Opinion

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As building standards accelerate ahead, leading to the rise of passive houses and fundamental changes to a large proportion of our building stock, ventilation and the management of good indoor air quality must climb higher and higher up the agenda.

This is a relatively new subject for most people and certainly something that's fairly alien – even counter intuitive – to homeowners. If you've just spent a large chunk of your savings insulating your home and sealing it up from the cold it may horrify you to be told that you now have to put holes in it to let cold air in.

And herein lies the rub. In the world of ventilation there are two almost opposing goals. One looks to achieve an air quality in the home as close to that of outside as possible, while the other tries not to lose heat or bring too much cold air in.

The priority of course should always be the health of the occupants and of the building fabric itself, but the imperative to insulate and seal up our homes can sometimes sit in opposition to this – especially when the financial incentives lie on the energy saving side. Whether you're a home owner or the Department of Energy nothing is more energy efficient than no ventilation at all.

So instead we rely on building standards, regulations and codes of practice to ensure that when we build or upgrade, we create healthy buildings in which people can live, work and educate their children.

Failing to get this right is as unthinkable as failing on fire safety. It may not be as dramatic as having to move yet another block of residents out to fix a problem, but councils all over the country are moving residents out one by one to fix issues with poor ventilation, air quality, mould and condensation right now.

There are many more people patching up the problem, redecorating or simply living with it. Occasionally it might hit the news as with Dolphin's Barn, but more often than not it's a silent problem.

The danger is that ventilation is an afterthought. And – as with fire standards – all of the regulations and codes of practice in the world will mean nothing unless they're enforced.

The ventilation industry has come together and formed the Irish Ventilation Industry Association (IVIA). It's already working to reinforce regulations and codes of practice with better information and best practice advice. Its goal will be to follow this with training and better control.

But we need more than this – we need to understand buildings and people better, and we need to establish our goals and solutions more thoroughly. For example airtightness is only part of the picture when it comes to mould and condensation control – there's evidence to suggest many homes built over the last few decades may be leakier than those built 50 years ago. So why do we see problems so quickly after renovation and insulation work is carried out? There are various answers: it may be due to increased airtightness without ventilation, or it may be how we live – these days we tend to use more hot water and wash and dry our clothes indoors.

We may also have changed the very structure of the building: surfaces are warmer and may expose weaknesses like thermal bridges more aggressively than before, creating very focused points for condensation and mould.

It's a complex subject that is assisted hugely by the growth in modelling tools to simulate impacts, such as Siren and Wu, which offer a real insight into something that would be complex, costly and time consuming to study in a real life.

In September 2011, with the financial support of the Higher Education Authority and Springboard, the Dublin School of Architecture at DIT Bolton Street admitted 20 unemployed architects and architectural technologists to its recently validated postgraduate certificate in Digital Analysis and Energy Retrofit. I was lucky

enough to see their presentations to Dublin City Council on a range of solutions for upgrading the "gull wing" flats that are so prominent in the city. (ed. – see feature article on p85) It was a real example of how design and modelling can come together to show detailed and practical ways to upgrade our stock, including sound ventilation strategies.

One of our problems is that we're limited in the detail of targets we have when it comes to air quality, we draw on British standards for humidity, we have no standards of our own for CO_2, VOCs or bacteria, and in general we fall back on fairly vague WHO standards.

So it's hard to see how we can create meaningful regulations, codes of practice and strategies if we're not entirely clear what our goals are. Is simply saying that you need 0.5 or 0.3 of an air change an hour really good enough?

Without doubt we're moving forward very quickly with our buildings, but ventilation is only just starting to hit the consciousness of the industry. There has been a widely held view that just whacking a few holes in walls generally sorted a problem out. But that time has passed and real ventilation strategies now have to be realised in all building types. It's not good enough to simply say that everyone from homeowners to teachers to health care professionals can really be expected to control something as complex as air quality by opening another window or manually opening a hit and miss grille.