SWBR

KEY TAKEAWAYS

Building Chemistry

Building chemistry matters because the built environment is largely composed of materials that are synthetic, chemically processed, or treated.

Chemistry and Health

Material chemistry should be understood to mitigate the risk of reactions or potential health problems.

A Brighter Future

There is increasing information available to inform our material choices and assess the impact our decisions have on human health and the environment.

INSIGHT Thought Leadership



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MATERIAL HEALTH AND WELL-BEING

Owners, occupants, and designers must continue to enrich their understanding of how the built environment impacts human health.



Why does material chemistry matter? Because buildings are built in large part with materials that are synthetic, chemically processed or treated. Not all chemicals are problematic, but then again not all chemicals within products are disclosed. There is a growing demand for transparency from manufacturers regarding the chemicals used in the products we buy. The green building movement has focused on the threats associated with high levels of volatile organic compounds (VOCs) in buildings. VOCs are unstable compounds that "off-gas" or vaporize into the air from products, furnishings, paints, and flooring products – often causing side effects including headaches and nausea. Specifying low-VOC products during design has become best practice for designers.



Chemicals are commonly used to improve material durability and performance. Although advantageous or cost-effective, some chemicals are associated with negative health effects.

As designers, the more we learn about building material chemistry, the more important it becomes to make responsible and healthy decisions when selecting building materials.

BROMINATED FLAME RETARDANTS

BFRs are designed to suppress or delay the production of flames and prevent the spread of fire. Commonly used in plastics, textiles, and coatings, these chemicals have been found to be emitted into dust and may leach into the air, soil, or water in a landfill. Potential effects of chronic exposure include immune suppression, cancer, and endocrine disruption affecting reproductive and neuro development.

BFR restrictions result in the development of new flame retardants, which may still be problematic – ultimately resulting in additional restrictions and replacements. This process has been referred to as "chemical whack-a-mole". Although tricky to pin down, BFRs are among a range of widely-recognized "chemicals of concern".

CHEMICALS OF CONCERN

Health and well-being will remain a critical focus in the building industry. In addition to mitigating the spread of COVID-19, the avoidance of "chemicals of concern" is a growing focus for designers and is featured in green building systems such as the Living Building Challenge and the WELL Building Standard.

TRANSPARENCY

Improved understanding of the human health impacts of building materials and improved access to tools and data are critical to better design. The key component is transparency – the disclosure of material ingredients from manufacturers.

Through demands for Environmental Product Declarations (EPDs) and Health Product Declarations (HPDs) during design, architects and interior designers have put increasing pressure on manufacturers for chemical disclosure. Although not yet central to the material selection process, it is clear that building design is transforming as we all seek healthier materials.

CONCLUSION

Design professionals are educating themselves on new information every day. Owners, occupants, and designers can see a future where they will be making important choices more wisely, knowing that well-being starts when we know what is in our buildings.