



Brown University's Commitment to Healthier Materials

2025 Program Report

Celebrating successes in Brown's efforts to safeguard human health and reduce the use of toxic chemicals in building materials and campus purchasing.



BROWN

Brown University

Office of Sustainability & Resiliency

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Brown's Commitment to Action

In March of 2021, Brown released its Sustainability Strategic Plan, including a commitment to **Safeguard Human Health** as one of the 5 primary sustainability objectives. This kickstarted a collaborative initiative spanning departments and disciplines across the University, engaging students, faculty, and staff in a collective mission to reduce the use of toxic chemicals for the health of all those in the Brown community, and beyond.



3. SAFEGUARD HUMAN HEALTH

Objective 1: Brown will improve the health of the Brown community by reducing or eliminating the use of potentially toxic chemicals in building materials, dining services and supplies.

Bringing All Stakeholders to the Table



Following Brown’s commitment to safeguard human health, the University established the Human Health Working Group—a cross-campus coalition of students, faculty, staff, and leadership responsible for identifying priority strategies for eliminating toxic chemicals from future purchasing. Leveraging scientific expertise and institutional operational knowledge, the group developed a targeted, actionable strategy aligned with Brown’s campus needs. This work led to the identification of three initial priority focus areas: building materials, cleaning products, and chemicals used in landscaping.

Human Health Working Group Members

SENIOR ADMINISTRATION

- Chief of Staff, Office of the EVP for Finance & Administration
- EVP for Finance & Administration

PLANNING, DESIGN & CONSTRUCTION

- AVP, Sustainability & Resiliency
- AVP, Planning, Design & Construction
- Director of Campus Planning
- Sr. Program Manager (Building Interiors)
- Grounds Superintendent

CUSTODIAL SERVICES

- Sr. Director, Custodial Services

DINING SERVICES

- Director of Residential Dining

STUDENT BODY

- Student Body Representative

FACULTY ADVISORS

- Professor of Epidemiology, Director of the Center for Climate, Environment & Health
- Dean of the Faculty, Professor of Environment and Society and Sociology

EXTERNAL SUPPORT

- Brightworks Sustainability
- TRUST



Healthier Building Materials

Using healthier building materials can help to reduce occupant exposure to substances linked to respiratory issues, cancer, endocrine disruption, and other health risks¹. By prioritizing products with safer ingredients and transparent supply chains, institutions can create healthier indoor environments^{1,2}, support responsible manufacturing practices, and minimize harmful emissions^{2,3} throughout a material’s life cycle.



Healthier Cleaning & Maintenance

While traditional cleaning products often contain volatile organic compounds (VOCs), irritants, and other hazardous substances⁴ that can degrade indoor air quality and pose risks to custodial staff and building occupants⁵, green cleaning products with safer ingredients⁶ are essential to maintaining healthy and clean indoor environments⁵.



Healthier Landscaping

Using healthier landscaping chemicals and materials helps protect the well-being of campus communities, grounds crews, and local ecosystems^{7,8}. By reducing reliance on pesticides and synthetic fertilizers that can contain harmful or persistent chemicals⁷, institutions minimize exposure risks, prevent soil and water contamination, and support biodiversity⁷.

Why Healthier Chemistries?









This comprehensive plan targets multiple chemicals of concern that have been linked to adverse human health. Thus, reducing or eliminating the use of toxic chemicals in Brown's facilities has the potential to improve the health of the whole Brown community given that we spend 90% of our time indoors.



Joe Braun, PhD,
Professor of Epidemiology

Health Concerns linked to Chemical Classes

Chemical Class	Functional Usage	Related Health Conditions
 PFAS	<i>Non-stick coatings, stain treatments, wrinkle-resistance</i>	<ul style="list-style-type: none"> • Kidney & testicular cancers • Decreased fertility in women • Low birth weight¹
 Halogenated Flame Retardants	<i>Flame spread, fire safety</i>	<ul style="list-style-type: none"> • Endocrine and thyroid disruption • Immunotoxicity • Reproductive toxicity¹²
 Antimicrobials	<i>Inhibiting microbial growth, odor control, pesticides, disinfectants</i>	<ul style="list-style-type: none"> • Hormone-disruption • Asthma + respiratory sensitivity • Bacterial resistance + immunotoxicity¹³
 PVC	<i>Plastics, piping, siding, flooring</i>	<ul style="list-style-type: none"> • Asthma + respiratory sensitivity • Abnormal fetal development • Cancer¹⁴
 Bisphenols	<i>Polycarbonate plastics, epoxy resins, thermal paper (receipts), food packaging</i>	<ul style="list-style-type: none"> • Obesity and diabetes • Heart disease • Neurodevelopmental disorders¹⁵
 Phthalates	<i>Plasticizers, sealants, packaging, fragrances, cosmetics</i>	<ul style="list-style-type: none"> • Endocrine disruption • Learning, attention, and behavioral difficulties in children • Decreased fertility in women¹⁶

Health of Building Occupants


The average person spends 90% of their time indoors, where concentrations of chemical pollutants are typically 2-5x higher than outdoors. While it may seem like building materials and furnishings are relatively static unchanging objects, in reality there are chemical reactions occurring all around us. Unbound molecules may release and shed over time, while volatile- and semi-volatile organic compounds invisibly migrate into the air we breath and dust we may unknowingly ingest. PFAS stain treatments and Halogenated Flame Retardants (HFRs) are two such chemicals often found in indoor dust, which have been observed to be hormonally disruptive in concentrations as little as 4 µg⁹. By comparison, the average adult ingests approximately 20 mg of dust daily, which is 5,000 times that amount. These chemical classes are now found in the blood or urine of more than 90% of Americans and are linked to hormone-disrupting health conditions ranging from infertility to diabetes to abnormal fetal development.



90% of the average person's time is spent indoors

2-5X higher concentrations of air pollutants

4 µg of indoor dust observed to be hormonally-disruptive⁹

 PFAS 'Forever chemicals' are now found in **90% of Americans**

Occupational Exposures to Workers

Workers who regularly interact with chemicals of concern, such as those working in construction, manufacturing, agriculture, and emergency-response, can be at particularly high risk for developing chronic or serious health conditions. The US Occupational Safety & Health Administration (OSHA) estimates that American workers alone suffer more than 190,000 illnesses and 50,000 deaths per year that are related to chemical exposures. These risks can extend beyond workers themselves to their family members and children, both through 'take-home' exposures¹⁰ resulting from contaminants that remain on workers' clothing and skin, as well as through transgenerational impacts of endocrine-disruption on descendants and epigenetic mutations that are passed down through generations.



50,000 deaths per year are related to chemical exposures among American workers

190,000 illnesses

5-7X take-home risk to children children of workers exposed to lead were 5-7x more likely to have higher levels of lead in their blood than average¹⁰

Impacts on Fenceline Communities

The chemicals used in materials and their manufacturing can impact the health of populations throughout material life cycles. Communities living near manufacturing facilities, particularly lower-income communities of color, are disproportionately impacted by environmental pollutants. One area in Louisiana has become known as 'Cancer Alley' due to such pervasive and unrelenting releases of hazardous chemicals. This area is home to over 200 petrochemical and industrial plants, which in 2019 reported over 15 million pounds of on-site releases of hazardous chemicals to air, water, and land¹¹. Many of these facilities have an enduring history of noncompliance with EPA regulations, with some reporting violations in all 12 of the last 12 quarters¹¹. The community in this area has an estimated risk of cancer that is almost four times the national average¹¹.



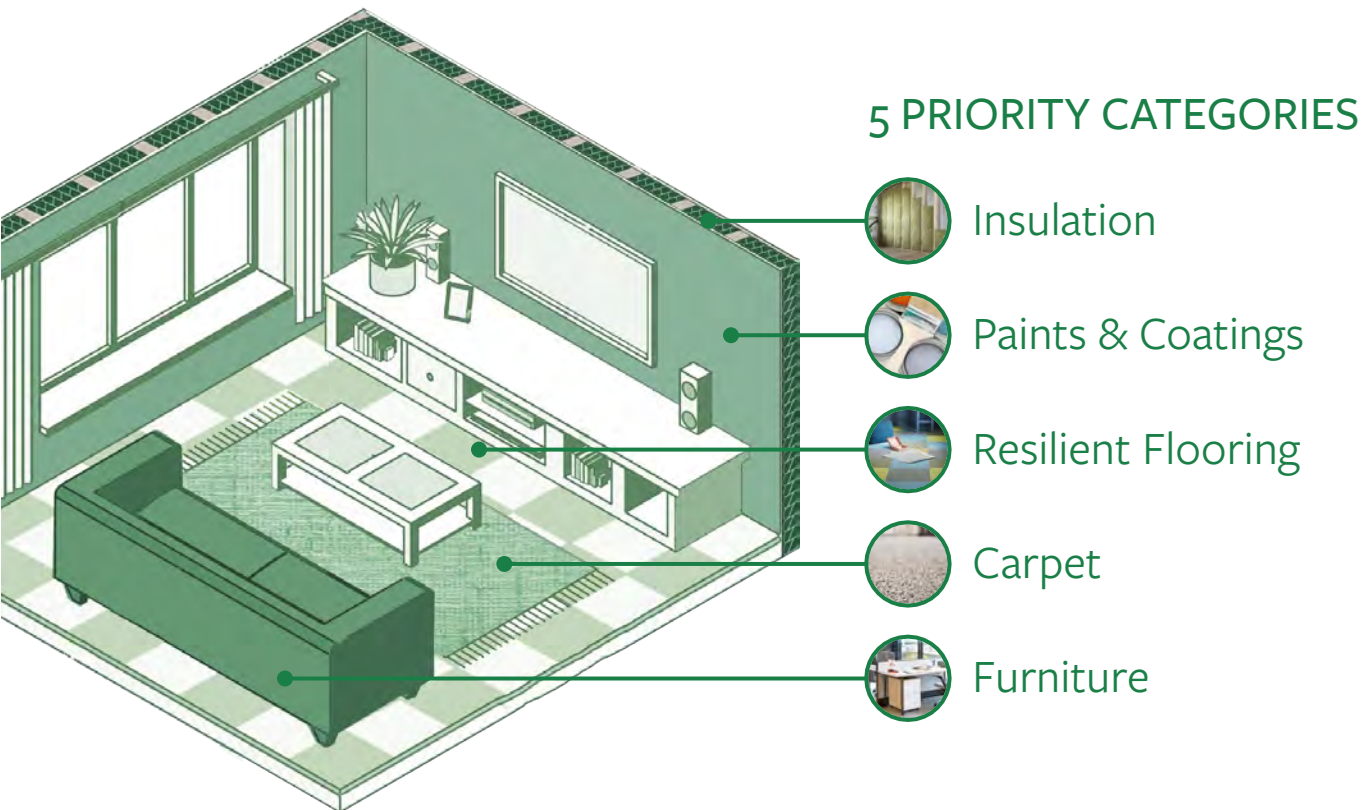
"CANCER ALLEY" LOUISIANA

220 manufacturing sites along this stretch of the Mississippi report Toxic Release Inventory emissions

15M pounds of hazardous chemicals were released to air, water, and land in 2019

4x cancer rates among communities in this area have been reported to be four times the national average

Healthier Building Materials



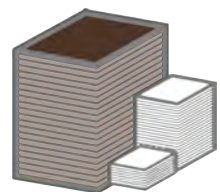
PRIORITIZING HIGH-IMPACT MATERIALS

Brown identified 5 high-impact categories of building products as priorities for setting material health standards. These material categories were determined to be the first priorities because while they can often contain toxic substances, there are also many healthier options readily-available on the market.



High Concern

for containing toxic chemicals or treatments



High-Volume

materials used in proportionally large quantities on buildings



Healthier Alternatives

that avoid toxic chemicals have proven to perform



Market Availability

cost-competitive healthier options are readily available

CONTINUOUSLY RAISING THE BAR

Expanding Product Categories

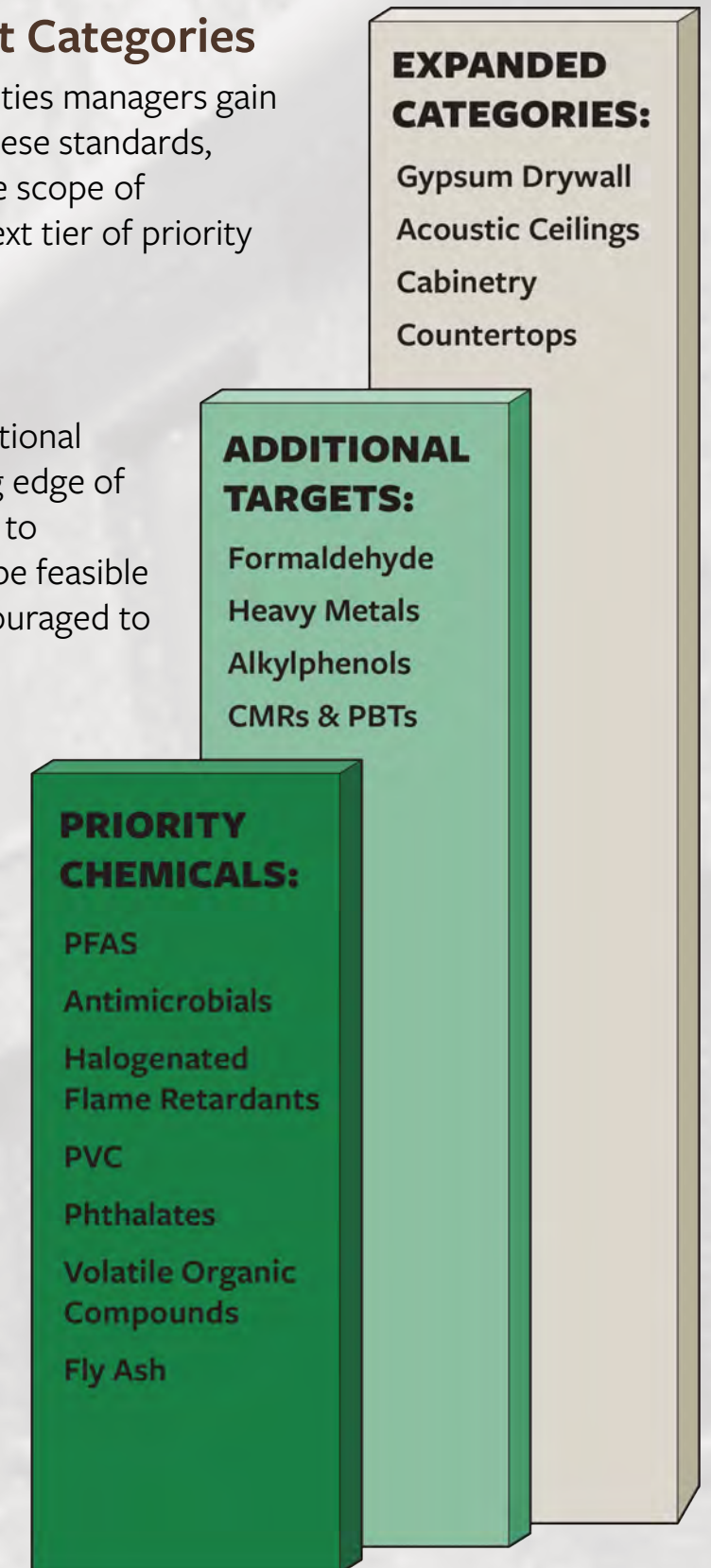
As project teams and facilities managers gain experience in delivering these standards, Brown plans to expand the scope of materials to include the next tier of priority product categories.

Preferred Targets ✓✓

Preferred Targets define higher aspirational standards that products at the leading edge of green-chemistry have been optimized to achieve. While these targets may not be feasible in all situations, Brown teams are encouraged to strive for them when possible.

Baseline Requirements ✓

Baseline Requirements set the minimum standards that products must meet for avoiding high-priority chemical classes, such as PFAS coatings and Halogenated Flame Retardants (HFRs). These toxic treatments can be readily avoidable, and doing so in priority product categories has shown to have significant impacts. In a study from Harvard's Chan School of Medicine and Living Lab, researchers sampled 47 spaces that had been renovated with healthier carpet and furniture based on the same standards Brown has set for Baseline Requirements. In these spaces, the concentration of PFAS 'forever chemicals' was 78% lower than the baseline, and HFR concentrations were reduced by 45%-65%³.



Pilot Project Successes

Since the initial debut of Brown’s healthy materials standards in Fall of 2023, Brown has successfully piloted these standards on eight capital projects. These projects account for more than half a million square feet of newly constructed and renovated spaces, spanning all types of programs and projects, have included more than a dozen different architecture and design firms, and are on track to achieve compliance with healthy materials standards while delivering on-time and on-budget.

Andrews House Renovation
Interior Gut Renovation
Completed Fall 2024



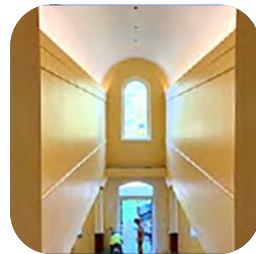
Indoor Turf Facility
New Construction
87,000 sf indoor turf field and practice facility
Completion Expected: 2026

Danoff Laboratories
New Construction
Construction to be Completed: Summer 2027



Pembroke Hall
Interior Renovation and Fit-Out
Completed Fall 2025

Salomon Hall Lobby Renovation
Lobby Renovation
Construction to be Completed: Fall 2026



Sciences Library
Office of College Admission
Office Relocation
Completed: Fall 2025

Haffenreffer Museum
Relocation Conversion
Construction to be Completed: Fall 2025



Manning Hall
Admissions Welcome Center
Interior Renovation
Completed: Fall 2025

Resilient Flooring, 100%
Paints & Coatings, 100%
Carpet, 100%
Furniture, 86%
Insulation, 75%

8 Capital Projects

have piloted Brown’s healthy materials standards

122 Healthier Products

were selected by design teams across the 5 categories

50+ Unique Manufacturers

met Brown’s standards, providing diverse and cost-competitive product options

100% of Carpet & Flooring

met Brown’s baseline requirements at a minimum, avoiding toxic chemicals such as PFAS, PVC, Phthalates

100% of Paints & Coatings

met low-VOC and PFAS-free requirements

BROWN DEPARTMENTS

- Office of Sustainability & Resiliency
- Planning, Design, & Construction
- Facilities & Campus Operations
- Finance & Administration
- Dean of the Faculty

DESIGN TEAMS

- Sasaki
- Goody Clancy
- Kieran Timberlake
- Utile Inc.
- TenBerke
- Kite Architects
- Perkins Eastman
- Merge Architects

FURNITURE VENDORS

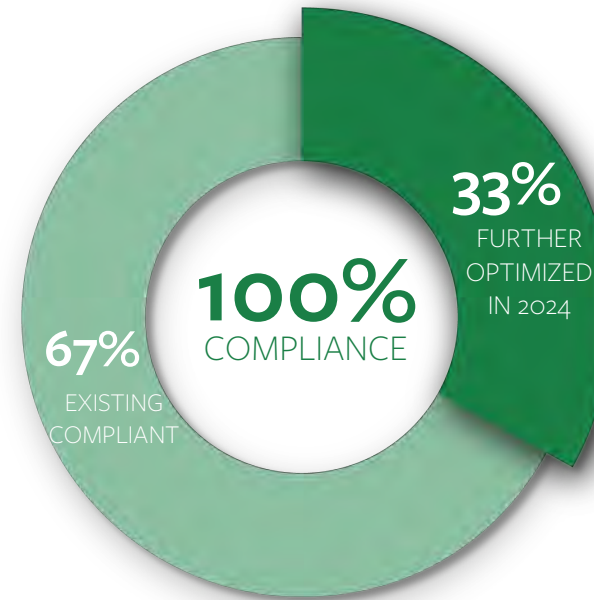
- Pannello
- COR
- Red Thread
- Sheehans

Healthier Cleaning Products

Brown Custodial Services first introduced a Green Cleaning Plan in 2017, including best practices for cleaning processes to ensure a healthy and safe environment for the people who work, visit, and live in Brown University's buildings. This plan included practices for improved indoor air quality and eliminating chemicals that could negatively impact the health of sensitive occupants, while effectively maintaining clean facilities and healthy environments.



- Green Product Specifications
- Staff Training & Orientations
- Chemical Solution Storage
- Dilution & Safe Handling
- Commitment to Continuous Improvement



Optimizing Products

Following the 2024 standards update, Brown Custodial Services worked with cleaning supplier, Imperial Dade, to further optimize product selections. Within one month of the update, an additional 33% of product specifications were further optimized to bring Brown Custodial's cleaning products to 100% compliance with the new standards.

Product Standards & Health Targets



PRODUCT PERFORMANCE

Products must pass category-specific performance standards and perform comparably to conventional products.



NO CARCINOGENS, MUTAGENS, REPROTOXICS (CMRs)

Products must not contain substances classified as Carcinogens, Mutagens or Reproductive or developmental toxicants (CMRs), which can cause cancer, genetic mutations, or harm reproductive health.



RESTRICTED VOLATILE ORGANIC COMPOUNDS (VOCs)

Products must meet VOC restrictions to minimize off-gassing of indoor air pollutants and associated respiratory concerns.



NO PERSISTENT BIOACCUMULATIVE TOXIC (PBT) CHEMICALS

Products must avoid Persistent, Bioaccumulative, Toxic (PBT) chemicals, which are of particularly high concern as they do not easily degrade and can accumulate in the environment, moving up the food chain, causing long-term health impacts for humans and wildlife.

2024 STANDARDS UPDATE

Product standards for green cleaning have made considerable progress in recent years, raising the bar to address chemicals of concern more comprehensively and assessing products' active ingredients for potential human health impacts. Accordingly, in 2024 Brown Custodial Services worked with the Office of Sustainability & Resiliency and Brightworks Sustainability to update Brown's Green Cleaning Plan, including updated standards for product specification that reflected the highest standards for product ingredients and chemistry in green cleaning.



Green Seal
GS-37



UL EcoLogo
2700



EPA's Safer
Choice
Standard



EPA's Design
for the
Environment

Healthier Landscaping

146 acres of campus grounds

76 acres of athletic fields & turf

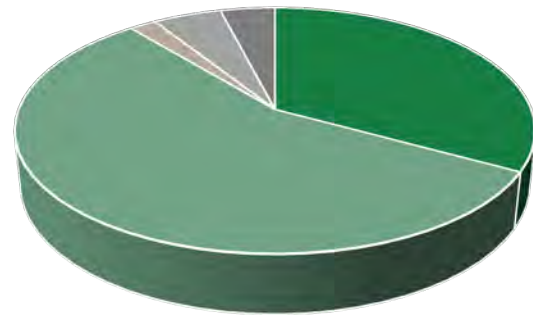
6.5 acres of shrubs & beds

24%
increase in
ORGANICS
in 2024

Organic Grounds Management

Maintaining healthy, thriving landscapes across Brown's 146-acre campus requires a deep understanding of local ecology and agronomic practices, supporting a resilient ecosystem that prioritizes soil health, biodiversity, and natural pest management to reduce reliance on synthetic pesticides and herbicides.

The most effective strategy for reducing potentially toxic chemicals in landscape management is through utilizing organic materials. Brown's grounds crews continue to institutionalize organic management practices and in 2024 increased the use of organic materials by 24%.



92% Organic Materials
for grounds management in 2024

- Organic, OMRI Certified
- Organic, Non-Certified
- Synthetic Fertilizers
- Synthetic Pesticides
- Synthetic Herbicides



Minimizing High-Priority Pesticides

The Grounds Department collaborated with the Office of Sustainability & Resiliency, faculty advisors, and Brightworks Sustainability to create a framework for assessing the active chemical ingredients of products used in landscape management, minimizing those of high concern to human health.

Piloting Adaptive Strategies



Alternative Minimum-Risk Treatments

In instances where lower-risk products could be used and perform with the same efficacy, one-for-one substitutions have been made to transition to safer chemistries.



Adapting Practices with Organic Treatments

Grounds has also been testing organic treatments, such as using corn gluten as a pre-emergent herbicide for crabgrass, assessing effectiveness as well as shifts in practices for different application cycles.



Leaf Collection for Farm Donation

As part of Grounds' commitment to organic practices and community benefit, every year 10–20 tons of leaves are collected and donated to local farms—diverting material from landfill and supporting the production of organic fertilizer.

Healthier Impacts at Brown & Beyond

Brown's commitment to healthier chemistries extends well beyond campus —mitigating impacts to communities and populations exposed throughout the life-cycle of materials, while also driving industry progress by sharing best-practices, advocating for safer products, and continuously raising the standard for what's possible.

Cultivating a Healthier Campus

The most immediate impact of avoiding toxic chemicals in building, cleaning, and landscaping products is creating a healthier campus environment and minimizing potentially harmful exposures for our students, faculty, and staff.

500k square feet of healthier buildings **8** new capital projects **243** buildings managed by custodial's green cleaning



Disseminating Best-Practices

Each project has been an opportunity to engage design teams, program managers, vendors and suppliers in best-practices around healthier materials, lessons which they can take forward and continue to share.

32 project managers trained **13** design teams & furniture vendors **5,000** visitors to Brown's Healthy Materials Hub



Driving Demand for Healthier Products

By actively engaging manufacturers on each project, we help drive demand for safer product formulations, expanding market availability and accelerating industry-wide progress toward more sustainable options.

600+ products researched **72** manufacturers engaged **50+** products disclosed ingredients for the first time



Continuously Raising the Bar

With each project, we build momentum, demonstrating the viability and value of these standards and inspiring us to set even higher goals—continually raising the bar for what's possible in creating healthier, more sustainable environments.

30% of materials met aspirational level "Preferred Targets" **4** additional product categories added to building standards





Resources & Citations

To learn more about the impacts of materials on human health and strategies for selecting healthier products, check out a few of our favorite resources:



Brown Healthy Materials Hub

Brown University



Informed Product Guidance

Habitable



Six Classes

Green Science Policy Institute



The True Costs of Toxic Materials

Habitable, 2021



Green Cleaning Guidance

US EPA

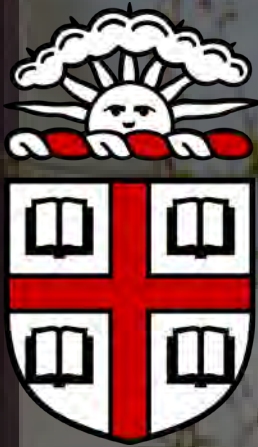


OMRI Organic Products List

USDA National Organic Program

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For more information,
Visit: [Brown Healthy Materials Hub](#)
Contact: healthymaterials@brown.edu

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Office of Sustainability & Resiliency
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