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Worker health and safety, and laboratory services firm

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Clearing the Air about Indoor Air Quality:

How an Indoor Air Quality Consultant can make your business healthier and more profitable.

Introduction

The indoor air quality of businesses and workplaces is a growing concern among managers, business owners, benefits managers, and human resource directors. Where 'sick building syndrome' and other worker complaints were treated with suspicion a decade ago, professionals are becoming increasingly aware of the impact that indoor air quality has on operations. When you consider the fact that, according to **the National Safety Council (NCS)**, people spend nearly 90% of their time indoors, it is only natural that companies are turning their attention to the impact of indoor air quality on the health and wellness of their workers.

According to **the Federation of European Heating and Air-Conditioning Association,** "indoor air quality (IAQ) is characterized by all the physical, mechanical, and chemical characteristics of indoor air having an impact on the human being." These can include microbial contaminants like bacteria and mold, chemicals (including Carbon monoxide and Radon), and allergens. This even includes the Carbon dioxide that people exhale – too much Carbon dioxide can cause headaches, drowsiness, and reduced productivity.

The causes of poor indoor air quality vary, but they share common characteristics. According to **the United States Environmental Protection Agency (EPA),** "indoor pollution sources that release gases or particles into the air are the primary cause of indoor air quality problems." The EPA also notes that "inadequate ventilation can increase indoor pollutant levels

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The Effects of Poor Indoor Air Quality

The effects of poor indoor air quality take many forms. Some only manifest from extended exposure to indoor pollutants while others appear immediately. Among those effects that the EPA acknowledges as acute symptoms are headaches, dizziness, fatigue, and upper respiratory irritation (e.g., eyes, nose, and throat). Short-term exposure can also induce asthma, hypersensitivity pneumonitis, and humidifier fever (a flu-like illness marked by fever, headache, chills), myalgia, and malaise without prominent pulmonary symptoms.

EPA studies also demonstrate that the short-term impact of indoor air varies depending on the current wellbeing of a building's inhabitants. Such factors include age, pre-existing medical conditions, and individual sensitivity to pollutants. Sensitivity to both biological and chemical pollutants can increase with time and exposure. Further, reactions often appear as symptoms of common ailments like colds and viral diseases. This commonality means that such symptoms are attributed to illnesses rather than to pollutants in the indoor environment, making it difficult to monitor comprehensively.

Long-term effects can prove much more serious. For example, Radon, a naturally ocurring element, one of the leading causes of lung cancer, is a common indoor pollutant released when Uranium deteriorates. Among non-smokers, radon is the second-leading cause of lung cancer and kills an estimated 21,000 Americans a year, according to the **EPA.** The **World Health Organization (WHO)**, the United Nations' health program, estimates that as many as fifteen percent (15%) of all lung cancer cases worldwide are caused by Radon. But Radon-caused cancers are only one example. Poor indoor air quality can lead to respiratory disease and heart disease. Other IAQ contaminants like Asbestos and Carbon monoxide can cause long-term negative effects. Diseases caused by exposure to Asbestos (including lung cancer Mesothelioma, a cancer of the lining of the chest and the abdominal cavity; and Asbestosis, during which the lungs become scarred with fibrous tissue) can often take as long as twenty to thirty (20-30) years to manifest. Carbon monoxide exposure at moderate concentrations can cause angina, headaches, impaired vision, and reduced brain function.

The Cost of Poor Indoor Air Quality

The costs of poor IAQ can be considerable and, conversely, improving your IAQ can help your bottom line. Managing indoor air quality can lead to a healthier staff and reduction in costs. A number of commonly-used methods for improving indoor air quality, including increased ventilation, reduced air recirculation, improved filtration, ultraviolet air disinfection, and reduced occupant density, can reduce environment-related illnesses and lead to healthier workplaces. According to **a recent study by William J. Fisk** of the Lawrence Berkeley National Laboratory in California, such improvements significantly lower the occurrence of four (4) of the most common respiratory illnesses, which account for 176 million lost work days at a cost of $70 billion a year, due to the cost of treatment and lost work. Such improvements in building design can also create a nine to twenty percent (9-20%) reduction in cases of the common cold, translating into sixteen to thirty-seven (16-37) million fewer cases annually. This reduction could save U.S. businesses as much as $14 billion each year. Improved health generally increases worker productivity, which ultimately stimulates a company's bottom line. Fisk estimates that U.S. companies could save a combined $160 billion a year by improving indoor air quality regulations and standards.

Another budget item that indoor air quality affects is employee recruitment and training. Bronson Methodist Hospital in Kalamazoo, Michigan recently released a study on the effects of improved IAQ following the construction of a new patients' pavilion that utilized green

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How an Indoor Air Quality Consultant can make your business healthier and more profitable

The key to improving your employee's health (and the health of your bottom line) is working with indoor air quality consultants that address your specific facility needs. IAQ professionals have been at the forefront of the movement to recognize the importance of a healthy indoor environment. For example, **the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)**, an organization that includes many indoor air quality experts, has raised the standards called for in their IAQ guidelines. ASHRAE standards have "served the building industry and the public as the most prominent standard on ventilation for indoor air quality," according to Dennis Stanke, the ASHRAE committee chair responsible for the standard. Stanke adds that this represents "additional guidance for designers of building ventilation systems." These guidelines for indoor air quality cover issues like the concentration of Carbon dioxide (CO_2) and moisture management as well as heating, ventilating, and HVAC systems.

When a company begins to suspect that they have an indoor air quality issue, they are often unsure of how to react. The realization begins in small ways. Co-workers discover that they both have sore throats, or begin to notice that they're starting to get sleepy at the same time every afternoon, or people complain to each other of recurring headaches that they don't get at home. Because companies rarely know exactly how to address these concerns, they often put off taking action. But, as the figures above prove, ignoring indoor air quality can be more costly than acting.

The first step to clearing the air is talking to an expert – a professional in occupational health and safety – and finding out if you have a problem. A health and safety organization will typically send a Certified Industrial Hygienist (CIH) or other qualified IAQ consultant to your facility to begin evalu-

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ating possible sources of the problem. An IAQ expert will bring the training and experience necessary to get to the bottom of employee complaints.

By first interviewing staff, an IAQ consultant will identify the symptoms that employees believe are being caused by their work environment. In rare cases, symptoms are purely coincidental and workers have attributed illnesses to their workplace environment when, in fact, the cause lies elsewhere. This common mistake is called a **regression fallacy** in that it misplaces the cause of the illness in an understandable if erroneous way. A methodologically sound interviewing process can quickly discover that the facility is not the cause of the symptoms.

More frequently, an IAQ consultant will find enough common symptoms to suggest a likely cause. According to the **EPA**, some common causes for poor indoor air quality include :

- Carbon dioxide from poor ventilation;
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Many of these problems are solved fairly easily and inexpensively. As noted previously, remediation methods can include increased ventilation, reduced air recirculation, improved filtration, ultraviolet disinfection of air, reduced office sharing, and reduced occupant density.

Other problems present more serious challenges. After assessing the indoor environment, an IAQ consultant can help you develop a short- or long-term plan for fixing the problem. An IAQ consultant can lay out the options available for more costly projects – including replacing a facility's HVAC system – and act as a general contractor for the necessary changes. By having a qualified IAQ professional deeply involved in the work, you can make certain that your facility will provide the healthiest indoor environment at the lowest possible price.

Conclusion

Clean indoor air has a significant impact on the way businesses operate and how profitable they can be. By collaborating with a qualified IAQ consultant, any business can help realize the savings that improved air quality can cause in reductions of lost time to illness, fewer insurance claims, and improved worker retention and recruitment. By working with businesses to improve the health of their workplace, an IAQ consultant can help keep the costs of necessary improvements low while taking advantage of an improved environment. An IAQ consultant will help you clear the air at your workplace – improving your work environment ***and*** your bottom line.

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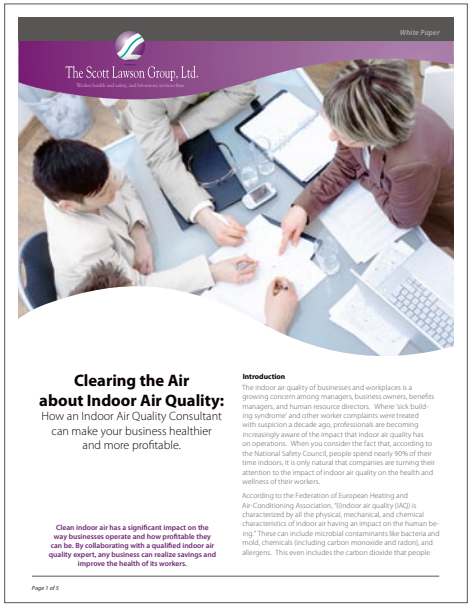

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Improved indoor air quality in industrial and utility businesses is imperative in creating safe work environments. A partnership with a knowledgeable air quality expert will ensure that even the most high-risk work environment is safe for workers.

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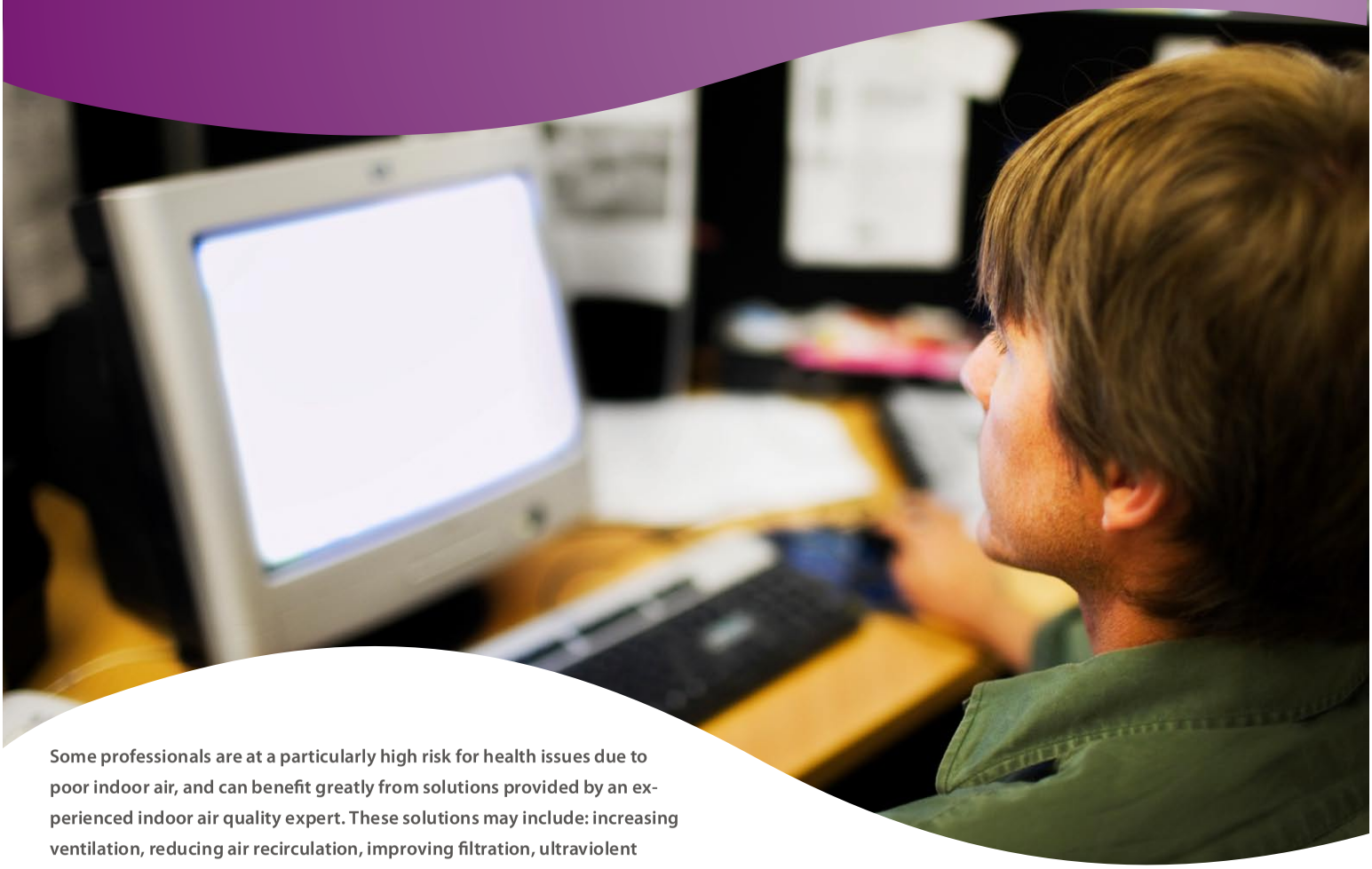

Some professionals are at a particularly high risk for health issues due to poor indoor air, and can benefit greatly from solutions provided by an experienced indoor air quality expert. These solutions may include: increasing ventilation, reducing air recirculation, improving filtration, ultraviolent disinfection of air, or reducing occupant density.

Another budget item that indoor air quality affects is employee recruitment and training. Bronson Methodist Hospital in Kalamazoo, Michigan recently released a study on the effects of improved IAQ following the construction of a new patients' pavilion that utilized green building practices to improve air quality. This study, conducted by the Center for Health Design, found that turnover among Bronson's nursing staff has been reduced 4.7% while employee satisfaction has grown.

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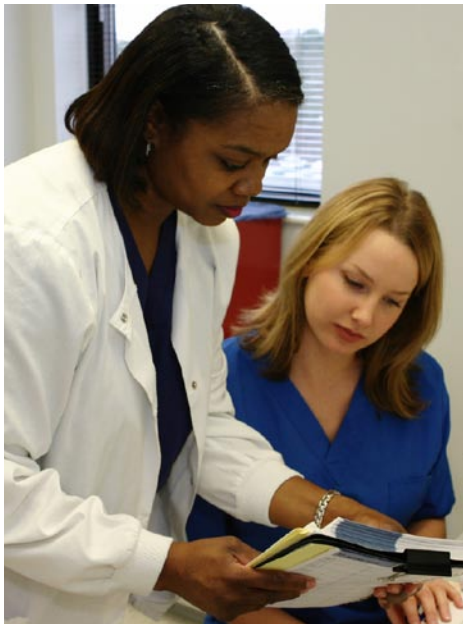

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