

WHITE PAPER

Living Workplace Design  
Plants Promote Healthy Mental  
Well-Being and Creativity  
Benefits to Employees  
Solution to Employers  
Biophilic Design  
Sick Building Syndrome

# HOW PLANTS

AFFECT YOU AND  
THE WORKPLACE



## Living Workplace Design: Bringing Offices, Organizations and Employees to Life with Plants

As long as workplaces have existed, progressive organizations have continuously looked for ways to optimize the environment for workers' comfortability and productivity. From the focus and privacy cubicles were first designed to provide to today's ergonomic chairs, standing desks and beyond, office design has proven to be paramount in the well-being and efficiency of those working within the space.

Over the past few decades, research has emerged that highlights the benefits that access to nature in the workplace provides, both to employees and employers. The positive effects on individuals' mental and physical wellness, a fundamental benefit in and of itself, also translate to gains for companies in the form of increased and higher quality output, as well as a reduction in direct and indirect costs due to illness.

---

### Plants Promote Mental Well-Being and Productivity

Today, most employers recognize the importance of the work environment to job satisfaction and performance. At a time when less than half of workers report being satisfied with their jobs (Accenture, 2011), a high-quality workspace is arguably more vital than ever before.

Compounding on questions of job satisfaction are the ever-increasing amounts of stress employees are subjected to in their tasks and duties day-to-day. In fact, a Harvard University study found that **43 percent of workers** believe their job negatively impacts their stress levels (2016).

While there are many paths companies might take to create a more active, biophilic (read more in side bar) space for their team members, one of the most efficient methods is incorporating plants into the work environment.

#### Benefits to Employees: *Reduces stress, promotes positive mood and an overall sense of well-being*

While symptoms of stress may initiate with headaches and fatigue, it can quickly turn toward more serious outcomes, like depression, drug or alcohol abuse, high blood

### Biophilic Design

An innovative philosophy that is both nature and human-centered, Biophilic Design reconnects workplaces and cities back to nature for us to truly thrive. The term was first popularized in 1984 when biologist Edward O. Wilson published *Biophilia*.

Since then, the concept has spread through the architecture and design communities, driving creators of large-scale commercial projects and public spaces toward a more seamless integration between nature and the built environment.

As the design philosophy continues to gain traction and research has been released that indicates its benefits to those occupying a space, employers have begun to seek these environments for their workplaces.

pressure and other severe health problems (Mayo Clinic, 2016). However, this common workplace concern can be markedly improved with the introduction of plant life.

In a study by the New University of Technology Sydney, plants were placed in offices for a three-month test period.

The research showed that those workers with plants situated throughout their workplace experienced a **30-60% reduction in stress levels** and negative feelings. Comparatively, those without greenery reported increases in overall negativity by 20-40% (2010).

Plants not only are positive agents in the reduction of stress, they can also shift an employee's sense of well-being as a whole. Those with access to natural elements in their workspaces experience increased perceptions of well-being by **up to 15%** (Cooper, 2015).

Some forward-thinking organizations have already begun putting this research into practice. Very much ahead of the curve, Genzyme Corporation debuted a newly redesigned headquarters in 2004 that featured an indoor garden. In an employee survey conducted 18 months post-opening, **88% felt an improved sense of well-being** due to the accessibility of natural elements in their workplace (Cooper, 2015).



### Creativity

Research shows that problem solving skills, ideation and creative performance improve in work spaces that include plants.  
Texas A&M University 2007



### ROI

Plants also contribute to a higher ROI by playing a part in employee retention and recruitment. 40% of people said the environment would influence their decision.  
ASIS Report-What Motivates Employees



### Wellness

When plants are present, people are healthier. In fact, research has found that people have 60% fewer sick days if there are indoor plants.  
Journal of Environmental Horticulture

## Solutions for Employers: Increased employee creativity and productivity

Providing workers with a renewed feeling of positivity and stress reduction using plants benefits an organization in a myriad of ways, but most directly, companies experience increases in productivity and creative thinking.

In a study conducted by Texas A&M University, participants were placed in office environments both with and without plant life and asked to perform a variety of creative problem-solving tasks. In the plant-adorned spaces, both men and women experienced positive effects on innovation and ideation. On average, men in

offices with plants generated **30% more ideas** overall than those in the control spaces, while women offered noticeably more creative **solutions** than their counterparts with no plants (Society of American Florists, n.d.).

Depending on company goals, innovative thinking may be just what an employer needs; however, plants bring more than just out-of-the-box thinking – they also increase productivity among workers. In fact, participants in a Washington State University study experienced a **12% increase in productivity** on a simple computer task when situated in a room with plants (Goodwin, Lohr & Pearson-Mims, 1995).

This research illustrates the fact that plants do not just improve workers' mental states – they can directly impact a company's bottom line.

---

## Plants Improve Physical Wellness & Create a Healthier Workplace

Mental well-being is not the only aspect of an employee's health that can be affected by a less-than-ideal work environment; their physical well-being can suffer, as well.

Poor air quality can lead to a plethora of health issues ranging from headaches and fatigue to dizziness and eye irritation (Environmental Protection Agency, n.d.). These seemingly minor symptoms can have significant consequences for employers, as poor indoor air quality costs companies an estimated **\$15 billion in sick leave and poor work performance** each year (Agopian, 2016).

As research continues to be released on the subject, Sick Building Syndrome (read more in the sidebar) is becoming a top concern for employers. Incorporating plants into the work environment can serve as a strong first step toward improvement in these situations.



### Takeaways

Workers with plants situated throughout the workplace experience 30-60 percent reduction in stress levels and negative feelings.

---

Men in offices with plants generated 30% more ideas. While women offered noticeably more creative solutions.

---

Those with natural elements in their workplaces experience increased perception of well-being by up to 15%.

## Benefits to Employees: *Reduces cold and flu-like symptoms*

In a study by the Agricultural University of Norway, just three plant containers were added to an office environment. After the three-month experiment, workers reported **reductions in coughing (37 percent), fatigue (30 percent), stuffy nose (28 percent) and dry throat (24 percent)**, among other symptoms (Fjeld, 2000).

Studies from NASA reinforce the claim, stating that, “Plants absorb and break down the most harmful of indoor chemicals through their leaves to create a healthy indoor ecosystem. Just three plants in a room can vastly improve the air in the space (n.d.)”

The organization also asserts that airborne mold spores and bacteria can be **reduced by up to 60%** using plants (Scruton, 2017).

Cold and flu-like symptoms make it difficult for employees to do their jobs and manage their personal lives to the best of their abilities. With simple plant installation solutions, employers can ameliorate these issues.

## Solutions for Employers: *Reduced absenteeism and health care costs*

As previously mentioned, employees are experiencing reduced mental well-being often manifest physical symptoms, as well. These health problems can result in sizeable expenditures to the employer in the form of increased healthcare costs and reduced productivity from employees. In a poll conducted by ComPsych Corp., **more than 25% of workers** reported missing three to six work days per year due to stress, **while 57% missed one to two days** for the same reason (Perkins, 2016). When layered on top of the sick days that employees already take due to pre-existing conditions or other illnesses, these figures are significant.

## Sick Building Syndrome

A term used to describe a range of symptoms that people experience when spending extended amounts of time in a building with low air quality, Sick Building Syndrome has become a potential occupational hazard as it has become more widely understood.

Issues ranging from poor ventilation to chemical contaminants in a building can generate severe symptoms in those who spend time in that space. People working in a structure with Sick Building Syndrome may experience physical ailments including nausea, headaches, dizziness and more.

As research, has unfolded over the past few decades, employers and owners of commercial buildings have increasingly turned their focus toward this serious concern.

Beyond the costs in lost productivity due to absenteeism, employers are pouring additional funds into employee health care as physical symptoms of stress require treatment. In fact, The American Institute of Stress estimates that job stress costs the U.S. industry **more than \$300 billion** each year (n.d.).

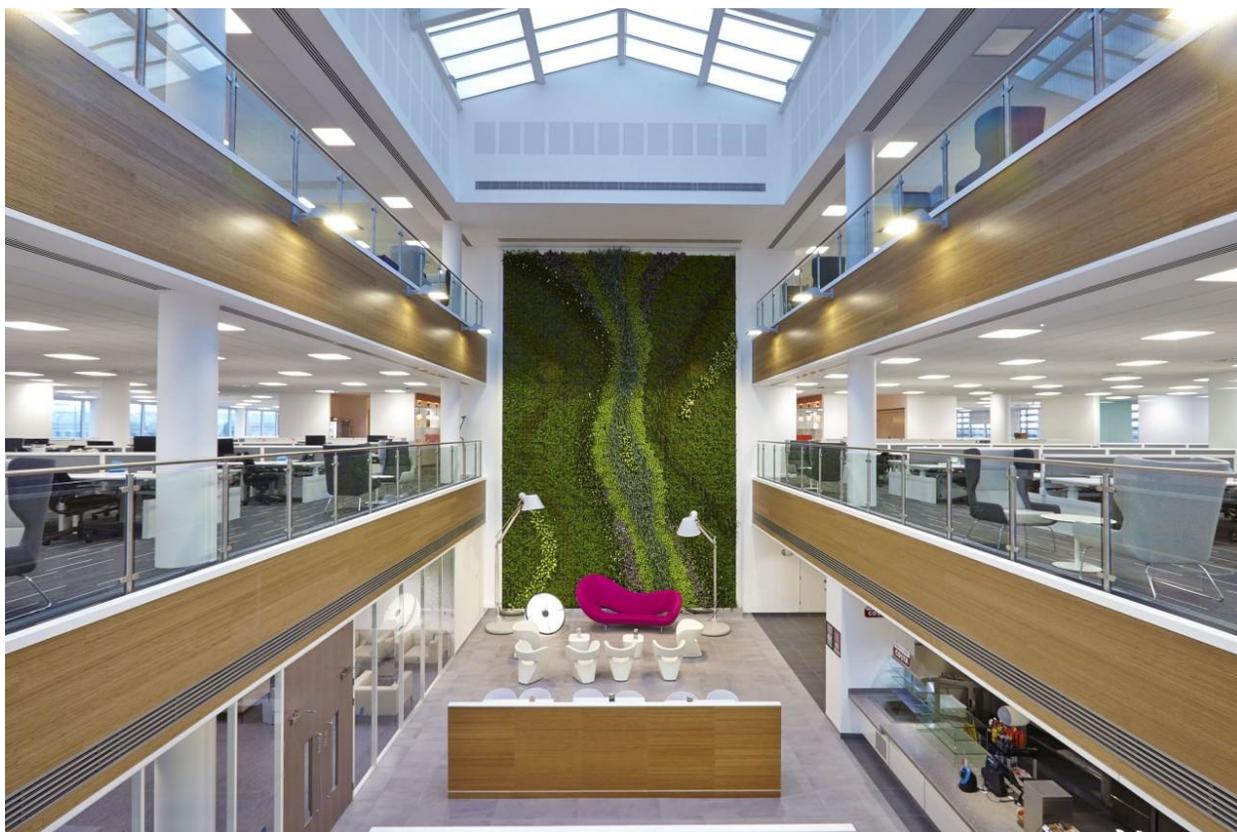
As part of a robust overall wellness effort, plants can help reduce sick leave in office environments. In a study conducted by the University of Oregon, some workers were given a view of plants and trees from their desks, while the control group had no view of any greenery. On average, employees with views took 57 hours of sick leave per year, while those with no view took an average of 68 hours (Elzeyadi, 2011).

## Solutions for Employers: *Reduced absenteeism and health care costs*

As previously mentioned, employees are experiencing reduced mental well-being often manifest physical symptoms, as well. These health problems can result in sizeable expenditures to the employer in the form of increased healthcare costs and reduced productivity from employees. In a poll conducted by ComPsych Corp., **more than 25% of workers** reported missing three to six work days per year due to stress, **while 57% missed one to two days** for the same reason (Perkins, 2016). When layered on top of the sick days that employees already take due to pre-existing conditions or other illnesses, these figures are significant.

Beyond the costs in lost productivity due to absenteeism, employers are pouring additional funds into employee health care as physical symptoms of stress require treatment. In fact, The American Institute of Stress estimates that job stress costs the U.S. industry **more than \$300 billion** each year (n.d.).

As part of a robust overall wellness effort, plants can help reduce sick leave in office environments. In a study conducted by the University of Oregon, some workers were given a view of plants and trees from their desks, while the control group had no view of any greenery. On average, employees with views took 57 hours of sick leave per year, while those with no view took an average of 68 hours (Elzeyadi, 2011).



## References

- Accenture (2011). Reinvent Opportunity: Looking Through a New Lens. *In Accenture.com*. Retrieved from [https://www.accenture.com/t20160127T035320Z\\_\\_w\\_\\_us-en/\\_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/About-Accenture/PDF/1/Accenture-IWD-Research-Embargoed-Until-March-4-2011.pdf](https://www.accenture.com/t20160127T035320Z__w__us-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/About-Accenture/PDF/1/Accenture-IWD-Research-Embargoed-Until-March-4-2011.pdf)
- Agopian, N. (2016, January 18). Don't Breathe Easy: The Adverse Effects of Poor IAQ. *Air Conditioning, Heating and Refrigeration NEWS*. Retrieved from <http://www.achrnews.com/articles/131497-dont-breathe-easy-the-adverse-effects-of-poor-iaq>
- Fjeld, T. (2000). The Effect of Interior Planting on Health and Discomfort among Workers and School Children. *HortTechnology*. Retrieved from <http://horttech.ashspublications.org/content/10/1/46.full.pdf>
- American Institute of Stress (n.d.). Workplace Stress. *In Stress.org*. Retrieved September 20, 2017 from <https://www.stress.org/workplace-stress/>
- Brenna, J., Burchett, M.D., Craig, A., & Torpy, F. (2010, July). The positive effects of office plants. *Nursery Papers*. Retrieved from [https://www.ngia.com.au/Attachment?Action=Download&Attachment\\_id=1430](https://www.ngia.com.au/Attachment?Action=Download&Attachment_id=1430)
- Cooper, G. et al. (2015). The Global Impact of Biophilic Design in the Workplace. *In HumanSpaces.com*. Retrieved from <http://humanspaces.com/global-report/>
- Elzeyadi, I. (2011, October 3). Daylighting-Bias and Biophilia: Quantifying the Impact of Daylighting on Occupants Health. *In USGBC.org*. Retrieved from [https://www.usgbc.org/sites/default/files/OR10\\_Daylighting%20Bias%20and%20Biophilia.pdf](https://www.usgbc.org/sites/default/files/OR10_Daylighting%20Bias%20and%20Biophilia.pdf)
- Environmental Protection Agency (n.d.). Indoor Air Pollution and Health. *In EPA.gov*. Retrieved September 20, 2017 from <https://www.epa.gov/indoor-air-quality-iaq/introduction-indoor-air-quality>
- Goodwin, G., Lohr, V., & Pearson-Mims, C. (1995, November). Interior plants may improve worker productivity and reduce stress in a windowless environment. *Journal of Environmental Horticulture*. Retrieved from [https://www.researchgate.net/publication/237441131\\_Interior\\_plants\\_may\\_improve\\_worker\\_productivity\\_and\\_reduce\\_stress\\_in\\_a\\_windowless\\_environment](https://www.researchgate.net/publication/237441131_Interior_plants_may_improve_worker_productivity_and_reduce_stress_in_a_windowless_environment)
- Harvard T.H. Chan School of Public Health (2016, July). The Workplace and Health. *In HarvardGazette.com*. Retrieved from <https://harvardgazette.files.wordpress.com/2016/07/pr-rwjf-harvard-workplace-and-health-poll-report.pdf>
- Mayo Clinic Staff (2016, April 8). Stress symptoms: Effects on your body and behavior. *In MayoClinic.org*. Retrieved September 20, 2017 from <http://www.mayoclinic.org/healthy-lifestyle/stress-management/in-depth/stress-symptoms/art-20050987?pg=1>
- NASA Spinoff (n.d.). Plants Clean Air and Water for Indoor Environments. *In NASA.gov*. Retrieved September 20, 2017 from [https://spinoff.nasa.gov/Spinoff2007/ps\\_3.html](https://spinoff.nasa.gov/Spinoff2007/ps_3.html)
- Perkins, O. (2016, November 8). Workplace stress undermining productivity: ComPsych survey. *In Cleveland.com*. Retrieved from [http://www.cleveland.com/business/index.ssf/2016/11/workplace\\_stress\\_undermining\\_p.html](http://www.cleveland.com/business/index.ssf/2016/11/workplace_stress_undermining_p.html)
- Scruton, A. (2017, January 11). The Health Benefits of Indoor Plants and How to Avoid "Sick Building Syndrome". *In PSDInst.com*. Retrieved from <https://psdinst.com/health-benefits-indoor-plants-avoid-sick-building-syndrome/>
- Society of American Florists (n.d.). University Research Indicates Flowers and Plants Promote Innovation, Ideas: Key Findings Shed Light on Environmental Psychology of the Workplace. *In SAFnow.org*. Retrieved September 20, 2017 from <https://safnow.org/marketing-business-resources/getting-local-publicity/customizable-press-releases/university-research-indicates-flowers-and-plants-promote-innovation-ideas-key-findings-shed-light-on-environmental-psychology-of-the-workplace>



Sagegreenlife offers visually stunning, scalable, sustainable living walls that bring workplaces to life. The company is committed to using plant design to help promote health and productivity benefits and to create a more vibrant atmosphere in offices across the United States and around the world.

For more information, visit [sagegreenlife.com](http://sagegreenlife.com) or email [info@sagegreenlife.com](mailto:info@sagegreenlife.com)