Workplace quality: improving employee health and wellbeing using plants

While workplace safety considerations are often given prominence by organizations, health and well-being considerations are more difficult to quantify and tend to be given less attention.

With suggestions that employee disengagement is increasing, it is important to provide workplaces that positively influence employee well-being. Engaged employees have an energetic and effective connection with their work and look upon it as challenging rather than stressful. The focus is often on symptoms of disengagement such as distraction, lack of interest, poor decision-making and high absence rates, rather than the root causes; of which the workplace is a key root cause.

Studies have shown that job resources are positively associated with work engagement, which include physical, social or organizational aspects of the job that may reduce job demands, assist achievement of work goals or stimulate personal growth, learning and development. It is possible, therefore, that the workplace could be considered a job resource, which either positively or negatively impacts upon engagement.

A healthy working environment can be defined as an environment that is free from negative health contaminants and where safety hazards are reduced to the minimum. A healthy working environment will contribute to staff feelings of well-being. Corporate real estate strategy for workplace design has a major role to play in providing such environments.

Sick Building Syndrome

One of the key negative health aspects of buildings is “Sick Building Syndrome”, which emerged as a recognized workplace problem in the 1980s. With the move to air-conditioned buildings over the last 50 years or so, and more recently, energy-efficient buildings, the environmental conditions for Sick Building Syndrome have been created.

Symptoms of illness relating to sick building syndrome include eye, nose and throat irritation; dry skin and mucous membranes; skin rash; mental fatigue; headaches and airway infections; cough; hoarseness, wheezing, itching, hyper-sensitivity; nausea and dizziness. These symptoms will generally disappear shortly after leaving the building.

Sick Building Syndrome can be caused by poor ventilation, enabling the build up of indoor pollutants. Management can also create an organizational culture which increases the sensitivity of the building population to environmental conditions. For example, by setting inadequate environmental performance standards, lacking suitable building performance data, failing to anticipate the consequences of change, ignoring job stress factors or responding slowly to environmental complaints.

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Office pollutants

Volatile Organic Compounds (VOCs) are present in buildings, particularly in new or recently refurbished buildings. They are typically associated with materials derived from petroleum products and arise in off-gassing from a variety of building products, furnishings, cleaning products, paints, adhesives, carpeting, upholstery, panelling, plastic, vinyl, copying machines, computers and hundreds of other office products. VOCs are also found to be emitted in varying amounts by the lubricating oil in mechanical parts of office printers. These include substances such as Benzene and Formaldehyde, which in low concentrations can cause skin irritation and dry throats but in higher concentrations are linked to cancer.

Building occupants may be exposed to many pollutants simultaneously and although exposure to individual contaminants may be extremely low, the combined effects over time may be much more significant.

Allergen sensitization occurs when the body is exposed to an allergen resulting in an altered capacity to react to that substance. Further, exposure can lead to immunoreaction such as asthma, rhinitis, alveolitis, dermatitis or eczema.

Some allergens found in offices are:

- Insect detritus.
- House dust mite excreta.
- Fungal spores.
- Isocyanates.

Contaminated air may also result from contamination of fresh air intakes such as emissions from the building itself or other nearby buildings; vehicle exhaust from street traffic, car parks and loading docks; contamination from industry, streets and construction sites; or outdoor contaminants from other sources being transferred to unexpected situations by wind currents.

The ability of plants to remove common office pollutants

An array of research has documented the beneficial effects of plants in removing indoor air pollutants. For example, the first evidence of the ability of indoor plants demonstrated that Spider Plants have the ability to detoxify Formaldehyde.

Subsequent studies of the ability of standard nursery stock plants and their associated micro-organisms to remove formaldehyde, xylene and ammonia from sealed chambers over a five month period revealed that the most effective plant for removing formaldehyde was the Boston fern. Two Boston Ferns would be capable of removing the formaldehyde from a 9.3 square metre office, with a 2.4m ceiling height. The dwarf date palm was the most effective at removing xylene and the lady palm was best for removing ammonia. Plants also have the ability to remove offensive odours, particularly ammonia.

Indoor plants have the potential to improve air quality by removing trace organic pollutants from the air in energy-efficient buildings. Therefore, indoor planting is one of the most promising means of alleviating sick building syndrome.

Well-being

The main aspect of well-being within the workplace relates to the psychology of the building users. Perceptions of workplace quality appear to have a significant effect on building users’ psychology. Research has shown that reductions in complaints and absence and increases in productivity can be achieved by improving the working environment, and workplace satisfaction has been associated with job satisfaction.

One of the key requirements of workplaces, as far as employees are concerned, is privacy. Design solutions such as partitions may unintentionally reduce perceived privacy...
by increasing spatial privacy. Partitions make individuals blind to their surroundings so noises and movements on the other side of the partition become more distracting because they are unanticipated. However, research on perceived privacy has found that those working in private workspaces felt they could better use their abilities, had better perceptions of accomplishment and were able to keep busy all the time.

There are also positive distractions that may be incorporated into buildings to improve workplace quality and productivity such as trees, plants and water. Many feel that the use of large plants to increase privacy perceptions make the office more pleasant and informal and thus reduces the need for high levels of privacy.

In addition, people's mood might be affected by plants, and those with a view of nature, such as trees and greenery, can be more satisfied. Even a short exposure to a natural setting can serve a restorative function. Studies have found that workers with a view of nature tend to feel less frustrated and more patient, find their job more challenging, express greater enthusiasm for it, and report higher life satisfaction as well as overall health.

Having natural areas at the workplace can be useful for views or direct involvement, such as lunch areas and areas to walk. Bringing nature into buildings is becoming increasingly popular with the use of landscaped atria and "streets" within buildings.

Perceptions of plants in offices

In a study that considers the effect of plants on employee perceptions of elements that contribute to well-being in an open plan office, two offices were selected of the same size and orientation in the same building. The design and layout of the offices were similar and the occupants had similar roles. Plants were installed in one of the offices but not in the other.

A survey was then administered and completed by the occupants of the two offices. Two hundred and four responses were received, giving a response rate of 47 per cent. Of these responses, 114 (55.9 per cent) were received from office 1 (the office with plants) and 90 (44.1 per cent) from office 2 (the office without plants).

Results

The results of the survey demonstrate that those in the office with plants felt more comfortable, more productive, healthier and more creative than those in the office without plants. Perceptions of privacy, however, were not found to be greater in the planted office.

Those in the planted office also were found to be feeling less pressure than those in the non-planted office, with a greater number of respondents in the non-planted office also feeling that the workplace contributed to their feelings of pressure. This indicates that the presence of plants may reduce feelings of stress.

The respondents in the planted office also felt the environment was more aesthetically pleasing than those in the office with no plants.

A greater percentage of respondents in the planted office indicated they would like more plants than those in the non-planted office. The majority of respondents in both offices indicated they would like more plants.

An integral part of corporate real estate strategies

Standard nursery stock plants have been shown to be effective in removing indoor air pollutants such as formaldehyde, xylene and ammonia. The Boston fern was most effective at removing formaldehyde, while the dwarf date palm was best at removing xylene and the lady palm was most effective for removing ammonia. Plants are also capable of removing offensive odours and are potentially a means of alleviating sick building syndrome.
There are also the psychological benefits of plants relating to employee well-being. Plants can contribute to greater perceptions of workplace quality, affecting mood and making employees feel more productive.

Although further research would add clarity to this subject, the research indicates that plants in the workplace are a contributory factor to employee health and well-being. Plants should, therefore, be considered as an integral part of corporate real estate strategies for workplace design in order to improve productivity and support the core business function.

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