



Wellness: The Future of Building Design, Construction and Operations

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Wellness Is the Future of the Built Environment—Are You Ready?

The COVID-19 pandemic has impacted the design and operation of commercial buildings in a myriad of ways - from shutting facilities down for months on end at the outset of the outbreak to rethinking the way we view physical space and how it can help keep occupants safe now that businesses are reopening. Perhaps more than anything, however, the pandemic has pushed us past the tipping point with regard to health and wellness.

Even prior to the coronavirus pandemic struck, buildings and interiors professionals were already adopting design and operations strategies with health and wellness in mind. In fact, the International WELL Building Institute (IWBI) reported back in 2017 that nearly 50 percent of employers said health and productivity programs were essential to their company strategy, while 91 percent of employers reported offering health and wellness programs for reasons beyond medical cost savings. IWBI also reported that the physical workplace is one of the top three factors affecting job performance and satisfaction, citing a study in which 90 percent of employees surveyed admitted their attitude about work is adversely affected by the quality of their workplace environment.

Now, more than ever, wellness is taking center stage in the design and construction of commercial buildings. This eHandbook offers tips and strategies from trusted sources for design professionals and building owners alike on this trend that is shaping the future.

In this digital resource, you'll find data supporting the need for and the opportunities that can be found in embracing best practices that support health and wellness efforts; a breakdown of different building components that can have a positive impact on occupants; guidelines for incorporating wellness strategies in commercial facilities; as well as case studies and other resources, including helpful products, to help illustrate these concepts. Each article offers a preview of the latest information on how the built environment can help support wellness with links to the original sources.

We hope you find this eHandbook useful as you navigate the new normal in building design and operations.



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RESETTING THE WORLD WITH WELLNESS:

Healthy Built Environments for Healthy People

By Ophelia Yeung & Katherine Johnston

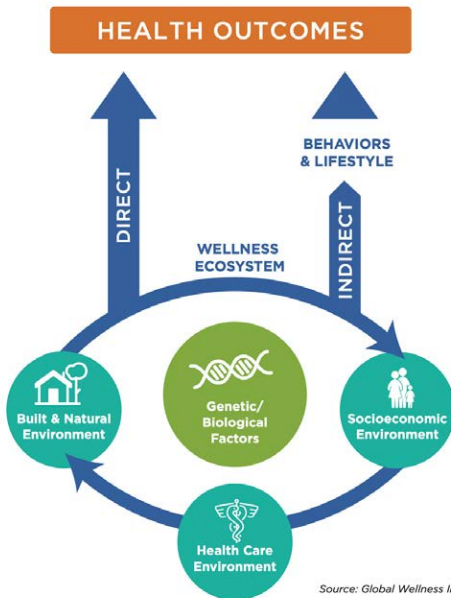
OUR HOMES AND COMMUNITIES REPRESENT OUR MOST IMPORTANT INVESTMENT IN OUR HEALTH.

In an unprecedented global public health response to stop the spread of COVID-19, half of the world's population is now living (or has lived) in some form of lockdown in their homes and immediate neighborhoods. Our homes may be our castles to defend against the pandemic, but they have also become our prisons, where we must remain with our families and roommates, or alone. Our homes may normally be sanctuaries where we can relax, sleep or entertain, but now they have also become our primary places of work, study, play, exercise, creativity and caring for others. COVID-19 is forcing us to see our homes and neighborhoods in a new light. Where we live has an outsized influence on our wellness in all dimensions (physical, mental, social, emotional, spiritual and environmental), affecting our preparedness and resilience to face today's challenges and beyond.

The concept that our built environment influences our health is not new. In the last two centuries, our urban planning, infrastructure and building design were shaped by the imperative to control the infectious disease epidemics that accompanied urbanization and higher-density living during the Industrial Revolution.ⁱ New York City, now an epicenter of the COVID-19 outbreak, was plagued by repeated epidemics of cholera, tuberculosis and yellow fever in the 19th century, when exponential population growth led to haphazard development, overcrowded tenements, pest infestations, waste-filled streets and contaminated water supplies (i.e., a hotbed for infectious disease). Then, as now, the poor were exposed to the highest risks of illness and death. By the mid-20th century, infectious disease was brought under control through deliberate environmental design changes, and not by medicine (most antibiotics were not yet invented). Key strategies in New York included improving street sanitation and sewage systems; building a new aqueduct to deliver clean water; banning the construction of dark, airless buildings; mandating building setbacks from streets to increase the flow of light and fresh air; and creating Central Park as the "working man's lungs."ⁱⁱⁱ

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Up to **80-90%** of our health outcomes depend upon the external and environmental factors in our wellness ecosystem



While infectious disease is no longer the primary cause of death globally, our homes, buildings, neighborhoods and cities continue to play an enormous role in our health outcomes and longevity.ⁱⁱⁱ Recent research on the determinants of health indicates that external and environmental factors may be responsible for up to 80-90% of our disease risks and health outcomes.^{iv} Those who are very young, elderly, disabled or poor are particularly vulnerable to these external factors.^v In the United States, the neighborhood or county where we live can predict our life expectancy and manner of death^{vi}, and these differences persist even after adjusting for socioeconomic and demographic factors.^{vii}

A complex web of external factors (access to healthcare, socioeconomic factors and our natural and built environments) form a “**wellness ecosystem**” that can augment or mitigate our genetic disposition for disease. **Our wellness ecosystem has a *direct* effect on our health by transmitting communicable and environmental diseases. It also *indirectly* affects our health by influencing our behaviors and lifestyles.** It can make healthy habits easy, convenient and the “default” option - or not.

OUR INDOOR AND OUTDOOR ENVIRONMENTS THREATEN OUR HEALTH.

Buildings can spread disease. COVID-19 has brought renewed attention to the role that buildings play in spreading communicable disease. Key transmission pathways include air transfer, high-touch surfaces and occupant density and activity. These concerns are heightened in high-risk environments (e.g. hospitals), and high-density and shared spaces where we spend many hours or interact with many people (workplaces, schools, retail centers). Prevention measures in buildings may include windows that open to improve airflow, better ventilation systems and humidity management, and advanced antimicrobial coatings and surfaces. Spatial reconfiguration and having enough space to spread out people in homes, workplaces, schools and shops - as well as in high-traffic areas like elevators, corridors, bathrooms and cafeterias - may be a luxury in high-cost cities, but these features and amenities may no longer be a luxury from a public health perspective in a post COVID-19 world.^{viii}

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Indoor air can make us sick. The World Health Organization identified indoor air quality and “sick building syndrome” as a health major concern over 30 years ago, and indoor air pollution can be 2-5 times worse than outdoors.^{ix} In lower income countries, the use of coal, kerosene, and biomass fuels for cooking and heating causes nearly 4 million premature deaths every year.^x In buildings around the world, people are exposed to harmful substances such as polyvinyl chloride (PVC) and phthalates, flame retardants, volatile organic compounds (VOCs), antimicrobials, bisphenol A (BPA) and nanomaterials, which are embedded in modern construction techniques, materials and products. Sick buildings can also result from mold and fungus infestation. These issues do not receive adequate attention during normal times, but they could be deadly or cause serious health problems during extended lockdowns, when more people are confined to their homes and in indoor environments.

Poor outdoor environments are a major health risk. Air, water, soil, and food pollution have reached an epic scale, threatening human health as well as planetary health. Pollution is the largest environmental cause of disease and was responsible for 9 million avoidable premature deaths worldwide in 2015, with over 90% occurring in low- and middle-income countries.^{xi} Air pollution causes the majority of these deaths by increasing the incidences of asthma, lung cancer, heart disease, stroke and other chronic diseases.^{xii} A recent Harvard University study found that higher rates of air pollution are correlated with higher COVID-19 deaths in the United States.^{xiii}

THE BUILT ENVIRONMENT SHAPES OUR BEHAVIORS AND LIFESTYLES.

Make movement the default option in our daily lives. Our modern built environment is often described as obesogenic because it encourages sedentary behavior (e.g., driving over walking, taking elevators instead of stairs, etc.). In congested and sprawling urban areas, urban planning increasingly prioritizes vehicular flow over people – e.g., widening of roads, stripping of sidewalks and high-speed roadways that are unfriendly to pedestrians and cyclists. To plan for reopening after the COVID-19 lockdown, cities will have to change the way people commute and reduce reliance on crowded public transit. Milan is beginning to reconfigure 22 miles of local streets by adding bike lanes, widening sidewalks and lowering speed limits.^{xiv} Other major European cities, such as Paris, Berlin, Brussels and Budapest, are making similar plans. Some of these conversions were already planned for the longer-term; COVID-19 creates an opportunity and urgency to reorient transit planning to embed more walking and cycling into daily life, with the simultaneous benefits of reducing the risks of transmitting infectious disease, encouraging active transit to reduce the risks of chronic disease, and reducing pollution.

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Provide free and accessible spaces for active recreation. As modern life becomes ever more sedentary, people who want to stay active and healthy have to find time to do so in their leisure and recreation time. The private gym, health club and fitness industry has been growing rapidly, but these facilities are only affordable and accessible to those who live in wealthier, developed countries and urban areas, and they serve less than 4% of the world's population.^{xv} Needless to say, these private indoor facilities are mostly closed during the COVID-19 lockdown. Public spaces and outdoor recreational amenities that enable physical activity are more important as ever. While people may not be able to use public swimming pools, athletic fields and playgrounds until physical distancing requirements are relaxed, they can still exercise in parks, jogging/biking paths, hiking trails and public squares and plazas. However, these recreational spaces need to be free and close to home. Numerous studies have shown that proximity to parks is associated with higher levels of physical activity, especially for seniors, children and disadvantaged populations.^{xvi} The wellness benefits of recreational infrastructure extend beyond just exercise; they also support social connections and enhance mental well-being.

Use nature's power to improve mental, emotional and physical well-being. Green spaces and contact with nature are essential for our mental, emotional, psychological and physical well-being. Positive impacts include buffering/reduction of noise and air pollution; increased physical activity; improvements in cognitive abilities, productivity, attention, mood and healing; as well as reduction of aggression, violence and negative feelings.^{xvii} During the current lockdown, many people are cut off from nature, especially in large cities. Indoor natural elements such as potted plants, pictures of nature and views of the outdoors can also have positive impacts on healing, stress, mood and cognitive functioning.^{xviii} In a post COVID-19 world, there are opportunities to incorporate biophilic design into buildings, neighborhoods and cities;^{xix} leverage ecological assets such as rivers, lakes and riparian habitats to create greenways and multi-use trails in urban environments; and increase access to nature close-to-home by investing in street trees, pocket parks and community gardens.^{xx}

About the Authors

This white paper was prepared by Ophelia Yeung and Katherine Johnston, Senior Research Fellows at the Global Wellness Institute. Together, they have four decades of experience leading research and strategy development for businesses, universities, research institutions, and multilateral and government organizations under the auspices of SRI International, a Silicon Valley-based technology and innovation company. Since 2008, Ms. Yeung and Ms. Johnston have worked with the team at what has become the Global Wellness Institute to pioneer groundbreaking research on the global wellness economy.

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Information courtesy of Center for Active Design, operator of the Fitwel Certification System.

Research to Action: Building Health for All[®] in the Face of COVID-19

The global spread of COVID-19 has heightened awareness of the pressing importance of Fitwel's mission of building health for all. With people around the world spending an increasing amount of time indoors and in their local neighborhoods, the spaces where we live, work, study and play have shifted dramatically. As we move through our collective response to COVID-19 and begin to recover, a new normal will emerge to create a more resilient society—and the buildings and public places we inhabit will play a critical role in this shift.

At the Center for Active Design, we are committed to ensuring our users and community have access to up-to-date resources that directly reflect the latest available health evidence. As part of this effort we will be sharing a series of resources to help guide building owners, property managers, designers and employers as they respond to COVID-19 now and into the future. The five resources will focus on the following topics:

1. **Leveraging Buildings to Mitigate Viral Transmission.** This resource will provide an overview of the basics of viral transmission, as well as strategies to mitigate transmission—including limiting physical interactions, handwashing, regular cleaning, ventilation, filtration and humidity.
2. **Building Trust in the Workplace.** This resource will provide guidance for cultivating employee and tenant trust, and enhancing perceptions of safety once office buildings are ready to re-open. We will cover topics, including but not limited to, emergency preparedness, communication, surveying and signage.
3. **Mental Health and COVID-19.** This resource will focus on the importance of considering mental health during crises, and how home environments can be optimized to promote feelings of well-being. Strategies covered will include greenery, outdoor spaces, high quality indoor air, sleep environments, and health-promotion programming.
4. **Density and Resiliency.** This resource will focus on how density can contribute to resiliency and public health, concentrating on a number of areas, including energy savings, affordable housing, diversity, public transit, sustainability, active transportation and healthcare.
5. **Chronic Disease, Equity and COVID-19.** This resource will explore the interconnected relationships between COVID-19, the social determinants of health and chronic disease. Topics covered will include healthcare access, food access, housing quality, job roles, among others. This resource will also dig into specific strategies that can help address many of the inequities associated with negative COVID-19 outcomes, such as pollution, food environments, access to outdoor space, and community resiliency.

These resources are designed to contribute to an ever-evolving conversation, and we will stay abreast of new science as the research base expands. We are all in this together, and we look forward to continued collaboration to discover the best ways to meet the challenge of COVID-19.

LEVERAGING BUILDINGS TO MITIGATE VIRAL TRANSMISSION

While buildings alone cannot solve the COVID-19 crisis, there are several tangible tactics that building owners, managers and employers can implement to reduce viral transmission and support the fight against this pandemic.

As the research community continues to study COVID-19, new evidence is constantly emerging. Many of the studies below report findings from the SARS and H1N1 outbreaks. These findings have guided our response, which will continue to evolve as we learn more about COVID-19 in the coming weeks, months, and years ahead.

This resource compiles relevant research findings and highlights how the Fitwel Certification System can be applied to address health concerns associated with COVID-19. The goal is to provide actors across the real estate industry with vital information to guide and support changes being made in response to COVID-19.

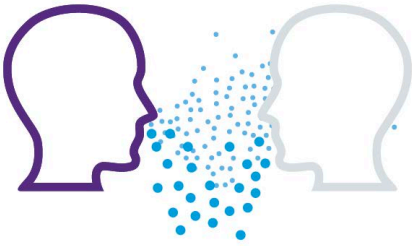
BASICS OF TRANSMISSION

First, it is critical to understand the basics of what we know as of April 2020 about transmission of COVID-19. The types of transmission are ordered based on relevancy according to available research.

Person-to-Person Transmission

The SARS-CoV-2 virus, which is the cause of COVID-19, is believed to mainly spread through person-to-person transmission via respiratory droplets.¹ This type of spread is also referred to as large droplet transmission, which occurs when infective droplets travel from an infected individual to someone who is within 1 meter (\approx 3 feet). While the World Health Organization (WHO) recommends maintaining 3 feet distance from others, the Centers for Disease Control and Prevention (CDC) advises staying at least 6 feet away from other people.^{2,3} The reason behind these differences has to do with uncertainty about how far the virus can travel when a person coughs, sneezes or speaks. What we do know is that large droplets cannot remain suspended in the air because of their weight, meaning they either drop to the ground, land on a person or onto another nearby surface.

Research suggests that COVID-19 can be transmitted through large droplets produced via coughing and sneezing of symptomatic individuals, as well as of those who are asymptomatic.⁴



Strategies for limiting large droplet transmission within buildings include sick leave, handwashing, regular cleaning, social distancing and mask-wearing.

Larger droplets ($>5 \mu\text{m}$) fall to the ground relatively quickly, remain in the air for only a short amount of time, and can only be transmitted short distances.

SURFACE-TO-PERSON TRANSMISSION

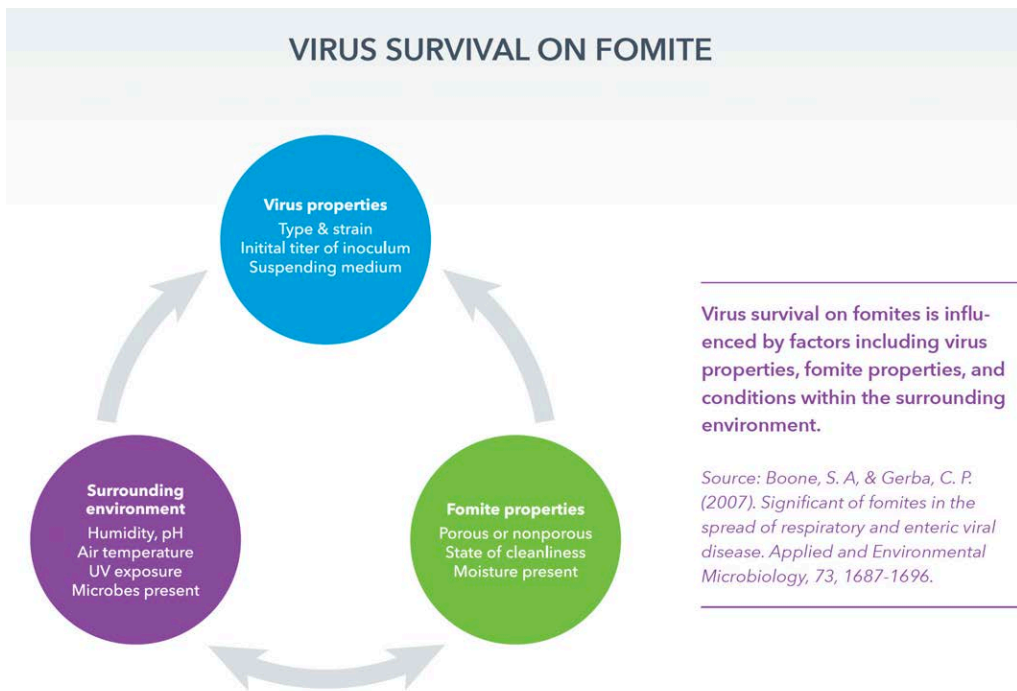
Surface-to-person transmission, also known as “Fomite Transmission,” occurs when a person touches a surface where large droplets of the virus have landed, and then touches their mouth, nose or eyes. A “fomite” is an object or surface that can carry an infection. A fomite can be a piece of clothing, a door handle, a countertop or a subway pole. Fomite transmission is a type of large droplet transmission in that when an infected individual talks, sneezes, coughs or vomits nearby surfaces can become contaminated by large droplets that fall from the air. Fomite transmission can also potentially occur via contact with an airborne virus that settles after disturbance of a contaminated fomite, such as shaking a contaminated blanket.⁵ When it comes to COVID-19, we are still learning how long the virus can last, and it appears to vary by material. A recent study from the New England Journal of Medicine (NEJM) found that the virus remained viable for much longer on plastic and stainless steel than on copper and cardboard.⁶

It is important to note that just because a viable virus may transfer from an object to a human, this does not mean that the dose is large enough to be infectious. The viral concentration decreases rapidly, with the half-life on stainless steel being 5.6 hours, and the half-life on plastic being 6.8 hours.⁷

Strategies for limiting fomite transmission within buildings include increasing humidity, regular cleaning and handwashing.

AEROSOL TRANSMISSION

Aerosol transmission of a virus occurs when small droplets that are $\leq 5 \mu\text{m}$ in diameter, also known as droplet nuclei containing the virus travel further than 1 meter through the air. Long-range airborne transmission is only possible when the droplets of infectious material are small enough to remain airborne and be transmitted over long distances. Research has not been conclusive on whether COVID-19 can be transmitted via airborne transmission, but recent articles do indicate that there is a potential risk of aerosol transmission.



One study, looking at the presence of SARS-CoV-2 (the virus that causes COVID-19) in aerosols in two Wuhan hospitals during the height of the COVID-19 outbreak, found airborne viral RNA in a variety of areas, with higher levels detected in highly trafficked and unventilated spaces, patients' toilet areas and medical staff areas. The results indicate the importance of room ventilation, open space and disinfection. One area this article does not address is infectivity of the aerosolized virus, meaning there is uncertainty about whether the dose in the air found in these specific places is enough to cause a COVID-19 infection in another individual.⁸

Another study published by the *New England Journal of Medicine* also suggested the possibility of airborne transmission,⁹ but according to the World Health Organization (WHO), it is worth noting that in the study, the aerosols were generated by a very powerful machine in a controlled laboratory setting, which does not mirror what would happen if a human cough or sneeze in an unregulated setting.¹⁰ Finally, a third study, published in March found no detectable SARS-CoV-2 RNA in the air samples collected in a COVID-19 patient's hospital room.¹¹

For more information and guidance on the basics of viral transmission, visit the CDC and the WHO. While research has not been conclusive, the WHO

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Employees are Happier, Healthier and More Productive in LEED Green Buildings

Healthier, more sustainable buildings give employers a hiring edge to attract best in class talent.

According to a recent survey from the U.S. Green Building Council (USGBC), employees who work in LEED-certified green buildings are happier, healthier and more productive than employees in conventional and non-LEED buildings. The survey also shows that a majority of office workers want to work for companies that are value-oriented, take stances on important issues like sustainability, and do their part for making a positive difference in the world. In fact, 84 percent of respondents prefer to work for a company that has a strong, concrete mission and positive values.

“Employees know that green building programs like LEED help companies to develop responsible, sustainable and specific plans for green energy, water, waste, transportation and many other factors accountable for the human experience,” says Mahesh Ramanujam, president and CEO, USGBC.

When it comes to choosing a new job, findings show that people’s decisions were influenced by whether or not the workplace was in a LEED-certified building. More than 90 percent of respondents in LEED-certified green buildings say they are satisfied on the job and 79 percent say they would choose a job in a LEED-certified building over a non-LEED building.

“We discovered that today’s employees are more motivated than ever to work for a company that promotes not just a higher standard of living for its employees, but also of its community,” continued Ramanujam. “In today’s highly competitive job market, if companies want to attract and retain highly-skilled, talented employees, they must demonstrate a commitment to environmental, human and economic sustainability.”

LEED buildings are linked to improved productivity, health and wellness, and the survey showed that these attributes, as well as a space that provides clean and high-quality indoor air, directly contribute to employees feeling happy and fulfilled at work. More than 80 percent of respondents say that being productive on the job and having access to clean, high-quality indoor air contributes to their overall workplace happiness.

In addition, 85 percent of employees in LEED-certified buildings also say their access to quality outdoor views and natural sunlight boosts their overall productivity and happiness, and 80 percent say the enhanced air quality improves their physical health and comfort.

The survey, conducted by Porter Novelli on behalf of USGBC, included 1,001 workers in the U.S. who are employed full-time or part-time, or self-employed but work in an office building setting.

LEED, or Leadership in Energy and Environmental Design, was developed by USGBC and is the world's most widely used green building rating system with more than 94,000 projects participating in 167 countries and territories. In addition to focusing on strategies that help address climate change, LEED prioritizes actions that promote the health and wellbeing of the people within buildings and spaces.







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Why the Healthy Buildings Movement will Explode in 2020

9 FOUNDATIONS OF A HEALTHY BUILDING

In *Healthy Buildings*, Joe Allen and John Macomber share a helpful model to assess a building's potential effects on human health. The model includes nine foundations – including ventilation, thermal health and more – to help building owners, managers, and occupants plan indoor spaces that promote health. We are thrilled about how well this model, which is available on [Harvard's For Health website](#), aligns with our mission at Saint-Gobain:

"Saint-Gobain designs, manufactures and distributes materials and solutions which are key ingredients in the wellbeing of each of us and the future of all. They can be found everywhere in our living places and our daily life: in buildings, transportation, infrastructure and in many industrial applications. They provide comfort, performance and safety while addressing the challenges of sustainable construction, resource efficiency and climate change."

At SageGlass, we love partnering with our colleagues at Saint-Gobain North America to consult with building owners, investors, builders and architects on solutions to promote occupant health. Together, we offer expertise on the following:

- Acoustics
- Albedo & Lighting
- Biophilia
- Building Codes
- Building Science Principles
- Durability
- Moisture Analysis
- Multi Comfort Design
- Sustainability
- High-Performance Buildings

Our building scientists have been researching and promoting these concepts for years, so it's exciting that *Healthy Buildings* not only pulls them together in a clear model, but also makes the economic case for healthy buildings.

THE ECONOMIC CASE FOR HEALTHY BUILDINGS

One of the most valuable aspects of *Healthy Buildings* is its interdisciplinary approach. Allen and Macomber use health science, building science and business science to make a compelling argument that healthy buildings are not only good but also *good for business*. Savvy companies can use their real estate as a tool to drive employee recruitment, productivity, wellness and retention. And investors can charge a premium for healthier spaces.

The authors cite research from the Lawrence Berkeley National Lab that estimates that implementing just a handful of the nine foundations of healthy buildings could boost the U.S. economy by \$20 billion. The research factored in ventilation, thermal health and mold and moisture control. But how can we convince decision makers of the enormity of this opportunity?

In most commercial office building projects, developers try to minimize costs, while tenants want to maximize the occupant experience. Even in an owner-occupied project, there may be split incentives between different departments. In other words, the group that pays for the healthy materials and amenities may not be the same group that directly benefits from them. But Allen and Macomber make a strong case for more far-reaching benefits and ROI.

JOIN THE CONVERSATION ABOUT HEALTHY BUILDINGS

This book could not be more timely. In the face of the COVID-19 pandemic, businesses and organizations are re-examining their workplaces and customer-facing facilities. How can we better prepare ourselves for future pandemics, and how can we simply make our buildings – where we spend the majority of our time – healthier? This shouldn't be a priority for healthcare facilities alone. This should be a priority for offices, housing, transportation terminals, retail spaces, and more.

SageGlass was honored to sponsor a recent webinar with Joe Allen and John Macomber to help elevate the conversation about healthy buildings. If you missed it, [you can watch the recording now](#). SageGlass CEO Alan McLenaghan provides a welcome, and VP of sales and field operations Namrata Vora interviews the authors, who share some highlights of the book.

You can also visit the [Healthy Buildings website](#), where you can read testimonials and learn more about the authors. Thanks to our media partner [Bisnow](#), a great commercial real estate news source and community, for hosting the webinar for us. And congratulations to Joe Allen and John Macomber for writing such an important book at such a historic time.

WATCH THE WEBINAR



Prescription for Healthier Materials: A Design and Implementation Protocol

Frances Yang, SE, LEED AP BD+C, WELL AP

Sara Tepfer, MS Architecture, BS Chemistry

In 2014, the AIA adopted the Materials and the Built Environment position statement: “The AIA recognizes that building materials impact the environment and human health before, during, and after their use. Knowledge of the lifecycle impacts of building materials is integral to improving the craft, science and art of architecture. The AIA encourages architects to promote transparency in materials’ contents and in their environmental and human health impacts.”

- AIA 2014 Annual Report

Materials matter, and this document offers project teams a protocol to put these words into action. The protocol guides owners, design professionals, contractors, and facilities managers toward best practices for choosing and installing products that are healthier over their full life cycle for humans and the environment. Unlike chemical avoidance list approaches, which have their place, this guide does not declare any bans on specific materials or product content. Instead, we seek to:

- Outline a framework for designing and building with healthier materials on projects
- Identify useful resources to aid project teams in the selection of safer alternatives
- Educate readers about the harms of certain types of substances found in building products

BUILDING MATERIALS MATTER

Over the last decade, a growing body of environmental health research has shown that commercially available products, including building materials, commonly contain chemicals known or suspected to be hazardous to human health. Given that most people spend about 90 percent of their ¹time indoors, and that many of these chemicals now appear² regularly in urine and blood samples, there is growing belief that our buildings are exposing us to hazardous chemicals. In addition to impacts on building occupants, hazardous materials can pose impacts on people and natural

systems across materials' life cycles, during extraction, manufacturing, installation and disposal. How can the design and construction industry address these concerns?

Several chemical avoidance lists, which identify chemicals to be avoided in building products, have been developed as one response to this development. As another response, greater transparency has become a motto for a growing materials health movement, and manufacturers are increasingly asked to disclose product chemical content beyond what regulations require. However, these lists and disclosure documents have been challenging to implement because of limited understanding of where these chemicals occur in products, how best to avoid them (e.g., whether to identify safer alternatives or forego them altogether), and how to prioritize such directives among other materials and product selection criteria.

SHAPING MATERIALS HEALTH OUTCOMES

This protocol seeks to produce a navigational guide that is appropriate to the American design and construction industry.

It provides:

- Detail on the science and policy context for healthier materials
- An approach owners and project teams can take to turn the vast array of chemical substances, certifications, and chemical avoidance lists into a manageable set of shared references
- Examples of how to turn values around health and transparency into clearly written goals and scope of work, approachable targets and clear roles and responsibilities for a project
- An overview of approaches to implementing healthier materials—from favoring disclosure to prioritizing avoidance of selected substances
- An introduction to common disclosure and optimization tools to guide your project team
- Common barriers in implementing healthier materials into projects—and how to address them
- Examples from practice that demonstrate different approaches to prioritizing healthier materials in a variety of project types

While this protocol is written from a design perspective, it is intended for everyone working in this field. Designers are key players in evaluating and selecting building materials but designers are far from the only ones who shape the material health outcomes for our projects or our planet.

The Need for a Roadmap to Healthier Materials

The authors of this document have found that “reduced toxicity” and “healthier materials” are not easily specified by building owners, and approaches for tracking and documenting compliance with these objectives are not yet codified. The nearest

precedent to bridge this gap was a guide for the United Kingdom, authored by Ove Arup & Partners, published in 1997 and then reissued in its 2nd edition in 2011. The Good Practice Guide to the Selection of Materials in Building Construction became a guidance document that changed the approach design teams took to selecting materials on building projects. As quoted from the British Council for Offices:

“This document was designed to encourage a change in emphasis, from the exclusion of materials to ensuring good practice in their selection. This objective was achieved, as consequently contract specifications referred to that document rather than the materials exclusion list.”

While relevant in concept, the existing UK guide is not appropriate for use in the United States for several reasons. Unlike in the US, the European Union has put in place several regulations since the guide was published, such as the REACH program and Consumer Product Labeling requirements.

These regulations have helped address many EU marketplace concerns related to chemical hazard identification in construction products. In contrast, the lack of such regulation in the US has led to a vast array of tools for project teams and design firms that are primarily targeted towards American practitioners. Also, the project delivery process in the UK and EU is more often design-build and less risk-averse.

THE WEIGHT OF EVIDENCE FOR SELECTING HEALTHIER MATERIALS

A growing body of environmental studies and reports demonstrates the connection between chemical exposure from certain materials and human health. This offers a big opportunity—and strong motivation—for architects and designers to more carefully consider the materials they choose, and for owners and facility managers to be more selective in the products they authorize for purchase or buy directly.

Research by the Environmental Working Group (EWG)³ in 2005, for example, analyzed the levels of pollutant chemicals found in infants⁴ for a large group of industrial chemicals, including many used in building products. The study identified “early life exposure to environmental pollutants”—many of which are leading suspects for the rise

in cancer, nervous system disorders, preterm births and low birthweight, and reproductive system defects among Americans—in cord blood, or blood found in the umbilical cord of the infant at birth.⁵

A 2012 report by the World Health Organization (WHO) and the United Nations Environment Programme acted as an international call to action, showing the global ubiquity in commercial products of endocrine-disrupting chemicals linked to many types of cancers, fertility and pregnancy complications, and even obesity. Its authors noted the positive health effects that result when governments take action to reduce exposure, such as bans or restrictions of specific endocrine-disrupting chemicals.⁶

Market-driven efforts can also bring these positive effects, and they often do so more quickly than regulation, which can take significant time to develop, adopt, and implement. Through the selection of safer materials, architects and project teams have the ability to reduce human exposures to toxic chemicals and make communities healthier.

“The true burden of environmentally induced cancer has been grossly underestimated. With nearly 80,000 chemicals on the market in the United States⁷- many of which are used by millions of Americans in their daily lives and are un-studied or under-studied and largely unregulated - exposure to potential environmental carcinogens is widespread.”

- President’s Cancer Panel, 2010

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Passive Daylighting Systems Could Transform the Architecture of Natural Light

Natural light is a powerful architectural tool. As the importance of sustainable design grows, passive strategies like daylighting have become critical in reducing the impact of the built environment. Additionally, research in the last decade has shown daylighting to have significant health and wellness benefits for users.

Today, we have more tools than ever to harness daylight. From innovative reflective materials to advanced computer modeling, architects are using modern technology to light buildings more efficiently. When you embrace these systems, you'll create a brighter future.

WHAT IS PASSIVE DAYLIGHTING?

Passive daylighting strategies promote the quantity and even distribution of daylight throughout a building by collecting natural light and reflecting it into darker areas of the building. What makes this a "passive" strategy is that the design elements do not require any special mechanical equipment or energy sources. As soon as the sun rises, the passive daylighting strategies collect and reflect light throughout the building.

Architects use windows, skylights, clear doors, light tubes, mirrors, light shelves and other reflective surfaces to collect and direct light to key areas in the room. For example, if a waiting area is located in a dark corner with no nearby windows, architects can redirect light from other well-lit parts of the room using passive reflecting elements.

This type of system is incredibly beneficial both for building owners and for visitors. You'll use less energy to keep the building lit during the day. This, in turn, could save you money and help you reach [sustainability and renewability goals](#).



There are also a number of health and wellness benefits when you allow more natural light into your building. Exposure to natural light improves:

- Mood
- [Employee and visitor satisfaction](#)
- Student performance and learning
- Healing (especially in hospital environments)
- Productivity
- Cognitive function
- [Circadian rhythms](#)

PASSIVE DAYLIGHTING STRATEGIES

Every building is different, which is why architects customize passive daylighting strategies based on the building's location and its intended use. The goal of daylighting is to collect enough daylight in the summer to turn off electric lights and collect as much as possible in the winter to help heat the building. Here are a few design elements that architects use to bring in as much natural daylight as possible:

- **Building orientation.** Light direction is important. Light that comes from the south is usually best for daylighting as sunlight is consistent throughout the day and year. This orientation can also be used for solar heat gain. Light that comes from the north is the next best, as the sunlight is as consistent as the south, just in a lower quantity. Light that comes from the east and west should be avoided if possible. Sunlight at these orientations is harsh, it only occurs during half the day, and the height of the sun changes throughout the year, making sunlight harder to control. Architects design buildings so that the rooms that require the most daylight (like front entrances) face north or south, while rooms that require less daylight (like storage rooms) face east or west.
- **Windows.** To bring as much light into the building as possible, architects use windows with tall head heights. They can also use uniform windows (horizontal ribbon windows) across the entire facade to light the space evenly. HMC Architects used this technique when we designed the Frontier Project. We also used bilateral window placement—windows facing each other from opposite or adjacent sides—to light the entrance from every angle.
- **Skylights.** Skylights allow daylight to enter from above, which is useful in spaces at the center of the building where light from windows can't reach. As with windows, uniform skylight spacing results in uniform lighting. Architects can also place skylights high above the floor, allowing the light to diffuse before it reaches the ground.
- **Clerestories.** Windows that are high above eye level, or clerestories, can light up an entire room. Architects usually combine clerestories with a reflective roof material or paint. The light enters through the clerestories and reflects off the roof, spreading very diffuse light around the room below.

- **External Shading Systems.** At certain times of the day at each orientation, the light will be too bright and may produce a strong glare inside the building. To prevent this, architects design custom external shading systems to protect windows and other transparent openings. These systems usually include a combination of horizontal and vertical elements, but vary depending on the geographical location, climate and building orientation.
- **Light shelves.** A reflective horizontal shelf placed above windows reduces glare and directs light deeper into the space.
- **Solar tubes.** These channel sunlight from the roof through a narrow opening. During the day, they look like ordinary ceiling lamps, but they are powered by the sun rather than electricity. These work well when placed directly above desks, where people need plenty of light.
- **Light wall colors.** Light, reflective paint helps light to bounce around the room and makes the space feel brighter.
- **Parametric modeling, daylight simulation, and artificial intelligence (AI).** Modern architecture firms use parametric software to generate optimized daylighting strategies for buildings. Daylight simulation software analyzes the building geometry and calculates the anticipated daylighting levels throughout the building at any given time of year. AI is the latest development, and its potential yet to be seen, but it is capable of synthesizing massive data sets in seconds to automatically generate a solution, then learn from the solution to create a more efficient solution.

Architects often use a combination of these strategies to maximize natural light in a space. For example, when HMC Architects designed the [CSU Monterey Bay Joel and Dena Gambord Business and Information Technology Building](#), we used three passive daylighting strategies.

1. The building features a central atrium that connects the interior and exterior spaces. We lined the atrium with large skylights and clerestories to draw daylight in. We also installed floor-to-ceiling windows on interior walls. Light enters through the skylights and eventually reflects through the interior windows, lighting the rooms inside.
2. We maximized exterior windows on the north and south orientation.
3. On the east and west orientation, we created a custom external shading system. This prevents glare and unwanted solar heat gain while still allowing plenty of diffuse light into the space.

As a result, the building is bright and well-ventilated. Students can relax and [enjoy the views of nature](#) through the many windows and skylights. Moreover, the building uses less energy and is on track to achieve LEED gold certification.

When you work with architects to optimize daylighting, you can harness the power of natural light and make the most of your resources.

SHOULD YOU INCORPORATE PASSIVE DAYLIGHTING SYSTEMS FOR YOUR BUILDING?

All users benefit when a building utilizes natural daylighting. It's not only better for the environment, but it's also better for health and wellness. However, designing for daylighting can also be challenging. A few factors may complicate the design process.

For example, it's difficult to maximize daylighting for multi-story apartment buildings or offices. That's because many of these buildings are very deep but not particularly wide. It's harder to direct natural light into the center of the building—the space farthest away from exterior windows.

Still, there are ways to maximize daylighting even for buildings like this. An experienced architect knows exactly where to place reflective surfaces to direct more light into the space so you can make the most of what little natural light you have.

Additionally, while it's best to incorporate passive daylighting strategies at the beginning of the project, it is possible to retrofit a building with some of these design elements. For example, architects can add windows or storefront systems to the exterior envelope. Or, they can install light shelves on an existing window. It's never too late to introduce more natural light into your building.

Passive daylighting systems will continue to play a key role in architecture well into the future. When you embrace natural light, you'll foster better environmental stewardship and encourage your visitors to lead happier and healthier lives.

To find out more about what passive daylighting systems can do for you, contact HMC Architects today. Sustainable practices like daylighting are at the heart of our designs. We'll help you make the most of your resources and create an efficient, welcoming building that meets all of your visitors' needs.



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Breaking Down Indoor Environmental Quality (IEQ) and How to Improve It

By Suchi Bhattacharjee

Health and wellbeing of occupants in workplaces are directly affected by the built environment that defines indoor environmental quality (IEQ). IEQ is a measure of several different indoor parameters, including but not limited to:



- Indoor air quality
- Interior thermal comfort
- Interior light quality
- Indoor air quality

Indoor air quality constitutes of various factors like temperature, relative humidity, presence of VOCs (such as formaldehyde and acetaldehyde) and dangerous gases (such as CO_x, NO_x and SO_x). Poor air quality leads to various health symptoms of

the occupants, which can include inflammation of the eyes and respiratory system, headaches and tiredness, inability to concentrate, nausea and related loss of productivity, according to a research paper presented at Healthy Buildings.

A report published by the EPA identified that improved indoor air quality in workspace environment can not only help occupants to achieve higher productivity but also result in fewer lost workdays.

In a workplace environment, there is a risk for exposure to a variety of VOC emission sources, including consumer and commercial products, paint and associated building materials, furnishing, combustion materials and appliances. A National Health Interview Survey conducted by the Centers for Disease Control and Prevention of non-institutionalized adults in the U.S. demonstrated that 12.7 percent of employees are exposed to chemicals, 9.5 percent to smoke and 15.8 percent to vapor in a workplace environment.

The research report in the June 2016 issue of *International Journal of Sustainable Built Environment* found that the two most common strategies adopted to improve air quality are:

- Increasing the ventilation rate
- Reducing the source of pollution within and outside the building

Interior designers play a prominent role in improving air quality through efficient design and appropriate choice of interior finishes and furniture. A recent increase in the adoption of green building guidelines has considerably helped with the air quality issues by using low polluting building materials and installing effective air handling systems.

INTERIOR THERMAL COMFORT

Thermal comfort, yet another IEQ parameter, influences occupant health and comfort. Studies suggest strong correlation between thermal comfort and occupant productivity in a workplace environment. However, ecological and demographic factors such as geographic location and climate, time of year, gender, race and age have strong correlation with thermal acclimatization of the occupant, which further influences thermal comfort.

As defined by ASHRAE Standard 55 (2004), thermal comfort is “that condition of mind which expresses satisfaction with the thermal environment.” To achieve thermal comfort, six primary factors are addressed during the design of a workplace and selection of an air handling system:

- Metabolic rate of occupants
- Clothing insulation
- Ambient air temperature
- Radiant temperature
- Air speed
- Humidity

It’s important to address the specific thermal comfort needs for a building from its early design stage, as sometimes the alteration of structures post-construction is inefficient and expensive.

INTERIOR LIGHT QUALITY

Interior lighting, an important IEQ parameter for the workplace, is the use of either natural or artificially converted light energy to provide desired visual environments

for workspaces. Human eyes are generally attracted toward light, a unique human behavior called phototropic behavior (most predominant in moths). Studies have shown that light not only attracts people, but can actually change the path of about 40 percent of a crowd with directional change in light intensity, as noted in the “Display Lighting Preferences” report in the *Journal of the Illuminating Engineering Society*.

Inappropriate lighting systems can affect occupants’ natural circadian rhythms and hormonal patterns, thus impacting comfort level. Light with high luminous intensity helps people perform very complex and intricate visual tasks accurately and without much fatigue, according to a report found in the *Journal of Architectural Engineering*. As designers, the key purpose of providing appropriate interior lighting is not only for better visual effect but also for health and comfort of its occupants.

About the Author: Suchi Bhattacharjee is an Associate Professor of Interior Design at University of Oklahoma with an area of interest in sustainability and indoor environmental quality. She holds a doctorate degree in Environmental Design and Planning and an MS degree in Building Construction from Virginia Tech after completing her bachelor of Architecture degree in India.

5 Ways Buildings Can Improve Mental Health

By Janelle Penny

The COVID-19 pandemic has put mental health in the spotlight, but many workplaces presented barriers to good mental health long before the novel coronavirus struck. At the virtual Greenbuild 2020 conference, a panel of leading design experts convened to explore how buildings can influence mental health—and how the [WELL Building Standard](#) certification is uniquely positioned to make that influence positive.

“It’s hard to ignore buildings as the key environment we spend most of our lives in,” explains Emily Winer Suresky, Mind Concept Lead for the International WELL Building Institute. “We spend over 90% of our lives indoors. In COVID times, it’s probably more like 99.9% of the time. The spaces we inhabit right now are mostly our homes, but buildings and spaces have a profound impact on our health, our wellbeing and our productivity.”

USING THE WELL FRAMEWORK TO IMPROVE MENTAL HEALTH

The WELL Building Standard’s features offer several opportunities for buildings to improve mental health, notes Lida Lewis, associate principal and director of interiors for Page. Use the list of possible credits as ideas for what you can achieve in your own building. Some features, like Stress Support (Feature M05) may require the help of HR or other departments, but there are a few key things designers and facilities teams can do on their own to support mental health, such as:

- 1. Physical Activity Opportunities** (Feature V06). When you curate amenities, look at ways to encourage physical activity, from spaces that easily convert into yoga classes to simple signage about stress relief apps.

- 2. Emergency Preparedness** (Feature C15). Organizational resilience is good for individual mental health because people can trust that emergencies will be handled. Strive to make emergencies “resemble snow days as much as possible,” Lewis urges. “Snow days aren’t threatening. They’re an emergency, but we know exactly what the plan is.”
- 3. Enhanced Occupant Surveys** (Feature C04). “You can also reach out to your employees and occupants and just ask them what are the things they most need help with so you can direct your efforts most efficiently,” Lewis says.
- 4. Visual and Physical Ergonomics** (Feature V02). Support movement and comfort, including when people are working from home, Lewis says. Provide access to ergonomic furniture during the work-from-home phase as much as possible, and make sure office furnishings reduce physical strain and injury for when people return to the office. Being comfortable helps battle burnout by reducing stress, Lewis explains.
- 5. Active Furnishings** (Feature V07). Like ergonomic furnishings, furniture that discourages prolonged sitting and sedentary behaviors may be possible for both work-from-home and office-based setups. Direct people to where they can find active furnishings for their homes and see that the office is equipped for when everyone comes back. The ability to move around and stretch can be an important tool in combating chronic stress.

Whichever strategies you choose, Winer Suresky cautions that mental health approaches can’t be one size fits all. What works well for one organization may not work well for yours.

“Think about what’s going on in your population, your workplace and what people are going to respond to,” Winer Suresky says. “It’s important to think about who your people are, who you’re trying to help and what issues you’re going to tackle when you’re thinking about addressing mental health in the workplace.”

CLICK HERE FOR MORE INFORMATION

Promote Health and Well-Being

OVERVIEW

Indoor environments have strong positive effects on occupant well-being and functioning, especially attributes such as the amount and quality of light and color, the sense of enclosure, the sense of privacy, access to window views, connection to nature, sensory variety and personal control over environmental conditions. Designing to enhance psychological well-being will therefore have positive impacts on work effectiveness and other high value outcomes, such as stress reduction, job satisfaction, and organizational commitment.

To reap the fiscal, physical and psychological benefits of healthy buildings, projects must have a comprehensive, integrated design and development process that seeks to:

- Provide maximum access to natural daylight and views to the outdoors
- Provide superior ventilation
- Control sources of indoor air contamination
- Prevent unwanted moisture accumulation, and
- Enhance the psychological and social aspects of space

Indoor environments also strongly affect human health. For example, the EPA estimates that the concentration of pollutants (like volatile organic compounds) inside a building may be two to five times higher than outside levels. A 1997 study by W.J. Fisk and A.H. Rosenfeld (Estimates of Improved Productivity and Health from Better Indoor Environments. Indoor Air Vol. 7, pages 158-172) reports that the cost to the nation's workforce of upper respiratory diseases in 1995 was \$35 billion in lost work plus an additional \$29 billion in health care costs. The study estimates that more healthful indoor environments could reduce these costs by 10 to 30 percent.

Implementing sustainable design principles will also help achieve these objectives.

RECOMMENDATIONS

Provide Maximum Access To Natural Daylight And Views To The Outdoors

- Use a daylighting analysis tool to help guide the design process. See also WBDG Daylighting.
- Design windows to allow daylight to penetrate as far as possible into a room. Consider using light shelves (solid horizontal elements placed above eye level, but below the top of the window) to reflect daylight deep into a room. Design windows to provide views out from most spaces.
- Design for diffuse, uniform daylight throughout the room. Avoid glare. Avoid direct beam sunlight in continuously occupied spaces; however sun “spots” in other, shared or public spaces, are desirable and psychologically beneficial.
- Consider interior (shades, louvers, or blinds) and exterior (overhangs, trees) strategies to control glare and filter daylight.
- Consider shared daylight through glazed interior walls.
- Integrate daylighting with the electric lighting system. Provide controls that turn off lights when sufficient daylight exists. Consider dimming controls that continuously adjust lighting levels to respond to daylight conditions.
- Design floor plate depth to allow access to windows and views.
- Consider the security implications of window, glazing, and door locations. See also WBDG Designing Buildings to Resist Explosive Threats and Retrofitting Buildings to Resist Explosive Threats.

PROVIDE SUPERIOR VENTILATION

- Design the ventilation system to exceed *ASHRAE Standard 62.1: Ventilation for Acceptable Indoor Air Quality*.
- Minimize recirculation while assuring energy efficiency through energy recovery. See also WBDG High-Performance HVAC.
- Ensure that ventilation air is effectively delivered to and distributed throughout the ‘breathing zone.’ Consider individual controls.
- Provide local exhaust for restrooms, kitchens, janitor’s closets, copy rooms, etc.
- Consider installing CO₂ sensors to provide real time monitoring of air quality.
- Consider separating thermal conditioning from ventilation in order to vary delivery of air volume separate from temperature for better comfort.
- See also WBDG Natural Ventilation.

CONTROL SOURCES OF INDOOR AIR CONTAMINATION

- Test the site for sources of contamination: radon, hazardous waste, fumes from nearby industrial or agricultural uses. See also WBDG Air Decontamination.
- Locate air intakes away from sources of exhaust fumes (e.g. from buses, cars, or trucks).
- Consider security implications of the location of building air intakes.
- Consider recessed grates, “walk off” mats and other techniques to reduce the amount of dirt entering the building.
- Specify green products and materials and furnishings that are low emitters of indoor air contaminants such as volatile organic compounds (VOCs).
- Allow adequate time for installed materials and furnishings to “outgas” before a new workplace is occupied. Assist the process by running the HVAC system continuously at the highest possible outdoor air supply setting after materials and furnishings have been installed to adequately “flush out” the facility. (The exact timing may vary for different materials and different environmental conditions.)

- Consider “modular zoning” for air distribution in order to avoid cross contamination, including providing mail handling center with a separate ventilation system.
- Install proper barriers between occupied and construction zones in renovation projects in order to protect worker health.

PREVENT UNWANTED MOISTURE ACCUMULATION

- Design the ventilation system to maintain the indoor relative humidity between 30 percent and 50 percent.
- Design to avoid water vapor condensation, especially on walls and the underside of roof decks, and around pipes or ducts or windows.
- Design buildings with proper drainage and ventilation.
- See also WBDG Mold and Moisture Dynamics and Air Barrier Systems in Buildings.

ENHANCE THE PSYCHOLOGICAL EFFECTS OF SPACE

- Design to allow workers to move freely from solitary work to group action as work requires.
- Provide mobile technologies (phones, computers, wireless connectivity) that support new work styles and work practices.
- Design to reduce stress and facilitate mental rest breaks.
- Provide workers the means to make meaningful changes in their immediate environments (e.g. through personalization and control over the immediate environment to the extent possible).
- Provide spatial features that support visual and acoustical privacy but allow opportunities for informal encounters.
- Provide an interesting visual environment and, at the same time, design for a balance between visual access and visual enclosure. Provide views of natural vegetation, indoors or outdoors, when possible.
- Strive to create a “sense of place” such that the workplace has a unique character that engenders a sense of pride, purpose, and dedication for individual workers and the workplace community.



Large glass areas at the DPR Construction Phoenix Regional Office connect occupants to the exterior courtyard where vertical steel screens, draped in vines, help to filtering light, air and dust, screen views of adjacent parking and bring nature into view. These features create 2,600 square feet of outdoor wellness space and extend the area's yearly use.

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From the Design Quarterly: Building design as a tool for wellness

By Kaitlyn Gillis

Can algorithms help us design to improve occupant health? Here's how we are creating a parametric tool for wellness design.

For years, most design education programs didn't emphasize what happens physiologically or psychologically to someone when they're in a space. Few in the design industry were taught how design might deal with a psychological or physiological issue. And as a result, many of the spaces we occupy today provide only the bare necessities.

We have also observed an uptick in a range of health issues since the 1970s. On average, North American children spend far less time outside than they did in 1970s and the effects are dramatic. In Canada, for example, childhood obesity is a major issue and we're seeing type 2 diabetes increasing in young children. Elsewhere, communities are grappling with issues like anxiety and depression.

But changes in design approaches for wellness are on the rise. As designers we're learning how to apply design to make us feel better. In education, for example, we know to design with views of nature and properly scaled spaces to create a sense of comfort for children and improve learning outcomes.

The fact is that our environment, inside or out, impacts our health. In the U.S., Canada and Northern Europe we spend upwards of 90 percent of our time indoors.

How does the built environment affect health? Noise is a leading cause of stress. We have a natural affinity for daylight. Air quality can impact cognitive performance. Having ample personal space makes us feel good. Yet, each of us is different with our own needs and physiology.

People with ADHD or on the autism spectrum, for example, are more sensitive to distractions and noise. How do we design to promote well-being of everyone that occupies our built spaces?

While sustainability and green buildings rating systems were once oriented toward reducing harm to people and the environment, they have broadened in scope and detail. New wellness-focused certifications provide a template for designing with human well-being in mind.

But can we design for more vulnerable populations? Can we improve their health? Can we use design to create a better environment for people with anxiety, childhood obesity or diabetes?

A TOOL FOR BUILDING WELLNESS THROUGH DESIGN?

I had the opportunity to work with a group of talented designers to develop a prototype to answer the questions above. Taking parametric thinking from structural engineering and energy performance practice, we applied the same methodology

Can we use design to create a better environment for people with anxiety, childhood obesity, or diabetes?

to designing for wellness. This team effort is a research project between our sustainability, architecture, research and benchmarking, and practice technology groups at Stantec.

We created a digital decision tool to help our design teams during the early stages of design process. It enables designers to use the available data about vulnerable populations present within a community and help them make decisions about how to address those health issues through a combination of design strategies.

We developed the prototype around K-12 education projects in Alberta, Colorado and Texas. We looked at the prevalence of health issues in these communities—including childhood obesity, anxiety, depression and ADHD—and ranked them in order of prevalence in each geographic area.

HOW IT WORKS

The tool enables designers to choose the setting or project context, an urban environment, for example, and the project type, K-12, in our pilot. They also select the key health topic category—mental (mental health differences), physical or cognitive (how we learn and process information).

It's not designing on autopilot. On the contrary, the tool requires us to be knowledgeable about the demographic we're designing for and the issues that are challenging the users. When fully realized, it will be about giving us and our clients options for attaining a desirable outcome.

Our tool offers designers three tiers of strategies, low commitment, medium commitment and high commitment for each project goal—allowing us to show clients how they can impact wellness on any budget. Low commitment might target meeting established thresholds for daylighting and include low-cost techniques for achieving that. Designers can adjust between available strategies to see how each will affect the health issue they're targeting. For example, how three design strategies for optimizing daylight will impact depression.

We want to demonstrate the effectiveness of easy choices, like paint color. There's a lot of evidence on paint color and how it affects mental health. Paint is a great example of a low-effort strategy with high potential impact.

The idea is that this tool can be run during predesign when the architect or interior designer is first engaged. It should become part of an interactive design process between designer and client that results in design outcomes that promote health.

THINKING DIFFERENTLY

The built environment can play an important role in mitigating health and well-being issues, but it's not a solution in and of itself. Right now, designers have a great talking point for introducing the importance of well-being in commercial spaces—both morale and performance have been shown to be boosted by workplaces that promote well-being. The firms that invest in wellness for their staff are positioning



Cambridge Montessori School Site Master Plan in Cambridge, Massachusetts.

themselves to retain talent and increase innovation. We are anxious to build out the commercial/workplace capability of our tool.

While it's just a prototype today, it represents a way of thinking that we can adopt right now. As designers for people, we must be thinking about how our work will impact the well-being of

our users on every project. Every one of us is unique, with our own preferences and challenges. So, we must think about designing for diverse population groups and the issues they face. And by doing so, we raise the bar from doing no harm to doing

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Credit: Center for Active Design, operator of the Fitwel Certification System.

Strategies that Mitigate Viral Transmission

There is no denying that our environment is connected to the spread of COVID-19. The strategies listed below provide several ways that the design and operations within buildings can be optimized to slow viral transmission rates. The strategies listed below are ordered based on strength of evidence and predicted impact.

LIMIT PHYSICAL INTERACTIONS

Associated with diminished risk of person-to-person transmission.

While we don't know exactly how many lives social distancing has saved, we have all become extremely familiar with images describing the flattening of the curve, and understand the impact limiting physical interaction can have on the spread of COVID-19. According to modeling by Stanford University, if controls are lifted too quickly a resurgence could occur, and if populations resume business as usual at any point through December 2020, there is a risk of a spread that overwhelms hospital capacity.¹³

This means that even as workplaces begin to reopen, some level of physical distancing will be essential. While workplaces will never be able to completely remove infection risk, there are many policies that can help support employees as they strive to limit physical interactions. Most of our data around workplace infection at this point is in response to influenza. A literature review article estimates that on average, 16 percent of influenza transmission occurs in the workplace each year.¹⁴ There are many steps employers can take to limit the spread of viral infections within the workplace.

At its core, social distancing is about limiting physical interactions to diminish risk of exposure. For those able to support remote work, establish staggered schedules where employees are able to telework several days a week to help them avoid commutes and in-person interactions. Managers should coordinate with employees to ensure they are comfortable working remotely and have spaces where they are able to work safely and productively.

It will also be important for employers to support workers staying home when exhibiting COVID-19 symptoms or when around someone exhibiting symptoms. This means that paid sick leave is vital. One study found that universal paid sick days reduced workplace infections by 5.86 percent. In addition, providing 1 or 2 paid sick days specifically for the flu reduced workplace infections by 25.33 percent and 39.22 percent, respectively.¹⁵

Credit: Center for Active Design, operator of the Fitwel Certification System.

While more research is certainly needed, providing PPE to employees who work in close quarters or in maintenance and custodial roles may also be beneficial when it comes to mitigating transmission within workplace settings.¹⁶ We are still learning more about the exact impact of social distancing and how this can successfully be implemented in an office setting. For more information on physical distancing, visit the [CDC](#).

CLEANING

Associated with diminished risk of fomite transmission

There is a reason we have all been doing our best to clean door knobs, light switches, bathrooms, kitchens, and even our phones in the midst of the COVID-19 pandemic. Thorough cleaning strategies are a key defense against viral transmission. It is suspected that under certain circumstances, these particles can be transferred to a human through touch, which is why cleaning is one of the leading strategies to mitigate disease spread. That said, much about COVID-19 is still unknown.¹⁷

A recent study in the New England Journal of Medicine found that the virus can remain viable for up to 72 hours on plastics, 48 hours on stain-less steel, 24 hours on cardboard, and 4 hours on copper. What is important to note is that only .1 percent of the starting virus materials remains alive for these time periods. While it is possible to get infected, it is very unlikely.¹⁸

A strong evidence base demonstrates the efficacy of consistent and thorough cleaning protocols when it comes to infection prevention. Similar viruses can be inactivated by a range of disinfectants including 70 percent ethanol, 5 percent benzalkonium chloride (Lysol), and 10 percent sodium hypochlorite.¹⁹ Click here for guidance from the US Centers for Disease Control and Prevention (CDC) on recommended cleaning practices. What this demonstrates is that regular cleaning of high-touch areas is an effective method of reducing transmission. According to the CDC it is important to prioritize the cleaning of high-touch areas, such as tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets and sinks.²⁰ While no disinfectants are Green Seal certified, because none are completely harmless, Green Seal does have guidance for how to disinfect safely [...].

Cleaning of the surrounding environment has also been shown to influence personal hygiene behaviors. Clean sinks have been shown to also promote proper hand-washing technique and increased length of time spent washing hands. Unsurprisingly, when sinks are dirty some choose not to wash their hands.²¹

Credit: Center for Active Design, operator of the Fitwel Certification System.

It will also be vital to provide personal protective equipment, such as gloves and face coverings, for custodial staff, who may be at a higher risk of infection.²² According to the Occupation Safety and Health Administration and the National Institute for Occupational Safety and Health, personal protective equipment, such as gloves and respirators, should already be provided to building maintenance workers and custodial staff based on their job descriptions and exposure to chemicals.²³ All PPE should also be disposed in a designated receptacle in a secure area, rather than general receptacles within spaces occupied by tenants.

For more information on effective cleaning practices, visit the [CDC](#).

HANDWASHING SIGNAGE

Associated with diminished risk of person-to-person and surface-to-person transmission

According to the CDC, handwashing is the most effective thing one can do to rescue the spread of infectious diseases.²⁴ While this may seem like a simple task, a vast majority of the populations isn't practicing proper technique.

One study found that hand hygiene, described as handwashing frequency, duration and hand sanitizer ownership, may reduce respiratory illnesses in shared living settings and mitigate the impact of the influenza A (H1N1) pandemic.²⁵

Despite the beneficial impact, a study of hand-washing behavior in a college town found that 66.9 percent of the subjects used soap when washing their hands. Of these, 1.2 percent did not dry their hands, but left the restrooms with wet hands. About 23 percent attempted to wash their hands, that is, they wet their hands but did not use soap. A total of 10.3 percent did not wash their hands at all after using the restroom. The study also found that less than 6 percent of the sample approached the recommended hand-washing duration of 20 seconds.²⁶

Luckily, signage can help. To encourage positive change in behavior, handwashing signage has proven effective. The same study as the one referenced above, also analyzed how handwashing signage impacted handwashing practices and found that handwashing signage influenced both handwashing behaviors and the length of washing time. Through observation, the researchers found that signs including messages about correct handwashing or reminders to use soap can increase compliance. Additionally, since more than one-third of men "wash" their hands without soap, signage could be especially impactful in men's rooms.²⁷

Credit: Center for Active Design, operator of the Fitwel Certification System.

For more information on the importance of handwashing, visit the [CDC](#).

VENTILATION

Associated with diminished risk of aerosol transmission

Ventilation is shown to be especially effective when it comes to preventing aerosol transmission. A review of 40 original articles found a conclusive association between ventilation and the spread of infectious disease through the air. Specifically, findings indicate that higher ventilation rates are associated with decreased disease spread. In response to highly contagious conditions like tuberculosis, measles and SARS, these findings have already been applied within many healthcare spaces. For example, according to ASHRAE isolation rooms, where optimal ventilation rates are required, up to 12 air changes/hour are encouraged to maximize uncontaminated air.²⁸

While the spaces where we live, work, study and play might not require such high ventilation rates, available data does suggest that lower ventilation rates are associated with increased inflammation and respiratory infections. Specifically, a study out of Finland found that ventilation rates of up to 25 l/s per person were associated with reduced prevalence of a host of sick building syndrome symptoms, including communicable respiratory infections.²⁹ Another study found a dose-response relationship between out-to-indoor air flow rate per person in dorm rooms and the percentage of occupants with at least six common cold infections annually. While a mean ventilation rate of 1 L/person was associated with 35 percent of those who reported having six or more common colds, a mean ventilation rate of 5 L/person was associated with just 5% of self-report common colds ≥ 6 times.³⁰

One model looking at how ventilation could prevent aerosol transmission, suggests that for diseases transmitted by droplet nuclei, such as influenza, having good ventilation would be as impactful as vaccinating 50-60 percent of the population in a poor ventilation scenario. This statistic assumes a 60 percent vaccine efficacy rate, and cannot be applied universally, but does give a good idea of the potential impact ventilation could have on disease spread, if COVID-19 is in fact being transmitted through the air.³¹

All of that said, when it comes to ventilation, it is important to balance sustainability concerns with those relating to disease spread. Recent studies suggest that natural and hybrid ventilation strategies have demonstrated success when it comes to saving energy while also maintaining an optimal indoor air quality for occupants.³²

Credit: Center for Active Design, operator of the Fitwel Certification System.

As always, the unique context must be considered, as there are many factors that dictate the most appropriate ventilation mechanics for a specific building, and ventilation alone should not be relied on alone to prevent viral transmission.

For more information on ventilation, visit [ASHRAE](#).

FILTRATION

Associated with diminished risk of aerosol transmission

While changes to air filtration practices may take additional effort to implement, it is worth mentioning as this approach can help property managers, architects, and engineers plan for the future and prioritize efforts to maximize indoor air quality. Research suggests that filtration of recirculated air may be effective in reducing transmission of airborne infectious diseases. When operating at their full potential high-efficiency particulate air (HEPA) filters can remove 99.97 percent of particles that are 0.3 microns or larger. These filters remove dust, vapors, bacteria and fungi, and also effectively capture viral particles spread by droplet nuclei.³³

Air filtration is one part of a complex air quality system, and before upgrading the capacity of the existing HVAC system must be considered. While some will only be able to handle MERV 13 filters, others might be able to successfully install HEPA filters.

One study uses a hypothetical 500 m² office with 3 m ceilings and 25 regular occupants to demonstrate the individual likelihood of influenza infection during an 8-hour workday depending on different levels of HVAC filtration. Based on the well-established Wells-Riley model for predicting risk of infectious disease transmission, this study predicts that the risk of infection in an environment using MERV 13 or greater levels of filtration is approximately 31 percent to 47 percent lower than in a similar space without any filtration.³⁴

According to industry experts on the difference between filtration levels, while MERV 13 filters tend to trap less than 75 percent of air particles between .03 and 1.0 microns, MERV 16 filters can trap 95 percent or more.³⁵

Filtration is one part of a broader mechanical system, and like ventilation must be

Credit: Center for Active Design, operator of the Fitwel Certification System.

considered in the context of the whole building, and should not be relied on alone to prevent viral transmission.

For more information on filtration, visit [ASHRAE](#).

HUMIDITY

Associated with a diminished risk of surface-to-person and aerosol transmission

Environments with low humidity are more supportive of viral viability, meaning that viruses spread faster in less humid conditions. This is because droplets in dry air evaporate quickly, reduce in size and fall to the ground more slowly, travel further, and reach more people and/or surfaces. The means that more humid environments are less hospitable to virus survival and transmission.³⁶

The evidence indicates that maintaining indoor humidity between 40 percent and 60 percent is associated with a significant reduction in the infectivity of an aerosolized virus.³⁷

One prospective study found that an increase in average absolute humidity from 6.33 millibars (mb) in control rooms to 9.89mb in humidified rooms (Relative Humidity ~42–45 percent) was associated with a significant decrease in influenza A virus presence on objects as well as in air samples.³⁸ Another study looking into the role of relative humidity in the aerosol transmission of influenza found that at a relative humidity of ≤ 23 percent total viruses collected for 60 minutes retained 70.6–77.3 percent infectivity, but at ≥ 43 percent the viruses collected only retained 14.6–22.2 percent. What this shows is that even keeping the indoor environment at a humidity of between 30–60 percent can have a profound impact on aerosol transmission.

While we know that humidity is effective at reducing the length of time virus particles remain viable, there are also serious health concerns that must be considered when increasing humidity within a space. This is especially true for older buildings, which oftentimes weren't built or designed to support higher humidity rates.³⁹ Humidity should be regulated by property managers and building owners, and we do not recommend personal humidifiers within commercial buildings as that can disrupt overall humidity levels.

For more information on humidity, visit [ASHRAE](#).

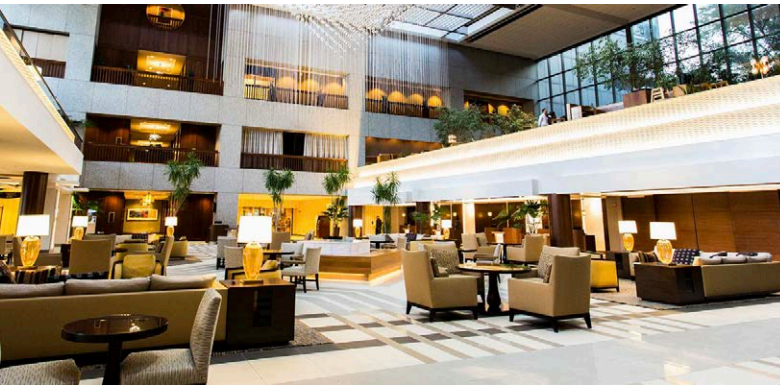
CLICK HERE FOR FULL REPORT

Design Guidelines for Infection Control

The impact of [COVID-19](#) has been felt across every vertical market. As some jurisdictions begin phasing toward reopening, many of our [clients](#) have asked us what they can do to make their buildings feel safe for their customers and employees.

Our research has shown the virus is spread through a building in three ways: (1) surface transmission, (2) large droplet transmission through close human contact, and (3) airborne transmission. To design a safer space, we need to look at each of these transmission vectors and identify what can be done to control the spread of infection. Below are design guidelines, developed by our practice directors and in consultation with our partners at [Henderson Building Solutions](#), based on dozens

of conversations they've had with clients, partners, and each other. These design guidelines are meant to help you guide a discussion with your design teams on what measures can or should be taken, both in the short and long term, to make your building safer as things begin moving toward a new normal.



HOSPITALITY DESIGN: GUIDELINES FOR INFECTION CONTROL

The hospitality industry has undoubtedly been impacted by the [COVID-19](#) pandemic. To do their part to flatten the curve, many hotels closed their doors while society stayed home. As more cities across the country reopen, it's imperative that the industry implement design strategies for infection control to keep guests as safe and comfortable in their environments as they would be at home. Our experts have developed the following guidelines to help our clients navigate conversations around doing just that.

AIRBORNE BIOAEROSOL TRANSMISSION

- HEPA filtration of HVAC – Either within HVAC units or portable and standalone units.
 - Standalone units are the most feasible compared to retrofit of existing HVAC equipment
- UV lights in HVAC equipment
 - Install where a straight run can provide adequate dosage time
- Bipolar Ionization air purification
- Active Particle control devices – Standalone units are the most feasible compared to retrofit of existing HVAC equipment
- Increased ventilation and air transfer rates
- Relative Humidification – 40%-60%

SURFACES SURFACE CONTACT TRANSMISSION

- UVC lights in restroom stalls activated by vacancy sensors
- Additional cleaning protocol in food service areas
- Increase surface cleaning especially high-touch surfaces
- Touchless plumbing fixtures, automatic door operators, drinking fountains, elevators
- Replacement of finish materials to more easily cleanable surfaces
- Reduction of decorative elements (pillows, bed runners, etc.)
- Sanitize bottom of shoes as customers enter

SOCIAL DISTANCING DROPLET TRANSMISSION

- Limit occupancy of specific areas like, customers at bar and dining areas, gym, pool, etc.
- Add signage for social distancing in elevators and lobby areas
- Technology-based solutions to support mobile check-in and phone based-room access
- Infrared temperature measurement of customers and staff at main entries
- Remove outer doors of public restrooms to avoid a touch point

RETAIL DESIGN: GUIDELINES FOR INFECTION CONTROL

As a result of the [COVID-19](#) pandemic, many [retail spaces](#) have closed their doors to protect shoppers from the spread of this new disease. Although retailers will reopen and greet customers again, it won't be business as usual. New social distancing and infection control measures are necessary not only to keep consumers safe but to build their confidence that it's ok to shop without fear.

SURFACES SURFACE CONTACT TRANSMISSION

- Increase surface cleaning
- Touchless door/plumbing fixtures
- Remove cloth seats in dressing/waiting areas
- UVc light sanitation of surfaces
 - Restrooms, dressing rooms, checkout areas
- Leverage technology to reduce touchpoints in purchases

AIRBORNE BIOAEROSOL TRANSMISSION

- HEPA filtration of HVAC
- UV lights in HVAC equipment
- UV lights in upper room areas
- Increased ventilation
- Maintain 50% humidity
- Add thermal cameras at entry points for temperature testing of customers

SOCIAL DISTANCING DROPLET TRANSMISSION

- Reconfigure visual merchandising or reset traffic patterns
 - Periodic review using heat mapping
- Set occupancy limits in stores
 - Queuing system to control the amount of people in the space at a time
- Partition entry and exit points of the store
- Require employees and/or customers wear masks
- Mobile point of sale to eliminate close contact interaction
- Curbside pickup/drive thru
- Appointment/invitation-only shopping

CLICK HERE FOR FULL REPORT

Design for Wellness Beyond Today

By Jeffrey Paine, FAIA & Scott Baltimore, AIA

Before COVID-19, the world was already overloaded with stress from work, family, political concerns, and environmental and economic challenges. These forces were also increasing awareness of the impact of stress on physical, social, mental and emotional health.

With nearly everyone on the planet now experiencing a full-blown pandemic, we are even more attuned to the importance of health and wellness in our lives.

Demand for building features that enhance human comfort, encourage positive behaviors and hygiene, and support a “mind, body, spirit” approach is rising in all building types—many that had rarely considered these qualities previously including office developments, classroom buildings and municipal facilities.

Sustainable features, now considered desirable by most user groups from students to office building tenants, foster the wellbeing of users by reducing pollution and facilitating environmental stewardship. Amenities such as gyms, showers for those who bike or walk, interconnecting staircases that encourage movement and in-house healthy dining options can all contribute to the physical health of building occupants.

Providing for occupants’ wellness involves more subtle understandings of how people inhabit and use space. Today, with COVID-19 disrupting much of daily life, revisiting and reinforcing the ingredients of design for wellbeing becomes both needed and timely.

ONE SPACE NEVER FITS ALL

Even before home isolation became a universal experience, the idea of facilitating a sense of personal space for building users was an essential aspect of design for wellbeing. Views of nature, natural light, flexible furnishings and the presence of greenspace allow individuals to feel more



Credit: Robert Benson Photography

personally tied to the spaces they occupy.

More importantly, accessible and occupiable terraces, plazas and roof gardens allow users to break away from daily routine and connect to the natural world. These spaces also enhance wellbeing by allowing users to choose where to work. Getting up from one's daily workspace and resettling in a different environment, whether to work in a team, alone in a lounge area, outdoors under a shade canopy or in spaces that socially connect them with others, is freeing. The process can also reset one's perspective, enhance self-awareness and encourage creativity.

Today's government-mandated work-from-home and corresponding virtual conferencing protocols are giving us a glimpse into how we each shape our own work environment. No two spaces are identical. Whether our COVID-19 workspace was on the couch, at the kitchen table amidst the action of home life, or behind a desk with a view, we will each emerge with greater consciousness of the need to tailor one's environment to tackle the task at hand.

QUALITIES OF SPACE FOR WELLNESS

As designers, we recognize that many characteristics of buildings and spaces can enhance comfort, encourage mental and physical wellbeing and foster supportive communities. Humans are attracted to the familiar characteristics of natural materials like stone and wood. They project warmth and comfort and provide a calming sense of connection to nature.

More and more, the material quality of buildings and spaces goes beyond natural references to reflect the specific site or locality. Materials that reference a building's immediate surroundings and community add meaning and provide users deeper connections to the world. This sense of belonging is a vital facet of emotional wellness.

Natural light has been proven to improve the experience of users when glare, reflection and heat gain are controlled. Equally, the absence of natural light wears on a person's mental and physical wellbeing. Strategies for controlling light can span from simple sunshades to high-tech electrochromic glass.

Green spaces again have a role in supporting human wellness. Educational and corporate campuses, and even urban office towers, are giving back street-level space to their users and to their neighborhoods. The tops of skyscrapers, once essential to the iconography of high-rise buildings, are now prime locations for sky gardens and amenity terraces that provide both a change of setting and access to fresh air.

THE FUTURE OF WELLNESS DESIGN

We cannot predict the 2020 COVID-19 pandemic's ultimate influence on our lives and the architecture we create, but we can speculate on how current trends in design for wellness might be reinforced and adapted as people emerge with more sensitivity to ensuring individual and collective wellbeing.

At work, assuming the demand for individual offices will increase is shortsighted, just as it was for tall buildings post-9/11, which continued to get built. All building types have been adding spaces to facilitate collaboration and cross-disciplinary thinking—practices that will continue to be in demand as we collectively seek to solve problems and generate innovation.

The design challenge is to reconfigure these spaces to ensure, when necessary, distancing practices can be implemented. Moveable partitions, seating and workstations will accommodate spatial adaptation. Increased outdoor meeting space will allow for congregation and, as needed, distancing while meeting.

Multipurpose rooms, prevalent in many buildings, will gain added significance if their design includes adaptability to allow sheltering-in-place. Robust technological infrastructure will ensure these spaces the capacity for digital and virtual communications. We must also provide the ability for people to safely find a place for contemplation or privacy, such as the current trend for open-plan workplaces to add spaces reminiscent of phone booths.

Health centers, whether for students or communities, will likely require new and additional spaces for isolation. Seamless wayfinding—always important for these buildings—carries special importance in filtering users through buildings and ensuring they arrive to their intended destination.



Duke University
Student Wellness
Center casual
meeting space

Credit: Robert Benson Photography

Spaces that facilitate healthy choices may also contribute to every individual's capacity to care for themselves, including community teaching kitchens and oasis and meditation spaces. Waiting rooms may get larger, with more zones of separation, so those seeking routine care can have separation from those who are sick. These functional additions can accelerate our focus on wellness and encourage attention to self-care.

We include interiors staff in our architectural design teams. These professionals infuse our work with perspective on the latest materials, color options, and even more detail on the health impacts of materials and finishes. This integrated approach brings the best combination of talent to holistically addressing design for wellness.

RECONNECTING

Every individual has multiple communities, and the pandemic has likely made our connection to others more significant than ever before. Many of us are anxious to get back to those communities, whether at home or work, and to the idea of being part of something bigger than ourselves. Team working, learning, collaborating, and building community will still be important to the workplace and education. Many of the strategies we've learned in this pandemic—staying six feet apart, good hand hygiene, not exposing others when you're sick and so on—will make their way into our design thinking. Building code and zoning ordinances will inevitably evolve to ensure greater safety against the spread of future viral outbreaks.



Emory Student Center student commons
Credit: Robert Benson Photography

Yankee Stadium Sets Standard for Sports Stadiums by Achieving WELL Health-Safety Rating

By Adrian Thompson

It's safe to say we all miss sports. This time of year, rain or shine, stadiums and arenas should typically have thousands of roaring fans cheering for their favorite team. However, facilities have had to completely change the playbook when it comes to game day.

Eager to get fans back in the stands safely when attendance is permitted, some teams are notably setting the standard when it comes to ensuring the health and safety of athletes, staff, vendors and fans.



Before entering a facility, look for the seal. “The WELL Health Safety Rating is designed to be a kind of shorthand – when you see the seal outside, you can feel more confident going inside,” says Rachel Gutter, president of the International WELL Building Institute (IWBI). Credit: New York Yankees

Yankee Stadium, home of Major League Baseball’s New York Yankees, recently became the first sports and entertainment venue in the world to achieve the WELL Health-Safety Rating for Facility Operations and Management.

Launched in June and created by the International WELL Building Institute (IWBI), the WELL Health-Safety Rating is an evidence-based, third-party verified rating for all facility types, focused on operational policies, maintenance protocols, emergency plans and stakeholder education to address a post-COVID-19 environment now and broader health and safety-related issues into the future.

The rating requirements, which have been fulfilled by Yankee Stadium, serve as a blueprint for best operating procedures to help combat COVID-19, while also providing world-class standards for overall health and safety.

“A lot of what stadiums and entertainment venues are now thinking about is how

to demonstrate to their constituents that they're doing the right things and taking as many precautions as possible by making their efforts and achievements visible to athletes, fans and staff alike," says Rachel Gutter, president of IWBI. "If your players and staff don't feel like you are capable of supporting their safety, or if your fans don't have line of sight to what you are doing to uphold their health, they are not going to return."

Gutter says the WELL Health-Safety Rating is designed to be a kind of shorthand – "when you see the seal outside, you can feel more confident going inside." By achieving this designation, which has been confirmed by a third-party verifier, Green Business Certification Inc. (GBCI), she states the club can operate with confidence that they are utilizing best practices for players and staff, and that they are appropriately prepared to accommodate the reintroduction of fans when approved to do so by Major League Baseball and local governmental authorities.

YANKEES' HEALTH AND SAFETY STRATEGY

The WELL Health-Safety Rating leverages insights drawn from the IWBI COVID-19 Task Force, in addition to guidance developed by:

- World Health Organization (WHO)
- U.S. Centers for Disease Control and Prevention (CDC)
- Global disease control and prevention centers and emergency management agencies
- Recognized standard-making bodies, such as ASTM International and ASHRAE
- Leading academic and research institutions

The Yankees joined more than 100 organizations, encompassing over 500 facilities, who enrolled in the documentation-based program at launch and who have begun implementing its scientific guidance. Yankee Stadium achieved the WELL Health-Safety Rating by implementing features across five categories:

- **Air and water quality management**, which includes the assessment of ventilation and fresh air supply through mechanical or natural means, and reviewing inventory of all filters and ultraviolet germicidal irradiation (UVGI) equipment.
- **Cleaning and sanitization procedures**, including ensuring proper handwashing and surface contact by staff, improving cleaning practices and their frequency, and selecting cleaning products that disinfect without harmful ingredients.
- **Emergency preparedness programs**, which provide a blueprint for dealing with unforeseen events and providing an actionable plan for re-entry after an emergency event.
- **Health service resources**, which promote the well-being of employees through screening services, mental health services, seasonal vaccination programs and a smoke-free environment.

- **Stakeholder engagement and communications**, which include employing proper signage throughout Yankee Stadium and promoting health literacy to employees, partners and patrons, including food service safety verification.

Although at the time of this writing the club is playing without attending fans (like all MLB teams), the implemented features help signify that the New York Yankees are prioritizing the health and safety of all who walk through the stadium's doors. Looking at the facility's history, it's no surprise the team was the first to step up to the plate to achieve the WELL Health-Safety Rating.

In January 2019, the team hired Dr. Allen Hershkowitz as its environmental science advisor, believed to be the first position of its kind in professional sports. Shortly after, in April, the club made headlines again by becoming the first major North American sports team to sign on to the UN Sports for Climate Action Framework, the aim of which is to bring greenhouse emissions in line with the Paris Climate Change Agreement and inspire others to take ambitious climate action.

A PANDEMIC PLAYBOOK FOR FACILITIES

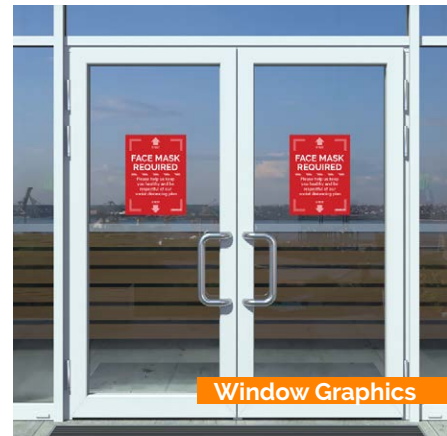
Although the WELL Health-Safety Rating is still fairly new, it's making its way into other leagues. As football fills television screens once again, the Dallas Cowboys is another professional sports team making major strides behind the scenes to get ready for the day when crowds return. The Texas team's AT&T Stadium is the first in the National Football League working toward the WELL Health-Safety Rating.

Dealing with the pandemic going forward, Gutter believes that some of the interim strategies organizations are considering aren't appropriate as long-term strategies as it relates to both sustainability and our well-being. Approaches such as dedensification, social distancing and widespread use of hand sanitizer and single use plastics may work for now, but vaccination support, air quality improvement measures and re-thinking ingress and egress are more in line with long-term approaches, she says.

"Codifying this process so we can respond more efficiently to future circumstances is part of the goal," Gutter explains. "This is also all the more reason this rating will need to be reviewed and renewed year to year."

Gutter notes that measures to address acute health risks beyond COVID-19, such as emergency preparedness planning and flu vaccination availability, are part of the WELL Health-Safety Rating as well. Owners, operators and tenants can learn more about pursuing the WELL Health-Safety Rating at www.wellcertified.com/health-safety.

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Case Study: Troy School District

To curb the aggressive spread of the COVID-19 virus, school districts across the nation shut down entirely during the middle of March 2020. The impromptu move to remote learning

for the remainder of the 2019-2020 school year proved to be a challenge for students, teachers, administrators and parents alike. This challenge aside, when the virus continued to spread throughout the summer of 2020, the return to in-person learning in the fall of 2020 remained in question.

To solve this issue, school districts throughout the U.S., along with the state and local governments, looked at varying approaches for returning students and staff back to schools in a safe manner. Like most, if not all, school districts across the country, the Troy School District, in Troy, Michigan, struggled with how to educate children safely yet effectively. They faced the difficult decision whether to provide in-person instruction versus remote learning which had proven to be such a challenge the previous spring. What

was certain was that providing safe in-person learning environments would require modifications to classrooms, hallways and shared spaces like cafeterias, gyms, and auditoriums to ensure social distancing and overall safety protocols.





The Troy School District ultimately decided to work towards getting students back into all schools, at minimum in a limited basis, by the middle of October 2020. As part of their plan, the district established a set of goals labeled "Return to Learn" revolving around three key objectives:

- Returning students to face to face instruction as soon as possible
- Prioritizing safety and sustainability
- Providing consistent yet flexible programming

In order to achieve these goals, Troy School District turned to iMBranded.

"Safety, reliability and flexibility were paramount in this process," says Rick West, assistant superintendent, Business Services, Troy School District. "iMBranded's ability to deliver in a short period of time and their experience in helping bring people back to offices and factories during the past several months was a key factor in us choosing them. We looked at all of their products and worked with their team to get them into the right places."

SOLUTION

In April 2020, iMBranded, a Pontiac, Michigan-based millwork manufacturer and large format graphics printing company, developed a line of social distancing products called Safely6ft. This line of mobile and stationary acrylic dividers, along with social distancing floor, wall, window and table graphics, and hand sanitizer stations, were developed to get people back into offices, restaurants, schools and other environments.

Troy Schools initially reached out to iMBranded in mid-August of 2020 to discuss outfitting each of the district's 26 buildings with a full line of Safely6ft products within a very compressed timeline.

Key dates were:

- August 21 – Initial measuring in the schools
- August 26 – Proposal delivered
- September 1 – Initial Board review
- September 15 – Board approval
- September 21 – Deliveries and installations begin

The project was broken down into three phases:

- Phase 1 - 250 custom acrylic shields for administrative use
- Phase 2 - Approximately 1,000 portable shields and 650 mobile shields for instructor use
- Phase 3 - Custom social distancing graphics

Upon Board approval, iMBranded was able to produce and deliver within the following timeline:

- Phase 1 - 6 business days
- Phase 2.1 - 3 business days
- Phase 2.2 - 6 weeks
- Phase 3 - 4 business days

Funding for the Troy School District project was covered by the CARES Act.

RESULTS

Getting students back into schools was a significant challenge. Some districts still do not have students back fully.

“As a graduate of the Troy School District, this project had a personal connection,” says Jim Whitehead, founder and CEO of iMBranded. “Furthermore, we wanted this to serve as an example that we could get students, teachers and faculty members back into schools in a safe, effective manner.”

Students began returning to in-person learning in Troy during the week of October 4th. “So far, we’ve found the products easy to use and the students have adapted well,” Dr. Rich Machesky, superintendent, Troy School District, says.

In addition to the Troy School District, iMBranded saw success with its office, hospitality and restaurant programs and has fulfilled orders for educational institutions throughout the U.S.

FOR MORE INFORMATION



What You Need to Know About the Great Indoors

In The Great Indoors: The Surprising Science of How Buildings Shape Our Behavior, Health, and Happiness, **Emily Anthes** examines how indoor spaces affect our bodies and minds, for better or worse, in so many ways. While researching this book, Anthes talked to leading researchers in building sciences and visited innovative spaces including a school, a commercial real estate company, a healthcare lab, a residence for people with disabilities, and a women's prison.

People in the building industry will come away with new inspiration to create more humane and life-affirming buildings. At SageGlass, we love to be part of innovative projects with ambitious goals for occupant health and wellness. And in light of the COVID-19 pandemic, **interest in healthy buildings is soaring**. So Monique Salas, our Healthcare Business Development Manager, recently interviewed Anthes to learn more about this important new book.

BUILDING SCIENCE IN THE TIME OF COVID-19

While the book was just released this summer, Anthes wrote it well before COVID-19 was an issue. Yet there are some very relevant concepts. "I do talk in the book pretty explicitly about how we can design spaces that reduce the spread of infectious disease, and so while I didn't have COVID in mind, some of those lessons apply," says Anthes. "But then the other piece of it is – even beyond the disease itself – we're all spending so much more time in our homes. And so I think there are a lot of lessons from the book about how we can create homes and indoor spaces that are really restorative and help keep us healthy and happy. There's plenty of stress during this time, but through some changes to – and attention to – our built environment, we can try to minimize that and create spaces where we feel safe and comfortable."

Anthes has written several recent articles related to COVID-19:

- ["The Pandemic's Indoor Opportunity: How Design Affects the Safety of our Indoor Environments"](#)
- ["Coronavirus Lockdowns May Raise Exposure to Indoor Air Pollution"](#)
- ["Pandemics spread in hospitals. Changes in design and protocols can save lives."](#)

THE INSPIRATION FOR THE BOOK

Anthes is a science writer who spends a lot of time poring over scientific journals. Seven or eight years ago, she noticed a lot of new research on what's often referred to as the indoor microbiome: the collection of microorganisms that inhabit the built environment.

"We spend all this time in our buildings – 90% of our time indoors – but I never really thought much about what was happening in them," explains Anthes. "And it made me realize that these environments are so much richer and more complex than I had realized, and so that was the spark that prompted me to say, 'What else is there to find out about these environments?' and, 'What power do they have that we often overlook?'"

Anthes has been researching and writing on the built environment for several years. For instance, four years ago she published an article in *Nature* called "**The office experiment: Can science build the perfect workspace?**" *The Great Indoors* is a culmination of everything she's learned through thorough research and first-hand experience in some unique spaces.

NUGGETS OF WISDOM ON DAYLIGHT AND VIEWS

As a business development professional in the electrochromic glass industry, Monique Salas thinks a lot about the significance of daylight and views. In the interview, she asks Anthes to share a couple nuggets of wisdom on the topic. "As it happens, daylight and views – and particularly views of nature – are two of the most important things you can provide building occupants," says Anthes. "There are just reams and reams of scientific literature."

Anthes goes on to explain that daylight can:

- boost our moods
- regulate our circadian rhythms

And views of nature can:

- reduce stress, anxiety, and pain
- boost concentration, focus, and productivity

"So basically, if there's any positive outcome you want to encourage," explains Anthes, "daylight and views can help do that. They're really critical for building occupants." While the research on the benefits of daylight and views is clear, access to these elements is often still seen as a luxury. (Consider, for instance, the corner office.)

UNDERSTANDING THE “SO WHAT?”

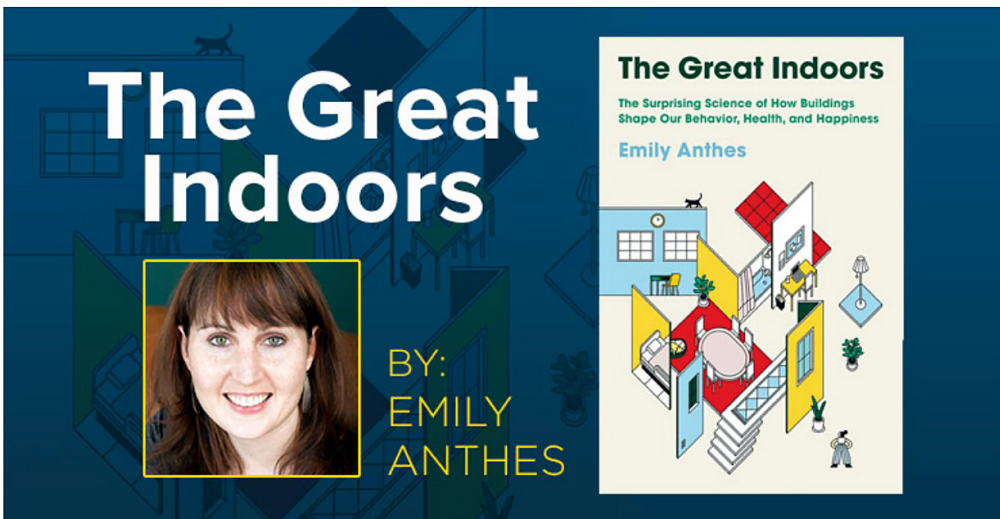
Anthes explains that a lot of the earliest research on daylight and views was done in hospitals. Patients in sunnier rooms require fewer painkillers, are discharged sooner, and have lower mortality rates. “Even if we’re not making much headway at convincing hospital administration that the humane thing to do is provide daylight and views,” says Anthes, “there’s a really compelling economic argument, too.”

Similar arguments can be made for other indoor environments like workplaces and schools. In fact, research has found that daylight and views affects our cognition. Anthes explains something called attention restoration theory. “It turns out that looking out a window, particularly at a natural landscape, engages us in a sort of effortless way,” she says, “and it allows our minds to rest, and then subsequently improves our focus, and our attention spans, and our productivity.”

A companion theory to attention restoration theory is the biophilia hypothesis. “That’s very much about how looking at nature relaxes us,” explains Anthes, “and then that relaxation has all sorts of downstream effects: reducing cortisol and dropping blood pressure.” Combined, the two theories make a compelling business case for designing indoor spaces that offer plenty of daylight and views of nature.

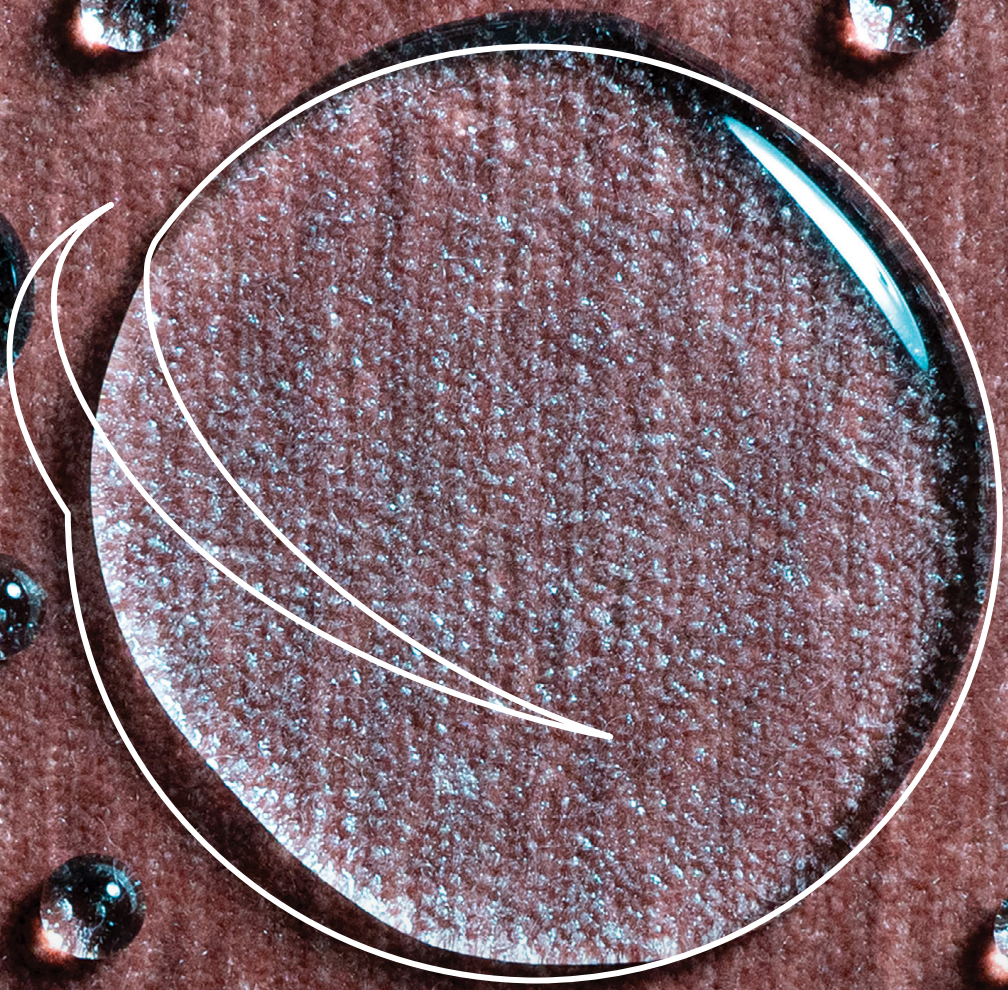
For more takeaways related to the commercial real estate, healthcare, and building industries, [watch the entire 30-minute interview with Monique Salas and Emily Anthes.](#)

WATCH INTERVIEW





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The first and only EPA-listed disinfectable fabric.

**A normal fabric just won't
cut it in the new normal.**

crypton.com/epa-approved



A Normal Fabric Just Won't Cut It in the New Normal

As people return to work, travel and public spaces, assurances of safety and clean will be paramount. In this new normal, built environments must foster sanctuary and security, and the choice of materials used in interior spaces must support and contribute to those needs.

Fabrics are in a unique position to meet these timely requirements—but not all textiles are created equal. Crypton offers the assurances of protection and clean at every level and is uniquely positioned to respond the needs of the moment. It always has been.

“Our fabric has been evaluated and called out by name by the EPA to be disinfected. We are the first fabric that can make that claim,” says Lance Keziah, CEO of Crypton. “Our barrier fabrics offer a multi-tiered ‘defense’ with a 5-year warranty, antimicrobial and stain-resistant technology and an integrated, permanent liquid barrier that is proven to prevent solids and liquids from permeating to the cushion below – allowing Crypton fabric to be cleaned and disinfected. We are the sustainable choice to protect guests, clients and environments.”

Performance is required, but so are aesthetics and the tactile experience. Crypton is creating a cognitive connection between their performance textiles and the increased desire for sanctuary, security and trusted ‘clean’ environments – without sacrificing aesthetic appeal or design flexibility.

In other words, Crypton delivers exactly what designers and customers are craving: something special, something clean, something soft, beautiful and dependable that guarantees clean. With fabric textures like velvet, linen, chenille and boucle, com-

plemented by rich, lively colorations, Crypton literally provides a soft place to land. Thanks to Crypton, designers have a complete solution for addressing the need for cleanability without being limited by a specific type of fiber or weave and have nearly unlimited design and texture options available to them.

“I truly believe we are the fabric solution for this moment,” says Crypton CEO Lance Keziah.

Crypton’s performance characteristics haven’t changed, but the desire in the market for exactly what they offer has increased exponentially since the start of the pandemic. The brand’s messaging approach is straightforward and research-based, leveraging forecasting and industry trend reporting on consumer behavior in the pandemic age.

The Fabric Solution for This Moment

Here is why Crypton is uniquely positioned for this new normal and why typical fabrics just won’t cut it:

TOUGH & TRANSPARENT: Furniture and fabric need to be durable and of high quality. Customers need to know they can trust products and the companies behind them. Crypton offers a 5-year warranty, and strives to be transparent, providing knowledge of the science and materiality behind its products.

EASY: Life feels complicated and fear of germs is a big stress factor. Creating disinfected surfaces and spaces is more important. The ability to stay hygienic with easy-to-clean, disinfectable textiles reduces worry and saves time, both more popular than ever before.

BEYOND CLEAN: An added comfort is the ability to go beyond clean. Antimicrobial materials like Crypton with its permanent silver-ion technology fend off micro-organisms, safeguard against odor-causing bacteria and prolong the life of textiles. And Crypton has the added benefit of disinfection.

While the demands of the new normal are higher than ever, Crypton offers designers and specifiers the assurance of performance and the appeal of aesthetics and tactile experience they simply won’t find in any normal fabric.

[READ MORE | CRYPTON](#)



Staying Hydrated Has Never Been Easier –Or Smarter

By Janelle Penny

Companies are increasingly looking for solutions to help keep employees hydrated, healthy and happy during the workday.

That's where The Smartwell® Touchless Beverage Dispenser comes in. This beverage dispenser offers healthy alternatives to sugary beverages by dispensing filtered still or sparkling water with natural fruit flavors and enhancements like electrolytes or Vitamin C.

This nourishing office amenity could be yours for free – [enter today](#) and become one of 5 people to win a free Smartwell® Touchless Beverage Dispenser.

HOW IT WORKS



Place your refillable water bottle, cup or other container into the machine's alcove, then customize your beverage using the mobile app (available for [Apple](#) or [Android](#)) or touchscreen.

Start with fresh, filtered still or sparkling water, then add flavors or enhancements. Users can have a beverage that is as unique as they are in just a few seconds.

Maintenance is easy, too. Flavors are dispensed from Smartwell's multiuse flavor pouches, which provide up to 300 eight-ounce beverages each.

The pouches are simple to maintain and replace, and you can even get an email alert when a pouch runs out.

[Enter here for a chance to win a Smartwell® Touchless Beverage Dispenser for your workplace.](#)





5 WAYS TO MAXIMIZE YOUR BENEFITS

Here are five key benefits you will see from The Smartwell® Touchless Beverage Dispenser.

- 1. Smartwell helps meet corporate sustainability goals.** Plastic bottles take up space in landfills and frequently end up in oceans, where they impact marine life. The beverage dispenser allows you to create a bottle-less office that meets your green goals by eliminating single-use bottle waste.
- 2. Smartwell saves money, space, and time.** On-demand dispensing and multiuse pouches mean you don't have to buy, store, or dispose of single-use containers anymore.
- 3. People love using Smartwell.** The beverage dispenser is easy and fun to operate and provides users with a personalized experience. Now you can meet corporate sustainability goals, save money, and provide a popular amenity all at the same time.
- 4. It's easy to stay safe.** With Smartwell, you can now dispense custom beverages using your mobile device. Just scan the QR code to download the app (available for [Apple](#) or [Android](#)), select your customizations and sip. There is no need to worry about touching a screen that other people have touched before, you can enjoy custom beverages only touching your phone.
- 5. Smartwell could be yours for free.** You could be one of 5 people to win a free Smartwell® Touchless Beverage Dispenser for your office. [Enter to win today!](#)

[Enter here for a chance to win a Smartwell® Touchless Beverage Dispenser for your workplace.](#)

HOW TO GET STARTED

Getting started with The Smartwell® Touchless Beverage Dispenser could not be easier. Let Elkay's licensed and insured technicians install your new unit for you, and your office can enjoy fresh, flavored water in just a few hours. This refreshing amenity is ready to become a destination in your office. Isn't it time for something new?

[LEARN MORE](#)

Portable Handwashing Station Supports Hygiene On the Move

All Sensor Hands-Free Delivery Systems.

Just Manufacturing® introduces our all NEW portable, ENVIRO series hand wash sink, constructed of heavy-duty 16 /18 gauge, type 304 stainless steel. The heavy-duty HY-G1-TP station is self-contained from start to finish including water from storage tanks below, sensor activated soap dispenser, auto dispensed paper towel to be disposed of in the convenient side waste receptacle. These are made for indoor and outdoor use. Our “On the move... to the location you need” station comes to life in our all sensor HY-G1-TP unit or the just as durable but pared-down HY-G1-ECO. The HY-G1-TP services child through adult heights. Either model can be utilized within school locations such as gymnasiums, classrooms, hallways, cafeterias, outdoor sporting areas and other locations where accessible water is limited and hands-free cleanliness is a must.



HY-G1-TP (Fully Accessorized Unit)



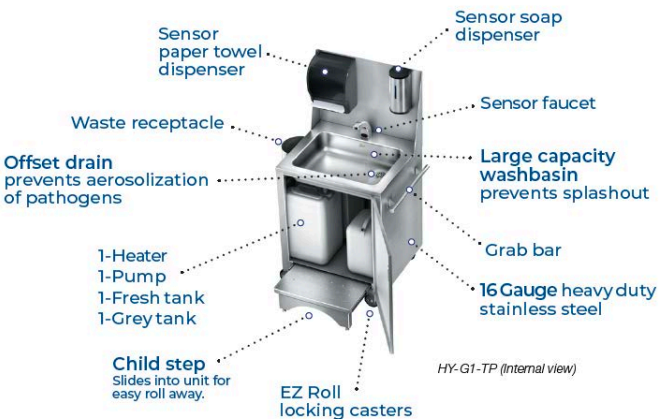
HY-G1-ECO (Hose Bib connect Unit)

Features:

- Hands-free
- Child step (HY-G1-TP model only)
- 2 hook up options: integral tank type or hose bib economy unit
- CuVerro option
- Indoor/outdoor use
- Portable micro cart
- Optional second set of tanks available

Product Details:

- Heavy-duty stainless steel construction of 16 and 18 gauge, type 304
- Hand-free sensor faucet and mixing valve
- Sensor activated soap dispenser
- Sensor activated towel dispenser
- Large capacity wash basin
- Offset drain location rear corner to reduce aerosolization
- Recessing slide step for child height access
- 120 volt water heater 2 Imp. gallons
- 120 volt water pump
- Waste receptacle
- Heavy-duty handle for easy portability
- Removeable fresh water tanks
- Removeable waste water tanks
- Lockable access door
- Unit components are NSF, CSA, UL or equal approved





HY-G1-TP Model:

Portable station with storage tanks, water heater, thermostatic mixing valve, handsfree sensor faucet, sensor towel dispenser, sensor soap dispenser and a child step that slides into station for easy roll away.

Included in the HY-G1-TP Model:



J-6913
Lavatory
Sensor faucet
(standard)

J-6920
Sensor faucet
(optional)

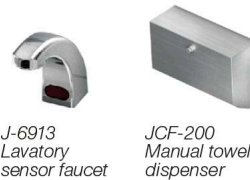
Sensor slimroll
towel dispenser
*(we may substitute color
pending availability)*



HY-G1-ECO Model:

Portable station with hose connection and hands-free sensor faucet and mixing valve.

Included in the HY-G1-ECO Model:



J-6913
Lavatory
sensor faucet

JCF-200
Manual towel
dispenser



Sensor
soap
dispenser

Pull-out
child step

Grab bar

Waste
receptacle

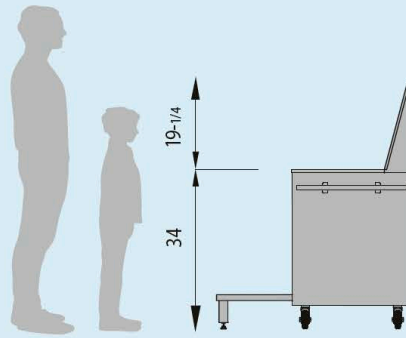


JSD-40
Manual soap
dispenser

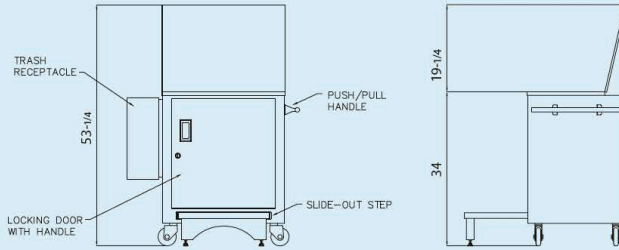
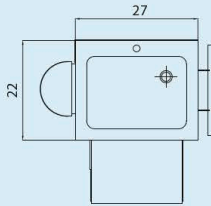
Grab bar

Portability and cleanliness for adults and kids alike.

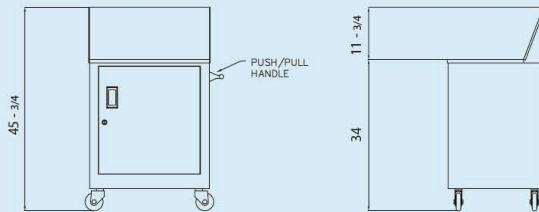
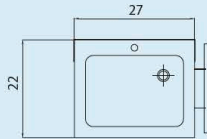
Our portable stations meet height requirements for **adult** and **child** use.



Model: HY-G1-TP



HY-G1-TP



HY-G1-ECO

[CLICK HERE FOR MORE INFORMATION](#)

PRODUCTS



Smartwell Touchless Beverage Dispenser by Elkay

The Smartwell Touchless Beverage Dispenser offers flavorful still and sparkling water alternatives to sugary beverages, along with enhancements like electrolytes and vitamin C, that help your office meet health and wellness initiatives and prepare for the upcoming cold and flu season. The dispenser allows users to view nutritional information, create flavor combinations and add enhancements with ease from their mobile device.

www.elkay.com



UVC by Fairfield

Fairfield has launched an ultraviolet C (UVC) disinfecting product that can be applied to three of the company's best-selling lounge chair series - the Payton Series, Conrad Series and Modern Arm Wall Hugger Recliner. UVC is a form of ultraviolet light with germicidal wavelengths, making it a useful tool for disinfecting efficiently and effectively, and is capable of killing 99 percent of bacteria, viruses and other pathogens. The electronic UVC system can be applied to the arm of the lounge chairs. The simple press of a button then radiates the ultraviolet light, cleaning high-touch surfaces such as mobile phones, and automatically concludes disinfecting after five minutes. The device also comes equipped with a USB port and wireless charging options for both iPhone and Android devices.

www.fairfieldchair.com



Portable ENVIRO Series Hand Wash Sink by Just Manufacturing Company

This new portable ENVIRO series hand wash sink is constructed of heavy-duty 16/18 gauge, type 304 stainless steel and can be used both outside and indoors. The heavy-duty HY-G1-TP station is self-contained from start to finish, including the water from storage tanks below, sensor-activated soap dispenser and auto-dispensed paper towels that can be disposed of in the convenient side waste receptacle. Options include the all sensor HY-G1-TP unit, which services child through adult heights, or the HY-G1-ECO. Either model can be utilized where accessible water is limited and hands-free cleanliness is a must.

www.justmfg.com



365DisInFx UVA Technology by Leviton Lighting

Leviton Lighting brands is the first lighting manufacturers to license 365DisInFx UVA technology, a new disinfection lighting technology by GE Current, for incorporation into the company's lighting portfolio. GE Current's 365DisInFx UVA technology uses UVA LEDs to reduce the potential spread of certain common infection-causing pathogens in virtually any space. This allows for spaces to be disinfected in real time while occupants are present. The UVA light emitted from the fixture is invisible to the human eye. When installed and used as directed, fixtures incorporating this disinfection technology are designed to meet IEC photobiological safety standard 62471.

www.leviton.com



Serenity Light, Sound, Rainhead by ThermaSol

The all-in-one Serenity Light, Sound, Rainhead delivers chromotherapy, sound therapy and a gentle falling water sensation through a Bluetooth enabled ThermaTouch Smart Touchscreen Control. Designed to integrate seamlessly into an existing bath environment, this system features a ceiling-mounted, single self-contained module that can be installed without access from above. A gradually changing mood lighting mode generates a calming spectrum of color, while other chromotherapy settings correspond to different chakras for an added sense of balance and wellbeing. Voice response feedback and a built-in, high-performance audio system further contribute to a soothing shower experience.

www.thermasol.com



VOLA Electronic Faucet from Hastings Tile & Bath

The VOLA faucet is available as a hands-free version with an advanced motion sensor, eliminating the possibility of transferring germs to faucet handles. Each water-resistant unit is equipped with water-tight seals and the ability to adjust the flow rate from the standard 1.3 gpm to 0.5 gpm and the flow time to 3, 10 or 20 seconds. The unit is equipped with a built-in data port to allow the option to upload data to a computer and view the water usage over any period of time. The faucet also has a hygienic rinse feature that runs the water for 20 seconds every 24 hours to keep fresh water moving in the lines when the unit is not in use—an ideal feature for rarely used bathrooms.

www.hastingstilebath.com



BalancedCare by Axis Lighting

With a focus on patient and staff wellness, BalancedCare is a new brand of lighting that balances both visual and circadian needs, as well as links to nature, and promotes healing outcomes. BalancedCare offers patent-pending BeWell performance optics for both visual comfort and functionality. A departure from traditional luminaires with unsightly segmented compartments or indirect baskets, BeWell light guide technology provides multiple precise distribution options to deliver the many layers of light required in healthcare environments. The luminaires also provide glare-free comfortable lighting that supports the visual tasks of staff while enhancing patients' overall wellbeing.

www.axislighting.com



BuzziRing by BuzziSpace

To comply with social distancing guidelines in communal spaces, BuzziSpace is launching an updated version of BuzziRing, the world's smallest "private room" with a wall mounting feature that optimizes space use. The hub has acoustical properties that absorb sound both on the inside and the outside, rounding an insulated cocoon for personal concentration. The design comes with a built-in wooden table, a functional light with two USB ports for charging, and is available in a wide range of fabric and color options. An optional clear sheet of partition/barrier can be added in the booth for a two-person chat with safety in mind.

www.buzzi.space



BOB-19 by Scandinavian Spaces

The BOB series has now expanded to include a plexiglass divider named BOB-19, as a reflection of the demands of changing times. BOB-19 is easy to add or remove from between the modules on any new or existing BOB sofa with no disassembly or tools required. The divider can quickly be rearranged into any preferred position, though Scandinavian Spaces recommends placing the divider with no fewer than three seats between each divider to provide a safe and comfortable seating experience. BOB-19 comes in one height and three different widths to accommodate all the BOB modules that are currently available.

www.scandinavianspaces.com



CLAIR by Wolf-Gordon

Wolf-Gordon previews an all new Type II wallcovering category with CLAIR, a PVC-free material that has durability and performance capabilities on par with traditional Type II vinyl and is even harder to tear. The initial collection features 10 textile- and organic-inspired designs that are derived from the beauty of nature; with an eye towards wellness, each features subtle movement and a refined, contemporary look.

www.wolfgordon.com

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