



RELATIVE HUMIDITY INDOORS: FACTSHEET

Besides oxygen, the air we breathe also contains water vapour. The amount of water vapour in the air can affect your comfort, your health and the structural integrity of your home and its contents. Humidity is the amount of water vapour in the air. The relative humidity (RH), which is expressed as a percentage, is the amount of water vapour the air contains compared to the maximum possible at that temperature and pressure. The RH is affected by temperature, which explains why differences can be observed according to seasons. In general, RH levels in homes tend to be lower in winter and higher in summer.

Impacts of Low Relative Humidity

Low RH in your home, below 30%, can occur in winter. It may aggravate skin allergies and cause eye irritation and respiratory infections. It can lead to cracked skin and increased static electricity (sparks). Low RH may provide an appropriate environment for the survival of some types of viruses (Figure 1). It may also cause wood floors and furniture to contract.

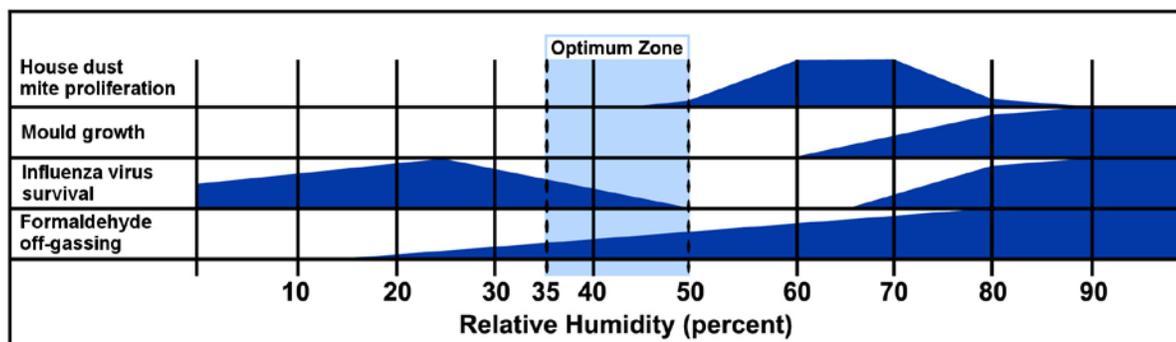
Impacts of High Relative Humidity

High RH, above 55%, in your home can be due to inadequate ventilation or large moisture sources indoors. High RH can be a problem because the building structure or contents can stay damp or wet for extended periods of time. This can promote the growth of mould, bacteria, and dust mites (Figure 1).

- **In winter:** higher RH levels can be problematic and cause moisture to condense on cold surfaces such as windows, foundation, walls or pipes.
- **In summer:**
 - High RH levels occur more commonly. However, because the building structure is warm, high humidity will usually not lead to condensation problems on above-grade floors, although basements may be affected, as well as uninsulated cold water pipes and toilet tanks.
 - High humidity can cause comfort problems, and combined with high temperature, it can increase off-gassing of volatile organic compounds, such as formaldehyde, from building materials and consumer products (Figure 1).

HEALTH CANADA RECOMMENDATIONS

Based on the chart below, Health Canada (2007) recommends that the RH in your home is kept below 50% in the summer and between 30-35% in the winter (Figure 1).



Adapted from: Arundel, A.V. et al. 1986. Env. Health Perspectives. 65:351-361.

Figure 1: Optimal indoor relative humidity zone, at 20°C.

Sources of Humidity

- Showering or bathing, and cooking, if exhaust fans are not working properly or are not used;
- Infiltration of water from the outside when there are cracks or leaks in the foundation, floor, walls or roof;
- Plumbing leaks;
- Flooding, for example due to weather conditions (snow melt, storm surges, prolonged or heavy rainfall);
- High indoor moisture sources, such as aquariums or numerous plants.

How to Measure Relative Humidity

- You can measure RH in your home using a hygrometer (humidity sensor). These can be purchased at any hardware store.

How to prevent low Relative Humidity

- If the RH levels are below 30% in your home in winter, you may consider using a humidifier to maintain those levels around 30-35%. Make sure you operate and maintain your humidifier according to the manufacturer's instructions, and if you see excessive condensation on cold surfaces, you may need to reduce the amount of humidification.

How to prevent high Relative Humidity

Find and fix the source of the moisture in your home

- Repair plumbing leaks promptly;
- Repair cracks or leaks in the foundation, roof, walls and window frames;
- Ensure rain, irrigation water and snowmelt drain away from your home by sloping the grade away from the building;
- Clear debris from eavestroughs and downspouts and ensure that the outflow runs to the street;
- Cover any exposed earth in the crawl space or basement with heavy polyethylene (sealed at the edges and any seams and weighted down).

Keep surfaces warm and dry in your home

- Wipe your window frames and sills daily if you notice condensation to keep water from dripping and causing mould to grow, or consider reducing the level of humidification;
- Insulate exterior or foundation walls that are uninsulated or poorly insulated;
- Consider upgrading to high-performance windows to prevent condensation;
- Allow air and heat to circulate, especially behind furniture or curtains;
- Use moisture tolerant materials in areas likely to get wet (kitchen, bathrooms, laundry areas);
- Run a dehumidifier in damp areas such as your basement to help reduce RH, when necessary.

Ventilate your home

- Always use your bathroom exhaust fans while showering and kitchen range hoods while cooking to vent moisture outdoors, and make sure the fans exhaust outside;
- Always vent clothes dryers to the outside;
- Use your home's existing mechanical ventilation system or, if there is none, consider installing one, preferably one with a Heat Recovery Ventilator (HRV) or an Energy Recovery Ventilator (ERV);

- In order to ensure airflow and heat is distributed evenly across rooms, keep heating vents and walls clear of furniture and leave interior doors open if possible;
- When the outdoor temperatures are very cold, your house may not be able to tolerate RH levels above 30% without excessive condensation on windows and other cold surfaces. This situation does not mean you have indoor sources of moisture. However, you may consider reducing your humidifier use and /or increasing your home ventilation on that day to reduce the RH levels and condensation on windows.

Complementary information

- [Addressing Moisture and Mould in your home. Health Canada. 2014](#)
- [Flood Cleanup: Keep in Mind Indoor Air Quality. Health Canada. 2014](#)
- [Residential Indoor Air Quality Guidelines: Mould. Health Canada. 2007](#)

If you want to get a copy of these documents please contact us at: air@hc-sc.gc.ca.

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