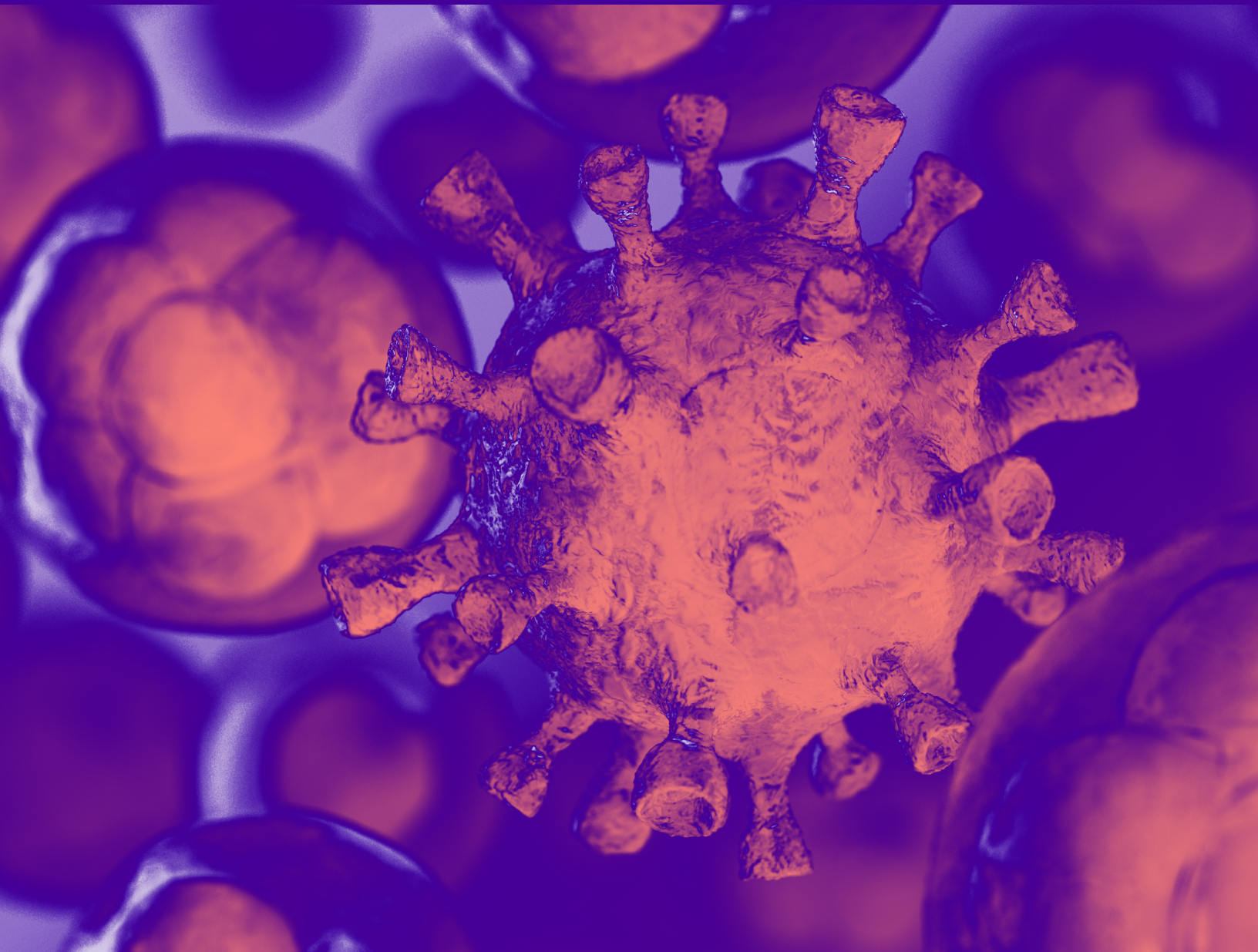


— COVID-19 Statement

# Understanding Antimicrobial Ingredients in Building Materials

Healthy Building Network  
Perkins and Will



— COVID-19 Statement<sup>1</sup>

# Understanding Antimicrobial Ingredients in Building Materials

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## About the Authors

As a research-driven architecture firm, **Perkins and Will** has created a practice where design, technology, and research converge to create places that improve how we live and work. To help keep us at the forefront of innovative design, we believe that it is essential to make focused investments in thought leadership in order to solve our clients' increasingly complex challenges and advance our profession. Toward that end, the Perkins and Will Science Fellow program was initiated in 2014. In 2015, in lieu of awarding an individual researcher the fellowship, Healthy Building Network was engaged to aid our efforts to better understand the impacts our buildings have on human and environmental health.

**Healthy Building Network** is a research-based not-for-profit organization focused on advancing the best environmental, health and social outcomes by reducing chemical hazards in the products that make up our built environment. The Pharos Project (a web-based building material evaluation system) and the Healthy Building News (since 2002) are just two means by which they have achieved deep respect within the design and construction industry. Perkins and Will and Healthy Building Network possess many complementary synergies between our organizations, including core values around the Precautionary Principle, transparency, and optimism about the power of design to make positive change. The Science Fellowship program provided our organizations the perfect opportunity to see where those synergies could lead.

As of May 8, 2020, the World Health Organization has reported 3,726,292 confirmed cases, 257,405 deaths, in 215 countries from around the globe due to the Coronavirus Disease (COVID -19) Pandemic.<sup>2</sup> In light of this crisis, Healthy Building Network and Perkins and Will reexamined the conclusions and recommendations of our white paper, **“Healthy Environments: Understanding Antimicrobial Ingredients in Building Materials,”** which we co-wrote in 2017.

The aim of this update is to evaluate the accuracy of our original recommendations in the wake of current concerns and efforts to reduce viral transmission. This is intended to be maintained as a living document in the subsequent months to reflect emerging research and data related to whether antimicrobial building products protect human health from SARS-CoV-2 and COVID-19.<sup>3</sup> The original white paper should be referenced for more information on the potential health and environmental impacts of antimicrobial materials, along with summaries on the most common substances used as antimicrobials and the products in which they are found.

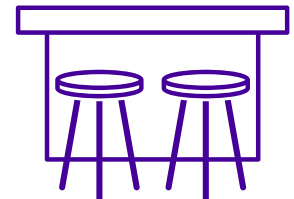
## Do building products containing antimicrobial additives help prevent the spread of viruses, specifically SARS-CoV-2?

To date, there is no evidence demonstrating that products intended for use in interior spaces that incorporate antimicrobial additives in the product makeup, actually result in healthier populations using those spaces. As building managers, tenants, and design professionals continue to explore return-to-work and business protocols, one focus of these strategies has been the reduction of virus transmission from frequently touched surfaces.

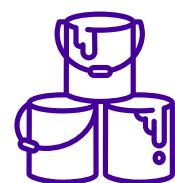
Increasingly, products considered furniture or an interior finish—including door handles, countertops, and paints—may be coated, impregnated, or manufactured with one or more combination of antimicrobial agents. As outlined in our white paper, the labelling, advertising, and marketing of these products frequently imply a level of protection from bacteria and viruses that have been explicitly refuted<sup>4</sup> by the United States Center for Disease Control<sup>5</sup> and major American healthcare systems<sup>6</sup>, and have been acknowledged by manufacturers of antimicrobials as well.



Door Handles



Countertops



Paints

**Here are just two recent updates from prominent manufacturers of the antimicrobials Microban and Ultrafresh:**

**A message from Microban International about Coronavirus (COVID-19)<sup>7</sup>**

“... Our built-in antimicrobial technologies are effective against a plethora of product damaging microbes, but are not currently proven to have any antiviral properties when built-into products. The active technology itself may be effective against viruses in pure state, but not when incorporated into a product.

***Microban antimicrobial product protection is not intended to control disease pathogens.***” (emphasis in original)

**A message from Thomson Research Associates, Inc. (TRA)’s regarding their product “Ultrafresh” and its built-in and textile antimicrobial technologies<sup>8</sup>**

“...Our antimicrobial technologies are effective against a broad range of product-damaging microbes, but are not currently proven to have any antiviral properties when built into products. The active technology itself may be effective against viruses in pure state, but not when incorporated into a product...”

# Antimicrobials are not intended to be products for infection control.

## Lead With Science

The greatest source of misunderstanding—undoubtedly ignited by current circumstances—is that the claims associated with antimicrobials in products are often confusing and may strongly imply a health benefit, even if one is not explicitly stated. In this time of great unknowns, it is tempting to be reactionary. But in our reaction to this unprecedented situation, we must focus on science. In the case of antimicrobial treatments in building products, the science says that this will not help, and it may actually be harmful. Antimicrobials may have negative impacts on human and environmental health.<sup>9</sup> Some antimicrobials are suspected carcinogens or respiratory sensitizers,<sup>10</sup> and diseases such as cancer<sup>11</sup> and asthma<sup>12</sup> have been shown to decrease a person's ability to fight COVID-19. The widespread use of antimicrobials may be associated with microbial resistance to these agents, and, potentially, to therapeutic antibiotics. In addition to the direct human health impact, evidence is growing that antimicrobial additives can migrate from the products in which they are incorporated, finding their way into wastewater systems and the larger environment with unknown ecological implications, but with reasonable cause for concern.<sup>13</sup>

Antimicrobials may be necessary in some products for preservation purposes—to protect the product itself from degradation from mold and mildew or to prevent spoilage.<sup>14</sup> However, antimicrobials are not intended to be products for infection control. We encourage manufacturers to disclose the identity and hazards of preservatives used in building products through disclosure tools, such as a Health Product Declaration, and to prefer fully assessed, less hazardous preservatives whenever possible. When antimicrobials are not necessary for preservation of a building material, they should be avoided. In all cases, Perkins and Will recommends avoiding products with antimicrobial additives that make explicit or implied claims about benefits to human health; these claims are misleading and may indicate inclusion of unnecessary antimicrobial additives. Until the CDC issues guidance as to the efficacy of antimicrobial building products, we suggest design professionals avoid their use. As new products enter the market, we suggest the design professionals review direction from the CDCs and other local health authorities for direction on the use of these products.



### **The Role of Proper Cleaning**

Of utmost importance, the health claims made about the use of antimicrobial treatments to building materials and finishes can create a false sense of security that may cause building managers to be less diligent with cleaning and disinfecting protocols. The use of finishes and building materials with antimicrobial additives is not among the recommendations made by the US CDC for reducing the potential of exposure to viruses in buildings.<sup>15</sup> The CDC guidance focuses on the cleaning and disinfecting of facilities.<sup>16</sup> We found in our 2017 white paper that one sector where the use of antimicrobial building products may be especially tempting is healthcare. In addition to their primary purpose of restoring patients to health, hospitals must also combat the spread of hospital-acquired infections (HAIs). The U.S. CDC's guidance on infection control protocols states that even in the case of patients with compromised immune systems, the health of all patients is best ensured through proper cleaning practices and maintenance of building engineering systems (ventilation, etc.).<sup>17</sup> Health Care Without Harm, a global leader in transforming health care's environmental footprint, concluded in their own 2016 publication that "while antimicrobials in hospital furnishings may ultimately prove to be efficacious, currently the benefits, risks, tradeoffs, and costs associated with their use are largely unknown." The authors found that "the growing use of products containing antimicrobials can also further increase the risk of antibiotic resistance, engender a false sense of security with reduced attention to cleaning and disinfection, and increase costs of products and materials."<sup>18</sup>

**In this time of great unknowns, it is tempting to be reactionary.... In the case of antimicrobial treatments in building products, the science says that this will not help, and it may actually be harmful.**

## Conclusion

In 2017, Perkins and Will and Healthy Building Network published this extensive analysis of antimicrobials treatments in building products. In May 2020, in light of the COVID-19 pandemic, we reviewed the conclusions reached three years ago. We find that our original conclusion stands: No evidence yet exists to demonstrate that products intended for use in interior spaces that incorporate antimicrobial additives result in healthier populations. Further, antimicrobials may have negative impacts on both people and the environment.

While there is a clear need for COVID-19 pandemic action plans, we must be cautious and inquisitive, follow the science, and ultimately provide building users with the necessary information to avoid a false sense of security.

This conclusion has been reinforced by the Centers for Disease Control and Prevention's 2019 updated "Guidelines for Infection Control in Health-Care Facilities"<sup>19</sup> and, for the first time, antimicrobial manufacturers have acknowledged that these products are "not intended to control disease pathogens," and are "not currently proven to have any antiviral properties when built into products."<sup>20</sup> Perkins and Will continues to follow the lead of the CDC, the US Food and Drug Administration, and other credible institutions, by maintaining "Antimicrobials - marketed with a health claim" on its Precautionary List ([transparency.perkinswill.com](https://www.perkinswill.com/transparency)). Perkins and Will project teams will continue to advise clients to seek and use reasonable alternatives where appropriate.

**While there is a clear need for COVID-19 pandemic action plans, we must be cautious and inquisitive, follow the science, and ultimately provide building users with the necessary information to avoid a false sense of security.**



The aim of this update is to present current information about reported or potential health and environmental impacts of antimicrobial substances as commonly used within the building industry, and to assist architects, designers, building owners, tenants, and contractors in understanding those impacts.

Perkins and Will strives to make use of this information to inform recommendations to each of our clients, based on their individual project needs. In general, when we find evidence of the potential for harm in the lifecycle of products that we specify, including to the environment, occupants, installers, fabricators, or factory workers, we prefer to proceed with caution in regard to the use of that product. Antimicrobials, as a class of chemicals, have been flagged in recent years as substances of concern, most recently in September 2016 when the Food and Drug Administration ruled that companies will no longer be able to market certain antibacterial washes that are currently in widespread use. We always work with our clients to find the best possible solutions for their project; sometimes, criteria other than health or environmental impacts (such as cost, availability, durability, or future maintenance, to name a few) drive the final decisions.

As in all matters regarding caution in relation to human and environmental health, we believe that the precautionary principle is appropriate as a tool for us to use in discussing design alternatives with our clients. Where there is information that credibly suggests the possibility of a negative human or environmental health impact in relation to a particular design choice, then we strive to advise our clients of that risk, and to see whether other alternatives exist.



# Endnotes

- 1 The conclusions in this update are based on research regarding the efficacy of antimicrobial treatments to building materials and finishes to kill viruses generally and not SARS-CoV-2 specifically, as new research addressing the SARS-CoV-2 and the built environment is limited at the time of writing this update. One of the first published papers can be found here: <https://msystems.asm.org/content/5/2/e00245-20>.
- 2 <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- 3 Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the virus strain that causes the coronavirus disease 2019 (COVID-19). This updated executive summary discusses antimicrobial treatments to building materials and finishes that attempt to kill the virus.
- 4 [https://archive.epa.gov/epapages/newsroom\\_archive/newsreleases/ac0c1af1625888608525771b00561e83.html](https://archive.epa.gov/epapages/newsroom_archive/newsreleases/ac0c1af1625888608525771b00561e83.html)
- 5 <https://www.cdc.gov/infectioncontrol/guidelines/environmental/index.html>
- 6 <https://about.kaiserpermanente.org/total-health/health-topics/kaiser-permanente-rejects-antimicrobials-for-infection-control>
- 7 As of May 14th, Microban removed the page with the cited statement. The original statement can still be found at the following archived link: <https://web.archive.org/web/20200323132309/https://www.microban.com/message-about-covid-19>.
- 8 As of May 15th, Thompson Research Associates, producer of Ultrafresh, removed the page with the cited statement. The original statement can still be found at the following archived link: <https://web.archive.org/web/20200515122847/https://ultra-fresh.com/covid-notice/>.
- 9 Appendix A of the white paper identifies antimicrobial agents found in specific types of products, as well as their health hazards at the time of publication. An up-to-date list of health hazards associated with antimicrobials found in building products can be found in Healthy Building Network's Pharos database here: <https://pharosproject.net/comparisons/844>.
- 10 Appendix A of the white paper identifies antimicrobial agents found in specific product types, as well as their health hazards at the time of publication. An up-to-date list of health hazards associated with antimicrobials found in building products can be found in Healthy Building Network's Pharos database here: <https://pharosproject.net/comparisons/844>.
- 11 <https://www.cancer.org/latest-news/common-questions-about-the-new-coronavirus-outbreak.html>
- 12 <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/asthma.html>
- 13 [http://assets.ctfassets.net/t0qc19kymnlu/3JYr0nH8G4iU8QkEAQ8qoq/48c9b83efd49ccc28f66790057679fc4/Antimicrobial\\_WhitePaper\\_PerkinsWill.pdf](http://assets.ctfassets.net/t0qc19kymnlu/3JYr0nH8G4iU8QkEAQ8qoq/48c9b83efd49ccc28f66790057679fc4/Antimicrobial_WhitePaper_PerkinsWill.pdf)
- 14 See discussion in Appendix B of the 2017 white paper. [http://assets.ctfassets.net/t0qc19kymnlu/3JYr0nH8G4iU8QkEAQ8qoq/48c9b83efd49ccc28f66790057679fc4/Antimicrobial\\_WhitePaper\\_PerkinsWill.pdf](http://assets.ctfassets.net/t0qc19kymnlu/3JYr0nH8G4iU8QkEAQ8qoq/48c9b83efd49ccc28f66790057679fc4/Antimicrobial_WhitePaper_PerkinsWill.pdf)
- 15 <https://www.cdc.gov/coronavirus/2019-ncov/community/reopen-guidance.html>
- 16 <https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-building-facility.html>
- 17 U.S. Department of Health and Human Services Centers for Disease Control and Prevention (CDC). "Guidelines for Environmental Infection Control in HealthCare Facilities." Centers for Disease Control and Prevention, 2003. [http://www.cdc.gov/hicpac/pdf/guidelines/eic\\_in\\_HCF\\_03.pdf](http://www.cdc.gov/hicpac/pdf/guidelines/eic_in_HCF_03.pdf)
- 18 Schettler, Ted. "Antimicrobials in Hospital Furnishings: Do They Help Reduce HealthcareAssociated Infections?" Health-Care Without Harm. Accessed March 30, 2016. [https://noharm-uscanada.org/sites/default/files/documents-files/3854/Antimicrobials%20Report%202016\\_0.pdf](https://noharm-uscanada.org/sites/default/files/documents-files/3854/Antimicrobials%20Report%202016_0.pdf)
- 19 <https://www.cdc.gov/infectioncontrol/guidelines/environmental/index.html>
- 20 "A Message from Microban International about Coronavirus (COVID-19), viewed April 29, 2020 at <https://www.microban.com/message-about-covid-19>; <https://ultra-fresh.com/covid-notice/>

