

# Fact Sheet 1:

## Frequently Asked Questions

- What are the possible consequences if IAQ is overlooked?
- Does good Indoor Air Quality improve productivity?
- How can IAQ help create a productive environment?
- How can employers improve IAQ?
- Why should staff encourage employers to improve IAQ?
- What are the benefits to employers taking an interest in IAQ?
- Are there any employers who have benefited by improving IAQ?
- What are the pressures on employers to take an interest in IAQ?
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### INDOOR AIR QUALITY and PRODUCTIVITY IN THE WORKPLACE

When looking at Indoor Air Quality in the workplace, the part played by the following elements should be taken into consideration:

- Air Flow
- Air Cleanliness and Hygiene
- Temperature
- Humidity
- Working Environment and Furnishings
- Maintenance of Air Conditioning & Ventilation Equipment

Productivity in the workplace is affected by many aspects of the working environment including motivation, stress, personal relations and workload. In addition to this Indoor Air Quality (IAQ) can also have a significant impact on working productivity.

In recent years our knowledge of the factors influencing IAQ has increased and it is now widely accepted that poor IAQ affects productivity. There is a much greater awareness of the quality of indoor air, but until recently there has been little information on the link between IAQ and productivity. Much more research still needs to be done on the subject.

#### INVESTMENT IN IAQ

In one study, investment in ventilation at around £3,000 per annum (with a capital investment of £14,000) was estimated to bring savings of over £35,000 a year, by reducing absenteeism, alone.

#### IN THE OFFICE

Office workers concentration will decrease by between 30% and 50% as the temperature rises above 24°C.

## **IN THE FACTORY**

As the temperatures rise above 25°C staff become much more vulnerable to accidents and their mental performance declines accordingly, resulting in a reduction in quality and output.

## **THE CRITICAL EQUATION**

A drop in performance of just 2% is likely to exceed the cost of providing good indoor air quality.

## **STAFF AWARENESS**

In a survey of 2,840 office workers, more than half reported that symptoms related to their working environment reduced their productivity.

### **What are the possible consequences if IAQ is overlooked?**

Staff become tired more quickly and can suffer from such problems as asthma, eczema, headaches and depression. Productivity declines and absenteeism increases. Staff can also feel neglected which can lead to poor morale within the company.

### **Does good Indoor Air Quality improve productivity?**

Yes, because staff can become tired, lethargic or even ill when the IAQ is poor. All of these lead to lower productivity, absence from work and at worst, serious accidents.

### **How can IAQ help create a productive environment?**

A productive working environment should be well ventilated with an appropriate level of temperature and humidity (moisture in the atmosphere). It is also important that indoor air has a low level of the contaminants that cause illnesses. These contaminants include tobacco smoke, pollutants from poorly maintained heating ventilation and air conditioning (HVAC) systems, emissions from furnishings and building materials and even exhaust fumes from motor vehicles outside the building.

### **How can employers improve IAQ?**

By providing ventilation capable of removing contaminants and giving an adequate supply of fresh air and by regularly inspecting and maintaining HVAC systems. Carpets and soft furnishing should be regularly cleaned to remove excess dust. It is also helpful to clean offices in the evenings. This allows dust and other airborne particles (which can cause asthma attacks), to settle before staff arrive in the morning.

### **Why should staff encourage employers to improve IAQ?**

Good IAQ is not only a way of increasing the working productivity. In buildings where IAQ is strictly controlled it can have a beneficial impact on health. A high quality and properly maintained HVAC system will filter out particles that can induce hay fever and asthma attacks. The result is a

much lower incidence of these ailments and a less tiring environment to work in.

### **What are the benefits to employers taking an interest in IAQ?**

In some cases IAQ can dramatically increase productivity and reduce absences from illnesses. The capital expenditure and running costs incurred in employing effective ventilation can easily be recouped by relatively small increases in productivity. A recent American study shows the large savings that can be potentially made by a relatively small investment. The authors of this study concluded: "Given the dominance of labour costs, even a modest increase in productivity could justify substantial capital expenditures to improve indoor air quality."

Another study has revealed that savings can also be made by reduced absenteeism.

### **Are there any employers who have benefited by improving IAQ?**

There are studies showing a direct line between IAQ and productivity. A study of an insurance company that relocated to new premises with environmentally responsive workstations (ERWs) experienced a measurable increase in productivity. An ERW allows each worker to control such things as the heating, cooling, humidity and ventilation of their work area. The study revealed that productivity increased after an initial reduction caused by the disturbance of the move.

### **What are the pressures on employers to take an interest in IAQ?**

While it is now accepted that IAQ affects productivity the health risks associated with poor IAQ have been understood for much longer. Employers now increasingly face legal action from staff who have suffered the effects of poor IAQ. Also, as the long term health implications of poor IAQ become apparent there may well be a back-log of compensation claims. This has already happened with asbestos poisoning and in order to avoid a similar scenario employers may well be forced to improve IAQ.

### **What is not known about IAQ and productivity?**

A few reliable studies support the claim that IAQ affects productivity. Much more research is required in order to quantify how the individual elements of air quality such as the temperature, relative humidity and various pollutants affect productivity.

### **What should be done to increase our knowledge?**

Productivity should be measured under varying IAQ conditions while other factors remain constant. For example it could be measured at different temperatures or humidity. It could also be measured before and after the HVAC system was cleaned. Absence rates and surveys of employee attitudes should also be weighed against varying IAQ conditions.

As research into the subject develops the benefits of good IAQ are becoming more apparent. Unfortunately the subject has commanded much less attention than the quality of outdoor air but things are gradually beginning to change. Investment in people normally forms a far larger proportion of an employer's outlay than the cost of operating a building. The workforce are a company's greatest asset, and they should be treated as such. Good quality indoor air can help make a better workforce - not just in terms of productivity, but also a healthier and more contented one.

### **What is the present situation on IAQ?**

British standards for ventilation are set by the Chartered Institute of Building Service Engineers (CIBSE) and they compare favourably with other international standards.

Government regulations are less specific but they state that workplaces should be ventilated by a sufficient quantity of fresh or purified air.

### **Will there be any changes to the current standards?**

Possibly. New European standards for ventilation in offices have recently been proposed. Members of the European Community will decide on whether to adopt them on September 30th 1996. One of the main differences between these and the British standards is that they differentiate between various types of building.

### **Further Reading**

"Comparison of employee upper respiratory absenteeism costs associated with improved ventilation". Larry C. Holcomb and Joe E Pedely. ASHRAE, 1994. Absenteeism, Health Productivity.\*

"The effects of indoor climate on productivity and performance". D.P Wyon. WS and Energi, 1986. Productivity, Thermal Environment.

"The impact of the building indoor environment on occupant productivity - Part 1: Recent Studies, Measures and Costs". Harold G. Lorsch and Ossama A. Abdou. ASHRAE. 1994. Environmentally Responsive Workstations, Productivity, Relocation.\*

"Indoor Air Quality: a comprehensive reference book". Maroni, Seifert and Lindvall editors. Elsevier, 1995. Indoor Air Quality.

"Indoor Air Quality as a determinant of office worker productivity". N.H. Zyla-Wisensale and J.A.J. Stolwijk. Conference on Indoor Air Quality, Toronto, 1990. Productivity.

"Indoor Air Quality Conference". Various authors. Mid Career College London, 1996. 0 9524553 4 X. Cleaning and Maintenance, Computer Prediction of IAQ and Comfort Health, Legal, Productivity, Ventilation Standards.

"Productivity in the United States: A question of capacity or motivation".  
Ralph E. Goldman. ASHRAE, 1994. Motivation, Productivity, Thermal  
Environment.\*

"Workplace health, safety and welfare. Approved code of practice". Health  
and Safety Commission. HMSO, 1996. 0 7176 0413 6. Health, Safety and  
Working Conditions.

\*These can be purchased from CIBSE, tel: 0181 675 5211