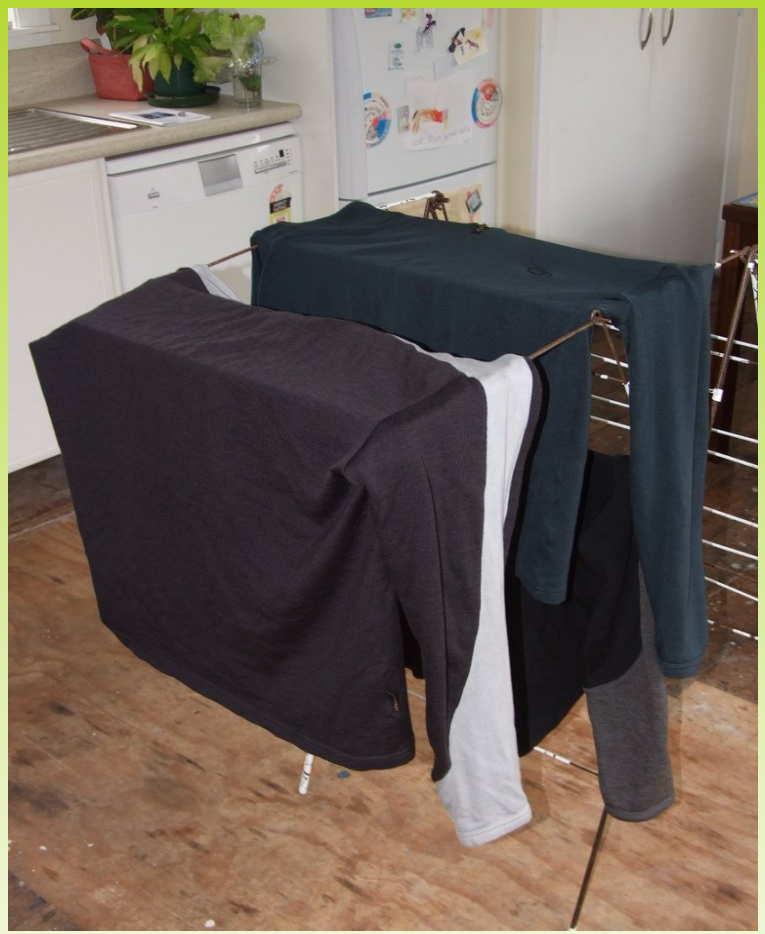
- **Why does condensation happen?**



- **Condensation, damp, and mould are caused by a combination of factors:**
- **Too much moisture in the air inside the house.**
- **Houses too cold.**
- **Not enough ventilation.**

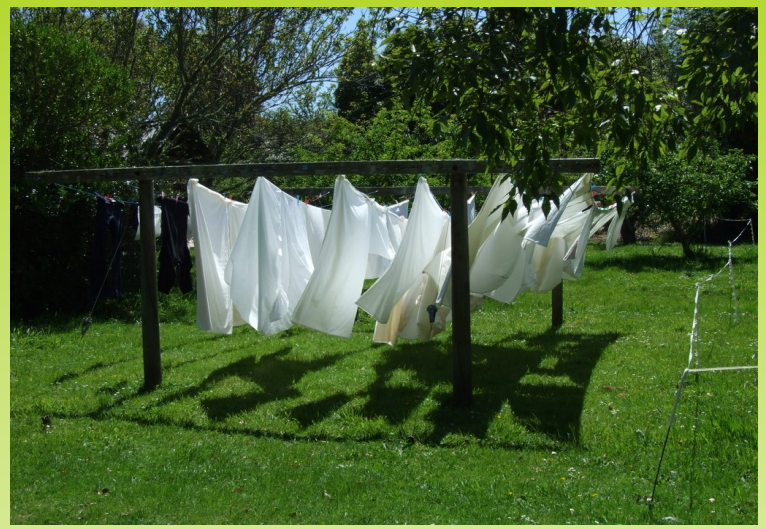
- **What can we do to reduce the risk of condensation happening?**

Do not dry laundry inside



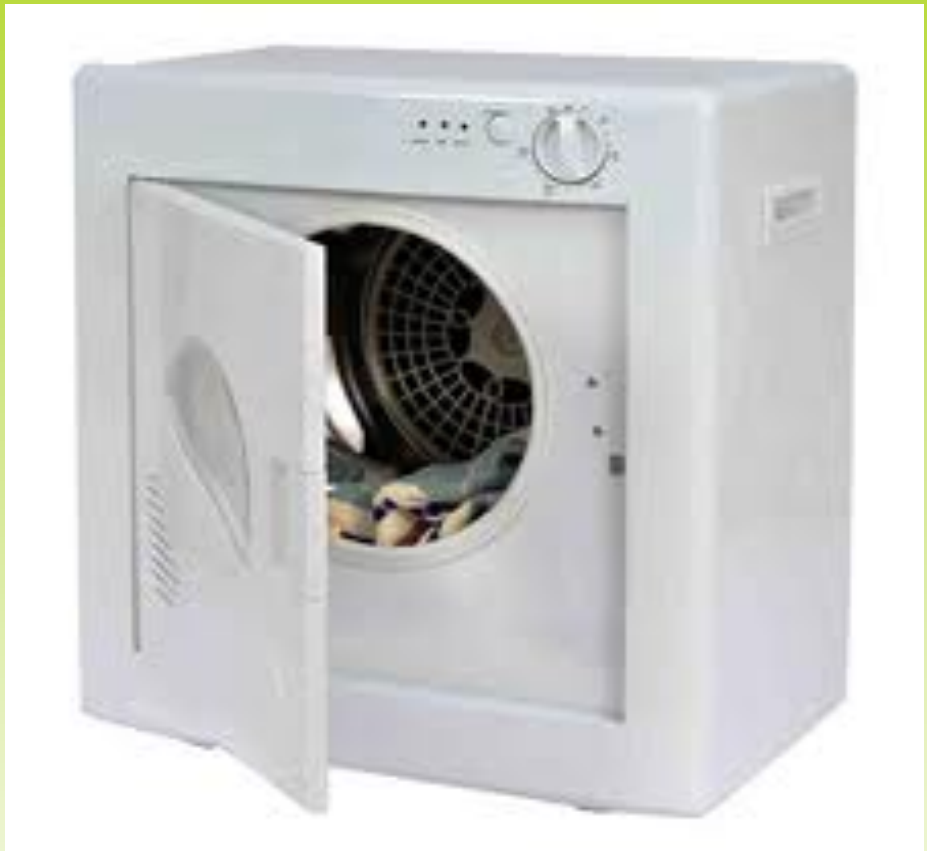
- Every load of washing you dry inside will add five (5) litres of moisture into the air inside your house.
- This can make houses damp and cause mould.

Dry laundry out side



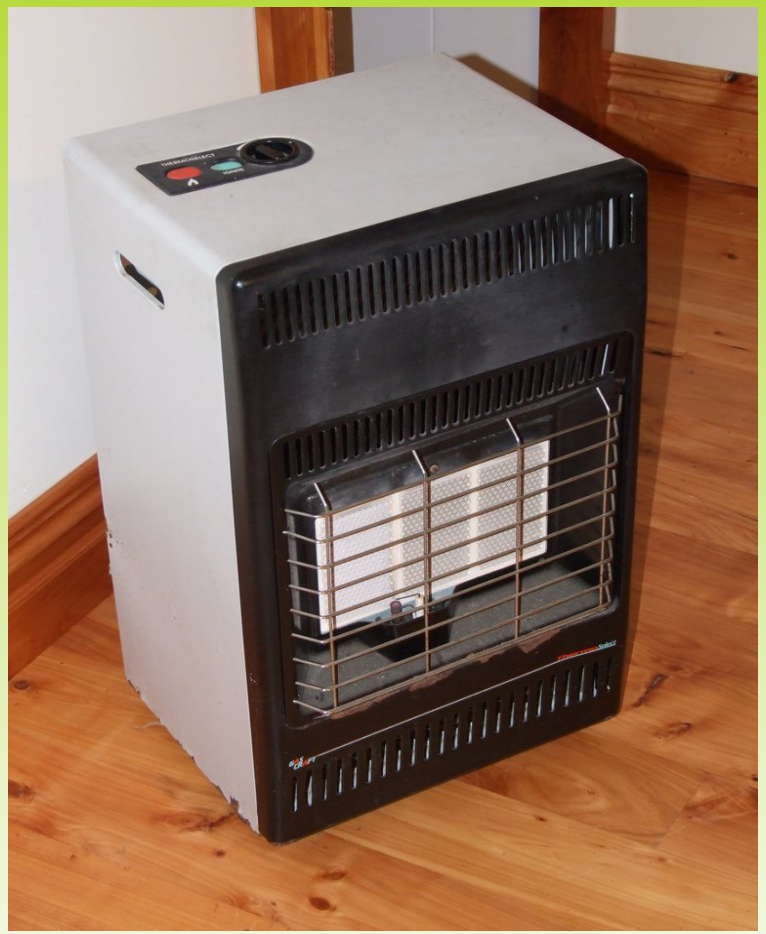
- Use the free energy from the sun and wind to dry clothes outside on a clothes line.
- The UV in the sun also helps kill any bacteria.
- It’s free!

Clothes driers



- If you use a clothes drier it should be vented to outside the house.
- Using the sun to dry your clothes will save you @ $200 a year

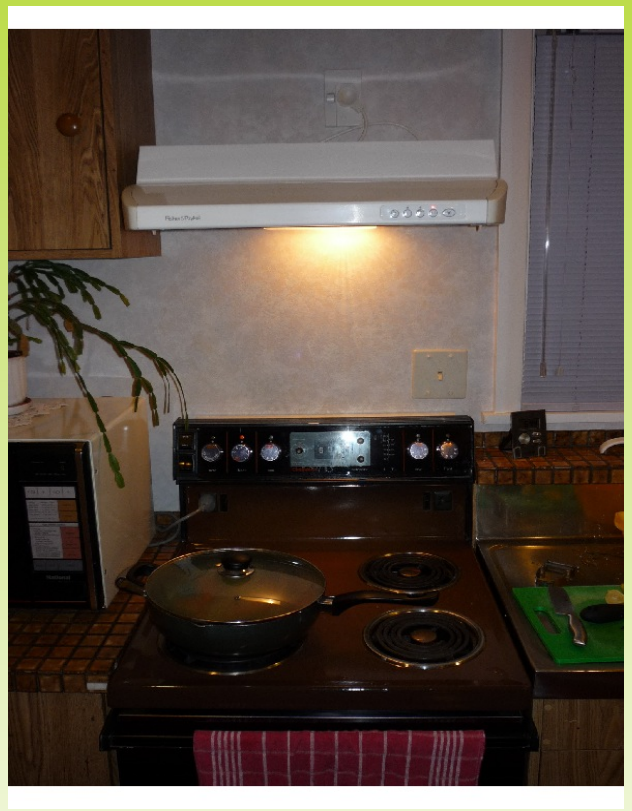
Do NOT use portable gas heaters



- They create lots of water and put poisonous gasses into your home.
- They are the most expensive type of heating!!!

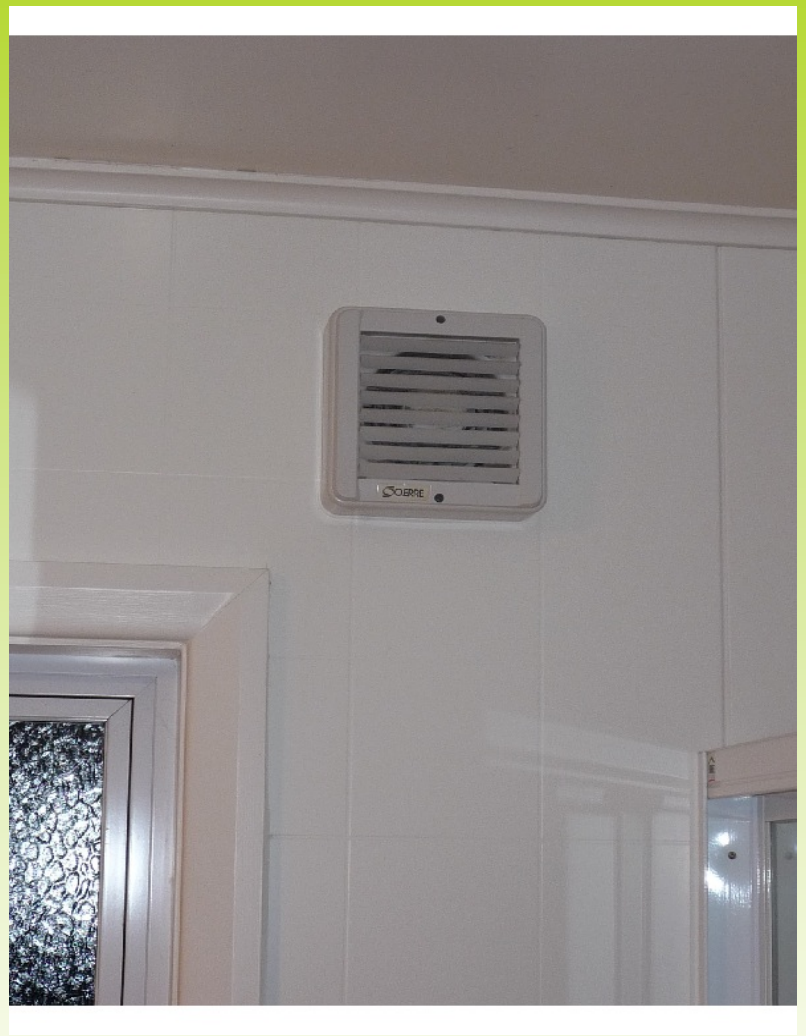
- They increase the incidents of respiratory problems among users
- Un-flued gas heaters are expensive to run
- 30% of households buying an un-flued gas heaters also buy a dehumidifier within 6 months.

Kitchens



- Use pot lids to reduce amount of moisture and steam going into the room.
- Use the extract fan or range hood if there is one installed.

Bathrooms

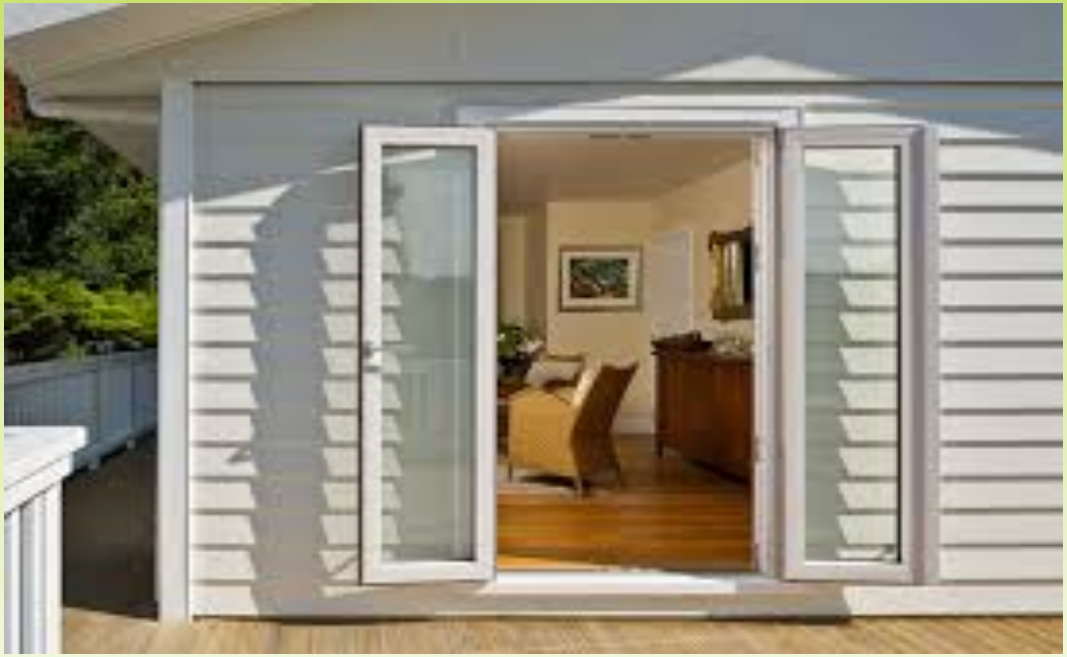


- If an extract fan is installed, turn it on as soon as you run the shower or fill the bath. Leave the fan running until all signs of moisture have gone from inside the bathroom.
- Keep the bathroom door closed to stop the moisture from the bathroom moving through into the rest of the house.
- Open the windows during the warm part of the day.

MOISTURE CREATED BY COMMON HOUSEHOLD ACTIVITIES

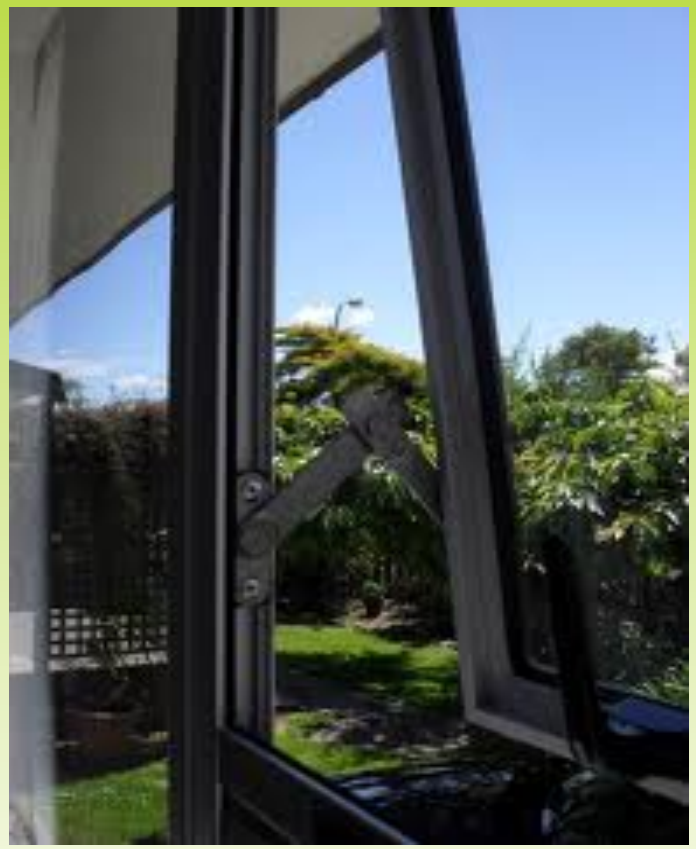
Activity	Litres
Cooking	3.0 per day
Clothes washing	0.5 per day
Showers and baths	1.5 per day (per person)
Dishes	1.0 per day
Clothes drying (unvented)	5.0 per load
Gas heater (un-flued)	Up to 1.0 per hour
Breathing, active	0.2 per hour (per person)
Breathing, asleep	0.02 per hour (per person)
Perspiration	0.03 per hour
Pot plants	as much water as you give them

Controlled ventilation



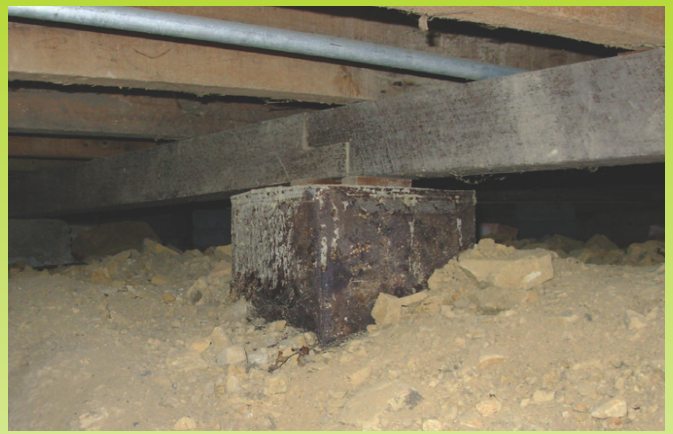
- Open windows during the warm part of day. Aim for at least 20 minutes a day.
- Shut windows by mid afternoon in winter.
- Use extract fans if fitted.

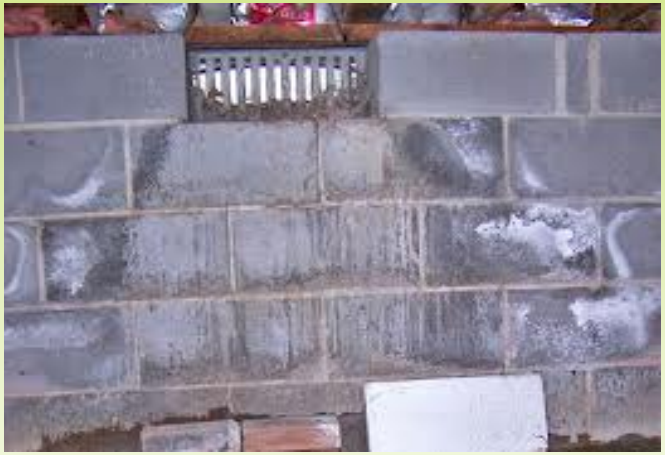
Uncontrolled ventilation

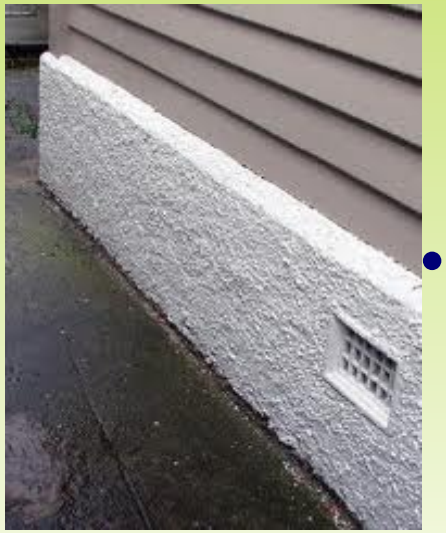


- Do not leave windows open all night.
- Gaps around doors & windows, open downlights, poorly fitting ceiling hatches.

Subfloor moisture problems







- Up to 40 litres of moisture evaporates out of the ground under NZ houses every day.
- This is when the ground under the house is dry!

- **Installing a damp proof membrane on the ground under your floor stops up to 40 litres of moisture coming up from under your home each day**

Get rid of moisture at point of source

We need to collect the moisture at the point that it is generated and get rid of it to the outside environment as quickly as possible.

We should not need to use a dehumidifier or a roof space ventilation system.

To summarise

To reduce the risk of condensation and the issues that come with it, we need to keep our homes:

- **Warm**
- **Dry**
- **Ventilated**

Questions ?

Heating and cooling potential of roof space air: implications for ventilation systems

Final Report

Prepared for the Energy Efficiency and Conservation Authority (EECA)

May 2011

Report by Warren Fitzgerald, Dr Inga Smith, and Muthasim Fahmy

Department of Physics, University of Otago

with input and advice from

Dr Zhifa Sun, Michael A. Carruthers, Bonar R. Carson, and Mark R. Bassett.

Heating and cooling potential of roof space air: implications for ventilation systems

This report outlines research conducted by the University of Otago which looks at the heating and cooling potential of moving roof space air into a home's living areas, as the most common type of home ventilation systems do.

The report recommends that this type of ventilation system - known as a "positive pressure" or "roof cavity" system - is not promoted or installed based on potential heating or cooling benefits.

EECA was a part-funder of this Otago University research report.

heating-potential-ventilation-systems-may-2011.pdf