Ventilation

Ventilation systems may be required for a number of reasons at any specific site generally however the importance of air quality in the workplace means that most systems are there to maintain comfortable, healthy and compliant environmental conditions.

Ventilation should not necessarily be approached only in terms of compliance with legislative requirement but should operate as an integral component of the overall building services systems designed to suit the overall comfort requirements of occupants or any specific environmental characteristics required for organisational activities.

The health and wellbeing of building occupants can deteriorate quickly in poor air conditions. The essential characteristics of air supply are temperature, water content of the air (technically referred to as 'relative humidity'), air purity and the manner by which air circulates through spaces and over the human body. Ventilation systems combine various physical components to provide and remove air to support this.

Ventilation criteria or 'ventilation rates' vary between different types of functional space. Ventilation rates are expressed as the number of times a volume of air in a space is replaced every hour or as a volume of air supplied per occupant per second.

Ventilation systems are often provided to dilute or remove contaminants from spaces. Air contaminants come from many sources including equipment, chemicals, furnishings and building materials.

The level of pollution to which office occupiers are exposed to can be up to five times higher than normal airborne levels. New buildings are often cited as having higher levels of pollutants such as formaldehyde. However, as these diminish over time they are replaced by other irritants including fungi, bacteria and mites which breed on the dust and residue left by occupants.

Ventilation systems can circulate such irritants around the office, slowly increasing the concentration of them, particularly where extract air is re-circulated by the ventilation system. Even filter units themselves can become a habitat for fungal growth, releasing spores into supply air.

If the air we breathe is stale or contains such pollutants or too much carbon dioxide, it can result in a number of problems including headaches, nausea and allergic reactions. It is important therefore that air filters are changed regularly, to prevent a build-up of bacteria. Airborne viruses like upper respiratory tract infections can be passed on through these systems if the air is recycled. The recycled air should be mixed with fresh air, to avoid it becoming unhealthy.

The Chartered Institute of Building Services Engineers (CIBSE) publish a range of technical guidance documents on building ventilation www.cibse.org