



INDOOR ENVIRONMENTAL QUALITY v1.2

Poor indoor environmental quality is often caused from increased noise levels between rooms and external sources and concentrated levels of moisture, pollutants and allergens from poor ventilation. Because modern homes are so tightly sealed to avoid heat loss, this can lead to poor internal air quality - so remember when designing and building homes to “Build Tight, Ventilate Right”.

Options for improving indoor air quality:

- Product Selection* – Choose products with low risk of toxic emissions such as zero or low VOC’s e.g. floor coverings, water based rather than solvent based paints and adhesives, low formaldehyde flooring board, decorative surfaces and mouldings.
- Ventilation* – During construction open the doors and windows to ventilate the home, especially after interior stopping, painting, laying carpet and prior to occupancy.

The following measures will help extract moisture and pollutants during occupancy:

- Ducted rangehoods, clothes dryers and flued gas heaters,
- Extractor fans in high moisture areas such as bathrooms, laundries, spa rooms and toilets.
- A heat recovery ventilation system, air ventilation system and/or a heat pump with an air filter,
- Windows with passive vents or that can be left open during the day (use security or double tongue latches)

For spaces with natural ventilation only, an occupied space requires a net openable area (i.e. windows, doors etc) that is no less than 5% of the floor area.

For spaces with a mechanical ventilation system, recommended minimum ventilation rates for domestic buildings are:

- living areas (living room, bedrooms, dining room) – 0.35 air changes per hour but not less than 7.5 litres a second (l/s) per person
- kitchens – 50 l/s intermittent (or 12 l/s continuous or with opening windows)
- baths and toilets – 25 l/s intermittent (or 10 l/s continuous or with opening windows)
- laundries – 20 l/s intermittent
- spa pools – 5 l/s/m² of floor area
- garages – 50 l/s/car.

Source: BRANZ Level website www.level.org.nz (June, 2009)

- Thermal and Acoustic Insulation* – Good thermal insulation will avoid condensation forming on interior surfaces and possible mould growth. Acoustic insulation minimises noise levels entering or emanating from selected rooms.
- Seal leaks* – Check and seal all pipes, flues and ducts. Seal internal garage or workshop doors to avoid toxic fumes entering the house.

Building Code Compliance

(Data source: www.dbh.govt.nz, November 2009)

The Building Code (Clause G4) requires ventilation with outdoor air to maintain air purity. Compliance Documents contain several solutions for achieving this. The main solutions are natural ventilation comprising 5 percent of the floor area in opening devices or mechanical ventilation to achieve an air change in the occupied spaces (such as living areas) every three hours.

Because domestic ventilation systems draw air from the roof space, they are not directly drawing air from outside. Hence, they cannot be used to comply with the Building Code ventilation provisions. However, Building Code compliance is not generally an issue because domestic ventilation systems are installed in addition to opening windows.

Considerations

Installing domestic ventilation systems needs special care. The roof space must be clean and dry, as any animal waste, pathogens, allergens, mould and fungi in the roof space may be ventilated into the living space of the house. It is important to check for leaks in the roof space, as these may contribute to fungal and bacterial growth.



References

Beacon Pathway – www.beaconpathway.org.nz
BRANZ – level book series and website www.level.org.nz
Comparing energy efficient appliances – www.energyrating.com.au
Comparing water efficient plumbing and appliances – www.waterrating.gov.au
Efficient home energy and water use – www.smarterhomes.org.nz
Energy Efficiency and Conservation Authority – www.eeca.govt.nz
Department of Building & Housing – www.dbh.govt.nz