R-2000 Initiative

Breathe Easier With Healthy Ventilation and Fewer Pollutants

There has been an alarming rise in asthma, allergies and other respiratory ailments in people of all ages, but especially in children. Asthma is now the most common chronic respiratory disease in children. One potential cause is the poor quality of air inside our homes.

That is why more and more Canadians are requesting a home built to the R-2000* Standard which was developed by the Office of Energy Efficiency of Natural Resources Canada. The R-2000 Standard is already well known for its comfort and energy savings, and many Canadians are considering buying an R-2000 home as an essential part of planning for the long-term health of their family. Not only that, an R-2000 home integrates many energy efficiency features that reduce greenhouse gas emissions that contribute to climate change.

Choose the right materials

One major cause of poor indoor air quality is the increase of pollutants that are "off-gassing" chemicals into the indoor environment. These pollutants can come from many sources – anything from introduced materials, such as home furnishings and carpets, to structural and finishing materials, such as particleboard and paints. And the problem is everywhere in the homes and buildings in which we live, work and play.

R-2000 homes systematically control these pollutants. The solution is to either eliminate polluting materials in the construction process or effectively seal them in order to prevent hazardous chemicals' emissions in the home.

*R-2000 is an official mark of Natural Resources Canada.

Natural Resources Canada | Ressources naturelles Canada

Canada

Reducing the sources of the pollutants and the ability of remaining pollutants to escape into the air are the starting points for healthy indoor air.

Mechanical ventilation beats out mould

Ventilation – the elimination of stale humid air from the home and the introduction of outdoor air – is also very important. Humid air can cause condensation that supports mould growth that in turn releases toxic spores into the air. Canada Mortgage and Housing Corporation (CMHC) and Health Canada advise controlling humidity in the home by maintaining a relative humidity of between 40 and 60 percent to limit condensation problems.

In an R-2000 home, stale humid air is removed and replaced by clean, fresh air with a mechanical ventilation system called a heat recovery ventilator, or HRV for short. The HRV captures and recycles much of the heat from the outgoing stale air and uses it to warm up incoming air, which also saves energy. By constantly circulating outdoor air, the HRV helps eliminate the cold spots that cause condensation that encourages mould growth.

An HRV is mandatory in every R-2000 home and is central to the integrated ventilation system. It is like the lungs and bloodstream of the house delivering fresh air to, and exhausting stale humid air from, all rooms of the house. It is integrated to work safely and in balance with all the other fans in the house, such as those above the stove and in the clothes dryer, furnace room and bathrooms.

She got her life back!

For years Linda Linders suffered. It kept getting harder and harder to breathe, and her quality of life was spiralling downward. At one point, it was simply too much effort to even leave the house. But her house was one of her biggest problems!

Today Mrs. Linders is a different person. She is active, happy and healthy and enjoys a much-improved quality of life. She attributes a big part of her new-found lease on life to the R-2000 home her family purchased in their bid to stabilize her health.

"We did a lot of research and recognized that an R-2000 home should be a better place in which to live," says Mrs. Linders. "A builder we knew had an R-2000 house available in an area we liked, so we figured it was time to give it a try. I knew this was a home with a difference almost from the beginning. In six months, I was seeing improvements, and I have never looked back. This house really gave me back my life."

R-2000 homes study in the Maritimes

Between 1996 and 1999, a Health Canada team headed by Ottawa respirologist Dr. Judy Leech compared the health of occupants of 53 R-2000 homes in Nova Scotia and New Brunswick with the health of a similar control group living in conventionally built new homes. The study looked at a range of issues, from smoking and allergies to incidences of headaches and throat irritation.

Preliminary results show that the people in R-2000 homes said that their conditions had improved at a significantly higher rate than that indicated in the control group:

- Dr. Leech and her team found that 94 percent of families living in R-2000 homes felt that *the air quality was better* than that of other homes in which they had lived. This compares with 77 percent of those in conventional homes who believed this.

- Fifty-six percent of families in the R-2000 homes said that *their general health had improved* in their new homes, compared with only 32 percent in conventional homes.

- Ten percent of those in conventional homes said that their general health had deteriorated. *No one in R-2000 homes reported poorer health*.

Of the 50 individual chemicals that are normally found in air samples from residential environments, the NRCan study reported that the R-2000 houses had only 25 percent of the levels of formaldehyde and volatile organic compounds (VOCs) than those found in the conventionally built houses.

R-2000 goes further

In addition to lower VOCs, energy-efficient mechanical ventilation and lower energy costs, there are lots of other reasons that homes built to the R-2000 Standard offer added value:

- Certified R-2000 experts design and inspect the heating, cooling and ventilating systems to ensure that they meet the R-2000 Standard. This is in addition to all municipal and provincial inspections of the home.

- Air ducts that carry outdoor air through a heated living space in an R-2000 home must be insulated to a minimum R-3 (or RSI 0.5) insulation value and have a sealed vapour barrier around the insulation to prevent condensation and ice formation.

- All R-2000 homes must have a carbon monoxide detector installed as a safety precaution. Although this is a requirement in some jurisdictions, this detector is still not mandatory throughout Canada in conventionally built new or existing housing.

- Insulated spacer bars, a requirement for windows in all R-2000 homes, considerably reduce condensation and mould and make the windows more comfortable to sit beside.

- Insulation under the basement floor keeps floors warmer, reducing heating costs and any cold surfaces where moisture can condense.

- Waterproofing rather than just damp-proofing the basement or adding a free-draining layer around the basement keeps the foundation drier and less prone to mould growth.

- Installing a moisture barrier between the basement wall insulation and the foundation wall protects the insulation and framing against moisture damage and mould development.

Today one in five Canadians has a respiratory problem. Don't let members of your family become part of that statistic.

Make sure your next home is a healthy one – invest in an R-2000 home. Local R-2000 offices are there to help you. For the number of your local R-2000 office, call Natural Resources Canada's Office of Energy Efficiency toll-free at 1 800 387-2000, or visit the Web site at **oee.nrcan.gc.ca/r-2000**.

Leading Canadians to Energy Efficiency at Home, at Work and on the Road

The Office of Energy Efficiency of Natural Resources Canada
strengthens and expands Canada's commitment to energy efficiency
in order to help address the challenges of climate change.

Aussi disponible en français sous le titre :
Respirez plus facilement grâce à une ventilation salubre et un moins grand nombre de polluants.
Inventory No. M27-01-1901E


Recycled paper


Printed in Canada