

Relevant guidance regarding IAQ monitoring parameters

Temperatures are covered by the Workplace (Health, Safety & Welfare) Regulations 1992, which place a legal obligation on employers to provide a 'reasonable' temperature in the workplace. The Approved Code of Practice (ACOP) suggests the minimum temperature in a workplace should normally be at least 16 degrees Celsius.

CIBSE recommends that **Relative Humidity** levels in offices should be between 40 - 70% to maintain appropriate levels of comfort, but it is commonly recognised that most people will only start to experience symptoms below 30%. An overall comfort range of 30 - 70% is typically recommended.

UK Workplace Exposure Limits for **Carbon Dioxide** are listed within the EH40/2005 Workplace Exposure Limits (WELs) document published by the Health & Safety Executive (HSE); Short-term Exposure Limit (STEL) = 15,000 ppm and the Long-term Exposure Limit (LEL) = 5,000 ppm. However, the commonly recognised comfort limit within the IAQ industry is much lower than these figures at 1,000 ppm.

The UK exposure limits for **Carbon Monoxide** are listed within the EH40/2005 Workplace Exposure Limits (WELs) document published by the HSE; Short-term Exposure Limit (STEL) = 200 ppm and the Long-term Exposure Limit (LEL) = 30 ppm. However, the commonly recognised comfort limit is 9 ppm.



Microbial Air Sampling; CIBSE publish a relevant industry guidance document titled TM26:2000 'Hygienic Maintenance of Office Ventilation Ductwork', which provides guidance on monitoring of airborne levels of bacteria and fungi / mould and the interpretation of laboratory test results.



There is no specific health and safety requirement for conducting **Volatile Organic Compound** (VOC) monitoring in normal / office type work environments. However, the Leadership in Energy & Environmental Design (LEED) recommend a Total VOC limit of 500 micrograms/m³, which equates to approximately 125 ppb (parts per billion). It should be noted that there are various accreditation bodies (BREEAM, WELL & LEED) which publish standards for conducting VOC and Formaldehyde testing in new and refurbished buildings, prior to occupation. Conducting testing to such standards allows building developers to obtain credits and certification which may be specified in contracts, but are not considered legal requirements.

The World Health Organisation (WHO) publish air quality guideline values for **Particulate Matter** (PM) for outside / ambient air. Also, in dirty work environments, such as building sites or heavy manufacturing, there may be the potential for dust levels to exceed HSE Workplace Exposure Limits and in such instances, personal exposure monitoring for dust levels should be conducted using pumps and dust collection capsules.

The following international standards are relevant with regard to **Mould** surveys; ISO 16000-32 Indoor air - Part 32:

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Investigation of buildings for the occurrence of pollutants; and ISO 16000-20 Indoor Air, Detection and Enumeration of Moulds, Determination of Total Spore Count.

The Ionising Radiations Regulations 2017 (IRR17) come into effect where **Radon** is present above the defined level of 300 Bq/m³ (as an annual average) and employers are required to take action to restrict resulting exposures. The HSE and Local Authorities are responsible for enforcing these regulations in particular types of workplace. Testing for radon should be conducted in any workplace where its location and characteristics suggest that elevated levels may be found and significant exposures to employees and/or other persons are possible. Inexpensive surveys can be carried out by leaving small plastic passive detectors in rooms or occupied locations of interest.

Public Health England recommends that **Radon** levels should be reduced in homes where the average is more than 200 becquerels per metre cubed (200 Bq m⁻³). This recommendation has been endorsed by the Government. This Action Level refers to the annual average concentration in a home, so radon measurements are carried out with two detectors (typically in a bedroom and living room) over three months, to average out short-term fluctuations.

Lighting minimum recommendations are as determined within the HSE (Health & Safety Executive) guidance document HSG38 'Lighting at Work' second edition 1997. For example, offices are generally categorised as 'Work requiring perception of detail' and have an associated average illuminance recommended minimum of 200 lux and a minimum measured illuminance of 100 lux.

