

# WELL HEALTH-SAFETY RATING

## FOR FACILITY OPERATIONS

## & MANAGEMENT

### Program Overview



# TABLE OF CONTENTS

Overview.....	3
WELL Health-Safety Rating Feature Summary.....	4
WELL Health-Safety Rating Journey.....	17
References.....	18



## OVERVIEW

**The WELL Health-Safety Rating for Facility Operations and Management is an evidence-based, third-party verified rating for all new and existing building and facility types focusing on operational policies, maintenance protocols, occupant engagement and emergency plans.**

Designed to empower owners and operators across large and small businesses alike to take the necessary steps to prioritize the health and safety of their staff, visitors and stakeholders, the WELL Health-Safety Rating can help users confidently prepare their spaces for re-entry in a post-COVID-19 environment and into the future, instilling confidence and trust in occupants and the broader community. While developed in response to the COVID-19 pandemic and the specific interventions at a building- and organizational-scale that can help to reduce the risk of transmission, the strategies contained within the WELL Health-Safety Rating are broad-reaching and apply to numerous health and safety issues.

As organizations across the globe respond to the COVID-19 crisis by making updates to their policies and protocols, the WELL Health-Safety Rating provides an efficient and operationally focused opportunity to guide, validate, recognize and scale efforts that address critical health-safety issues. The third-party review ensures integrity and consistency, and results in a WELL Health-Safety seal for buildings and spaces that meet the rating's requirements, communicating leadership and a commitment to the health and well-being of the people who frequent the space.

The WELL Health-Safety Rating consists of a subset of relevant features from the WELL Building Standard (WELL) that were adapted for a facilities and operations focus.



# WELL HEALTH-SAFETY RATING FEATURE SUMMARY

The WELL Health-Safety Rating focuses on six main health-safety themes, including:

- **Cleaning and Sanitization Procedures**
- **Emergency Preparedness Programs**
- **Health Service Resources**
- **Air & Water Quality Management**
- **Stakeholder Engagement & Communication**
- **Innovation**

The WELL Health-Safety Rating will require that each building or space achieve 15 features by pursuing a combination of those outlined below, including as many as three submissions under Innovation. None of the strategies are mandatory. The WELL Health-Safety Rating presents a diverse set of evidence-based criteria that can be customized based on facility type and adapted to an organization's needs.



# CLEANING AND SANITIZATION PROCEDURES

## Support Handwashing

Proper hand hygiene is key to reduce the incidence of gastrointestinal and respiratory diseases.<sup>1</sup> Soap has been found to be more effective at removing germs than hand sanitizer in non-healthcare settings, as sanitizers' effect is impeded by dirty or greasy hands.<sup>3</sup> Despite hand washing, hands can only become as clean as the surrounding environment. Sinks may harbor pathogenic bacteria that can migrate onto hands during washing.<sup>3</sup> Water splashing from the drain may spread bacteria to surrounding areas.<sup>4-7</sup> Additionally, soap and the inside of liquid soap containers often remain contaminated after use; thus, best practice and research recommends that soap dispensers not be topped off.<sup>5,6</sup> Lastly, once an individual's hands are cleaned, they can more easily become re-infected when wet compared to when dry.<sup>3,8</sup>

**Feature Summary:** Reduce pathogen transmission associated with washing and drying hands through the provision of proper handwashing supplies, implementation of additional sanitization strategies, installation of signage for effective handwashing, use of disposable soap containers and availability of hand-drying towels.

## Reduce Surface Contact

COVID-19 and many other infectious diseases are spread primarily through close contact with an infected person via respiratory droplets. However, it is known that coronaviruses and noroviruses, among other pathogens, can survive on surfaces infected by droplets. For instance, research suggests that the COVID-19 virus can remain airborne for up to three hours and on some surfaces for up to 72 hours.<sup>9</sup> Reducing the instances where occupants touch surfaces can help minimize one of the vectors of disease transmission.

**Feature Summary:** Implement temporary and/or permanent strategies to reduce the amount of contact with high-touch surfaces.

## Improve Cleaning Practices

COVID-19 virus can remain airborne for up to three hours and on some surfaces for up to 72 hours.<sup>9</sup> A thorough plan for cleaning operations increases the overall efficiency of the process, while protecting the health of occupants and cleaning staff as well as minimizing environmental damage.

**Feature Summary:** Implement rigorous cleaning protocols that address high-touch surfaces by detailing the extent and frequency of cleaning, provide annual trainings for cleaning staff and require detailed documentation procedures.

## Select Preferred Cleaning Products

While sanitization is critical, especially during an infectious disease outbreak, commercial cleaning products may contain ingredients suspected to be hazardous to human health and the environment.<sup>11</sup> Cleaning product ingredients may contain vapors or gasses that irritate the nose, eyes, throat and lungs and can cause or trigger asthma attacks.<sup>12</sup> The provision of cleaning products that contain less hazardous ingredients may reduce the risk of respiratory symptoms.<sup>13</sup> Low-hazard cleaning products and cleaning practices reduce impacts in indoor air quality and in the health of those performing these duties, while protecting occupants as well.<sup>11</sup>

**Feature Summary:** Restrict use of hazardous or harmful ingredients in cleaning, disinfection and sanitization products.



# | EMERGENCY PREPAREDNESS PROGRAMS

## Develop Emergency Preparedness Plan

Natural disasters kill around 90,000 people and affect close to 160 million people worldwide every year, with both an immediate and long-term impact on human lives and built spaces.<sup>14</sup> Beyond natural disasters, infectious disease epidemics have increased in the 21st century, involving fast global spread due to travel, trade and urbanization.<sup>15,16</sup> The COVID-19 pandemic spread to almost every continent and infected more than six million people worldwide within five months, impacting the social and economic livelihood of the global population on an incalculable scale.<sup>17,18</sup>

Emergency preparedness planning is a risk management approach that enables rapid response. An effective emergency management plan requires an understanding of local potential hazards, the needs of vulnerable groups, the responsibilities of the emergency response team and building response capabilities.<sup>19</sup> Emergency management plans, including risk assessments, occupant drills and enhanced emergency communications, can help organizations be better prepared to handle unforeseen events, minimize occupant confusion and improve coordination and safety during emergency situations.<sup>15,20-24</sup> Robust emergency preparedness and response measures can also help to slow the spread of infectious disease and minimize secondary mortality.<sup>25</sup>

**Feature Summary:** Conduct a risk assessment to inform the resources, education, training and management plans necessary to respond to diverse emergency situations.

## Create Business Continuity Plan

Globally, the frequency, size and cost of disasters is increasing due to climate change, population growth and rapid urbanization.<sup>26-28</sup> In 2019, the global economic losses from disasters amounted to \$232 billion, and the COVID-19 pandemic caused the largest global recession in history.<sup>26,29</sup> Many financial losses from emergencies are not typically covered by insurance, and 90% of smaller companies fail after emergencies unless they can resume operations within five days, yet 1 in 5 companies do not consistently maintain business continuity plans.<sup>30,31</sup> Emergencies such as biological events or terrorist attacks may necessitate sheltering in the workplace, while longer-term emergencies such as the COVID-19 pandemic may lead to extended workplace shutdowns.<sup>32-39</sup> The latter can result in extensive layoffs, while employees who continue working may be forced to work in high-risk conditions or remotely in spaces not equipped to support productivity.<sup>35-39</sup>

Business continuity planning is critical to help manage business disruption, restore business operations, minimize risk to employees and mitigate financial loss when emergencies occur.<sup>23,24,40,41</sup> Establishing organizational remote work readiness can help operations run smoothly and support employee well-being and productivity when an emergency makes remote work imperative.<sup>40,42</sup>

**Feature Summary:** Develop a business continuity plan that identifies critical business functions necessary for recovery and responds to the results of a remote work readiness assessment.

## Plan for Healthy Re-Entry

Re-entry plans after emergencies should consider employee needs, offer employees flexibility, assess critical infrastructure systems, communicate re-entry strategies to key stakeholders and re-evaluate existing policies, operations and protocols to support a healthy, safe and inclusive re-entry.<sup>43-52</sup>

**Feature Summary:** Create a plan for re-entry after an emergency event that addresses maintenance and sanitization protocols, stakeholder engagement, access to personal protective equipment (PPE), dedensification (including phased re-entry), ongoing communication and training methods, and the continuous evaluation of health and safety protocols in the building.

## Provide Emergency Resources

Rapid and effective emergency response requires coordination with local emergency responders and maintenance of emergency resources such as an emergency notification system, first aid kits and automated external defibrillators (AEDs).<sup>19,53</sup> Supplementing those resources with occupant training on CPR, first aid, AED use and individual and family preparedness can increase individual response time and help improve survival rates; CPR and AED training alone can increase victim survival rates by nearly 40%.<sup>53,54</sup>

**Feature Summary:** Provide resources, personnel and training that support the occupant response to diverse emergency situations.

## Bolster Emergency Resilience

For emergencies that require sheltering on-site, a shelter-in-place plan is crucial to supporting occupant safety.<sup>32,34,55</sup> Designating space for emergency public use can reduce the burden on medical facilities and help patients receive immediate care.<sup>56,57</sup>

**Feature Summary:** Support health and well-being during and after emergencies through the provision of occupant education, emergency assistance funds and/or designated emergency spaces.



# | HEALTH SERVICE RESOURCES

## **Provide Sick Leave**

While 94% of the world's countries mandate paid sick leave, the U.S. and Korea are the only OECD countries that do not, and 40% of American employees have no sick leave. <sup>58,59</sup> Studies estimate 20 million Americans and 37% of UK employees go to work sick because they lack sick leave or have only one-day sick leave, respectively, infecting colleagues as a result. <sup>60,61</sup> Employees may also go into work when sick if their sick leave does not offer sufficient wage replacement. <sup>60</sup>

Studies show implementing paid sick leave reduces contagion in the workplace, improves employee productivity and reduces employee turnover. <sup>60-64</sup> Overall, enhancing access to paid sick leave can help improve the physical, social and mental health of individuals and communities, and can help prevent the spread of infectious diseases such as COVID-19. <sup>65,66</sup>

**Feature Summary:** Support the overall health and well-being of individuals by promoting stay-at-home policies and providing short-term and long-term sick leave.

## **Provide Health Benefits**

Based on the effects of previous SARS outbreaks, COVID-19 is predicted to have lasting physical and mental health impacts.<sup>67</sup> Providing individuals with access to health-promotion strategies, education and resources can help them to cultivate healthy habits and resilience in response to physical and mental health stressors. A healthy immune system helps the body fight infections and reduces co-morbidities that are associated with a greater risk for infection.<sup>68</sup>

**Feature Summary:** Provide access to essential health services, screenings and assessments.

## **Support Mental Health Recovery**

Mental health is a state of well-being in which individuals are able to live to their fullest potential, cope with the normal stresses of life, work productively and contribute to their community.<sup>69</sup> Stress is known to weaken the immune system and chronic stress is associated with increased risk of numerous adverse health consequences, such as depression, cardiovascular disease, diabetes and upper respiratory infection.<sup>69-70</sup>

Most individuals who go through emergencies experience psychological distress, resulting in depression, anxiety, feelings of hopelessness, fatigue, irritability or anger.<sup>71-72</sup> These impacts can be exacerbated by added stressors during emergencies such as social isolation, domestic abuse, economic hardship or loss of loved ones.<sup>71,72</sup> Having access to health services, mental health support and restorative programming are important before, during and after any health crisis, including the COVID-19 pandemic.

**Feature Summary:** Create opportunities for recovery after emergency situations through occupant access to mental health services and resources.

### **Promote Flu Vaccines**

Providing free on-site flu vaccines with education on good health habits can increase vaccination rates and reduce flu cases.<sup>73</sup> Implementing support for influenza vaccines may also help support the infrastructure that will be needed when a vaccine is available for SARS-CoV-2, as well as promote occupant health and reduce strain on a community's healthcare systems. Flu vaccinations also reduce the quantity and duration of visits to intensive care units,<sup>74</sup> freeing up medical capacity for other needs, like responding to medical emergencies caused by the COVID-19 and other pandemics as well as natural disasters.

**Feature Summary:** Promote community immunity through occupant health by providing vaccine programs and annual seasonal flu prevention campaigns.

### **Promote a Smoke-Free Environment**

Tobacco is responsible for an estimated six million deaths per year globally among direct users, and serves as the cause of death for up to half of its users.<sup>75,76</sup> In addition to those deaths caused by direct use, an estimated 890,000 annual deaths can be attributed to non-user exposure to second-hand smoke.<sup>75</sup> Smoking can also increase comorbidities for influenza such as chronic obstructive pulmonary disease (COPD) and COVID-19.<sup>77</sup>

There is no safe and acceptable level of cigarette smoke exposure.<sup>78</sup> Therefore, the only way to protect people from secondhand and thirdhand smoke is to implement a 100% smoke-free environment.<sup>78-80</sup> In order to prevent intrusion of cigarette smoke from the outdoors, steps must be taken to ensure that smoking is not allowed in the vicinity of building entrances, operable windows and building air intakes.<sup>81</sup> Another influencing factor on tobacco use is an individual's proximity to outlets where it is sold.<sup>82</sup> Restricting the sale of tobacco on-site is a key strategy for preventing or curbing use of tobacco products as well as providing support to those trying to quit.<sup>82,83</sup>

**Feature Summary:** Deter smoking, minimize occupant exposure to secondhand smoke and reduce smoke pollution.

# | AIR & WATER QUALITY MANAGEMENT

## Assess Ventilation

Air stagnation may concentrate airborne viruses or dust, so it is critical to keep indoor air as refreshed as possible. Research has shown that increased ventilation in a building can reduce the chance of influenza; a study published in 2019 found that ensuring even minimum levels of outdoor air ventilation reduced influenza transmission as much as having 50-60% of the people in a building vaccinated.<sup>84</sup> Increasing ventilation rates also is a recommended strategy for reducing the transmission of COVID-19 and other airborne contagious diseases.<sup>85,86</sup>

**Feature Summary:** Minimize indoor air quality issues by assessing the ability to increase fresh air supply through mechanical and/or natural means, thereby diluting human- and product-generated air pollutants.

## Assess and Maintain Air Treatment Systems

Indoor air pollutants can be the source of many health concerns. For example, particles exhaled by individuals infected by airborne diseases such as COVID-19 can remain airborne for several hours or longer and be recirculated to other parts of the building through the air ducts.<sup>86-88</sup> HEPA or near-HEPA filters can help remove virus particles, since the virus often travels as part of larger particles.<sup>85,89</sup> UVGI systems can also be effective, both when irradiating the upper portion of the room or in the air ducts so long as they are powerful and/or the air speed is slow enough to provide sufficient UV dose.<sup>85,90</sup> For optimal performance, air filtration systems need to be maintained according to the manufacturer's instructions. Without proper maintenance and filtration, heating, ventilation and air conditioning systems can build up mold and particulates that can propagate respiratory diseases such as COVID-19, especially after periods of inactivity.<sup>91,92</sup>

**Feature Summary:** Conduct a system inventory of all filters and UVGI equipment to inform proper air treatment and filtration maintenance.

## Develop Legionella Management Plan

Legionella bacteria is naturally present in waters at low concentrations, but it may colonize recirculated water systems<sup>93</sup> especially in buildings that have been vacant for some time. Legionnaire's disease especially affects the immunocompromised, smokers and those over age 50.<sup>93</sup> Assets commonly vulnerable to Legionella infestation include domestic potable and hot water systems, cooling towers, humidifiers, misters, decorative fountains, spas and hot tubs.<sup>93</sup> Implementing a proper Legionella management plan reduces the risk of exposure to pathogenic bacteria.

**Feature Summary:** Establish protocols that minimize the risk of Legionella colonization by analyzing hazards and maintaining documentation of regular water system inventories.

## Monitor Air and Water Quality

People spend approximately 90% of their time in enclosed spaces<sup>94</sup> – in homes, offices, schools or other building environments. Depending on their specific properties, pathogens can enter our system through breaks in the skin or through our body's natural openings, such as our mouth, nose, and eyes.<sup>95</sup> Some pathogens can enter our bodies through our mouth and nose via the air we breathe, the food we ingest, and the water we drink.

Exposure to air pollutants such as Volatile Organic Compounds (VOCs), ozone, particulate matter, carbon monoxide and others has been shown to increase the risk of respiratory and cardiovascular diseases in addition to causing thousands of cancer deaths annually.<sup>96</sup>

Exposure to a range of contaminants in water can result in negative health impacts including the spread of infectious disease.<sup>97</sup> Water is typically treated with chlorine to keep it free of pathogens; however, if left stagnant after a period of vacancy, chlorine is likely to lose its disinfection power, creating opportunity for pathogens to contaminate the water.<sup>98</sup>

**Feature Summary:** Perform annual monitoring of water and indoor air quality parameters.

## Manage Mold and Moisture

When improperly managed, moisture creates conditions conducive to the growth of mold and other biological pests, which can increase the risk of developing respiratory infections and asthma for those within the building.<sup>99</sup> It is estimated that one fifth of asthma cases in the U.S. are caused by excess moisture and dampness in buildings.<sup>100</sup>

**Feature Summary:** Limit the potential for bacteria and mold growth within buildings from water infiltration, condensation and internal leaks.



## Promote Health and Wellness

Establishing a health-centered mission and orienting stakeholders to how the organization will adhere to that mission and WELL features through design and operations, helps individuals remain engaged in the space and empowers them to utilize all available health and wellness programs and policies.<sup>101</sup> Multi-modal programming, educational materials and communications can help promote health literacy and increase positive health outcomes.<sup>102,103</sup> By supporting awareness of health and wellness programs and policies, organization can promote health literacy and encourage engagement with health resources, leading to both individual benefits - like increased participation in healthy behaviors and use of health services - and also employer benefits, providing an estimated 4:1 return on investment.<sup>104,105</sup>

**Feature Summary:** Cultivate a culture of health by reinforcing programs, amenities and policies available to support health and safety, including regular communications, occupant education and health risk assessments. Support healthy behavior through signage that communicates important health safety actions and information.

## Share Food Inspection Information

Restaurant grading and public posting programs can increase public awareness of restaurant cleanliness and quality and incentivize food establishments to uphold and maintain sanitary measures and hygiene practices. For example, the Los Angeles restaurant hygiene grading and posting system was associated with a 13% decrease in the number of foodborne-disease hospitalizations, reinforcing the potential public health benefit of this intervention.<sup>106</sup>

**Feature Summary:** Promote health and hygiene awareness by conducting regular food inspections and making the results visible to all occupants.

# | INNOVATION

## Innovation

Innovation strategies pave the way for organizations to develop unique strategies for creating safe and healthy environments. Innovation features address a novel concept or strategy not already included in the WELL Health-Safety Rating or achieve results above and beyond the existing features in the WELL Health-Safety Rating.

**Feature Summary:** Up to three innovations may be submitted for review and awarded for developing unique strategies for promoting health and safety.



# WELL HEALTH-SAFETY RATING JOURNEY

## **EXPLORE**

Download and review the criteria for achieving the WELL Health-Safety Rating.

## **ENROLL**

Sign up and share your commitment to pursue the WELL Health-Safety Rating.

## **CUSTOMIZE YOUR APPROACH**

Select the features that are relevant to your building or space.

## **UPLOAD DOCUMENTATION**

Provide feature-specific documentation using our digital platform to demonstrate your building or space meets the requirements of the WELL Health-Safety Rating.

## **REVIEW**

Undergo third-party documentation for review by GBCI to confirm you've successfully met the feature-specific intent and requirements.

## **ACHIEVE**

Earn the WELL Health-Safety Rating and promote your achievement.

## **RENEW**

Apply for your annual seal to demonstrate ongoing commitment to upholding operational policies, maintenance protocols and emergency plans.



# REFERENCES

- 1 Aiello AE, Coulborn RM, Perez V, Larson EL. Effect of hand hygiene on infectious disease risk in the community setting: A meta-analysis. *Am J Public Health*. 2008;98(8):1372-1381. doi:10.2105/AJPH.2007.124610
- 2 Show Me the Science – When & How to Use Hand Sanitizer in Community Settings | Handwashing | CDC. Accessed June 22, 2020. <https://www.cdc.gov/handwashing/show-me-the-science-hand-sanitizer.html>
- 3 Jumaa PA. Hand hygiene: Simple and complex. *Int J Infect Dis*. 2005;9(1):3-14. doi:10.1016/j.ijid.2004.05.005  
Parkes LO, Hota SS. Sink-Related Outbreaks and Mitigation Strategies in Healthcare Facilities. *Curr Infect Dis Rep*. 2018;20(10). doi:10.1007/s11908-018-0648-3
- 4 Chattman M, Maxwell SL, Gerba CP. Occurrence of heterotrophic and coliform bacteria in liquid hand soaps from bulk refillable dispensers in public facilities. *J Environ Health*. 2011;73(7):26-29.
- 5 Schaffner DW, Jensen D, Gerba CP, Shumaker D, Arbogast JW. Influence of Soap Characteristics and Food Service Facility Type on the Degree of Bacterial Contamination of Open, Refillable Bulk Soaps. *J Food Prot*. 2018;81(2):218-225. doi:10.4315/0362-028X.JFP-17-251
- 6 Kotay SM, Donlan RM, Ganim C, Barry K, Christensen BE, Mathers AJ. Droplet- Rather than Aerosol-Mediated Dispersion Is the Primary Mechanism of Bacterial Transmission from Contaminated Hand-Washing Sink Traps. *Appl Environ Microbiol*. 2019;85(2). doi:10.1128/AEM.01997-18
- 7 Huang C, Ma W, Stack S. The hygienic efficacy of different hand-drying methods: A review of the evidence. *Mayo Clin Proc*. 2012;87(8):791-798. doi:10.1016/j.mayocp.2012.02.019
- 8 Van Doremalen N, Bushmaker T, Morris DH, et al. Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. *N Engl J Med*. 2020;382(16):1564-1567. doi:10.1056/NEJMc2004973  
ASTM E1971-19.
- 9 Standard Guide for Stewardship for the Cleaning of Commercial and Institutional Buildings.; 2019. Accessed June 19, 2020. <https://www.astm.org/DATABASE.CART/WORKITEMS/WK60934.htm>
- 10 Garza JL, Cavallari JM, Wakai S, et al. Traditional and environmentally preferable cleaning product exposure and health symptoms in custodians. *Am J Ind Med*. 2015;58(9):988-995. doi:10.1002/ajim.22484
- 11 Occupational Safety and Health Administration and the National Institute for Occupational Safety and Health. Protecting Workers Who Use Cleaning Chemicals. Published online 2012. Accessed June 19, 2020. [http://www.epa.gov/oppad001/ad\\_info.htm](http://www.epa.gov/oppad001/ad_info.htm)
- 12 Zock J-P, Plana E, Jarvis D, et al. The use of household cleaning sprays and adult asthma: an international longitudinal study. *Am J Respir Crit Care Med*. 2007;176(8):735-741. doi:10.1164/rccm.200612-1793OC
- 13 WHO. Environmental health in emergencies : Vulnerable groups. *Public Health Management of Chemical Incidents*. World Health Organization. *Managing Epidemics*.; 2018.
- 14 World Health Organization. WHO's Work in Emergencies: Prepare, Prevent, Detect and Respond - Annual Report 2018. World Health Organization; 2018.
- 15 WHO Timeline - COVID-19. World Health Organization. Coronavirus Disease (COVID-19) Situation Report - 134.; 2020.

- 16 Occupational Health and Safety Administration. How to Plan for Workplace Emergencies and Evacuations. Published online 2001.
- 17 Lockwood NR. Crisis Management in Today's Business Environment: HR's Strategic Role.; 2005.
- 18 Skryabina E, Reedy G, Amlôt R, Jaye P, Riley P. What is the value of health emergency preparedness exercises? A scoping review study. *Int J Disaster Risk Reduct.* 2017;21:274-283. doi:10.1016/j.ijdrr.2016.12.010
- 19 Occupational Safety and Health Administration. Evacuation Plans and Procedures eTool | Emergency Action Plan - Develop & Implement an Emergency Action Plan (EAP).
- 20 American Red Cross Ready Rating. SMB Prepared Playbook. Published online 2015.
- 21 U.S. Small Business Administration. Disaster Preparedness and Recovery Plan.; 2019.
- 22 World Health Organization. COVID-19 Strategy Update - 14 April 2020.; 2020.  
Weather, Climate & Catastrophe Insight.; 2019.
- 23 Coronese M, Lamperti F, Keller K, Chiaromonte F, Roventini A. Evidence for sharp increase in the economic damages of extreme natural disasters. *Proc Natl Acad Sci U S A.* 2019;116(43):21450-21455. doi:10.1073/pnas.1907826116  
Evaluation Independent Global Increase in Climate-Related Disasters.
- 24 International Monetary Fund. World Economic Outlook, April 2020: The Great Lockdown.; 2020.
- 25 Business Continuity Plan | Ready.gov.
- 26 FEMA. Make Your Business Resilient.; 2015.
- 27 Evacuation Plans and Procedures eTool | Emergency Action Plan - Shelter-in-Place | Occupational Safety and Health Administration.
- 28 CDC Emergency Preparedness and You | Learn How to Shelter in Place.
- 29 Build A Kit | Ready.gov.
- 30 Coronavirus Makes Work from Home the New Normal.
- 31 COVID-19: Making remote work productive and secure: PwC.
- 32 Kluch S, Hickman A. 4 Workplace Adjustments to Help Parents Working From Home.; 2020.
- 33 Willis Towers Watson. North American companies take steps to protect employees from coronavirus epidemic. Published online 2020.
- 34 KFF. Taking Stock of Essential Workers | KFF.
- 35 Business Continuity Plan | Ready.gov.
- 36 Emergency Management Agency F. Continuity Guidance Circular - February 2018.; 2018.
- 37 Goldman SB. PANDEMIC MANUAL Planning and Responding to a Global Health Crisis for Facility Management Professionals.; 2020.
- 38 HMG. Our Plan to Rebuild: The UK Government's COVID-19 Recovery Strategy.; 2020.

- 38 HMG. Our Plan to Rebuild: The UK Government's COVID-19 Recovery Strategy.; 2020.
- 39 PricewaterhouseCoopers. Returning to the workplace after COVID-19: What boards should be thinking about: PwC.
- 40 Society of Occupational Medicine. Returning to the Workplace after the COVID-19 Lockdown.; 2020.
- 41 Recovery Readiness: A How-to Guide for Reopening Your Workplace | Cushman & Wakefield.; 2020.
- 42 GUIDANCE FOR CLEANING AND DISINFECTING.; 2020.
- 43 Getting Back to Work: Preparing Buildings for Re-Entry Amid COVID-19.; 2020.
- 44 Getting Your Workplace Ready for COVID-19.; 2020.
- 45 Re-Occupancy Assessment Tool V2.0.; 2020.
- 46 Guidance on Preparing Workplaces for COVID-19.; 2020.
- 47 Berryman P, Lukes E, Mancini ME, Cazzell M, Kardong-Edgren S, Cason CL. Improving Workplace Safety Training Using a Self-Directed CPR-AED Learning Program. AAOHN J. 2009;57(4):159-167. doi:10.3928/08910162-20090401-02
- 48 Konig M. Every Second Counts - AED Fact Sheet 2013 - Final.; 2013.
- 49 Federal Emergency Management Agency. Every Business Should Have a Plan. Published online 2014.
- 50 America Society of Civil Engineers. Alternate Care Sites Retrofitting Guidance.
- 51 CDC. Considerations for Alternate Care Sites | CDC.
- 52 Raub A, Chung P, Batra P, et al. Paid Leave for Personal Illness: A Detailed Look at Approaches Across OECD Countries.; 2018.
- 53 Expanding Access to Paid Sick Leave.; 2010.
- 54 Scheil-Adlung X, Sandner L. The Case for Paid Sick Leave.; 2010.
- 55 Heymann J, Rho HJ, Schmitt J, Earle A. Contagion Nation: A Comparison of Paid Sick Day Policies in 22 Countries.; 2009.
- 56 Estimating the Distributional Impacts of Alternative Policies to Provide Paid Sick Days in the United States Issue Brief- Worker Leave Analysis and Simulation Series 1.; 2017.
- 57 Scheil-Adlung X, Sandner L. Evidence on paid sick leave: Observations in times of crisis. Intereconomics. 2010;45(5):313-321. doi:10.1007/s10272-010-0351-6
- 58 Heymann J, Earle A, Hayes J. The Work, Family, and Equity Index How Does the United States Measure Up? About the Project on Global Working Families.
- 59 U.S. Department of Health and Human Services. Access to Health Services | Healthy People 2020. Braveman P, Gottlieb L. The Social determinants of Health: It's Time to Consider the Causes of the Causes. 2014;129:19-31. doi:10.1177/003335491412915206
- 60 Shah K, Kamrai D, Mekala H, Mann B, Desai K, Patel RS. Focus on Mental Health During the Coronavirus (COVID-19) Pandemic: Applying Learnings from the Past Outbreaks. Cureus. 2020;12(3). doi:10.7759/cureus.7405
- 61 Cases in the U.S. | CDC. Accessed June 25, 2020. [https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html?CDC\\_AA\\_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fcases-updates%2Fsummary.html](https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fcases-updates%2Fsummary.html)
- 62 Mental health: strengthening our response. Accessed June 22, 2020. <https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response>

- 63 Stress Weakens the Immune System. Accessed June 22, 2020. <https://www.apa.org/research/action/immune>
- 64 World Health Organization. Mental health in emergencies. WHO Fact Sheets.
- 65 United Nations. COVID-19 and the Need for Action on Mental Health.; 2020.
- 66 Greenbaum E, Meinert E. Vaccinating Against the Flu: A Business Case. 2010;(September).
- 67 Arriola C, Garg S, Anderson E, Ryan P. Influenza Vaccination Modifies Disease Severity Among Community-dwelling Adults Hospitalized With Influenza. *Clin Infect Dis*. 2017;65(8).
- 68 World Health Organization. Tobacco.
- 69 World Health Organization. WHO global report on trends in prevalence of tobacco smoking 2015. *WHO Mag*. Published online 2015:1-359. doi:978 92 4 156492 2
- 70 Jha P, Ramasundarahettige C, Landsman V, et al. 21st-Century Hazards of Smoking and Benefits of Cessation in the United States. *N Engl J Med*. 2013;368(4):341-350. doi:10.1056/NEJMsa1211128
- 71 International Agency for Research on Cancer. Evaluating the Effectiveness of Smoke-Free Policies.; 2009.
- 72 Gan Q, Hammond SK, Jiang Y, Yang Y, Hu TW. Effectiveness of a smoke-free policy in lowering secondhand smoke concentrations in offices in China. *J Occup Environ Med*. 2008;50(5):570-575. doi:10.1097/JOM.0b013e3181638640
- 73 MacNaughton P, Adamkiewicz G, Arku RE, Vallarino J, Levy DE. The impact of a smoke-free policy on environmental tobacco smoke exposure in public housing developments. *Sci Total Environ*. 2016;557-558:676-680. doi:10.1016/j.scitotenv.2016.03.110
- 74 Kaufman P, Zhang B, Bondy SJ, Klepeis N, Ferrence R. Not just "a few wisps": Real-time measurement of tobacco smoke at entrances to office buildings. *Tob Control*. 2011;20(3):212-218. doi:10.1136/tc.2010.041277
- 75
- 76 Reitzel LR, Cromley EK, Li Y, et al. The Effect of Tobacco Outlet Density and Proximity on Smoking Cessation. *Am J Public Health*. 2011;101(2):315-320. doi:10.2105/AJPH.2010.191676
- 77 Polinski J, Howell B, Gagnon M, Kymes S, Brennan T, Shrank W. Impact of CVS Pharmacy's Discontinuance of Tobacco Sales on Cigarette Purchasing (2012-2014). *Am J Public Health*. 2017;107(4):556-562. doi:10.2105/AJPH.2016.303612
- 78 Smieszek T, Lazzari G, Salathé M. Assessing the Dynamics and Control of Droplet- and Aerosol-Transmitted Influenza Using an Indoor Positioning System. *Sci Rep*. 2019;9(1):2185-2185. doi:10.1038/s41598-019-38825-y
- 79 The American Society of Heating Refrigerating and Air-Conditioning Engineers. ASHRAE Position Document on Infectious Aerosols. Published online 2020.
- 80 Federation of European Heating Ventilation and Air-Conditioning Associations. How to operate and use building services in order to prevent the spread of the coronavirus disease (COVID-19) virus (SARS-CoV-2) in workplaces. Published online 2020.
- 81 Stariolo DA. COVID-19 in Air Suspensions.; 2020.
- 82 Dietz L, Horve PF, Coil DA, Fretz M, Eisen JA, Van Den Wymelenberg K. 2019 Novel Coronavirus (COVID-19) Pandemic: Built Environment Considerations To Reduce Transmission. Gilbert JA, ed. *mSystems*. 2020;5(2):e00245-20. doi:10.1128/mSystems.00245-20
- 83 Liu Y, Ning Z, Chen Y, et al. Aerodynamic analysis of SARS-CoV-2 in two Wuhan hospitals. *Nature*. Published online 2020. doi:10.1038/s41586-020-2271-3

- 84 Yang Y, Zhang H, Nunayon SS, Chan V, Lai AC. Disinfection efficacy of ultraviolet germicidal irradiation on airborne bacteria in ventilation ducts. *Indoor Air*. 2018;28(6):806-817. doi:10.1111/ina.12504
- 85 Mendell MJ, Mirer AG, Cheung K, Tong M, Douwes J. Respiratory and allergic health effects of dampness, mold, and dampness-related agents: A review of the epidemiologic evidence. *Environ Health Perspect*. 2011;119(6):748-756. doi:10.1289/ehp.1002410
- 86 Bekö G, Clausen G, Weschler CJ. Is the use of particle air filtration justified? Costs and benefits of filtration with regard to health effects, building cleaning and occupant productivity. *Build Environ*. 2008;43(10):1647-1657. doi:10.1016/j.buildenv.2007.10.006
- 87 Legionnaires Disease and Pontiac Fever | Legionella | CDC. US Centers for Disease Control & Prevention. Published April 30, 2018. Accessed June 19, 2020. <https://www.cdc.gov/legionella/index.html>
- 88 Klepeis NE, Nelson WC, Ott WR, et al. The National Human Activity Pattern Survey (NHAPS): A resource for assessing exposure to environmental pollutants. *J Expo Anal Environ Epidemiol*. 2001;11(3):231-252. doi:10.1038/sj.jea.7500165
- 89 The National Academies. How Infection Works, Entering the Human Host — The National Academies. Accessed June 22, 2020. <http://needtoknow.nas.edu/id/infection/encountering-microbes/entering-the-human-host/>
- 90 Franklin BA, Brook R, Arden Pope C. Air pollution and cardiovascular disease. *Curr Probl Cardiol*. 2015;40(5):207-238. doi:10.1016/j.cpcardiol.2015.01.003
- 91 Nieuwenhuijsen MJ, Martinez D, Grellier J, et al. Chlorination disinfection by-products in drinking water and congenital anomalies: Review and meta-analyses. *Environ Health Perspect*. 2009;117(10):1486-1493. doi:10.1289/ehp.0900677
- 92 Wang H, Masters S, Edwards MA, Falkinham JO, Pruden A. Effect of disinfectant, water age, and pipe materials on bacterial and eukaryotic community structure in drinking water biofilm. *Environ Sci Technol*. 2014;48(3):1426-1435. doi:10.1021/es402636u
- 93 Institute of Medicine (US) Committee on Damp Indoor Spaces and Health. Damp Indoor Spaces and Health - 5, Human Health Effects Associated with Damp Indoor Environments. *Heal San Fr*. 2004;(2):355. doi:10.17226/11011
- 94 Mudarri D, Fisk WJ. Public health and economic impact of dampness and mold. *Indoor Air*. 2007;17(3):226-235. doi:10.1111/j.1600-0668.2007.00474.x
- 95 Centers for Disease Control and Prevention. The CDC Worksite Health ScoreCard: An Assessment Tool for Employers to Prevent Heart Disease, Stroke, and Related Health Conditions.; 2014.
- 96 Schaller A, Dejonghe L, Alayli-Goebbels A, Biallas B, Froboese I. Promoting physical activity and health literacy: study protocol for a longitudinal, mixed methods evaluation of a cross-provider workplace-related intervention in Germany (The AtRisk study). *BMC Public Health*. 2016;16:626. doi:10.1186/s12889-016-3284-6
- 97 Das S, Mia MN, Hanifi SMA, Hoque S, Bhuiya A. Health literacy in a community with low levels of education: findings from Chakaria, a rural area of Bangladesh. *BMC Public Health*. 2017;17(1):203. doi:10.1186/s12889-017-4097-y  
World Health Organization. Health literacy: The solid facts. Published online 2013.
- 98 Cho YI, Lee S-YD, Arozullah AM, Crittenden KS. Effects of health literacy on health status and health service utilization amongst the elderly. *Soc Sci Med*. 2008;66(8):1809-1816. doi:10.1016/J.SOCSCIMED.2008.01.003
- 99 Simon PA, Leslie P, Run G, et al. Impact of restaurant hygiene grade cards on foodborne-disease hospitalizations in Los Angeles County. *J Env Heal*. 2005;67(7):32-36, 56; quiz 59-60.



---

Although the information contained in this document is believed to be reliable and accurate, all materials set forth herein are provided without warranties of any kind, either express or implied; and none of the parties involved in the creation of this document assume any liability or responsibility to the user or any third parties for the use of or reliance on any information contained herein.

INTERNATIONAL WELL BUILDING INSTITUTE, IWBI, WELL BUILDING STANDARD, WELL V2, WELL HEALTH-SAFETY RATING, WELL HEALTH-SAFETY RATED, WELL CERTIFIED, WELL AP, WELL PORTFOLIO, WELL PORTFOLIO SCORE, WELL WORKFORCE, THE WELL CONFERENCE, WELL and others, and their related logos are trademarks or certification marks of International WELL Building Institute pbc in the United States and other countries.