

## How are you influencing your workplace wellbeing with IEQ?



Our prevailing indoor environment quality (IEQ) is the result of a number of interrelated factors. Now, it is as much influenced by users, layout and sustainability as it is by the building design, operation and maintenance.

In turn our IEQ directly influences the occupant's perception of their working environment, and so their wellbeing, and by virtue their productivity.

The push for better environmental credential (tighter building envelopes, energy efficiency), greater space planning and more flexible working styles also affects what we can do to influence our building's IEQ, and so improve or optimise that user experience.

Research by Jordan's Cereals, published in 2018, indicated on average we spend 142 hours indoors a week (in the office, at shops, at home, in the car or on public transport).

**Here are some influences on your IEQ you may want to reflect on.**



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## How are you influencing your workplace wellbeing with IEQ?

### 1. IEQ explained

In essence, IEQ considers the general quality of conditions within the building/premises and how they relate to the occupants wellbeing. It can cover anything from, air and water quality, user comfort, lighting and noise to space, décor, access, ergonomics and facilities.

Measuring IEQ can range from user satisfaction surveys to very detailed measurements of specific parameters (air, water, comfort, etc.) or even combinations of both.

IEQ can help to promote a productive and healthy environment. But if the IEQ is not effectively managed it can lead to problems for occupants and the building (including and caused) by:

- Microbiological contamination (mould, Legionella, etc.);
- Poor ventilation / temperature control;
- Chemicals (volatile organic compounds, etc.);
- Badly managed occupancy/space planning;
- Asbestos;
- Dusts, gases and other pollutants;
- Noise and lighting problems;
- Poor design and;
- Cleaning and maintenance issues.



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### 2. IEQ – Airborne contamination/Indoor air quality (IAQ)

Airborne contaminants, including, microorganisms, gases and dust (particles), as well as potentially coming from outside the building (vehicular pollutants, spores, construction dust etc.) can be generated from within the building too and cover everything from the occupants to office equipment, furnishings and even the products we use for cleaning.

While regularly the building is believed to be the primary cause for any coughs or colds doing the rounds, increasingly we are seeing other components being assessed. Dusts, and in particular PM10 and PM2.5, are being looked at more closely both in indoor and outdoor air.

Recent changes have occurred to the occupational exposure values for a number of specific gases (Carbon monoxide included). Other areas that can affect IAQ are:

- Volatile organic compounds off-gassed from furnishings/carpets or from cleaning/other chemicals; and
- Dusts/gases as a by-product of processes.

What are you doing to assess the IAQ in your building?



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### 3. IEQ - Occupancy comfort

Occupancy comfort in buildings in terms of temperature, relative humidity and airflow/air movement is historically the most emotive of issues to get right.

While there is much in the way of information, guidance and best practice for what “comfortable” levels of each should be, for everyone who is happy there are others who will be too hot, too cold, stuffy and draughty - and often, all in the same place at the same time! Practitioners will identify space temperatures of between 21°C and 24°C as optimum; it is what most forced air ventilation systems are designed to deliver too.



Legally the Workplace (Health, Safety and Welfare) Regulations 1992, Temperature in indoor workplaces, Section 7.(1) states, “During working hours, the temperature in all workplaces inside buildings shall be reasonable.” Its associated Approved Code of Practice (L24) suggests “The temperature in a workplace should normally be at least 16 degrees Celsius. If work involves rigorous physical effort, the temperature should be at least 13 degrees Celsius. However, these temperatures may not necessarily provide reasonable comfort, depending on other factors such as air movement, relative humidity and worker clothing.”

The concept of “thermal comfort” – a term describing a person’s state of mind in terms of whether they feel too hot or too cold, considers not just the environmental factors (space temperature, relative humidity, radiant temperature and airflow velocities, etc.), but there are also the variable people issues too (e.g. clothing, activity and wellbeing – metabolic rate and illness) affecting our perception of what is and what isn’t warm.

Equally, relative humidity not only influences thermal comfort, but if it’s too high can lead to condensation, mould and mildew (smells, growth and staining) and if it’s too low and dry, problems such as static or dry eyes, nose, ears and throat problems. Relative humidity levels of between 40% and 60% provide the most “comfortable” range in most buildings.

Occupancy comfort is about balancing the needs of the occupants with the capabilities of the building and solving more local environment issues to achieve optimum and manageable comfort levels, how are you balancing yours?

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### 4. IEQ - Noise and light

Noise can have a direct impact on hearing and health and is important where processes, plantrooms and/or activities generate significant levels, so the requirements of the Noise at Work Regulations 2005 apply. And while these are always important considerations with IEQ, it is often the less damaging but more irritating nuisance levels of this intrusive noise that cause the most problems. These can be a door repeatedly opening and closing, printers, other equipment, vehicle movements or even your colleagues!

The type of work environment you have will also affect the volume of noise required to exceed the typical background levels, so a manufacturing area in constant use will be more than an open plan office, which will be more than a reference library or store. Some departments where concentration or detail is paramount often tend to be quiet areas too.

Locating equipment away from populated areas where practical, maintaining doors and other items (to stop bangs and squeaks) and assimilating those who may have moved from a quiet office to an open plan one all help in managing nuisance noise.

Lighting is another area where failure to get it right can lead to both long and short term wellbeing issues for occupants and dissatisfaction with the indoor environment.

Most people are aware that natural light is good for us from a health as well as visual perspective – as well as a source of vitamin D. Many buildings today are being designed to maximise natural light, although it is not always possible particularly with large deep floorplates. Glare and temperature can also become unintended consequences.

The range of lighting available to architects is myriad, which is possibly why we can have so many different fittings and so need so many different types of bulbs!

As well as looking good the other primary purpose is to provide adequate levels of illumination which are appropriate to the tasks being performed. Typically for the office environment either for reading or display screen work this will be between 200 lux and 500 lux. Flexibility in the provided lighting system is also very beneficial with banks of lighting easily switchable and/or task lighting provided for those that may need it, how are you managing the lighting conditions in your building?



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## How are you influencing your workplace wellbeing with IEQ?

### 5. The value of ventilation

Ventilation in buildings can be classified as:

- Natural (openable windows and doors) where the exchange of air is dictated by the difference in pressure between the two areas.
- Mechanical/forced - as name suggests where fans are used to “blow” air into the building typically through ducts or plenums.
- Trickle - mixed mode or assisted depending on the type of systems they are using and incorporate heating, cooling, humidification and a form(s) of filtration and have fans and pumps to support them at various points of the system.

A well balanced, well operated ventilation system should help promote IEQ by helping regulate temperature, promote air movement, introduce “fresh” and remove stale air and dilute other potential internally generated pollutants (gases, dust, etc.).

To do this however it needs to be recognised that the outside air is often more contaminated with a number of pollutants than the air inside the building, so good quality filtration and a well maintained ventilation plant is needed.



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### 5. The value of ventilation (continued)

The Workplace (Health, Safety and Welfare) Regulations 1992, Ventilation, Section 6. States;

“(1) Effective and suitable provision shall be made to ensure that every enclosed workplace is ventilated by a sufficient quantity of fresh or purified air.

(2) Any plant used for the purpose of complying with paragraph (1) shall include an effective device to give visible or audible warning of any failure of the plant where necessary for reasons of health or safety.”

Its associated Approved Code of Practice (L24) includes:

“47 Enclosed workplaces should be sufficiently well ventilated so that stale air, and air which is hot or humid because of the processes or equipment in the workplace, is replaced at a reasonable rate.

48 The air which is introduced should, as far as possible, be free of any impurity which is likely to be offensive or cause ill health. Air which is taken from the outside can normally be considered to be ‘fresh’. However, air inlets for ventilation systems should not be sited where they may draw in contaminated air (for example close to a flue, an exhaust ventilation system outlet, or an area in which vehicles manoeuvre). Where necessary, the inlet air should be filtered to remove particulates.

52 Mechanical ventilation systems (including air-conditioning systems) should be regularly and adequately cleaned. They should also be properly tested and maintained to ensure that they are kept clean and free from anything which may contaminate the air.”

How are you assessing the ventilations systems in your building and the contribution they are making to a positive indoor environment?

Assurity Consulting are leading experts in workplace health, safety and environmental compliance. Our workplace environmental assessment service can give reliable information on your working environment to make sure your buildings are supporting a productive environment, working to industry guidelines. For more information, please contact us on tel. +44 (0)1403 269375 or email us. [info@assurityconsulting.co.uk](mailto:info@assurityconsulting.co.uk)



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