Healthy Materials Lab

YEAR EIGHT 2022-2023 REPORT We respectfully acknowledge that we live, study and work on unceded, traditional and ancestral Lenapehoking territories of the Lenape peoples.

Healthy Materials Lab

YEAR EIGHT 2022-2023 REPORT



OUR TEAM

The Healthy Materials Lab

Parsons School of Design The New School New York, NY

Director, Alison Mears AIA LEED AP Director of Design, Jonsara Ruth Assistant Director, Ahalia Persaud Podcast Producer and Office Administrator, Ava Robinson Senior Researcher, Catherine Murphy Senior Design Researcher, Leila Behjat Senior Researcher, DhML, Luam Melake Senior Researcher, Sam Bennett Podcast Producer, Burgess Brown Communications Team, Cristina Handal Communications Strategist, Michelle Huynh Chu Program Administrator, Noellia Surpris Postgraduate Researcher, August Rust Student Assistant Specialist, Vic Walsh Researcher, Gosia Rodek Researcher, Gamar Markarian

Healthy Materials Lab Advisory Committee

Ana Baptista Kate Daly Joanna Frank Dr. Maida Galvez Rolf Halden, Ph.D., P.E. Seandra Pope Susan Szenasy Joel Towers

Faculty Researchers

Andy Bernheimer Hee Chan Kim David Leven Helen Quinn Lucille Tenazas

Student Researchers

Angela Zeit Sheetza McGarry Gabriel Lee Kaitlin Teng

Donghia Healthy Materials Library Student Researchers

Logan Frances Miranda Reinhart Jess Thies Quincy Drane Olufemi Nathan-Marsh Summer Payton Isabella Krebs Anna Roth Luc Kellum Breanna Chin Krithi Nalla Dinky Asrani



Healthy Materials Lab is part of the Healthy Affordable Materials Project funded by a grant from The JPB Foundation

May 2023

CONTENTS

INTRODUCTION

AFFORDABLE HOUSING

- 01 HEALTHY AFFORDABLE HOUSING WEBPAGE
- 02 HEALTHIER AFFORDABLE BUILDING PRODUCTS
- **03** CASE STUDIES
- 04 ONLINE PROGRAMMING
- 05 HML X DETERMINED BY DESIGN
- **06** HML X MITHUN
- 07 PA HEMP HOME / IRC INCLUSION
- 08 ELDER HOUSING WITH HEMP
- 09 AFFORDABLE HOUSING ARCHITECTS + DEVELOPERS
- 10 BUILDING HEALTHY HOMES
- 11 HML ADVOCATES + NEXT STEPS

LIBRARY & RESOURCES

- 12 DONGHIA HEALTHIER MATERIALS LIBRARY
- **13** VISITS AND TOURS
- 14 DHML BLOG
- **15** NYC X DESIGN DAYS
- 16 COLLECTIONS: HEALTHIER MODEL MAKING
- 17 HML X BIG
- **18** HML X GALLERIES COMMIT
- 19 DESIGNING W/ HEMP + LIME

EDUCATION

- 20 INTRO TO HEALTHY MATERIALS LECTURE
- 21 CEH TOWN HALL
- 22 MATERIALS WORKSHOP
- 23 VIRGINIA TECH VISITING LECTURE
- 24 AVINASH RAJAGOPAL LECTURE
- 25 HML X LIMESTONE SCHOOL
- **26** FUTURE LEARN
- 27 ACADEMIC NETWORK

COMMUNICATION & DISSEMINATION

- **28** MATERIAL HEALTH: DESIGN FRONTIERS
- 29 COMMUNICATION STRATEGY
- **30** HEALTHY MATERIALS LAB WEBSITE
- **31** INSTAGRAM
- 32 LINKEDIN
- **33** NEWSLETTERS
- **34** PODCAST
- **35** FIELD RESEARCH
- **36** E-LEARNING MARKETING
- **37** AMERICA BY DESIGN
- 38 WOMEN IN ARCHITECTURE
- **39** INTERVIEWS: ARCHITECTURAL DIGEST + DWELL
- **40** NY11+ EXHIBITION
- 41 COMMUNICATIONS SURVEYS

INDUSTRY & PROFESSIONALS

- 42 WANTED DESIGN: ECOSOLIDARITY TALKS
- **43** AIA PITTSBURGH PRESENTATION
- 44 CARBON SEQUESTERING SYMPOSIUM
- **45** GENSLER SUSTAINABLE MATERIALS RESOURCES GROUP
- **46** NYSERDA: EMBODIED CARBON
- 47 HUDSON INC. DEVELOPERS
- **48** ARCH. LEAGUE NY: FIELD TO FORM
- 49 IDA WINTER SESSIONS
- 50 NYCHA A&E
- 51 DURACRYL PRESENTATION
- 52 HML X BIG
- 53 CMW PROJECT PEZZUCO
- 54 DISCUSSIONS + WORKSHOPS

RESEARCH

- 55 DHML TEXTILES COLLECTION
- 56 NEW COLLECTION
- 57 FUTURE AND ON-GOING COLLECTIONS
- 58 HEMPLIME
- 59 CARBON SEQUESTERING
- 60 PRODUCT DECLARATIONS
- 61 RESEARCHER SPOTLIGHT
- PRESS

PARTNERS

INTRODUCTION

We are...



Alison Mears Director and Co-Founder. Healthy Materials Lab ALA, LEED AP FULL BIO +



Jonsara Ruth Co-Founder & Design **Director**, Healthy Materials Lab ASID, IIDA FULL BIO +



Catherine Murphy Senior Researcher

FULL BID +

Burgess Brown

Podcast Producer

FULL BIO 4



Leila Behjat Senior Design Researcher

FULL BID +

Cristina Handal Design Researcher Ph.D.

FULL BIO +

Jess Thies Post-Graduate Materials Researcher FULL BID +

Sheetza McGarry Student Research Assistant

FULL BIO +



Vic Walsh Student Assistent Specialist FULL BID +

Ahalia Persaud

Assistant Director

Luam Melake

FULL BID +

Chu

FULL BIO +

Senior Researcher, Donghia

healthier Materials Library

Michelle Huynh

Communications Strategist

FULL BID +



Gabriel Lee Student Research Assistant

FULL BIO +



Noellia Surpris Program Administrator

FULL BIO +



Angela Zeit Student Research Assistant FULL BIO +

Kaitlin Teng Student Assistant

FULL BID +





COLLABORATION, TRANSFORMATION, CHANGE.

We are Healthy Materials Lab, a design research lab at Parsons School of Design. Today's affordable housing is not healthy housing–and this needs to change.

This year has been a time of major progress in our team's efforts to make every affordable home a healthy home. We continue to bring our research, design thinking, and education capacity to scale in order to persuade materials manufacturers, architects, and developers to act on what we now know about decreasing toxics in affordable housing.

We are optimistic that despite the difficulties we face as a country, and the serious global implications of the continued COVID pandemic, we will continue to keep healthier housing topof-mind for the key stakeholders who are helping us make healthy building materials standard in affordable housing in the United States. We are confident that our systems approach to making change in affordable housing will enable us to effectively confront the new challenges ahead.

It is no secret that the construction of affordable housing has been historically underfunded and a lack of routine maintenance has led to the widespread use of low-cost substandard and toxic materials in the construction and renovation of housing for low income families. To make matters worse, a long history of racist housing policies that discriminate against BIPOC communities and forefront construction cost-savings. rather than occupancy health, has resulted in the use of poor quality, frequently toxic building materials that can be directly linked to negative health effects for residents. Local communities have been largely excluded from any involvement in the process of planning and building affordable housing.

We are committed to raising awareness about toxics in building products and to creating resources for the next generation of designers and architects to make change today. We are an interdisciplinary, international, and professionally diverse collective of graduate students, alumni, and faculty.

Parsons School of Design's Research Labs

Social justice is a core mission at Parsons School of Design, The New School. Parsons' research labs adopt a theory of change that draws from a comprehensive, interdisciplinary approach and a range of expertise in strategic design, positioning the research within the context of social justice. Working on a range of projects that address systemic change, Parsons brings an extensive expertise in the built environment, an understanding of the importance of communication design to drive change, a historic ability to develop and implement innovation in a range of design scenarios. The Healthy Material Lab (hereafter "HML") was launched as one of the first Parsons Design Led Research Labs with the receipt of a grant to support the Healthy Affordable Material Project in 2015. HML is one of four partner organizations of the Healthy Affordable Materials Project. The Healthy Affordable Materials Project, is a collaboration of the Healthy Building Network (HBN), HML, Health Product Declaration Collaborative (HPDC), and Green Science Policy Institute (GSPI). Funded by a grant from The JPB Foundation, the Healthy Affordable Materials Project seeks to improve the lives and health of residents living in affordable housing across the United States by reducing the use of toxics in the building product supply chain. Under the Healthy Affordable Material Project grant, HML is focused on research areas in support of the project for the Affordable Housing (hereafter "AH") sector. HML is undertaking fundamental research into AH to record best practices in effect nationwide. To do so, HML documents the better building products currently being

Introduction



specified. We have created a range of resources, advocate for transparency and spread awareness in person at the Donghia healthier Materials Library at Parsons and online on HML website. The goal of the materials libraries is to create simple resources and tools to support healthier specification practices for architects and designers, and the AH sector at large. To increase awareness of the issues surrounding building product selection and drive change in product selection in the AH sector HML leverages communications expertise to translate complex concepts and data into accessible forms. We are working with a range of partners in the AH and health sectors to test product performance in real world conditions in order to demonstrate better building product selection and

installation practices. HML is also committed to sharing knowledge with the wider design community and fellow design academics, repositioning design education and practice to situate human health at the center of our work.

The Context of HAMP

Low income families across the United States suffer disproportionately from exposure to toxic substances used in building products. These exposures result from chemicals that are released into the air and dust of homes and schools during routine occupancy and as part of maintenance and renovation projects. Low income communities are also impacted by greater exposure as a result of the geographical proximity of affordable housing to product manufacturing factories that emit toxic chemicals, dumps, incinerators, and recycling facilities that process discarded materials. Factory and construction workers and children are particularly physiologically vulnerable and likely to be impacted by these toxics. Many chemicals commonly used in building products also pose hazards to the natural environment. Because these highly toxic chemicals are long-lived and pervasive in the marketplace, they are difficult to control.

It is well established that toxic exposures can be lessened through the intentional reduction of toxic materials in building products. A deliberate campaign to change the chemical formulations of commonly used building products (e.g. paint, pressure-treated wood, and engineered wood), has led to the reduction of lead, arsenic, and formaldehyde use in the last twenty years. Today there are continuing efforts in reducing toxic exposure to widely recognized chemical hazards in building products through decreased percentages of VOCs, phthalates, and flame retardants. Despite these successes, there are still many toxics in the built environment that require attention. Further, successful toxic reduction has primarily occurred in high end products and often takes decades for this market impact to trickle down to more affordable products.

Project Goal

The best way to prevent exposure to toxics is the reduction or elimination of their use at the source. The Healthy Affordable Materials Project will reduce toxics for families living in low income and affordable housing by scaling the use of new transparency and disclosure tools making it easier for decision makers

Annual Report Year 8



(designers, architects, developers) to avoid the most toxic chemicals present in the building materials commonly used in affordable housing. Increased transparency and disclosure will drive market change by incentivizing building product manufacturers to reduce the use of toxics in their products, as an alternative to disclosing negative information. This will result in an increased availability of healthier products to the affordable housing market.

HML's work on the activities and goals of the HAMP project is focused on scaling positive impact to replicate, adapt, broadly inform and transform current building practices in the AH sector over the last 8 years of funding.

In addition to the HAMP project, HML has expanded its practice based research to include a wide range of populations including early childhood, seniors, rural populations and residents in post-industrial cities. We have formed new partnerships to support new projects including both nonprofit and for profit organizations and adopt strategies acquired in our HAMP work and consistent with our Parsons' mission driven agenda. We continue to evolve and adapt our work within the core context of social justice. This year end report from HML is a summary of our activities over the last 12 months.

Affordable housing providers seeking to use less toxic building products face many obstacles. A fundamental obstacle is the lack of transparency of the chemical content of building products, making it difficult to make informed decisions about reducing potential toxic exposures. This lack of information is compounded by an

array of "green certifications," many of which rely upon incomplete and unverified information. Commercial developers are often able to navigate this web of certifications with support from additional sustainability staff or consultants; however, affordable housing project budgets are not able to support this extra support. Similarly, less toxic products are often introduced with a premium price which are beyond the budgets of affordable housing developments, including new and retrofit construction. As less toxic building products are introduced in the high-end residential and commercial building stream, older, less healthy building products are passed downstream to lower wealth communities.

An unintended consequence of green building standards and government are the incentives that encourage recycling and reuse of older products containing toxic chemicals. Recycling is viewed as desirable for its financial or social benefits, but the passing on of hazards is not always a consideration. These examples illustrate the complex problems presented to low wealth communities by the life cycle of exposures to toxic chemicals. They also demonstrate the need for both a comprehensive, integrated research program and the development of strategies to systematically reduce toxics in all building products as the most effective means of reducing these hazards in affordable housing communities.

Introduction

OUR GOALS

In the broadest sense, our goals are for healthier spaces and healthier lives. To achieve this, we strive to:

1. Improve today's commonly used materials to reduce exposure to toxics and improve health.

2. Build knowledge and awareness of today's healthier material alternatives –make them more marketable, accessible, and popular.

3. Work to implement tomorrow's healthy materials.

4. Partner with manufacturers to promote transparency and drive innovation.

5. Create healthier homes for all people.

COMMUNICATION STRATEGY: PROMOTE CHANGE



Ladder of Engagement.

The ladder of engagement is a framework that tracks the progress of users who are prompted to take steps towards achieving a higher goal. Developing the ladder of engagement helps us to predict how we can cultivate and move participants into the active role of becoming material health advocates and practitioners. At HML we measure our impact and evaluate the outcomes of our ecosystem of initiatives, using three main metrics.

Quantify the Number of Participants.

We are measuring participation from affordable housing providers such as designers, architects, specifiers, developers, owners, and the community. We are also measuring our reach across faculty and students, governing entities in New York City, and our influence across manufacturers and trade associations. Quantify Financial Investment. By measuring our impact and comparing the results of the Lab's multi-pronged initiatives with our financial investments, we can better strategize around which approaches are most effective in moving participants up the ladder of engagement.

Gauge Level of Engagement.

Through our use of analytics tools to measure website traffic, new social media follows, click through rates, resource downloads, page visitation statistics, content referrals and more, we aim to track the movement of participants from being unaware of issues to eventually becoming advocates.

THEORY OF CHANGE

We are using a combination of approaches to inform our theory of change.

Some of HML is situated within The Healthy Affordable Materials Project (HAMP); a systems-based approach to reducing toxic chemical exposures from building materials and furnishings through the creation of actionable alternative design products. HML's work integrates healthy building protocols, healthy products and green science with design research for affordable housing construction and retrofit in order to achieve scale and broad implementation across socio-economic communities within the US. Our broader goal is to align healthy materials with design research on innovative construction methodologies, durability, forward looking policy, behavior change, market forces, and aesthetics; and in so doing, influence the entire housing sector while reducing toxic chemical exposure throughout the supply chain.

WE ARE WORKING WITHIN THIS CONTEXT:

CONSUMER PROD EWG.org - persor	UCTS nal products	
HBN		
HPDC		

GOAL: BUILD AWARENESS THOUGH PHYSICAL AND ONLINE ENGAGEMENT



Unaware (most people)

Observers (aware but needs to know more)

ILFI

LEGEND

WEBSITE

ADVISORS

FINISHED HML INITIATIVE

IN PROGRESS HML INITIATIVE

COLLABORATIONWITH HML

POTENTIALCOLLABORATION

E-LEARNING COMMUNITY ENGAGEMENT

Living Building Challenge

CRADLE TO CRADLE

AIA MATERIAL MATTERS

FITWEL

HAMP Vision and Outcomes

Through the use of healthier building products and furnishings, the built environment contributes to the improved health of all people, especially lowest income communities. Our goal is to increase the adoption of healthier building protocols and practices within the affordable housing sector, leading to measurable increase in building product specifications that reflect healthier choices. This change will result in reduced exposure throughout the system by decreasing or eliminating known harmful chemicals from building products widely used in the affordable housing industry.

GOAL: DEVELOP RESOURCES THAT ENABLE PEOPLE TO ACT (ONGOING)



Introduction

WE ARE WORKING WITHIN THIS CONTEXT:

)

	CASE STUDIES ILFI HML Advisor	MANUFACTUR Competition in	ERS n the marketplace		COMMUNICATIONS ADVISORS Big Duck & Susan Szenasy	
	RED LIST Transparency List	CENTER FOR C HML Advisor	CIRCULAR ECONOMY		CONSUMER DEMAND Pressures the marketplace	•
	MANUFACTURERS Invest in research & development				RETAILERS IDENTIFY MARKET OPPORTUNITIES]•.•
•		Suppor (act on wants t way the	ters the issue an to change the y do things)	d	GOAL: CREATE NE THAT ENABLE PEO CHANGE PRACTIC	W PATHWAYS DPLE TO
		How ca through	n we introduce issues h resources?	F	• Work with retailers • Build consumer demand • Clarify a compelling message for different audiences	
		PHYSICAI MATERIA Donghia	L SAMPLES & RAW L WALL Healthier Materials Library CURRICULUM CHANGES	F	low do we advocate for	How do we evaulate
		CREATE I INDUSTR	NITIATIVE IN MANUFACTURING	t	HPD	TRANSLATORS Tools are needed to translate information into actionable results. - Pharos
		How ar being n	re healthier buildings nade?	V h	/ho is building with ealthier materials?	- Quartz - HML Website
		COLLECT WORK WI FOCUSED	SPECIFICATIONS TH PARSONS HOUSING LAB ON AFFORDABLE PUBLIC		Case Studies: HML Demonstration Projects BIG x HML Community MusicWorks Center HML x STAT Architects and Riseboro Building Healthy Homes	COLLECT HEALTHIER BUILDING PRODUCTS The Donghia Healthier Materials Library I
		DEVELOP THAT INC	PROCUREMENT PROCESSE	H	ow: New product evelopment	FRIENDS OF HEALTHIER
		ADVOCAT TEAMS TI OF THE D	E FOR INTEGRATED DESIGN HAT INCLUDE HEALTH AS PART ESIGN PROCESS		DENTIFY GAPS IN THE MARKET	MATERIALS • Aronson's Floor Covering • Mosaic House • Shaw • Floyd • Duracryl • Duracryl
		COLLECT	SPECIFICATIONS		COCUSED WORK ON VULNERABLE POPULATIONS • Early childhood development spaces – – • Affordable housing • Seniors	 Forbo Keim Alkemis Paint Olumbia Forest Products The Real Milk Paint Co. Naturepedic

Annual Report Year 8

HENNING LARSEN MOUNT SINAI HML Advisor THE NEW SCHOOL HML Advisor NYCA New York City Housing Authority BUILDING NEW NETWORKS TO SUPPORT ADVOCACY EFFORTS FOR THE LONG TERM		ACADEMIC NETWOR	K HON WING	DR THE EARTH DNA LADUKE
NYCA New York City Housing Authority BUILDING NEW NETWORKS TO SUPPORT ADVOCACY DETERMINED BY DESIGN EFFORTS FOR THE LONG TERM	HENNING LARSEN	MOUNT SINAI HML Advisor	THE HML	NEW SCHOOL Advisor
TO SUPPORT ADVOCACY DETERMINED BY DESIGN EFFORTS FOR THE LONG TERM	NYCA New York City Housing Authority	BUILDING NEW	NETWORKS	
	DETERMINED BY DESIGN	TO SUPPORT	ADVOCACY E LONG TERM	

THEORY OF CHANGE CONTINUED...

We identified a lack of awareness of the issue of toxics in the built environment as a fundamental barrier to change. This is a general problem and we launched our communications strategy to address this issue. Through the roll-out of this strategy we discovered that the ladder of engagement could be adapted more generally to make systemic change. We have established a research foundation for our work. Through the documentation and evaluation of current best practices in the affordable housing sector - from funding and policy, to design and construction and finally in occupation. This work was and is documented in a number of demonstration projects and reports studies. Current best practices in the material health field impact the work of "supporters" and advocates. To address other participants on the ladder and cultivate a greater understanding of the issues, we needed to expand our methodology to include: 1) Library and Resources 2) Education 3) Communication & Advocacy

4) Product Evaluation Tools



MAKING HEALTHY, AFFORDABLE,

BEAUTIFUL BUILDINGS

COMMUNITY

ENGAGEMENT

AFFORDABLE HOUSING

We believe that not only do people have the right to housing, but that everyone deserves a healthy home. Today's affordable housing is not healthy, and this needs to change.

The construction of affordable housing has been chronically underfunded and regulated by racist housing policies. After years of widespread use, low-cost, substandard, and toxic building materials are now directly linked to more serious health risks for low income families.

As researchers of healthier materials, we believe it is our responsibility to advocate for healthier affordable homes. This is why healthy housing equity is one of our core values. Over the years, it has come to inform almost everything we do, and is weaved throughout many of our initiatives and practices.

While we have many projects that take on different objectives, many also bring the impact of material health into focus. Our goal is to educate our audience on the importance of healthier materials at home, collaborate with others to build a strong community of change-makers, and lend our services where needed.





1

3







How to create change for TOGETHER or WITH communities?

4 HEALTHY + SUSTAINABLE AFFORDABLE HOUSING



HOUSING CASE

STUDIES

HEALTHY AFFORDABLE

5 ELEGANT + HEALTHIER AFFORDABLE HOUSING



6 AN INTEGRATED APPROACH TO MATERIAL HEALTH IN AFFORDABLE HOUSING



7 PA HEMP HOME + IBC INCLUSION



8 ELDER HOUSING WITH HEMP



9 HML + AFFORDABLE HOUSING ARCHITECTS AND DEVELOPERS



10 BUILDING HEALTHY HOMES



11 HML ADOVCATES + NEXT STEPS

THEORY OF CHANGE

We are using a combination of four pillars to inform of theory of change within affordable housing.

HML's work integrates healthy building protocols, healthy products and green science with design, research, and communication for affordable housing construction and retrofit in order to achieve scale and broad implementation across socio-economic communities.

Armed with better knowledge about the impacts of material choices, designers and architects can strive to create healthy and affordable housing, today. We anchor our lives in our homes, and therefore the materials we live within can make a profound difference in many peoples' health and lives. Healthier affordable housing is primarily in the hands of designers, developers, and builders. By working with industry members and residents we can make well-considered choices to foster healthier lives.



GOAL: FOSTER KNO MATERIAL ALTERNATI

COLLABORATION WITH 34 EXPERTS IN THEIR FIELDS

Mithun Professional Partner AN INTEGRATED APPROACH TO MATERIAL HEALTH IN AFFORDABLE HOUSING



GOAL: USE HEALTHIER BUILDING MATERIALS TO



WLEDGE AND AWARENESS OF VES TO EMPOWER PLANNERS, **BUILDERS, AND RESIDENTS**

What resources are available?



COLLBORATIONS WITH DONGHIA HEALTHIER MATERIALS LIBRARY



al Partner

FREE PROJECT REPORTS

COMMUNITY + SITE ANALYTICS

ECONOMY AND MARKET ANALYSIS

PROJECT THEORY AND STARTEGIES

MATERIAL SPECIFICATIONS AND

DETAILS





Annual Report Year 8



4





. . .

MANUFACTURERS, ND CONTRACTORS

d incentivize interest?

TIONS

g partnerships with itioners

note transparency and drive innovation?

TIONS

hlights of designers, builders, ng healthier affordable housing

D STRATEGIES

ng data on affordable housing

CELEBRATE

••••••

Affordable Housing



Receive updates about healthier affordable housing, healthy materials, and more.

email address + antar \rightarrow

for the Lab's

projects.

Consistently stays

in the Top 10 most

the HML website, month-to-month.

view pages on

The construction of affordable housing has been chronically underfunded and regulated by racist housing policies. After years of widespread use, low-cost, substandard, and toxic building materials are now directly linked to more serious health risks for low income families.





Harmful chemicals cost our food. Poisonous lead. contaminates our water. Carcinogenic flame retardant-filled insulation fills our walls. Indoor air pollution has resulted in an alarming rise in childhood asthma. In the face of this health crisis, even minor renovations can drastically improve the health of communities.

and make a profound difference in many peoples' health and lives. Healthier affordable housing is primarily in the hands of designers, developers, and builders, but working with future residents we can make well-considered choices to foster healthier lives.



How We Make Affordable Housing Healthier

Selection from Healthier Affordable Building Products Collection

1. HEALTHY AFFORDABLE HOUSING WEBPAGE

This year, we moved to host our affordable housing web resources in a central hub for all of the Lab's resources and projects on the subject. Housing affordability and health equity sits at the core of our practice, but it is sometimes difficult to see the relationship between affordable housing and all of our work on material and building health.

This page serves as a link between our many iniatives, and provides insight on how we use our resources, networks, and strengths to not only be affordable housing advocates, but fill in gaps of critical missing information and practically challenge the industry's status quo.

From the page, visitors can find: professional resources such as the Affordable Housing Material Collection; learning opportunities such as our AIA credited "Healthy and Sustainable Affordable Housing"; view the affordable focus our in-house design projects have such as PA Hemp Homes and Elder Housing with Hemp; and connect with exemplary professionals in our network through collaborations such as "HML x AH Architects and Developers" and Building Healthy Homes.

Creating non-exhaustive and accessible collections of information allow **supporters** to find the resources to become **advocates** and **practitioners**.

•••	

Affordable Housing

30+ VERIFIED PRODUCTS These materials were

determined to be low in toxicity, resilient, and made by companies with affordable prices or who are open to donating product

431 PRODUCTS VETTED IN TOTAL

We are continually vetting new products to see if they meet our criteria.

21 MANUFACTURERS WE

COLLABORATE WITH Active correspondence and connections to affordable housing designers and developers connections to affordable housing designers and developers

LEARNING HUE MATERIAL COLLECTIONS TOOLS & GUIDES PROJECTS

DONATE D

-

MATERIAL COLLECTION Healthier Affordable Building Products

HEALTHY AFFORDABLE HOUSING

Healthier Affordable Building Products 30 products

Stand In Standard States				
			P2004(7 A	
inensional Surface	Engineered Stone	Caesaratore	Quartz Cassic Collection 🎴 🖯	HPD Declare (111) 5D5
imensional Surface	Engineered Stone	Lapibec	Sintered Stone Slabe 🤗 🖬 🗐	HPD Declare EPD 104
Internional Surface	Physiol	Columbia Parent Products	Purafford Classic Core* Plywood 9 0	1990 Device 2190 BDS
inensional Surface	Plywood	Columbia Forest Products	PureBond Hardwood Plywood 😐 🖩	1010 Decime UPD EDS
imensional Surface	Salid Shene	Coldepring	Dramte Countentop B	HATE Declare STOR SER.
eor	Rood Veteel	Haley Brothers	Wood Doors	1010 Gardana 2010 1015
oor.	Hood Veneer	Masonita Architectural	Candura Standard Wood Veneer Doors 📍	1010 Dealers \$70 100
ryvall	Gypnum	National Oypeum Company	Cold Band Fire Shield 😐 🖯	1010 (lation (11) 806
Invest	Gypeum	National Gypsum Company	Gold Bond Gypsum Based 🤗 🗐	1010 Decises 2/0 \$25
Teeys	Oypnum	National Oypeum Company	Cold Band XP Oypeum Baard 😑 🖯	100 Derive \$70 \$D\$
broux, Cellulosis, & Iterular Insulation	Fiberglass	Knaul Insulation	Jat Stream Ultra 🤜 😣 190	+#10 Declare 6PD 5D5
Broux, Cellulosis, & Installer Insulation	Mineral Fiber	Ronal	5afe 😐 61.982	HPD Declare EPD SDS
Brown Cellulosis, & Installer Insulation	Mineral Fiber	Rosal	Safe N Sound 🥌 🛞	100 Declare 010 505
lawonry	Brick	Fireclay Tile	Gladed Thin Brick 🤷 😡	HPD limites \$PD 101
wint / Mineral	Petansium Silicate	Sam	Ivenstar 🧧 🖨 🗷	1910 Decises EPD SDS
uint / Minaral	Potassium Silicate	Romabio	EcoDomus 🥌 🛄	HPD Interiors 1703 SDS
wint / Synthetic	Acrylic Lates	Benjamin Moore	Ultra Spec 500	100 Decises (20) 505
wint / Synthesis	ArylicLater	Sherwin Williams	ProMartil 200 Zaro VOC 🤗 🖯 🕅	100 Decime EPO SDS
ourables and opropeties	Concrete	traMASON	Semason = 0	HPD Declare Into 1000
trelier	Lineleum	Forbs Flooring Systems	Forteo MCT C (2) (2) (20)	HPD Destine EPD 100
milet	Linoleum	Forbe Flooring Systems	Mamoleum Imagina 🤗 🗐	HPD Declare EPD 1010
Indian	Lindeum	Forbe Flooring Systems	Marmoleum Modular 😑 🖬 🗐	HPD Declare EPD 505
and the set	1 Inchesor	Ranks Election Distance	Alternative or Property of Call	MED Davies AND ADD

2. HEALTHIER AFFORDABLE BUILDING PRODUCTS

These healthier products have been successfully installed in Affordable Housing units across the US. These products (marked with the yellow dot) are aggregated from our other collections and are available as a starting point for designers, developers, and even residents to browse and make changes in their housing projects.

Installing products such as these examples can significantly reduce toxicity / improve environmental quality within the home. Purchasing healthier products also supports the health of communities living near production facilities.

Material collections increase engagement by building awareness of material health. HML researchers have organized this highly curated collection using strict criteria. By communicating criteria to our users we are helping to turn **supporters** into **advocates**.

•••	

Affordable Housing







3. HEALTHY AFFORDABLE HOUSING CASE STUDIES

Examining systems-based approaches currently being used to reducing everyday human exposure to harmful chemicals in building products. Using HAMP as a guide, this series connects manufacturers, building owners, and developers to reduce the use of harmful chemicals in homes, on construction sites, and in emissions from facilities. Through the examination of five exemplary affordable housing projects across the USA, HML developed in-depth reports allowing for the accessible dissemination of site surveying strategies, community engagement, construction detailing, and materials specifications - all downloadable from HML's website.

Collaborators:	nARCHITECTS	Foundation Comunities
Aeon	Taitem Engineering, PC Citizens Housing and Planning Council	Hatch Ulland Owen Architects
Hope Community	NYC Department of Housing Preservation and	Forge Craft Architecture and Design
MSR Design	Development	Spawless Construction
Weis Builders	Council Member Rosie Mendez	BEC General Contractors
Center for Sustainable Building Reserach	Ollie: All Inclusive Coliving	First Community Housing (FCH)
Monadnock Development LLC	Trumbull Neighborhood Partnership	Housing Choices Coalition
The Lower East Side Peoples Mutual Housing	Trumbull County Land Reutilization Corporation	OJK Architecture and Planning
Association (LESPMHA)	Fine Arts Council of Trumbull Community	

Capsys

Accessible detailed resources and references are difficult to find in the design industry, even harder in affordable housing. These in-depth reports disseminate **innovative** and proven practices that holistically address affordable housing health.



Affordable Housing





Spreads from "The Rose" and "Carmel Place" Case Study Reports

Annual Report Year 8



	HEALTHY MA PRODUCT AL	TERIALS LIST TERNATIVES	MODULT ALTONOMINE	Kelf versifie on statistical (new index) words paralies to fit. Interpretation of the statistic index words and the statistical of the impairiest from the statistical of the statistical of the statistical of the statistical of the statistical of the statistical of the statistical of the statistical of the statistical of the statistical of the	dialah sananana sananananananananananananananananananan	Resolution Faculty Applicable schemest private in and well as up load finalish private in any private in an adver- private private private private private in the schemest combination and private in adver- tising any load of the IRIC and advertising the schemest private schemest private in the schemest private transformed in the schemest private schemest private schemest private schemest private schemest private schemest private schemest private schemest private schemest private schemest pri
A lines	In Corporate to conside directions in order of PL Sectory Disease, calculated disease of the other part of the constrainty of the constrainty of the constrainty of the constrainty of the constrainty of the constrainty of the constrainty of the constrainty of t	A to be and block had The of the set last of starting then apply one of the set of the	Stratus HT by Analysis, Naming A sind dynamics of TA Analysis Interest Analysis. Name Description of Analysis in Society Provide Mean International Strategy of Analysis of Analysis Persistent Analysis of Nation Persistent Analysis of Nation Persistent Analysis of Analysis description of Analysis of Analysis and Analysis of Analysis of Analysis and Analysis of Anal	Reality concerns to accounting approximate the second real to account of the second real to acco	 Ared artists scient the course performance and accesses to this course artigs and an article article article article article to the the article art article article article to the article art art art article art architecture art	Langung Buells Calabrings on sold from Official grants 28. The Cauterings
the sector	White transmission from the second se	Institut for a first or an and a first or a second that first o	Respect Meet Web Leve III a Code of Code and Code and Code participation of Code and Code participation of Code and Code (Code and Code and Code and Code and Code and Code and Code and Code and Code and Code and Code and Code and Code and Code and Code and Code and Code and Code and Code and	Financia poli possibili de los de de senará encontrato de los destructuras de terretoria de los destructuras de terretoria de los destructuras de los des tegeneses. Encontrato aque a fuello acorea de facial facer terretoria de los de facer terretoria de facer	 P. Table Lab. with an advance strange of highlight in a strange strange strange in the strange strange strange strange strange tables and the strange strange strange strange strange based at 10 mm strange st	Promain The UK, IN LYM The are backload denoting to address the Three the standard memory in the three shows and account of the UK to address approximation
F	Includes compare an exerption in their comparison parts in the terminy and present and compare of Lancel State (Lancel and State and column and States and States and States and columns and states and states and states finding as and their states that is a "Statisty" in the state of the state state in the state of lands an experimental states that is a "Statisty" in the state of the state of the state of the states and the state state is a state of the states and the state of the state of the state field in the state of the state of the states of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of	Mos argue the well indice a signed set phone. And opport of caracteristic and argument caracteristic and argument caracteristic and argument indice indice and argument and	Here's Decline's serged the set of the start of PC halfed opport in the set metric. Code to call and hims a setting, and parameters for exclusion and empires and the exclusion and empires and the exclusion of an	haddnine for limit, a traide and exclusive or instantial ensigns. The second second second second second parts for high second second second second haddn second second second second haddn second second second second memory for high second s	tendente de la Consectación	Final Installant: Jel Tower (ACTM) Live minimized discovery provides provides. Self-Vitaneti is their reactions reach bare sample and is local it was an discovery and its first antibility. Simpler is a solution with a still fail of their Barlant of Apple barlance which a The fail fail in the anal Change and Collication.

Healthier Design For All



82+ SYLLABUS DOWNLOADS

Healthy and Sustainable Affordable Housing

Provides architects and designers working in affordable housing with tools and methods to make healthier product choices.

1 course 6 hours online content \$50

CEUs

6 AIA HSW 7.5 USGBC GBCI 7.5 IDCEC HSW

4. ONLINE PROGRAMMING: HEALTHY AND SUSTAINABLE AFFORDABLE HOUSING

This program brings together 34 experts in the fields of design, construction, science, medicine, and public and environmental policy to discuss how housing needs can be addressed through healthier design strategies. They speak – from their own professional experience – about how to overcome common challenges in order to create the healthiest environments for all – from contractors, to future inhabitants, to maintenance staff.

We firmly believe that this content should be accessible to everyone. The base price for the program, with over 6 hours of expert guidance, is just \$50. Completion of the course qualifies participants for 6 AIA HSW CEUs and 7.5 IDCEC HSW CEUs.

Collaborators:

Alison Mears, Director, HML Jonsara Ruth, Director, HML Ogonnaya Dotson-Newman, The JPB Foundation Ken Geiser, UMass Lowell Dr. Maida Galvez, Mount Sinai Jim Vallette, HBN Laura Vandenberg, UMass Amherst

David Andrews, EWG

John Warner, WBI

Mikhail Davis, Interface

Ana Baptista, Chair of Environmental Policy and Sustainability Management Program, The New School

Amanda Kaminsky, Building Product Ecosystems

Jeffrey Siegel, University of Toronto Wendy Vittori, HPDC

Russ Perry, Smithgroup JJR

Bea de la Torre, NYC HPD

Marty Keller, First Community Housing

Rhys MacPherson, MSR Design

Martha & David Lewis, LTL Architects

James Connelly, ILFI

Breeze Glazer, Lightstep

Jack Dinning, HML

Aaron Dorf & Dennis Rijkhoff, Snohetta Melissa Balestri, ZGF Architects Martha Lewis, Henning Larsen Shanta Tucker, Atelier Ten Emily Naud & Hank Burr, CGI Contractors Geoff Brock, Structure Tone Alexandra Acre Comez, Madrone Construction Resources Monica Nanez, First Comunity Housing Judy Levin, Center for Environmental Health Jason Marshall, TURI

This course provides practical and theoretical practices for designers in order to create more **awareness** and help **supporters** make responsible, healthier design decisions.



Affordable Housing

4 TOTAL COLLABORATIONS WITH DETERMINED BY DESIGN **45** HEALTHIER MATERIAL SUBSTITUTIONS





Exerpts from DBD x HML Lectures and Workshops

5. ELEGANT + HEALTHIER AFFORDABLE HOUSING

HML X DETERMINED BY DESIGN

Over the past few years, HML and Kia Weatherspoon's practice Determined by Design (DbD) have formed a reciprocal relationship of education, collaboration, and investigation into health and affordable housing building materials.

This partnership is particularly exciting because of Kia's work with the DC Housing Authority in Washington, DC and her involvement with the Environmental Center for Health.

In our collaborations with DbD our teams have found that decisions based on material health together with elevated aesthetics rarely make it onto an affordable housing developer's rubric. This isn't because decision-makers don't care about the health impacts of their buildings, but because of a lack of knowledge about material health.

Healthy Materials Lab (HML) and Determined by Design (DbD) initiated a collaboration to identify healthier materials typically specified in an affordable residential unit. Together our teams analyze materials that DbD currently specifies for their affordable housing developer clients and the criteria by which their clients evaluate materials (cost, performance, maintenance, etc).

We are working together to curate new, healthier palettes of materials that meet both the design criteria and the client's criteria. The materials are healthier, more sustainable,

and draw from historic buildings and community initiatives to reflect the culture of the local community.

Carried out by Kia's guidance, HML x DbD's investigations have influenced the DC Housing authority to change their interior material specifications in the design of all their affordable housing projects.

Impressively, Kia has since been asked to write the DC Housing Authority standards, which includes many of HML's suggestions, such as mineral paint, and healthier non-PVC flooring. Additionally, they are initiating resident FAQ's including "What are endocrine disrupting chemicals?", What materials affect our endocrine systems?", etc.

Kia's implementation of our collaborations with DbD will set standards for all future buildings at the DC Housing Authority, who currently manage approximately 8.100 public housing units and 16,400 Housing Choice Voucher units.

Determined by Design and Healthy Materials Lab share the goal to transform affordable housing across the United States into healthy, beautiful homes. Our respective teams focus on promoting equitable design processes, and educating professionals to make healthier design decisions.

This collaboration sets an example for how crossdisciplinary partnership can bring critical changes from **speculation** into systemic **realization**.



Affordable Housing



Exerpts from DBD x HML Lectures and Workshops
LECTURE: DESIGN EQUITY ISN'T A TREND, ITS OUR FOUNDATION

Another valuable outcome of our work with DbD has been the willingness to share their expertise on affordable housing as well as what they have learned from HML with a broader audience.

At the core of DbD's practice is a firm position that low-income families deserve healthy and aesthetically elevated homes. They deserve to live in a place that enables them to grow and thrive, just like anyone else in our society. To make these changes we must address the bias that enables developers, designers, funders, and the government to build with these materials. We must create alternatives to the current method of designing affordable housing.

During their multiple presentations and demonstrations, DbD explained the impact materials have on critical facets of residents: from physical and mental health to emotional and economic stability.

DbD, emphasized the need to design affordable living with the specific livedexperience of marginalized residence in mind.

Both Kia and DbD VP Sequoyah Hunter-Cuyjet drew parallels between the design of prisons, detention centers, and lowincome schools with contemporary minimalist commercial design trends. Drawing explicit attention to material choices, DbD detailed how the interior specifications of a project have the power to change this harmful trend that retraumatizes home environments for many vulnerable residents.

Through investigative and projectspecific collaborations with HML, DbD also addresses the embedded power this critical material focus in affordable housing has on the physical health of residents and well-being of the environments they inhabit.

DbD are experts in designing for the holistic health of affordable housing residents. Presentations like these enable the Lab to demonstrate the far-reaching impacts our research has, and inspire others to take care of the communities they design for and make intentional healthier changes in their own work.

Presentations and workshops like this **empowers** our audience to see material health as an integral part of design and community **responsibility.**





506 REGISTERED AND RECIEVED RECORDING







Exerpts from Mithun x HML Lecture

6. AN INTEGRATED APPROACH TO MATERIAL HEALTH IN AFFORDABLE HOUSING WITH MITHUN

Awareness around healthy materials continues to grow - within the architectural industry and product manufacturing community, within our clients' industries and the mind of the general public. Materials matter. They are the fabric of our built environment. A growing body of environmental health research has shown that building materials often contain chemicals known or suspected to be hazardous to human and ecological health. Within the architectural industry and product manufacturing community, within our clients' industries and in the minds of the general public an awareness of, and interest in, healthy materials continues to grow. Materials matter. They are the fabric of our built environment. As designers, we have the potential to impact material health outcomes by making fundamental changes to our design practice.

Leading practitioners from Mithun, winner of the 2023 AIA Architecture Firm Award, conducted a lecture with HML to share opportunities to further the use and prioritization of healthy materials in affordable housing. The discussion focused on the firm's interdisciplinary approach to design for health frameworks, internal and external processes, and strategies for implementing and overcoming barriers through a variety of project case studies.

Public programs show case realworld practice and projects, not only informing existing advocates but building excitement to move people from observers to healthier house advocates.





SECTION AY103 HEMP-LIME CONSTRUCTION

AY103.1 General. Hemp-lime construction shall be limited to the non-structural, solid infill mix of hemp hurd and its binder between or around structural and non-structural wall framing. Hemp-lime infill shall have a density ranging from 12.5 lb/tt² to 25 lb/tt² (200 kg/m² to 400 kg/m²). Hemplime walls shall be designed and constructed in accordance with Section AY103 and with Figures AY103.1(1) through AY103.1(4) or an approved alternative design.

Spray application of hemplime by Americhanvre for Don Services New Castle, PA with the Pennsylvania Housing Research Center at Penn State University and Parsons' Healthy Materials Lab. Funded in part via the Pennsylvania Department of Agriculture.

7. PA HEMP HOME + IRC INCLUSION

We are proud to be working on a HempLime home renovation, designed as healthy, affordable, and visitable housing. DON Enterprise in New Castle, PA is leading the collaborative project, which is called "PA Hemp Home" and is supported by the Pennsylvania Department of Agriculture.

This project was an honoree of the 2021 Fast Co. Innovation by Design Awards for the Materials Category. It was also voted as one of the Top 10 Design Innovations in the United States in the television series America By Design from ByDesignTV. We are thrilled to be honored alongside designers and businesses who are solving the problems of today and tomorrow, and to see the enthusiasm for the use of locally produced, healthy materials for housing those who need it most. Healthy Materials Lab at Parsons designed the house renovation and will conduct indoor air quality monitoring and testing.

On Friday, April 22, 2022, a ribbon cutting ceremony was held in New Castle for the completion of PA Hemp Home. Appropriately unveiled on Earth Day, the house is Pennsylvania's first total renovation of a residential structure using hemp-based building materials, utilizing breathable spray-applied Hemplime in its walls and HempWood on its floors. During the event, we heard from representatives from HML, the Pennsylvania Department of Agriculture, Pennsylvania Housing Research Center, Americhanvre, and DON Enterprises. Each team member talked about the potential of hemp-based building, including the economic potential for farmers and the hemp industry, and the impact on health from the elimination of toxins in the building industry.

In August of 2022, The International Residential Code (IRC) published revisions to the 2021 International Residential Code which now accepts hemplime as a usable building material, setting a new precedent for code expectations.. The code cited HML's PA Hemp Home as an example of the material's viability.

9

Countries where IRC is used as the basis for building code

	<u> </u>
U	

ALL 50

states in the USA use IRC to set the minimum acceptances of building standards. HML's project helps **raise the bar**.

NEWS Architizer Sustainablebrands.com designwanted

AWARDS SALESFORCE

RELATIONSHIP DESIGN AWARD

6+ HEALTHIER BUILDING PRODUCTS





8. ELDER HOUSING WITH HEMP

HML is working with local women and the Akking organization to develop new housing on the White Earth Reservation in Northern Minnesota. This ongoing project is beginning with a newly constructed home for an Elder and her six grandchildren, designed to provide security and respite for the family for generations to come. Once completed, the house will provide an example of a new form of sustainable residential construction.

In June of 2021, HML's co-directors Alison Mears and Jonsara Ruth visited White Earth in Northern Minnesota. They spoke with Winona LaDuke about hemp production, visited a local lumber mill, met the women who are in need of housing, and learned more about the specific needs of families and the general needs of the community. From their visits we learned of the multiple opportunities to invigorate local industries; from the manufacturing of industrial hemp for various uses, to the production of wall hung solar panels that are made locally.

Along with design drawings for the home, HML is creating a manual that illustrates techniques to support the local team during construction. The construction of this prototypical home will provide on-site training for builders to learn novel techniques that can be used on future projects. We are also working with Akking to create and present one of the lessons on Hemp Building for the Inaugural Tribal Hemp class in collaboration with Anishinaabe Agriculture Institute.

HML collaborated with the future owner and we were able to realize a final design for her family's home. The home will be situated on forested land purchased from the reservation, with views out to a pond. It will have walls constructed of locally sourced lumber, hemplime insulation, and a wooden rain screen on the exterior. The interior too is designed with healthier finish materials: walls in lime plaster and mineral paints, millwork and cabinetry made of plywood with no added formaldehyde, and healthy floor finishes. The design provides space for the family to cook meals together, gather around the fireplace, as well as space for the children to play both inside and outside and make artwork with their grandmother.

Together, we intend to build homes that celebrate the long lives of the women, enhance their current work, and make places of sanctuary on their own land for generations to come. Beholden to no one, the nation will chart its own future through innovation: hemp and local lime, new construction systems and methods, training programs, and job creation with local labor. Through this process we will create models of housing for the future: healthy homes for all people.

In-house design projects like Elder Housing with Hemp allow us to leadby-example. Using our research background we can **innovate** healthier architecture and, incentivize our **market** and industry partners, and **celebrate** the residents who are the center of our work.



This project will bring an affordable, healthy home to a family in need in White Earth, MN. Once completed, the design and outcome will set a **precedent** for ore healthier homes to come to other under-served populations

WHITE EARTH, MN DEMOGRAPHICS



DESIGN PROCESS WITH COMMUNITY MEMBERS

One woman's personal history to inform a new house

- Grow up in a farmhouse with her grandparents, made of mostly wood, listening to stories told by her grandmother around a wood stove
- 2 Bedrooms in close proximity to each other

Grandkids all shared a room
A new house for herself and her four grandchildren

Large kitchen, dining and living room with display for pottery

- carge excents, among and inving room with display for poterty collection
- Bathroom with a bathtub and shower and ample laundry space
- Cellar to store plant medicine, food and provide safety from tornadoes
- A new garden w/ deck, food production.large trees on site to remain
- High windows closer to the street for security
- Art space and storage for painting, beading (traditional clothing and jewelry)
- Metal roof to hear rain
 - Barn located towards the back
 - Chickens, Guinea Hens and Goats
 - Storage for tools and equipment





LOCAL MATERIAL SOURCING



WALL ASSEMBLY











View from living room into kitchen



Annual Report Year 8



Renovation of 1600 units into affordable housing

"Creating a space where residents can thrive, extend opportunities where they can take ownership of every area of their life, and address buried systematic issues that limit the progress of marginalized communities."

-West Harlem Group Assistance

Paints: na-VOC, odoriess, asthimagens-free, naturally mold resistant Spec: Fornicio

Resilient flooring: PVC and pthalates-free Spec: Forbo Marmoleum tiles

My personal choice would be to also choose materials that don't have a combination of biobased and fossil-based materials.

You can't unscramble an omelet. So once you have mixed those two together, it is essentially impossible to separate them again.

100% bio-based materials are my first choice." -Taleen Josefs STAT Architect



66

We focus a lot on finishes: gypsum, paints, tiles, caulking, flooring, sealants, treatments.

Those things might not be obvious to a resident, but we hope that they will make a positive impact on their health."

> Taleen Josetsson NGARB CPHC BREEAM AP Project Manager, STAT Architorium PC Principal, TAJ Architecture Studio PLU

Riseboro X STAT 63 Stolkhom (top left,), WHGA social media highlight (top right), STAT case study (middle left), Riseboro X STAT 676 Central (middle right), Riseboro X STAT 1 Stockholm (bottom)

9. HML + AFFORDABLE HOUSING ARCHITECTS AND DEVELOPERS

This past year, HML has intensified efforts to professionally connect with members of the affordable housing design-build industry. We have been consulting on projects, holding workshops, and having conversations with organizations from non-profits to private firms who build affordable housing in their scope of work.

One outstanding partnership is a new collaboration launched in the fall of 2022 with Brooklyn non-profit developer Riseboro Community Partnership and architects STAT architecture. In this project, we consulted on the material specification and building assemblies of eight new and renovated Brooklyn affordable housing projects in the South Bushwick neighborhood. The developer and architects are working with HML to create lists of healthier affordable housing products to install better materials in their projects. This list of better products will provide our partners with a verified list of products that can be specified and installed in not just these, but future projects as well.

The Riseboro x STAT team recently added 51 units located in the Brooklyn neighborhoods of Bed-Stuy, Bushwick, and Ridgewood neighborhoods.

Not only are we collaborating with these practitioners professionally, we are sharing insights, methodologies, and decisions made during these collaborations with our audience on our website and social media platforms. This provides a unique look into the inner workings of bringing a healthy affordable housing project to life - challenges included.

Other notable conversations from this effort include with our on going conversations with West Harlem Group Assistance who combat health issues through housing quality, NYCHA, Habitat for Humanity, Bernheimer Architects, and COOKFOX Architects. Many of these collaborations have been shared with our network already, others we are excited to publish in the future.

51 NEW UNITS OF AFFORDABLE HOUSING This effort directly influences today's projects while equipping architects and developers with the practical knowledge to build healthy affordable housing in the future.



CASE STUDY: STAT ARCHITECTURE

STAT Architecture: Healthier Materials



CASE STUDY: STAT ARCHITECTURE

STAT Architecture: Healthier Materials

recycled paper gypsum hemplime liquid linoleum soy-based floor sealant mineral batt insulation glass + porcelain tile and an

Photo: STAT Architecture:

BUILDING HEALTHY HOMES: A MISSION FOR MILLIONS



Building Healthy Homes map

10. BUILDING HEALTHY HOMES

In February 2023, we launched the Building Healthy Homes initiative to count, cultivate, and connect the healthier affordable housing industry. Sheetza McGarry is HML's key research assistant for this project.

As designers, we recognize the responsibility we have to ensure that the places we create are actively shaping our communities towards a healthier and more equitable future. It is no small feat, but one we can accomplish together – beginning with affordable homes.

Housing is one of the most influential spaces when it comes to human and environmental health. "Home" anchors our life and housing has the power to influence our social and physical health alike. So shouldn't our projects reflect this?

Imagine! Millions of affordable homes that actively contribute to the resilience of both their residents and environments.

One of the greatest barriers to this is a lack of accessibility to information and communities that are working within the healthier affordable housing space. Aligned with the Lab's mission to make healthier materials easier to access, Building Healthy Homes aims to bring affordable housing projects, practices, and materials into one easy-to-use place.

The project showcases the work firms are doing across the USA by continuously mapping each healthy and affordable unit. Participants submit projects through a submission form where the data is then analyzed and inputted into our Tableau dashboard's map, material calculator, and toxin calculator.

Furthermore, Building Healthy Homes has provided a platform for HML to share the expertise of other designers, builders, and developers within this community to a wide range of audiences.

Material lists, advice, methodology, and projects have are shared across all our platforms including the website, Instagram, LinkedIn, YouTube, and a Tableau dashboard.

Building Healthy Homes has also been educational within the Lab. Through this project, we are able to analyze data on material use and accessibility within affordable housing development as well as tap into our extended community and assess the influence Healthy Material Lab's resources have had.

By cataloging different application methods from recent, successful affordable housing projects we are providing the opportunity for those who are **unaware** about the materials to become **advocates** of its use in addition to existing practitioners to **connect** with each other.



33+ PARTICIPATING PRACTICES

1st

MOST SAVED POST ON INSTAGRAM IN Q2 2023

2nd MOST SHARED POST ON LINKEDIN IN Q2 2023

3rd

MOST COMMENTED ON POST ON LINKED IN Q2 2023

Common Chemical Reductions



100

Material trends in healthier chemical reductions





Annual Report Year 8





HML ADVOCATES ON THE MOVE

AlA Pittsburgh: Senior HML team presents the PA Hemp Home and process to AIA members

NYSID AND WellDesigned: Catherine Murphy spoke about healthy and equity in interior design

Northern New Mexico College: Alison Mears and Jonsara Ruth gave a lecture about building with hemp in collaboration with communities

Hudson Developers: Alison Mears presented on Material Health and removing toxins from affordable housing

NYCHA: Jonsara Ruth and Alison Mears presented an introductory seminar about Material health and affordable housing with the architecture and engineering teams

NYCHA: Alison Mears discussed past demonstration projects and future material health goals and limitations with the construction team

Kansas Limestone School: Leila Behjat and Catherine Murphy are working to support a housing project initiated by first and second graders at Limestone Community School

STAT Architects: Alison Mears discussed goals and limitations in implementing healthy materials in affordable housing projects

NEXT STEPS:

Affordable Housing Newsletter:

Just as affordable housing is at the forefront of our mission at HML, our audience has made it clear that it is on of their top priorities as well. In response to their question, we are launching an affordable housing specific segment of our monthly newsletter that shares projects and directly answers some of their biggest questions:

Why are healthy materials important and how are they related to affordable housing?

How can people access affordable healthy materials?

How do we hold decision makers accountable?

How can do we understand community needs around healthy materials and affordable housing?

Case Study Series (cont): Alison Mears spoke with Habitat for Humanities about the realities of implementing healthier materials in low income housing, the importance of resident education, and where more extensive services are needed. This conversation will be included in an upcoming Building Healthy Homes Case Study

Vermont Workers Housing: HML is beginning work on a new healthy model for workers housing in Vermont. The project will address physical health, accessibility to holistic wellness, education, and public care.

11. HML ADVOCATES AND NEXT STEPS

Research and innovation guides most of the lab's production, yet, we know that we like to address big problems with even bigger realities. Therefore, a lot of our behind the scenes work includes consulting with other experts and listening to the challenges faced by people who work within the field, or directly impact it.

Our team is constantly engaging in conversations across the globe to educate residents, designers and share holders; collaborate with other experts and communities; as well as learn from those who specialize in other areas of affordable health.

Highlights from this past year include presentations and discussions with state agencies such as NYSID and NYCHA, and presentations with leading industry organizations such as the AIA.

We also discussed harmful material practices with some of the largest building industry players such as Hudson Developers who reflected on the evolution of their specifications from more natural materials to composite toxic choices. We discussed the economic drivers behind these changes and other strategies they can explore to get back to their healthier roots! We are also moving to bring our affordable housing mission more to the forefront of the Lab's practice.

After surveying our audience, we found that many of them are not only passionate and curious about healthy materials, but about their intersection with affordable housing too! This coming year, we are launching an affordable housing newsletter segment to our monthly mailing list. We hope this helps us better organize our resources to reach those who need it most, and share the enlightening conversations and projects we engage in, more directly with our audience.

We also have a number of projects on the horizon, In addition to ongoing projects and iniatives, we are building a case study series as part of the Building Healthy Homes initiative. The goal is to connect practitioners with each other to see where they may learn from and help each other while sharing practical insights with our audience.

Furthermore, we know the best way to both teach and learn is by demonstrating. We are continuing to implement our findings and goals for the affordable housing industry directly into projects.

LIBRARY & RESOURCES

At HML, we believe the comprehensive and complete disclosure of building product contents is essential to drive behavior change in decision makers that impact the material health of our world. Access to educational programs and resources that share new knowledge to accurately document the contents of typical building products is a necessary part of this practice.

A fully informed decision-maker can select alternatives to toxic materials when the information about product toxic contents are disclosed, when feasible alternative choices are presented, and when the information is reliable and accessible. How do decision makers access accurate information?

HML is using our broad and effective design expertise to demonstrate to key audiences how a reduction in toxic materials in building materials will improve the health of affordable housing residents, communities, and individuals who come into contact with materials at all stages of a product's life cycle. We translate information into effectively designed and accessible materials to empower decision makers to make informed choices.



- 18 HML × GALLERIES COMMIT: EXHIBITION MATERIALS
- 19 DESIGNING WITH HEMP + LIME: OPEN SOURCE DETAILING



12. THE DONGHIA HEALTHIER MATERIALS LIBRARY

The Donghia healthier Materials Library at Parsons School of Design is a resource center dedicated to helping designers make responsible materials decisions. With curated product collections and frameworks for evaluating materials, we offer guiding strategies and hands-on examples of products making positive impacts on human health, environmental justice, and social equity.

So what makes a "healthier" material?

While there is no universal standard for what makes a healthier material, we look to be holistic in considering the impacts materials can have through their extraction, procession, use, and disposal, and all those who may be affected along the way.

Open to students, faculty, and staff of The New School, the DhML is staffed with student researchers and research assistants during all open hours. In Year 8, we were proud to welcome many outside visitors for tours and discussions.

Engagement with the library moves visitors from **unaware** to **advocate**. More so, orientations serve as an opportunity to introduce students and professionals to the issue of material health.



90 VISITING DESIGNERS

11 DESIGN SECTORS W/ POTENTIAL IMPACT

RESIDENTIAL COMMERCIAL WORKPLACE GOVERNMENT **MIXED USE INSTITUTIONS EDUCATION** RETAIL HOSPITALITY LANDSCAPE LIGHTING



hlw



marble fairbanks

STUDIO

SOFIELD

TenBerke

13. LIBRARY VISITS AND TOURS

DhML is proud to have welcomed many outside visitors to the Library in Year 8. Below, we have summarized some visits and HML's strategy to offer guidance and inspiration to industry professionals to get more acquainted with material health.

Marble Fairbanks -

We met with architecture firm Marble Fairbanks for a general overview of The Healthy Materials Lab and Donghia Healthier Materials Library. In discussing their current projects, we learned the firm received government contracts for parks and public spaces and they wanted advice on healthier materials to specify.

Studio Sofield -

We met with Studio Sofield at The Library because of their interest in applying health and sustainability to their high-end residential and commercial projects. HML gave them resources and advice for hazard avoidance, and made recommendations for materials substitutions that fit their aesthetics.

Deborah Berke -

TenBerke is an NYC-based architecture practice with a portfolio of institutional, commercial, and residential projects. They came to visit the Library where we gave them an overview of the Healthy Materials Lab and material collections. We also provided guidance on ways to reorganize their library, materials substitutions, and best practices.

ASID Metro Tour -

Co-director Jonsara Ruth and Luam Melake conducted tours of HML and DhML for the American Society of Interior Designers (ASID), New York Metro Chapter. During the tours, HML was able to offer guiding strategies and hands-on examples of products making positive impacts on human health, environmental justice, and social equity.

Casual presentations and informative discussions can quickly bring those who are **unaware**, **observers**, or **supporters** up to the **advocate** level by sharing strategies and resources that can be implemented immediately in their practice of material health.



Library & Resources



Biopreferred. What Does It Mean?

From The Library Drawers

14. BLOG: FROM THE LIBRARY DRAWERS

Beginning in Year 8, HML is bringing you the latest research from the Donghia healthier Materials Library in a new blog series, From the Library Drawers. Our first blog post was titled, "What does the Biopreferred label mean?"

It is not easy to figure out what is in a biomaterial. One reason is that manufacturers want to retain their proprietary information. They have spent millions of dollars and years researching and developing new materials and do not want to give their information away for free. To help consumers understand these new products and manufacturers preserve their intellectual property, the U.S. The Department of Agriculture created the BioPreferred certification.

Biopreferred.gov defines biobased products as "derived from plants and other renewable agricultural, marine, and forestry materials and generally provide an alternative to conventionally petroleum derived products." The BioPreferred Program was created by the 2002 Farm Bill and expanded as part of the 2018 Farm Bill. The Program aims to increase the use of biobased products, which would create new jobs, provide new markets for farmers, and decrease America's dependence on fossil fuels.

It is important to recognize that just because a product has a Biopreferred Label, it does not mean that it's necessarily healthier. There are many examples of products made with biobased content that also contain toxics. Nevertheless, it's good to understand how the United States Department of Agriculture prioritizes "biobased" materials.

Blog posts are part of HML's storytelling initiatives that seek to elevate the work and mission of the Lab. Our team uses compelling narratives to move people up the ladder of engagement, no matter where they start.



Library & Resources



SELF-GUIDED





15. NYC X DESIGN DAYS

The Donghia Healthier Materials Library is stop 9 of 10 on NYCxDesign's self-guided tour through New York City's Nomad and Flatiron neighborhoods. Situated among other stops on the tour, like the Flatiron building or the New York Design Center, DhML brings material health to the conversation with design and culture.

HML's Jonsara Ruth and Luam Melake sat down with NYCxDesign to record a brief introduction to the Library, its founding, and its goals. When the Lab was founded in 2015, The former Donghia Materials Library was transformed from materials collections to healthier materials collections, both for humans and for the planet. Today, The Lab continues to inform the collections held at the Library, while the Library serves as both a publicfacing and internal resource for the research being done at the Lab.

Materials used in architecture and design are what are most prevalent in our collections as these materials affect human health and the health of our planet the most. The DhML also acknowledges that all industries could benefit from this knowledge and continues to strive to be a resource for all. Under Luam's leadership, the Library has been able to expand its reach into the world of alternative materials like those that are plant-based or bio-fabricated. This has created exciting opportunities for students, faculty, and researchers to design healthier spaces and objects.

NYCxDesign has a large following and attracts over **300,000 people** to New York City every year for its annual festival. HML's inlcusion in this digital tour introduces more people to our work and increases our following.



Library & Resources

YEAR 8 YEAR 7

431

25

We are continually vetting new products to see if they meet our criteria.

Active correspondence regarding documentation and certification. 650 PRODUCTS VETTED IN TOTAL

50 MANUFACTURERS WE'RE CONTACTING

Healthier Model-Making Materials 19 products

CATEGORY A	SUE-CATEGORY	MANUFACTURER	PRODUCT A
Adhesive_Model Making	Polyvinyl Acetate (PVA)	Dick Blick Art Materials	Multi-Purpose White Glue
Adhesive_Model Making	Polyvinyl Acetate (PVA)	Dick Blick Art Materials	Washable School Glue 🗎
Adhesive_Model Making	Polyvinyl Acetate (PVA)	Dick Blick Art Materials	White Glue Stick
Adhesive_Model Making	Polyvinyl Acetate (PVA)	Elmer's	Elmer's Wood Glue
Adhesive_Model Making	Wheat	Playbox	Wheat Paste 🗐
Board Insulation	Cork	Amorim Isolamentos	Thermacork Standard Insulation
Dimensional Surface	Hardboard	Ampersand Art	Clayboard 🖯
Dimensional Surface	Hardboerd	Ampersand Art	Hardboard 🖯
Dimensional Surface	Plywood	Columbia Forest Products	PureBond Classic Core® Plywood 📍 🗎
Dimensional Surface	Plywood	Columbia Forest Products	PureBond Hardwood Plywood 😑 🖯
Dimensional Surface	Solid Wood	Midwest Products	Basswood
Fibrous, Cellulosic, & Granular Insulation	Seaweed	Advance Nonwoven	Seaweed Insulation
Packaging	Corn	KTM Industries, Inc.	Green Cell Foam 🗐
Packaging	Mycelium	Ecovative	MycoComposite
Packaging	Polylactic Acid (PLA)	Synbra Technology	BioFoam
Packaging	Starch	Paperfoam	Paperfoam 🗎
Pourables and Aggregates	Plaster	DAP	Plaster of Paris
Pourables and Aggregates	Sugar	Simi Cakes and Confections	Isomait 🖯
Sculpting	Beeswax	Stockmar	Modelling Beeswax 🗐

16. MATERIALS COLLECTIONS: HEALTHIER MODEL MAKING MATERIALS

In Year 8, HML continued adding new materials to our extensively vetted healthier materials collections. We also have curated new "thematic" collections to bring these products to more niches of the industry, making it even easier for people to find healthier materials specific to their needs. One of these collections has been the Healthier Model Making Materials, geared toward students, designers, artists, and architects.

Physical models and prototypes offer valuable opportunities for project development and evaluation. As with building materials, the health of materials used for model-making is crucial but can be a challenge when only a few manufacturers disclose ingredients. The lack of transparency may be partially due to a lack of requests from designers, architects and users in general. Many model-making materials are also exempt from publishing safety data sheets under OSHA's definition of these products as "articles" (see OSHA definition for "article"). With so little health information available, attention and ingenuity are vital. Ask questions. Be creative. Invent and innovate new materials. Grow your own mycelium, cast your own hemplime, work with found materials, make your own glue. Model making should echo the radical changes happening in building and create healthy, inventive options to materialize your ideas on a small scale.

Material collections increase engagement by building awareness of material health. HML researchers have organized these highly curated collections using strict criteria. By communicating this criteria to our users, we are helping to turn **supporters** into **advocates**.


17. BIG X HML: HEALTHIER MODEL MAKING

A collaboration between BIG's Model Making Center in their Copenhagen Studio and the Lab in NY is researching products and methods to make Architectural Model Making a craft that avoids hazardous substances and helps set an agenda for healthier building practices.

Two members of the HML team (Alison Mears and Leila Behjat) visited BIG Studio during a stay in Copenhagen. We began the meeting with Katrine Juul and sustainability team members from BIG IDEA. We then toured the Model Making Center, managed by Artemis Antonopoulou. The Center's Model Making Leadership has taken steps to enhance health and sustainability in the space by installing air filter systems and adopting policies to reduce material waste.

The initial exchange sparked a collaboration that includes raising awareness of hazardous substances and establishing alternatives to products commonly used in Model Making, such as petrochemical-based foams, glues and paints. "If we cannot create sustainable models, how can we create sustainable buildings?"

In the past, Designers and Architects had fixed ideas on the presentation of a design idea using readily available, inexpensive model-making materials. Consistent with Modern Architecture's stylistic preferences for pristine white models, many architects have wire-cut white styrofoam to represent building volume and used a range of plastic board products to represent walls and openings. When laser cutters are used, the tendency is to use materials that reduce burn or bending marks. These practices are common and deeply rooted in Model Making. Often the time crunch in a project prevents the exploration of alternative, sustainable materials and making practices. Today, as we confront the climate crisis, we are moving from petroleum-based, toxic products to more bio- and mineral-based, low embodied and benign materials in our architectural construction practices. So why not explore these better materials in modelmaking?

Partnering with architecture and design firms like BIG helps turn **supporters** into **advocates** whose work directly impacts the material health of surrounding communities.



ONGOING WORK WITH BIG ARCHITECTS

The ongoing investigation with BIG is twofold: finding healthier alternatives to products commonly used in model making on the one hand; on the other, offering and encouraging model-making methods with the adoption of principles of designing for disassembly. The explorations include using mechanical joining, and the incorporation of traditionally unconventional product options with the goal of avoiding harmful foams, glues and finishes and reducing waste.

In monthly team meetings, the project collaboration aims to elevate Model Making to be a gateway to healthier architectural design work. Experience shows that the incorporation of better practices in model prototypes brings designers on board: "Everything we've managed to change has come through making a sample", is the observation of Phillipa Seagrave, a Lead in the Center.

An awareness of health hazards in products, and ingredient disclosure for transparency are crucial at the building scale. Establishing frameworks for healthier Best Practices starts with a healthier Project Model.

27 HEALTHIER PRODUCT SUBSTITUTIONS

BIG x HML - Healthier Model Making 27 products

Anarasi ka Tan (ar

CATEBORY			PRODUCT A	INGREDIENT DISCLOSURES				
		Rubio Monocoet	OI Plus 20 B	HPO Declara (PO SDS				
Adhesive_Model Making	Polyvinyl Acetate (PVA)	Dick Blick Art Materials	Washable School Glue 🗐	HPD Declare DPD \$25				
Adhesive_Model Making	Polyvinyl Acetate (PVA)	Dick Blick Art Materials	White Glue Stick 🗐	into Declare (240 SDS				
Adhesive_Model Making	Wheat	Playbox	Wheat Paste	HPD Dealers (PD SDS				
Dimensional Surface	Glass	Coverings Etc.	Bio-Glass	HPD Destant IPD SDS				
Dimensional Surface	Hardboard	Ampersand Art	Hardboard 🖯	HPD Denters (PD SDS				
Dimensional Surface	MD₽	Roseburg	Roseburg Medite II MDF	HPD Declare EPD SDS				
Dimensional Surface	Plywood	Columbia Forest Products	PureBond Classic Core* Plywood 🤗 🗟	HPD Denters EPO SDS				
Dimensional Surface	Plywood	Columbia Forest Products	PureBond Hardwood Plywood 🤒 🖯	HPD Declare (PD 505				
Dimensional Surface	Solid Wood	Midwest Products	Besswood	HPO Deciare (PO 505				
Lighting	Mycelium	Danielle Trofe	MushLume Lighting Collection	HPD Deciare CPO 505				
Packaging	Cern	KTM Industries, Inc.	Green Cell Foam 🗐	HPO Declare CPO SDS				
Packaging	Mycelium	Ecovative	Mushroom* Packaging 🖯	HPD Declare CPD 500				
Packaging	Polylactic Acid (PLA)	Synbra Technology	BioFoam 🗎	HPO Declare EPO 000				
Packaging	Starch	Paperfoem	Paperfoam 🗐	HPD Declare CPD 000				
Paint / Biobased	Linseed Oil	Ottoeson	Linseed Oil Paint	HPO Declare EPO SDS				
Paint / Mineral	Lime Cassein	The Real Milk Paint	Milk Paint 🗐	HPO Declare 5PO SDS				
Paint / Mineral	Potassium Silicate	Kaim	Innostar 😑 🖯 🛞	HPD Decrare EPO SDS				
Pourables and Aggregates	Plaster	DAP	Plaster of Paris	HPD Declare (PD 5D5				
Pourables and Aggregates	Sugar	Simi Cakes and Confections	Isomalt 🗎	HPD Declare 6PD 6D5				
Sculpting	Beeswax	Stockmar	Modeling Beeswax	HPD Declare 0PD 500				
Surface Sealant	Oil,Hemp	The Real Milk Paint	Hemp Oil 🗎	HPO Declare EPO SDS				
Surface Sealant	Oil_Linseed	Alback	Purified Boiled Lineard OI	HPD Declara (PD SDS				
Surface Sealant	Oll_Lineed	Viking	Viking Linseed Oil Wax	HPD Deciere 6PD SDS				
Surface Sealant	Oll_Tung	The Real Milk Paint	Pure Tung OII 🖯	HPD Dentere GPD \$0\$				
Textile	Vilool	FabriTRAK	FabrFELT** 1	HPD Declare 6P0 606				
Textile	Wool	Filzfelt	Smm Wool Design Felt	HPD Declare 6PD 600				

500+ 42 MEMBERS OF HEALTHIER GALLERIES PRODUCT COMMIT SUBSTITUTIONS

ARTISTS COMMIT

Reports Action Resources About

Climate Action Database

The Climate Action Database is a collectively maintained resource for actions taken, plans published, and resources to support climate action in the art sector. The same distabase also appears on the California Conton) and Art - Climate Action websites.

To contribute, submit here

-Climan Artis: Inninan > Chemis Antor Suistans, Drug Seally

Climate Action Database Entry Details Exhibition Materials List

carrier to an experiment former further than a second state

Healthy Materials Lab and the Donghia healthier Materials Library, both at Parsons School of Design

Resource

Materials recommendations related by the resultby Materials Las and the Derights healthar Meteriats Library, both of Persons School of Design, consteal for Satisfue Consult

Exhibitons Product List AND A CARDINAL PARTY CONTACT. Tesectar mana PROFESSION IN CAPITOCANDAS OCCUPTOR. unter la accelerazione della fiscale fisione endo galforeggario, e ottorienti, hano regionale risco i fiscale celle a solati inst line terreterreterreterreterreterreter ---and the Parket ---------and it's parameters they want the same last to reason a scherol Canada and a solid commit of these or new cont The control of the second sec and it is not the owner. the other desidence when press (1975) _ profilozof at an other ballet basing for event district young and count basing basis, another count for and a second country and the regal change, investiges included must use MDV regat here go to talk, at included one has no antiser formalizer, do per contexts and frain 7% concursive and tes, instances -----And the state is not the best to its reac-tion from a construction of the paper index application to the paper index application of the state of the state of the application of the state ALTER WAS had exclusion to the out to admit thready to had social and a larger social in any one of the social sector. ALC: UNK ere i regestate calificator la formazione del tette l'he tettetture in contace primali na the prime is a reaction of the second of the second s a local data took a freque frank, mana internatione in analy, come all constants, orbit in one A PARTY AND AND A PARTY OF Barty Cardware (as respublicant) of the bentist related possibility (which is not cardial animal manifesting in the other PDC antifact insult in strained by Antinenas antipped stars Days Line Towner and the second second and the second s in the set

18. HML X GALLERIES COMMIT: HEALTHIER EXHIBITION MATERIALS

HML has partnered with Galleries Commit, a worker-led collective committed to a climate-conscious, resilient, and equitable future for New York City galleries.

Through rigorous evaluation, our team at HML / DhML created the Exhibition Products List, a live document that can be accessed through the Artists Commit Climate Action Database. This list includes many affordable material substitutions that can reduce a gallery's environmental impact, such as mineralbased paints, MDF and plywoods made with soy-based binders and no added formaldehyde, and acrylic made entirely from recycled acrylic.

Along with being a publicly accessible resource, the Climate Action Database is a jointly shared database by several art and climate initiatives.

Partnerships with like-minded organizations allow our work to be shared among more people in different parts of the industry. They also provide opportunities to initiate conversations and action toward advancing material health.



DESIGNING WITH HEMP+LIME

Open Source Detailing for Architects and Designers



19. DESIGNING WITH HEMP + LIME : OPEN SOURCE DETAILING FOR ARCHITECTS AND DESIGNERS

At HML, we believe that the future of building can be carbon neutral, biodegradable, energy-efficient, and healthy if plant-based building products become the norm. HempLime is one of these materials that has excellent potential to be scaled and used widelywe are at the beginning of the learning curve.

As a companion to our Hemp + Lime guide released in 2020, the goal for this publication is to create a catalog of precedents to motivate other architects to use hemplime in future projects. With their permission, we redrew their design details to compare the various design and construction methods.

The following projects are featured for their masterful use of hemplime as a promising building material:

Cape Cod Hemp House by Estes Twombly + Titrington with CH Newton, HempStone, Kiko Thébaud, Laurent Goudet AKTA - BVP and Anthony Néron (DuChanvre), 2022

Case di Luce by Pedone Working with Equilibrium Ltd, 2016

Lamia Santolina by YAS Architecture, Morleo Architecture, Angelo Melcarne with Scaff Systems (structural) and Messapia Style (hemp), 2021

Pierre Chevet Sports Hall by Lemoal Lemoal with Baticible, 2021

Wally Farms by Kaja Kühl (youarethecity) and Roger Cardinal Design with Lagonia Construction, Americhanvre, HempStone, and blocks manufactured by Coexist Build, 2022

Woonhuis Balk by TWA Architecten with Agricola Bouw, 2020

Collaborators:

Alison Mears, Director, Parsons Healthy Materials Lab

Jonsara Ruth, Design Director, Parsons Healthy Materials Lab

Meryl Smith, Researcher, HML

Eric Hu, Postgraduate Researcher, HML

By cataloging different application methods from recent, successful hemp+lime projects we are providing the opportunity for those who are **unaware** about the materials to become **advocates** of its use.



Library & Resources

Cape Cod Hemp House

Project Lonation Date Circl, MR New Completed, 2022 Architect, Edias Teorety - Titington Architects General Contraction (Ontwestan Hempline Consultants, Hilo Teorosus, Theoret, Laurent Gouder, Atth. – BVP Use Rester Consultants, Architect, New DuCharrie

DuCharrele Project Description: This 6,000 space from frames limited in Cape Cold, Passishinawaki, Jakes a constraintion of Passishinawaki, Jakes a constraintion of Passishinawaki, Jakes a constraintion of rans and traditional building materials. Cape Call Herein House Labibitity materials insighty, Writin the wells and the root. Insing fit, Writin the wells and the root. Nemptime was a proy-applied into the Taining and Is half in the prosts of read and tragetter with materials. Itsoid into building sizer the family materials read that Taigetter with materials into the building sizer the family materials of the building which holds the backer of the building which holds the backer and finds. On the interior, produce among the family constrained on the advection of the production and materials links to one encoded centro. Nodous the pro-communities and materials links to one monotone and interiore occusient heatth; health:



72





Fig.5+termy-apples 22 ets MrCable



Annual Report Year 8

Pierre Chevet Sports Hall

Project Location Crosspolles, Dourg, Francis New Completion 2011 Architect, Lamont Lamont Builder: Battobie

Project Description: Lancat Lancat anotherchar and Sectorapping office has delivered the first rave public building construction with templities building constructions, the Direct Dervet spurse and first the tasks of College Beaubourg. The furth college Beaubourg. The furth college Beaubourg. The furth college and constructions compares was the copportunity to experiment with an innovative and buildanetics implementation.

The properties of seturational principle even led by the determination to empiry lang seturation determination of the participant of the seturation of the seturation participant of the seturation of the seturation participant of the seturation of the seturation of a construction process, leave a seturation of the construction process, and a seturation of the seturations.

Holds by the convert neurointectore Violatus Prenchicement group based in the Rona Alexies region, the heartgline blocks crossen have see manufactured altifered have been which with neuroint altifered have been which with neuroint has been without a market, it comes toos the river part of the stern place



24



Exterior Wall Axonometric | Precast Hemplime Block



Spreads from the "Designing with Hemp + Lime" Booklet

EDUCATION

Parsons is a hub for national and international design research with extensive experience and capacity to work between theory and practice, through collaborations with a broad range of industry partners. As a trusted university partner, we provide neutral territory to enable a wide representation of stakeholders to convene and address all of the complex issues associated with the building materials system. Our research is informing our colleagues in professional practice and our fellow faculty through public lectures and presentations and through our social media presence.

Parsons is transforming the education of designers, and in so doing educating a new generation of design professionals who will carry their educational experience into their careers and transform industry. We are offering new studio classes, creating modules that can be incorporated into existing courses, and working with HAMP partners, such as HPDC, to develop curricular modules. With education as our platform, we are creating a greater understanding and awareness of the intersection of design and health.



20 INTRODUCTION TO HEALTHY MATERIALS LECTURE



21 CEH TOWN HALL



22 WORKSHOP W/ BARNARD COLLEGE

Avinash Rajagopal Editor of Metropolis Magazine

24 AVINIASH RAJAGOPAL: GLOBAL IMPACT OF INTERIOR DESIGN



26 FUTURE LEARN







25 HML X LIMESTONE SCHOOL









Parsons Healthy Materials Lab is dedicated to placing human health and ecologies at the center of every design decision to create healthier places for all people to live.

Established May 2015 Parsons School of Design | The New School | New York City -



40% of annual global CO2 emissions from buildings



Global CO, Emissions by Sector



20. RETHINKING MATERIALS FOR DESIGN: INTRODUCTION TO HEALTHY MATERIALS LECTURE

At HML we explore the relationships between human health and building materials. We make presentations to a range of different groups. These presentations enable groups of designers and architects to become familiar with materiality.

The 21st century is marked by rapid and potentially catastrophic global climate change. We face the depletion of natural resources and the imminent degradation of the earth's unique and varied ecosystems. Our actions as architects and designers have impacts on everyone: the most immediate and profound impacts we can have as designers are on the most vulnerable people in our communities. Let's look at why that is so. Our indoor spaces are filled with invisible chemical hazards, making indoor air 3-5x more toxic than polluted outdoor air. How did we get here? Most of the chemicals that are commonly used in construction in the US are not regulated. Only 250 of the over 85,000 chemicals currently in use are tested and only five have been partially restricted by law. Many of these chemicals are toxic and are becoming part of everyone's biology. There is

also a direct connection between carbon emitted in the production of petrochemicals and the specification of petrochemical based building products. Reducing the use of these building products reduces carbon emissions and reduces the unregulated harmful chemicals that are the product of these processes. Many of the products that are typically used in current construction, contain the chemicals that are linked to human disease. Polystyrene, phthalates, BPA PVC and flame retardants are all linked to human diseases. These materials shed and release those chemicals into our built environments which are then absorbed and become part of our biological systems.

It is critical that we build healthier and more resilient communities. Dramatically reducing people's exposure to harmful chemicals is an issue of equity and a public health priority to protect those who have suffered generations of institutionalized racism. In our work we look to remove these chemicals and propose viable, affordable and benign alternatives particularly in affordable housing.

These lectures allowed design students to get familiar with materiality and the concept of human health and chemicals in materials, spurring them on a journey to become **supporters & advocates.**





COLUMBIA GSAPP







PARTICIPANTS

16 BARNARD COLLEGE

15 COLUMBIA UNIVERSITY

125 VIRGINIA TECH

153 TNS PARSONS SCHOOL OF DESIGN

14 LIMESTONE SCHOOL





470 ATTENDEES

Material Palette



Formaldehyde Free Plywood Columbia Forest Products





Engineered Wood Floors HempWood

Unglazed Colorbody Porcelain Tile Daltile



Mineral Paint Keim



Solid Granite Precision Countertops



Collaboration DON Services a Parkons Healthy Materials Lab. PA HempHone



Linseed Oil Paint

Ottosson - Earth + Flax



Luxury Vinyl Tile (LVT) - MATERIAL COMPOSITION * BINDER: PNC 47% BINDER: bis(2-ethylhexyl) terephthalate < 17% BINDER: Disensore <17% FILLER: Calcium Carbonate 0.1000 - 28.5000% COLORANT: minimal carbon black % reported by manufacture



Linoleum - MATERIAL COMPOSITION * BINDER: Linuxed 00:19% BINDER: Can Rosin 2%, BINDER: Tail OI 19%, FILLER: Wood Flour 24%, FILLER: Calcium Carbonate 23%, FILLER: Calcium Carbonate 23%, FILLER: Sevend Marmoleum 11%, BACKING, Juste 8%, PROMONT: Transition Disorde & various other pigments 2%, CoATING, Loguer 1%



21. CENTER FOR ENVIRONMENTAL HEALTH TOWN HALL

HML senior researcher and architect Leila Behjat took part in the Center for Environmental Health's virtual townhall, The Great Indoors: Keeping Your Home Free of Toxics. Along with other industry professionals, Leila gave a presentation to educate Town Hall attendees on the history of how hazardous ingredients have become the norm in our building products, and offer strategies for reducing toxics in our homes and selecting healthier alternatives.

This event allowed for an **unaware** or **observing** audience to learn how they have the power to **support** and **advocate** for healthier materials in their own lives and homes.





Images from the Materials Workshop with Barnard College and Columbia University

22. MATERIALS WORKSHOP WITH BARNARD AND COLUMBIA

Have you ever wondered what the connection might be between embodied carbon, toxic chemicals, and what you design?

HML's Cristina Handal and Co-director Alison Mears conducted a hands-on workshop at Columbia University and Barnard College to explore, discuss, react, and confront this question through the materials used in design and construction.

In this workshop we asked participants to begin with physical material samples. They were asked to rank materials from low embodied carbon to high embodied carbon and then overlay a ranking for chemical toxicity. This exercise helps participants to begin to understand fundamental material properties.

Sometimes the best way to learn is through hands-on experience. Workshops like these equip the audience with tangible experience and memories that they can use to advocate for material health going forward.





Slides from Jonasara's lecture at Virginia Tech

23. VIRGINIA TECH: VISITING LECTURE SERIES

HML co-founder Jonsara Ruth visited Virginia Tech to give an introductory lecture to students of the School of Architecture + Design. Students and faculty from disciplines including industrial design, interior design, landscape architecture, architecture, and engineering listened to Jonsara's presentation on healthy materials, hemplime, and other potential materials for the future. With over 100 people in attendance, the talk was followed by a lively Q&A, as well as Jonsara conducted tutorials for small groups of students in the Bio Design Research group.

Visiting lectures allow design students to get familiar with materiality and the concept of human health and chemicals in materials, spurring them on a journey to become supporters & advocates.











2.28 The Global Impact of Interior Design

Avinash Rajagopal Editor of Metropolis Magazine

6:00pm, 25 E 13th St, E 206 (2nd Floor)





24. AVINASH RAJAGOPAL: THE GLOBAL IMPACT OF INTERIOR DESIGN

Co-hosted with HML and Parsons Interior Design Programs, Metropolis Magazine Editor-in-Chief Avinash Rajagopal came to Parsons to discuss how interior designers can address climate, health, and equity through new tools and frameworks. We know that design practices have a substantial role in improving life on our planet. Via presentation and lively discussion, Avinash covered topics and strategies in line with those we use at HML. Discussions like these remind us that we can design at the cutting edge of our industry while at the same time ensuring a healthier, sustainable future for the next generations.

Metropolis has over 50,000 subscribers, so events with guest speakers like Avinash Rajagopal bring attention to our work in the design industry, helping to generate more supporters and advocates for material health.











25. HML X LIMESTONE SCHOOL

HML has the privilege of supporting a class of first and second graders at Limestone Community School that are tackling a healthier housing shortage in their community.

In early 2023, Madeline Herrera read "A Kid's Book About Imagination" by Levar Burton to her class of first and second graders at Limestone Community School in Lawrence, Kansas. The book challenges readers to use their "superpower of imagination" to ask big "what if" questions. Inspired by the troubling sight of an unhoused family sleeping on the grounds at Limestone, one student asked, "What if everyone had parents and a home?"

The question sparked tough conversations about homelessness in Lawrence and some of the ways the students could help the family sleeping at Limestone. As kids do, they came up with a simple, no-nonsense response: why not just build them a house? So, the class got to work designing floor plans and making models of what a house needs to become a safe and comfortable home. The students started out with lofty ambitions for homes with 12 bedrooms and bathrooms fit for a queen. Fortunately, Steve Vukelich, Vice President of collaborative design company Multistudio, offered his services to help the class re-work their designs to a feasible scale.

With the help of local partners who have offered services and land, the dream of building one home has expanded to four. Now, the students have to determine what these homes will be made of– enter Healthy Materials Lab. Having done previous projects on plastics pollution, the class knew that material choices matter and wanted some guidance on how to specify materials in their designs that would be healthy for future residents and the planet.

Our ongoing work with the Limestone School students is one of the many ways we use education to empower others to make healthier choices, for themselves and for the people they care about.



HEALTHY MATERIALS FOR HEALTHIER HOMES

Senior Researchers Catherine Murphy and Leila Behjat met with the Limestone school class to answer their big materials questions: What's better to use: wallpaper or paint? How can we reduce our use of plastic? What about flooring-carpet or hardwood? How can you make the space feel joyful and welcoming just from the materials you use?

The students came away from their design meeting with Catherine and Leila excited to spec healthy materials and Catherine and Leila, having received genuine encouragement from the students, came away re-energized and in awe of the determination of this group. Healthy Materials Lab will continue to meet the students throughout their process and has held preliminary talks with Multistudio, the architecture firm leading the home designs. HML will provide support and guidance on material selection and will work with manufacturers to secure healthy materials donations to the project.







17 MILLION PEOPLE USE FUTURE LEARN AS A LEARNING PLATFORM

PARSONS Learn

Course Structure

Week 1: The Significance of Materials and Health Week 2: Environmental Health and Vulnerable Populations

Week 3: Life Cycle of Materials

Images from Introduction to courses on Future Learn

26. FUTURE LEARN

In the Summer of Year 8, we launched our coursework with the online education platform Future Learn to offer 5 new HML courses, four of which will be part of their Expert Track program to new audiences. Future Learn is a platform of millions of people from around the world learning together. Online learning is as easy and natural as chatting with a group of friends.

The four courses are called Healthier Materials and Sustainable Building Expert. Consider this for a moment; the US population is universally exposed to thousands of chemicals from routine exposures in our everyday lives from everyday goods and products, to chemicals in building materials. This needs to change. Our places and spaces should not be a source of toxic exposure.

We need to use building materials that are truly healthier and safer to construct healthy buildings and make healthy cities. If we make these changes, not only will they benefit all people, but will also benefit the planet. But to make these kinds of systemic changes, we need to create new design processes that include everyone in the decision making process. In these courses, students will discover how the materials used for constructing buildings can impact human health outcomes. We are expecting to have anywhere between **5,000 - 10,000** enrolled students per year.

The goal of this initiative is to create a platform on which healthy materials **advocates** can connect and share information with other advocates. The members of this network will ultimately impart their knowledge to **unaware** students.





570 MEMBERS 200 DIFFERENT SCHOOLS

84

Year 7

231



Welcome

Logout

Browse our carefully researched and curated academic resources, including model syllabi and webinars.

Syllabus Support & Examples \downarrow

Teaching Tools 🧅 Videos 🧅

Teaching Tools



Materials, their Chemistry, and Human Health

Explore this introduction to the first two courses of our online learning program Haulthier Materials and Sustainable Building. This video offers a IG-minute comprehensive overview of products and materials and their impact on human health. Presse share with your colleagues and students. To start, click "Present" and use the annous on your keyboard or on the screen to begin your journey!



0. Material Health Overview

The documents included here introduce the issue of synthetic chemicals in the interior environment and should help you communicate to students how they impact human health. Use this as a reference to develop assignments and class exercises.



1. Certifications and Disclosures

The diagrams included in this section provide a simple overview of certifications and disclowers. These will analysis students to assess holding products and their impact on human health.

27. ACADEMIC NETWORK

The Lab established a new network of architecture and design educators to support the open exchange of information about Material Health in the Built Environment. Faculty colleagues from Art and Design Colleges and Universities are invited to join. Parsons Healthy Materials Lab in New York City has been conducting design research on this critical new topic for design and architecture and we are creating a host of new information and resources. All of our information and resources are available to members of our academic network to use in their course materials and in their existing architecture and design programs. The network is free to join.

In exchange, the Lab asked that members, in turn, provide and share anything that they may be working on in this field in their own schools and communities. Not all members of the network have in-depth experience in the field of material health in the built environment. This topic is new to many. The Lab welcomed all experience and interest levels to join in the sharing of this information. All that is required of members is to participate in a conversation surrounding this topic. The goal of this initiative is to share trusted resources, create a platform on

> The goal of this initiative is to create a platform on which healthy materials **advocates** can connect and share information with other advocates. The members of this network will ultimately impart their knowledge to **unaware** students.

which healthy materials advocates can connect and share information with other advocates. The members of this network will ultimately impart their knowledge to architecture and design students--the new designers of a better future.

With the help of ModLab, HML continues to work to improve the interface of the Academic Network page by enhancing user experience for members.



RESOURCES FOR ACADEMIC MEMBERS AND FACULTY

Syllabus Support and Examples

Syllabus support

MFA Interior Design Studio 3: Fostering Healthier Futures

MFA Interior Design Studio 3: NYC Dept of Health: Empowering Healthy Futures

MFA Interior Design Studio 3: Healthy Living with Grocery

Teaching Tools

Materials, their Chemistry, and Human Health

Material Health Overview

Certifications and Disclosures

Material Health Chemistry

Chemicals of Concern

Design Strategies

Building Materials

Construction and Post-Occupancy

Videos

Navigation Guide to Healthy Materials Lab's Website

Affordable Housing and Beyond: Addressing the Needs of All Populations

Beyond Transparency: Improving Product Decisions with Transparency and Material Health Information

Transparency and Material Health "In Practice" - Accessing and Using Transparency and Material Health Information

Managing Transparency and Materials Health in Practice: Introduction to Firm-Level Issues



COMPARISON OF MATERIAL HEALTH PRODUCT

CERTIFICATIONS & DISCLOSURES

CERTIFICATIONS AND DISCLOSURES

a struct, galering at a filling independent their particular structure particle fibrituation. The independent term is a particular structure of the independent term is a s

		Verification	Levels	Health Criteria			ia	Public Data	Adaption			
	Type						-	Availability	1	1	Ξ.	Ξ.
HPD 42	Parking	Third party optional	-	•	0	0	0	Full regredient Ini, with free perceived memploys	۰	•	0	
Declare	(initial)	Third garly systems	-	•	•	0	•	Full togethere is a well. Hills, amounts, and Neuroffi	•	•	•	
Credie to Credie	NUT at her petitigter	Second party"	111111	•	•	•	•	Transier (net decision)	•	•	0	
Blue Angel	Material State	Tred party writed	-	6		6	•	Surrent of Sultant	•	•	0	
Nordic Swan	Nutrativity antihiption	This party solited	3444 L	6	•	6	0	land of dations	•	•	0	
Bill MA Level	Nulli attribute internet at landure internetion	This party without		•	•	•	•	Inclusion de land	•	•	•	
COPH Section 05350	frisien with the	the gary writer	-	0	0	0	•	Second or Subset	•	•	•	

The second second

Materials, Their Chemistry, and Human Health



By Healthy Materials Lab Jan. 15, 2020



Present



Material Health Curriculum

Home

Learning Objectives

Table of Contents

Introduction to HML
Material Health Curriculum

0

- ¥ Week 1-3.
- ✓ Week 3-5
- ₩ Week 5-7
- ✓ Week 7-15

Material Health Curriculum

ACADEMIC NETWORK MEMBERS



RHODE ISLAND SCHOOL OF DESIGN



HARVARD GRADUATE SCHOOL **OF DESIGN**

ELISAVA Barcelona School of Design and Engineering **ELISAVA SCHOOL OF DESIGN & ENGINEERING**



NEW YORK SCHOOL OF INTERIOR DESIGN



TULANE





UNIVERSITY OF HOUSTON



APPALACHIAN STATE UNIVERSITY









FASHION INSTITUTE OF TECHNOLOGY CENTRAL SAINT MARTINS



ARIZONA STATE UNIVERSITY





DREW UNIVERSITY







RENSSELAER POLYTECHNIC INSTITUTE



UNIVERSITY OF ARIZONA





UNIVERSITY OF CAPE TOWN



THE COOPER UNION



UNIVERSITY OF THE ARTS LONDON


Annual Report Year 8













COPENHAGEN SCHOOL OF DESIGN & TECHNOLOGY









UNIVERSITY OF ARKANSAS, FAY JONES



THE PENNSYLVANIA STATE UNIVERSITY



HOCHSHULE RHEINMAIN



SAVANNAH COLLEGE OF ART AND DESIGN



NORTHEASTERN UNIVERSITY





UNIVERSITY OF KANSAS, SCHOOL OF ARCHITECTURE AND DESIGN



BOSTON ARCHITECTURAL COLLEGE



COLUMBIA UNIVERSITY



CARNEGIE MELLON UNIVERSITY

NULT New Jersey Institute of Technology

NEW JERSEY INSTITUTE OF TECHNOLOGY



UNIVERSITY OF OREGON

ADDITIONAL MEMBERS OF OUR ACADEMIC NETWORK: California College of the Arts · Lesley University · U of MN College of Design · College of Dupage · College for Creative Studies · California College of the Arts · Smith College · The Art Institute of Tampa · Plymouth College of Art · Kingston School of Art · CUNY City Tech · Fashion Institute of Design and Merchandising · Art Academy of Cincinnati · La Roche University · Middlebury College · North Branch Area High School · The School of the Art Institute Chicago · Massachusetts College of Art and Design · San Francisco Art Institute · Pennsylvania College of Art and Design · Villa Maria College · Kansas City Art Institute · Editora de la revista La Tadeo Dearte · Köln International School of Design · SUNY Buffalo State · Indiana University · SWPS University of Humanities and Social Sciences · Politechnical University of Catalonia · Ravensbourne University · Virginia Commonwealth University · Moore College of Art & Design · University of Tennessee

COMMUNICATION & DISSEMINATION

HML brings a range of expertise to the field of material health through the impactful use of a range of communications tools, including communications design and data visualization that support the translation of technical and scientific data into tools that influence decision makers. Drawing from industry consultants and in-house expertise, we are able to develop tactics and strategies to advance the mission of the Lab and accelerate change.

We have developed a communications plan to drive awareness, create demand, and drive change via new tools and resources. The plan identifies key HML platforms and their characteristics. Our planning enables us to connect all of our digital activities and funnel users through specific actions. The pathways enable us to convert participants to higher levels of engagement and expand our network – increasing our potential influence.











30 HEALTHY MATERIALS LAB WEBSITE



31 INSTAGRAM





33 NEWSLETTERS





35 FIELD RESEARCH



36 E-LEARNING MARKETING



37 AMERICA BY DESIGN



38 WOMEN IN ARCHITECTURE Do You Need to Worry About VOCs?

Indeficie organis configuraria (VICc) and all amont in, but part of the antidion to the problem is as any to specify a which is Name Indeficient to

39 DWELL MAGAZINE, ARCHITECTURAL DIGEST





EXPANDING AUDIENCE 2022 RESULTS

41 COMMUNICATIONS SURVEYS

Material Health Design Frontiers

Parsons Healthy Materials Lab

28. MATERIAL HEALTH: DESIGN FRONTIERS

Year 8 represented the culmination of more than three years of consolidating, rewriting, translating and disseminating the research outcomes of HML's 2019 symposium, "Material Health". At the request of well known UK based/ internationally renowned architecture and design publishers Lund Humphries, these materials were collected, edited, and compiled into HML's first publication "Material Health: Design Frontiers" published in the UK in November 2022.

How do we imagine new practices for architecture and design as we respond to today's global challenges? How does an understanding of the fundamental issues threatening our planet and human species change the way we practice and teach? Understanding and forefronting Material Health creates healthier futures for everyone. A bright future is on the horizon if we can collectively design new paths forward for the built environments.

HML's first publication explores the intersectional and complex meaning of health in the material world. We bring together people from a wide range of fields related to design, health, materials, climate change, environmental justice, and innovation to explore and bring definition to the new field of material health. Our intention is to ignite lively conversation, reveal new opportunities and launch ongoing relationships.

The collection of essays provides a platform to examine critical issues that constitute the burgeoning field of Material Health. We celebrate material innovation, grapple with new and long-sustained challenges in socially engaged research and practice, and critically reflect on necessary changes to architectural and interior design education and practice. Together, the exceptional perspectives explored in these essays identify viable alternatives and illuminate new paths for architecture and design. From a multi-disciplinary perspective, the book offers an overview of how design shapes our future and how the next decades will radically change through a deeper understanding of the fundamental issues threatening our communities, our planet, and the human species.

Books have been communicating and disseminating information for centuries. While our work at HML is ever-evolving, we find our first publication to be the embodiment of key aspects of our mission: collaboration and material health for humans and the Earth.



BOOK LAUNCH CAMPAIGN

Our communications team directed much effort to supporting the launch of HML's first book in Year 8. In the months leading up to the launch, we shared several "teasers," including what the book would look like, what topics it would cover, as well as actual spreads from the book and information about our authors.

To celebrate the launch, we held our first in-person event since before the pandemic. HML co-founders Alison Mears and Jonsara Ruth spoke to the attendees about the highly collaborative process of the book's making, as well as shared quotes from some of the essays. HML also provided several copies of the book itself to share with attendees, as well as a discount code for students.

80+ ATTENDEES

Annual Report Year 8







MH:DF Book Launch Images

METROPOLIS

10 Architecture and Design Books Worth Adding to Your Reading List

METROPOLIS MAGAZINE READING LIST

Metropolis Magazine added MH:DF to their list, "10 Architecture and Design Books Worth Adding to Your Reading List." From the editors:

"Material Health: Design Frontiers, an eyeopening publication from Parsons School of Design's Healthy Materials Lab, dives deep into the intersection of design and health. In this essential book, the Healthy Materials Lab takes readers on a journey through the innovative realm of sustainable design practices, covering topics such as decarbonization, waste and circular economies, and the building industry's relationship to fossil fuels. Through case studies and expert analysis, it offers a comprehensive guide for architects and designers to create a built environment that promotes well-being and ecological balance. Showcasing cutting-edge research and design strategies that prioritize human and environmental wellbeing, this is a must-read for architects, designers, and anyone passionate about shaping a healthier world."



Annual Report Year 8



MH:DF Book Launch Images

Communication and Dissemination

Global Goods, Local Impact

Equity and Justice in Material Circulation and Disposal

ANA BAPTISTA

Assistant Professor of Environmental Policy and Sustainability Management and Co-director of Tainman Environment and Design Center, The New School, New York, US

Why not start in the place 1 call home? The magical, benefited city of Swarek, New Joney, Perhaps more people have not load the planeau of being them; hot meey have at lase deficent through it. Roose were it, or have sweed predects that have noteed through it. More people from we might repect are infimmely lasted to Newatt – whether they have it or not. Hope to being entrypee closer to the city of Swarek through two stories — one of people and the entror of garbaps. I think them and being reserved, most tactical noise to the think about motive besite relevent, most tactical noise to the statistical about motive communities.

I want to feat explore two tames that are key to these station environmental justice and environmental review. We offers thick show concentremental partice in the state that all people have to a buildly contentment - in particular, people of calor, and low increase, independent marginalized or discrimins the offers of the same of the work (0.4 all have a sight to a discriming place to first and place, right to deepe our environment and the folded of our environment in positive ways. That is the Solo of our environment in positive ways. That is the Solo of our environment is possible ways. The is the Solo of our environment is possible ways. The is the Solo of our environment is possible ways. The site of Solo of our environment is possible ways. The site is Solo of our environment is possible ways. The site is sportlender with regard is white privilege, means that there is a sport that the site of the second seco

ANTONIA MEANING COURSE PROVIDENT





The Air in There

AARON DORF Architect, Director of Snehetta, US

"Healthy materials' is a broad turns – a generously broad turns – that towa have on every aspect of the design and building process. Many inclusions and designees, supself included, lawe been describing on a body of lower that tries to take on that very business of hashing practice, of sweathandning, to explore the business and hashing practice, or sup push projects beyond the certifications that won for war can push projects beyond the certifications. But we have today.

Loss a director and architect at Spolerita, an architectum, landscope and design priority, where I have worked for the pair ID years. It has been a periodic for any strain architectum, in North America and Europe, wide projects and additional afflexs having emerged anomed the work. In the Us, we have effects in New Work and Sart Tranckos, which segrither Euroon ear North and Sarth American work. Some of the larger projects that we have brocked known for include the Dalo Opers Howes, completed in 2007: the National September this Monorfal, the project that first hought as to New York, completed in 2008, and the Xim Tranckos, whileman of Nodern Art (SMACMA) expansion, completed in 2007; the National September this Monorfal, the project that first houseful as to New York, completed in 2008, and the Xim Tranckos Monorma of Natherias and Sever priors on a chance to being global outcorks.

There is, have vet, another body of projects that we refer to as 'powerhouse projects' - each a different research

Building a Circular Future

LASSE LIND Architect, 3XN, Copenhagen

It has been projected that within the course of the next 30 yours, havens with hold as much plothly as up have done previously throughout all of human bioarys? To accommodate plotd outwaristics, Namaehy is paing to estim as humanian marker of buildings. This within scaling is alwayly happening, of course - much clearly visible in no colled energing committee. We Sharptai around 1982 and spain in 2018. This words, taking together with the rationics to the our converse built environment in respensible for mogbly 40% of the CCQ emissions globally, and togethy 20% for future generation, suggess an occur-holdeningly donaring task to future generations.

But a SNN architects, we try not to be overly possionistic. Provinense and architecture du not go well superflue – why would amout exemute something if there built is helicit in the finance of their thing? So, we accept the challenges of the current would: we dush dury them, we authorize than. We try to change them into positive drivers for the design work that we are doing when into positive drivers for the design work that we are doing involv which is done out if an old guarbort their its Coperdagen.

A bit about no one practice complexities and Ecodorum research on a core part of our business. Take's king, it doesn't matter if it is due partors or the isomers who convex up with the idea: the idea is shee drives un. We because needing on Nerthern Durope, with some projects in Clanda and Australia, and see designs a right survey of building typologies. Perhaps what ready

Figure 10 Yorks transmitter baseling galaxies. Circle Header could research descendentials: Circle strengths with research particular contractions places manyles, and selected spin particular (Hallpools arising of 10%).

NATURAL MERINE INTO A VALUE OF STREET





CHARLOTTE MCCURDY

Designer and Assistant Professor of Product Design, Rhode Island School of Design, US

What do we maan rolativ we say the prod to replace curbon? We focus as to of table of decarbonization but what encarby woold decarbonizing new column both Bio? Clamate change is toothying and pumbying toolhole about mill clear discussions of when extens on-climate woold ready means for day to day bids is consequently. Tacking, This tack of tangible, along timigers of a licible forces, in ture, forcher contributes to the torus and pumphole.

In terms of emissions associated with energy generation, we have unlevel the technological problems. Subar and wind alternatives are now cost competition; hetery toch is an the versus of busiding through to being cost assophistics. A low carbon energy restity is now the not ne dataset fatase. So what problems are left in that fatase layer emissions would, what we use an isongrab burning quite as much fixed link for energy? We will all be using family facts to reacted. We will all fixe

We will asile be using thand huch so resolution, We will asile the turning down rankeness, and releasing the caraboldod carbon from to started in those standardsens. We will all have to dole with the third of global emissions categorized as Vitreet emissions? In fact, this loangeworknowli Frand os Chanar Change direct released new reflexiveness on the ways in which constrains are being adout to recourse part of report these. Heads of providences gas emissions. This is due find update on heat their orientations are instantion. This is due find update on heat their orientations are instantion aintee 2006, so the data is shown in get cleaver and that will give as a before persons about the prevent, and the finance.

Pages 10 Ouriges, Million in a Hash Register Approximately recent Procementation of Charlotte Probability

NATIONAL MEMORY DISTORTION OF BRIDDING PROVIDENCE



Spreads from Material Health: Design Frontiers by Healthy Materials Lab



29. COMMUNICATION STRATEGY

We have continued to develop, modify, and optimize our multi-pronged communication plan to drive awareness, create demand and drive change via new tools and resources. We have developed new strategies with the goal of increasing our audience and transforming practice at multiple scales. Our strategic communications plan includes the marketing of our online certificate program, promotion of our public events, sharing takeaways from our research, and awareness around innovative designers and materials on the forefront of the healthy materials field.

Through surveys, networking, and other research tools, we have gained deeper understanding and insight into our various audiences and honed our messaging accordingly. We have refined how, where, and when we message our various audience segments, which include undergraduate and graduate design students, practicing architects and designers, faculty, and community based organizations, in order to optimize our engagement with them.

In Year 8, the HML communications team began deeply analyzing data and metrics of all of our communications efforts. This involved compiling information and meeting monthly to identify strengths and room for improvement in our communication strategy. These meetings help steer the direction of our communication, as it is ever evolving. The next spread includes examples of data and metrics collected each month.

WEBSITE ANALYTICS

For the website analytics, we look at Page Views, PDF Downloads, Total Visitors, how users find our website. We compare all of these items from month to month.

TOP 10 PD DOWNLO	ADS - 2022 # of PDFs on website =	~600	Total PDF downloads in 2022 = 3,865	
	Method Cards (Print & Digital)	349 256		
	Healthier Materials and Sustainable Building Syllabus			
	Healthier and Sustainable Affordable Housing Syllabus	238		
	HempLime Booklet	182		
	Better Building	152		
	10 Simple Steps	142		
	Textile Guides	118		
	Duracryl Corques Specsheet	61		
	Plastic Types Infographic	49		
	Year 6 report	42		

TWITTER ANALYTICS

For Twitter analytics, we look at overall visitors, likes, post engagements and overall performance. We then adjust what and how we post accordingly.

			In NO. Los		
			THE REAL OF	Accession and a second second second	and the second
e Send The method of the send to the	a for Electronic marks	2,352	Top Tweet and its masses with of	Top maritish	14
n derer populare ander fondige anterball of Inscrieb, proze kennellis. Dar nammel werk delty chiede inscrieber in fighted	tar ningthang tar a 1,220	T	fendesmanhalistics". No.an inginer to fai territurna with and	EVENT Approach, 1985, and the busing a sectors with Flatbert Weight, Mills 1974, read	1,281
Contract Contraction	Antonia Contractoria (MAL		the name place funding includies air master to make coffic collectioning	Repaire to the overt, pr to bit offering	7
ing ty data mayor and a second s	performent antibiotic		Bi Blass	taxies in our	
We're Hiring			VA	erwironments?	
And a state of the second s			123	er er er	
attendes			Real Production (State State State	Top mode feest	
Televel and the second			Top Patterner Incoming all pages	Repared and a constant of the legal of Mary	

More followers and more tweets does not necessarily mean more engagement, but at some point it would. Monthly difference (color in comp to last month's difference) Aug to Sept:

Tweets: +3 // Impressions: +107 // Profile visits: +61 // Mentions: +22 // Followers: -2

LINKEDIN ANALYTICS

Our LinkedIn page brings together a lot of our social media content. We look at post highlights, impressions, followers, visitors and shares.



INSTAGRAM ANALYTICS

Instagram is a great tool for communicating and sharing. We look at our best performing posts compared to our worst, followers, impression, reach, profile views and overall engagement.



YEAR 7

YEAR 8

68,447 65,135 **USERS**

198,889 183,743 **PAGE VIEWS**

102,599 97,126 sessions

3:57 **AVG. SESSION DURATION (MIN)**

3:38

HML WEBSITE ORGANIZATION

The website is organized in order to address the needs of audience members ranging from Unaware to Advocate by providing information that introduces the issue and a host of different resources.



Healthy Affordable Housing

Material Collections

Healthier Design Alternatives Natural and Healthy Databases of Certified Products Design Forward Product Libraries

Projects

Learning Hub

Tools & Guides

30. HEALTHY MATERIALS LAB WEBSITE

Healthy Materials Lab's website promotes transparency and advocates for an industry wide change in the material specification process. The goal of the website is to situate human and environmental health considerations as central to material specification. The website collects and curates a library of resources, including new content generated by HML, and is the virtual counterpart to the Parsons Donghia Healthier Materials Library physical collection of materials. By consolidating these resources into a simple online interface, the site increases accessibility and facilitates the practical implementation of healthier building practices.

We forefront easy navigation and search functions to enable users to access concise information and navigate to their specific needs. The simple text is complemented by intuitive graphics, first person narratives and stories, and suggestions for related content throughout. The interconnections created between subjects emphasize the systemic nature of complex topics and allow users to easily access information.

As the site grows and evolves, we have developed additional tools and added more useful information. We are constantly working to improve user experience and clarity.

The HML website represents one of the most comprehensive efforts to guide audience members up the ladder of engagement from **unaware** all the way to **advocate**.



Featured Collections



Healthier Building Products Collections See al TI Collections

These collections contain examples of healthier options, which disclose a minimum of 75% of ingredients by weight and avoid the most eignificant health concerns. Critical to our evaluation process is the impact of materials on human and environmental health throughout their Mecycle.



Healthier Design Alternatives Collections See all 5 Collections

From model making to finishing to applications throughout a space, human and environmental health considerations must be firefronted throughout the entire design process. These curated product collections contain products that contribute to a healthier design in a range of areas.



Natural and Healthy Collections See al 5 Collections ->

Natural materials combined with current technology can produce high-performing and healthier building products. For example, many natural materials are free from toxic additives such as PFAS or flame retardant chemicals. Because they also biodegrade at the end of their useful life, these materials may also benefit the health of soll, water, and ecceystems.





Here's what we're currently working on in our commitment to raise awareness about toxic chemicals in building products, and the importance of healthy materials through research, demonstrations and education.

Trace Material Policast ↓ Healthy Atteniable Browing Case Station 🚽 Demonstrations 🌡 Annual Reports 🧅

Trace Material Podcast See al 27 projects



Harvesting Housing In this episode, we head to Nambia to explore the ins and outs of a project that's addressing Nood insecurity and a housing shortage with the power of mycellum.



Mycelium for the Masses This week write in Upstate New York to talk to the leaders of a mycelium material revolution.



Nature's Detex This week, write in California learning about fung's power to clean up toxic sels and debris after wildfree with Californewa's Maya Elson.



The Citizen Scientist In this episode, we go down to Penneylvaria to talk to Willen Pedilla Brown, a citizen accertiat, and founder of Mycosymbiotics.

Healthy Affordable Housing Case Studies territory



First Community Housing Based in San Jose, CA, the project team demonstrates a commitment to bettering lives through integrating their alfordable housing development with services - a model of "housing is healthcare".



Foundation Communities The project team provides affordable housing in Austin, TX that integrates education and healthy living to enable "families to succeed"



Trumbull Neighborhood Partnership

THP's single family renovations in literan, a nustbell Dhis sity, are designed and executed to contact high rates of home abandownent. These renovations, often minor and cest effective, incentive community members to re-invest in their city.



Carmel Place

In response to increasing numbers of single person households, Monadrock Development LLC and the Lower East Side People's Mutual Housing Association, realized a HYVE driven pilot-study to explore mere housing options, using modular construction



BIG x HML - Healthier Model Making

How can healthier Model Making set the stage for designing healthier buildings? This question is the foundation for a collaboration between BIOs (Bjarke Ingels Orsug) Model Making Center in Copenhagen. Dermark and HML.



Community MusicWorks Center

Community MusicWorks Center will be a central, inclusive gathering place in the heart of Providence's West End, embodying CMV's sustainable musicar and values HMC, is partnering with the team to golde material health strategies.



HML + Attordable Housing Architects and Developers: STAT Architects and Riseboro

Designing and Building Healthier Housing with Dat Architecture and Risoboro Community Partnership



Building Healthy Homes: A mission for millions HML's new Building Healthy Homes initiative is a collective

Iving map and data-base of projects across the USA that face made healthy material changes to an affordable housing project. Read wors to find out how you can participate!

Communication and Dissemination



HML Instagram profile

31. INSTAGRAM

Instagram is a large part of our communications strategy to strengthen industry partnerships, cross-promote content, and reach a wider audience. In Year 8, we continued initiatives such as Material Mondays to share information about healthier material alternatives in a way that is engaging for designers and millennials alike.

We plan to continue using Instagram as an effective tool to develop HML's communication strategy, broaden our reach, and support our theory of change. As one of our key learnings, we found that Instagram is a great platform for building a network of independent designers who are pushing the boundaries of using healthier materials in new ways.

We use the "link in bio" feature on our Instagram to connect people to our other communications outlets and initiatives, like our newsletter signup, Trace Material Podcast, Building Healthy Homes submission page, and the HML website.

Instagram helps to increase supporters and broaden awareness of healthier materials among a design audience. Our account disseminates resources and knowledge of healthier materials in a visually engaging way that is both friendly and authoritative.

BEST PERFORMING POSTS

In Year 7, we learned that Instagram posts driven by educational content are the posts that perform best - meaning, these posts are "saved" the most so that people can refer back to them, they reach the highest number of accounts, and they gain us followers.

In Year 8, we used Instagram to not only promote ongoing projects, research, and workings of the lab, but to also post digestible pieces of information. Posts featuring materials and products we love and announcements for events and new resources increased engagement while disseminating knowledge to a wide audience.

17.2K AVG. NUMBER OF ACCOUNTS REACHED PER MONTH

Annual Report Year 8



Accounts Reached

354 Saves

9,366 Impressions



"Your zip code predicts your health better than your genetic code. Zip code is a proxy for things like socioeconomic status, racism, and environmental pollution."



287 Likes

3,840 Accounts Reached

96 Saves

4,592 Impressions

471 Likes

6,578 Accounts Reached

> 98 Saves

7,827 Impressions



Production Biopreferred. What Does It Mean? What Does It Mean?

The largest contributor of a product's carbon footprint is not global transport.

It's the materials we choose. 220 Likes

6,487 Accounts Reached

69 Saves

13,310 Impressions

347 Likes

> 6,126 Accounts Reached

129 Saves

> 7,060 Impressions

318 Likes 0

4,203 Accounts Reached

> 146 Saves

5,268 Impressions HML Materials Collections Mineral-Based Paint Examples We Have Tested

LIVE EVENT ANNOUNCEMENTS

In Year 8, our communications team put forth more effort to announce all events, presentations, panels and discussions that our team had either organized or participated in. This created more traffic and more attendees to events, especially those that were virtual.



EVENTS ON DEMAND

In Year 8, our communications team boosted efforts to direct traffic to the HML website to see our recorded events and lectures. We love the chance to connect with one another in person, but a hidden perk of virtual events has been that we can reach more attendees by making it so they can watch and learn about healthy materials and affordable housing on their own time.





Overview

We are Healthy Materials Lab at Parsons School of Design, dedicated to a world in which people's health is placed at the center of all design decisions. We are committed to raising awareness about toxics in building products and to creating resources for all designers and architects to change practice and make healthier places for all people to live.

Website

http://www.healthymaterialslab.org

Industry

Design Services

Company size

11-50 employees 19 on LinkedIn

Headquarters

New York, NY

Founded

2015

Specialties

sustainability, research, materials, material innovation, material science, affordable housing, health, building materials, building products, healthy materials, parsons school of design, design, vulnerable populations, toxics, manufacturers, education, industry development, innovation, e-Learning, human health, and the new school

32. LINKEDIN

As a platform, LinkedIn has achieved record growth in the past year, with a total of 900 million users. In Year 8, we managed to double our following while creating around 200 posts.

We have been using a LinkedIn company page to connect with individual professionals or companies that are neither on instagram or facebook or that prefer using this platform for their professional connections and interactions. Our followers on LinkedIn are mostly from the following industries: architecture & planning, design, higher education, construction, building materials, real estate, environmental services, civil engineering, research and nonprofit organization management. We lean on this channel to communicate to professionals about our eLearning programs, invite followers to our events and share news or calls to action from the HAMP partners and other organizations that align with our mission

LinkedIn Visitors Demographics

- 23.8% Architecture and Planning
- 8.8% Higher Education
- 8.3% Design Services
- 2.9% Interior Design
- 2.8% Construction
- 2% Research Services
- 2% Non-Profit Organizations
- 2% Real Estate
- 1.7% Wholesale Building Materials
- 1.8% Business and Consulting

LinkedIn helps to increase supporters and broaden awareness of healthier materials among professionals. Our account disseminates resources and knowledge of healthier materials in a visually engaging way and allows us to easily connect with other professionals working in related fields and keep track of developments in the industry.



COMPETITOR ANALYTICS AND REACH

We see our reach as an important part of our mission; the more people and accounts we can reach, the more potential for impact we have. For this reason, it is worth mentioning that the individual networks of HML co-founders and senior researchers often act as extensions of our collective network. These HML leaders share our work, and we share theirs as well as tag their accounts in our posts. This practice increases our reach and engagement. On LinkedIn, we are able to compare our followers and engagement statistics with others like us on the platform. This gives us an idea of where we stand among our competitors and ideas for improvement. After the growth we achieved in Year 8, we are proud to rank at the top in terms of followers and engagement with our content.

Healthy Materials Lab at Parsons School of Design Create Healthier Spaces and Support Healthier Lives-Through Involution, Education, Communications Design Services - New York, NY - 4.288 followers - 18 employees

Annual Report Year 8

				Q1 2023		
(arrange and a contraction (arrange and a contraction)			Competitor and place (Income Income)	(- 03	
		÷.		The second secon		2
Maximum		the second se				
~	Territory.	-	and the second se	-	the black	-
1 Bankan di Bankan	100			·	+=	-
p - management	-144	-		A	-	-
2 E Terristeren internet				*		-
4. D				• D		
1. I have been been been						
1 📆				1 g		
Rest inference Automation		Local differences and the second second	Taxa and taxa a			
w.	Terrarent.	-		-		-
1.0	-	-		1.8 mm	-	
-	-	-		• 0	-	-
8 #					(*	
t - months	(e)			-		
1 🗮 100,000 (0000)	.*.			· =		
1 I manufacture				A Management		





Healthy Affordable Housing for All. Donate today.

March 2023

the second of the



Learn about our latest collaboration!

<u>Community MusicWorks (CMW</u>) has been serving communities in Providence, RI for 25 years, guided by the mission to create a "cohesive community through music education that transforms the lives of children, families, and musicians." We're collaborating with CMW and <u>3SIX0</u> architects to facilitate the inclusion of material health into the building of their new center.

Read about the project

55,886 NEWSLETTERS

OPENED

33. NEWSLETTERS

Within this grant year, we continued to send out newsletters to our almost 14,000 subscribers. In the previous years, newsletters were sent out periodically, but we made an effort to increase the frequency to every month. We have continued to track how many of our subscribers open the newsletters we send. We saw an increase in our open rate in Year Eight, which now is at 40% (the industry average is 21%). Year Eight Newsletter Statistics

13,890 Subscribers

11 Total Newsletters Sent

58,886 Total Newsletters Opened

5,080 Average Opens per Month

Our monthly newsletters have increased engagement and interest in our on-going projects which results in observers becoming supporters & advocates.



Communication and Dissemination

TRACE MATERIAL RANKS AMONG THE TOP 10% OF PODCASTS GLOBALLY.

via Buzzsprout, one of the world's largest podcast hosting platforms.

50,181 DOWNLOADS YEAR 8

30,616 DOWNLOADS YEAR 7



34. TRACE MATERIAL

In Year 8, we released Season 3 of Trace Material, a podcast produced by Healthy Materials Lab that breaks down the building blocks of our constructed environment, one material at a time.

The episodes of season 3 averaged 492 downloads in their first week of publication, an improvement over the second season. According to updated 2023 stats from Buzzsprout, one of the largest podcast hosting platforms in the world, podcasts that receive more than 443 downloads in their first seven days are in the top 10% of podcasts globally.

With minimal budget for marketing, our communications team has managed to grow our diverse audience through engaging campaigns across social media and through our existing networks. Word of mouth and press coverage has further expanded our reach as we continue to promote this season of the podcast.

As a design-led research lab, we've been reminded once again that centering human stories is a critical part of our work. That humanities focus helped us resonate with our audience. Here's what some of our general audience had to say in our Apple Podcast reviews: "This show provided me with useful and incredibly relevant information. The hosts are so good at making the information easy to understand, while not doing anything down for the listener and providing clear context both historically and in present day. I can't stop recommending it to friends/family!"

"A very good podcast with easy to listen to hosts. Well thought out, low key, and in depth."

"Very encouraging and presents a silver lining to all the destruction we've seen"

"Thanks for exploring a vibrant and responsible episode about fungi. I'm a big advocate and follower of fungi in all its permutations. Looking forward to the future episodes!"

Ashley Lusk recommended Trace Material for Bello Collective:

"Don't let the publisher fool you: Trace Material may come from the Parsons School of Design's Healthy Materials Lab, but it's anything but academic ... if you want to say you're listening to a podcast about climate change without saying you're listening to a podcast about climate change, add Trace Material to your queue."

Podcasts are a method of storytelling that can move people up the ladder of engagement in an entertaining way. In this season of Trace Material, we dig into an experimental material and its potential to an **unaware** or **observing** audience.



Communication and Dissemination



Images from Leila's experience at the 2023 Heimtextil Trade Show

35. FIELD RESEARCH

In Year 8, HML continued our Field Research by documenting experiences at trade shows or exhibitions.

Senior researcher Leila Behjat attended the 2023 Heimtextil Trade Show. The "Textiles Matter," Future Materials Library exhibition by Franklin Till was of greatest interest as it explored four key routes to circularity. While the title seemed to focus on traditional textiles, the exhibit gave space to prototypes and products beyond fabrics in four paths to circularity. The four paths were grouped in two cycles: The technical cycle held the paths "Make and Remake" & "Continuous" and The Biological Cycle held the paths "From Earth" & "Nature Engineered."

The correlations between the textile and building world are manifold. Speaking with the exhibitors at these stands was a natural conversation on transparency, the curiosity about "what is inside," avoidance of toxics, and the idea that products need to answer to sustainability and health coherently throughout their lives.

The entrepreneurial, experimental spirit was contagious and seeing huge groups of people from all over the world learning, exploring and documenting these innovations and products showed that these topics are becoming more front of mind. Particularly the Nature Engineered section showed interesting products made from hemp, mycelium, sunflowers or brick and highlighted how agile the world of design innovation is.

Field research is an effective and refreshing way for our team to get inspired and expand our work. Seeing these products and innovations in person informs our exploring, research, and material vetting. A few product examples found at the trade show have been vetted and samples requested for the library.

Creating content and posting about our team members field research adds a new type of dissemination. This creates new observers and supporters.



Healthier Design For All





Classes begin today. Register to learn more.

Healthier Materials and Sustainable Building

Healthy and Sustainable Affordable Housing 4 COURSES 22 HOURS OF VIDEO 134 INTERVIEWS 24 ORGANIZATIONS 11 EDUCATIONAL INSTITUTIONS 5 CONTINENTS 11 COUNTRIES 18 ARCHITECTS 7 DESIGNERS

HEALTHIER MATERIALS & SUSTAINABLE BUILDINGS

HEALTHIER SUSTAINABLE AFFORDABLE HOUSING

7 SCIENTISTS 18 PROFESSORS 3 ENTREPRENEURS 3 STRATEGIC CONSULTAN 1 PEDIATRICIAN 1 LAWYER 1 INDUSTRIAL HYGIENIST

1 MARKETING CONSULTANT
36. E-LEARNING MARKETING

We have continued developing our marketing strategy for the online education programs. One of the goals in this year's campaigns was to ensure we were speaking to the different professionals that the programs are geared for, including architects and designers, but also contractors and manufacturers. This led us to vary the choice of words between design, develop, build, craft and innovate.

We conducted two live virtual open houses for interested participants to ask questions and hear from the program alumni. Detailed accounts of these events can be found in the Education section of this report.

Much of our communications efforts are focused targeting observers and enrolling them in the eLearning program. The courses are designed to turn participants into advocates.



E-LEARNING EXPANSION

We are growing our E-learning network. In Year 8, we prepared for the launch of coursework by HML on Coursera, a global online learning platform. HML coursework can also be accessed via FutureLearn. In year 9, we will expand our education content to YouTube, where people will be able to access free information about healthy materials and affordable housing.

These efforts are in addition to our existing coursework through The New School, and our involvement in the development of the Six Classes series by the Green Science Policy Institute.

2,000+ TOTAL STUDENTS LEARNING IN YEAR 8 Annual Report Year 8

ENROLLMENT / PARTICIPATION



1,130 STUDENTS SUMMER/FALL '22

892 STUDENTS SPRING '23

coursera

4,000+ STUDENTS SINCE APRIL '23 LAUNCH

___ Future ___ Learn

600+ STUDENTS ENROLLED



52,000 YOUTUBE VIEWS TO DATE





57 VIDEOS

MORE TO COME IN YEAR 9!

HML Coursework Learning Platforms

1.2 million **PEOPLE REACHED PER EPISODE**

Featured Innovations



ADOBE EXPRESS In Secenther of 2021, Adobe introduced Adulte Express = a web and mobile based app that makes it easy to treate standout content from fillularity of beautiful terrorated.

1 PARK WINDS

CONCEPT LUNA

LOADS MUSIC

FOOT DEFENDER

and prevent amputations.

A vision for sustainable PC design Concept Lune purchas the investaries of design attiving involution to reduce, reuse and create a significantly reduced product

and create a significantly reduced product particle footprint.

were now



AMERICA DESIGNED WITH DESIGN EQUITY

LEARN MORE

What if the future of every community included Design Equity¹⁷⁷ A future where everyoke grant up in a space their inflation their status and Antisiga and where this principle became the root of every interior everyone everyone. depigt decretes.

DEMOCRATIZING HOME DESIGN

The best qualities of materials such as particular conchelia and shael are taken and

continued to produce a technological achierce, capable or arguing efficiency and conditucture effectiveness, resulting in faild structures, but at the same time

VINTE NOW



As the function of our homes continuously charges, function needs to adapt. Automatic is a mobile lounge char that gine where you go.

12449-0008



DONATION DOLLAR

The Royal Australian Wet (the Milet) focused or provising the australian public's needs above all the indeveloping a unique product that would create a positive impact across Australian society.



VOTE NOW

manufa menunals LEARN MORE

LEARN MORE

VOTE NOW

LANKS MARE YOTE NOW

Some featured innovations and other finalists.

37. AMERICA BY DESIGN

HML's work with Kia Weatherspoon is featured in Season 3, Episode 4 of America by Design Innovations. In the episode, Lucy Jones interviews Kia about her work in design equity in affordable housing. Both HML and Kia believe that access to aesthetics and health must not be determined by socio-economic status. All communities, including low-income communities, deserve to live in homes that will enable them to thrive.

HML's task with Kia Weatherspoon's firm, Determined by Design, involves designing elegant and healthy affordable housing. In the episode of America by Design, HML cofounders Alison Mears and Jonsara Ruth help Kia select healthier finishes than the standard and toxic vinyl, as well as explain the importance of Kia's work.

HML's and Kia's work in Design Equity went on to become a finalist in AbD Innovations Season 3.

America by Design has a large audience of people across many industries. Our involvement allows our work to reach those who are **unaware** or **observers** and create more **supporters**.









Stills from Episode 3 where Kia's work with HML in Design Equity is featured.

Annual Report Year 8



Stills from Episode 3 where Kia's work with HML in Design Equity is featured.



Architectural Record





2022 WOMEN IN ARCHITECTURE AWARDS





38. WOMEN IN ARCHITECTURE

HML co-founders Jonsara Ruth and Alison Mears were awarded Architectural Record's Women in Architecture Innovators Award.

Design innovation begins with materials.

We're invested in a future where our Health, in the largest sense - societal, urban, economic, political, environmental and people's health - will thrive. What if we change our design practices to construct a new future? We hope that architects and designers will be inspired to build many more healthy affordable homes. Parson's Healthy Materials Lab is here to facilitate the process—we provide designers, architects and professionals in the building industry with the resources and support they need in designing healthier places for all people.

We thank Architectural Record for spotlighting the importance of material health and innovation in healthier design practices.

Being honored by Architectural Record creates more **supporters** and **advocates** in an audience of innovators alike.



Communication and Dissemination



Do You Need to Worry About VOCs?

Volatile organic compounds (VOCs) are all around us, but part of the solution to this problem is as easy as opening a window.

Text by

Illustrations by

Bridget Reed Morawski

Scott Wilson

Headlines for Architectural Digest and Dwell articles featuring quotes from HML's Jonsara Ruth

39. INTERVIEWS: ARCHITECTURAL DIGEST AND DWELL

Jonsara Ruth of HML and Mary Holt of Carnegie Fabrics were interviewed as part of Architectural Digest's article, "Is it Officially Time to Ditch PFAs?" The article written by Christina Poletto explains what per- and polyflourinated substances (PFAS) are and why they are a problematic additive in our interiors and homes.

"People are exposed to [chemicals] in their homes, but also if they live or work near production or disposal facilities. And, not surprisingly, underserved communities are disproportionately exposed. That is why our work focuses specifically on improving the homes of people living in public or affordable housing."

Jonsara Ruth for Architectural Digest

Architectural Digest and Dwell are of the leading voices in architecture and design. This allows our work to reach a large audience of **observers** and create more **supporters**.



NY11+ Exhibition: 'Wellness of Interior Design' with Prestigious New York Interior Design Colleges at Port Authority Midtown Bus Terminal

April 6th, 2023 / New York, NY

El Stars W Terret Californi

60+

ATTENDEES



40. NY 11+ EXHIBITION

HML Co-director Jonsara Ruth was a panelist at the NY11+ Exhibition: "Wellness of Interior Design" with Prestigious New York Interior Design Colleges at Port Authority Midtown Bus Terminal.

"In this substantial exhibit in a main thoroughfare, the work of interior design students are displayed to educate the public on the benefits and potential of studying and practicing interior design. The focus of the exhibit is to highlight one of the most relevant issues of our day: HEALTH+SAFETY+WELFARE=WELLNESS."

HML presence at public exhibitions like NY11+ can help people go from **unaware** all the way to **advocate**. These events have ripple effects; they educate, they inspire, and they can even recruit people to participate in our field of action.



40% WANT TO KNOW HOW COMMUNITY NEEDS ARE RELATED TO HEALTHY MATERIALS AND AFFORDABLE HOUSING

50% WANT TO KNOW MORE ABOUT HOW AFFORDABLE HOUSING AND HEALTHY MATERIALS ARE RELATED

> 40% WANT TO KNOW HOW TO HOLD DECISION MAKERS ACCOUNTABLE

63% WANT TO HEAR FROM US THROUGH OUR WEBSITE/BLOG 92% OF RESPONDENTS INDICATED AFFORDABLE HOUSING AS THE TOP ISSUE THEY CARE ABOUT

34% WANT MORE EDUCATIONAL COURSES

49% WANT TO HEAR FROM US ON INSTAGRAM

> 67% WHOTOOK THIS SURVEY WERE ARCHITECTS AND DESIGNERS

34% WANT HEAR FROM US VIA LINKEDIN

41. COMMUNICATIONS SURVEYS

A new communications initiative that we started in Year 8 takes the form of an email survey for expanding our audience and outreach. Over the summer, we sent surveys to over 500 people on our email list. The questions we included covered demographics, topics of interest, current challenges or barriers for change, and best forms of communication. We feel it is important for us to reach out directly to our audience as a way of keeping our work relevant and useful to them. We were excited and enlightened by this year's survey results, and plan to continue this initiative to larger audiences in the future.

Communications surveys bring attention to interest in specific areas of our work, through a lens of democracy. As a result, we can provide resources for people that directly relate to their needs.



INDUSTRY & PROFESSIONALS

HML is continuously working with government agencies, designers, residents, advocates, and other organization to material specification process and establish better industry guidelines fro material health. By working on both large-scale policy shifts, applied demonstrations, and audience specific conversations and workshops, HML aims to create systemic, long-term changes in practices that will affect the entire building materials chain – and the people who occupy these spaces.

In Year 8, members of HML participated in leading industry panels, gave presentations at offices and conferences around the globe, and engaged professionals from different sectors of design, affordable housing, construction, and fashion.

These events and conversations are critical to the work we do. Not only are they opportunities to share our knowledge about materials and health, it allows us to more specifically understand where the industry is and personally connect with the people within it. Furthermore, each connection is an opportunity within various industries and communities to increase our audience and create more healthy material advocates.





51 DURACRYL PRESENTATION



52 HML X BIG

community musicworks

53 CMW PROJECT CONTRACTOR PRESENTATION



54 DISCUSSIONS + WORKSHOPS

WANTED DESIGN

42. WANTEDDESIGN: ECO SOLIDARITY TALKS

HML co-founder and Design Director Jonsara Ruth was a panelist and member of the 2022 ECO Solidarity 2022 Advisory Committee.

During the panel, Jonsara noted that:

"It is more and more evident that pressures, such as climate change and harmful pollutants, are challenging the health and lives of communities globally, and its clearer than ever that designers need to respond and can make a real difference for future generations on our planet."

The initiative partners with EUNIC and nine of its cultural organizations to present an exhibition and hold discussions with an engaged New York City audience. The exhibition was designed and curated by architect Deborah Wang and explores "radical sustainability" through urban and product design, energy, and waste.

75 ATTENDEES Initiatives like ECO Solidarity move "conversation to implementation of solution" in helping to heal the planet through design.





Photos from presentation.

43. AIA PITTSBURG PRESENTATION

HML Co-founder Jonsara Ruth and post-graduate researcher Meryl Smith presented our PA Hemp Home Project to members of the AIA's Pittsburgh chapter.

In the presentation, Jonsara and Meryl summarized the project and gave pertinent details about the process of adapting a home that was initially designed with mostly petroleum-based finishes. Beyond being a healthy home, the PA Hemp Home is a model for how architects and designers can adapt structures to be more healthy for people and for the planet. The presentation included examples for how HML replaced petroleum-based building products with healthy versions: vinyl siding was replaced with a wooden rainscreen, petroleum-based insulation replaced with HempLime, vinyl tiles replaced with ceramic tiles, and laminate countertops replaced with granite.

10 AIA PITTSBURG MEMBERS IN ATTENDANCE This event was an opportunity to speak to leading professionals in the architecture industry and present them with not only professional critique, discourse, and research but applied and successful solutions.



CARBON SEQUESTERING

Symposium 2pm-7pm

Carbon Sequestering 2:00PM-3:15PM

The Largest Passive House Retrofit 3:15PM-4:00PM

Rubin Hall, NYU

FX Collaborative

Welcome by NYPH + Parsons Dr. Kimberley Rein Miner — Climate Tipping Point Dr. Wolfgang Feist — PHI research update (virtual) Chris Magwood — Build Beyond Zero

Embodied Carbon Story at Lendlease: 4:15PM-4:30PM Amanda Kaminsky

Engineering with Concrete & Wood

The Whole Carbon Picture 4:30PM-5:30PM SOM - Sequela Skysoraper

IOM - Sequola Skysoniper Attenuitive Products and Manufacturing Sequola Skysonaper - Yasemin Kologlu Prometheus - RSD Perspective

Interactive Networking

5:30PM-7:00PM O&A Panel — Alson Mears, Parsons HML Open Networking - Open Bar Alver Johnson/ J.M. Kaptan Hall

Passive House Retroft Michael Syracuse Cecil Schelb

Workshops

BEAM: A Tool for Climate Action 9:00AM-10:30AM Chris Magwood

Using the PHPP to Assess Operational Carbon Emissions 9:00AM-10:30AM Ed May Embodied Carbon 101 Building 9:00AM-10:30AM Aurora Jensen

9am-10:30am

25 East 13h St

44. CARBON SEQUESTERING SYMPOSIUM

HML, in collaboration with Parsons School of Design and New York Passive House hosted the 2022 Carbon Sequestering Symposium.

A combination of lectures and participatory workshops, this event brought students, industry members, and professionals across all fields of science and design together to participate in the critical discourse of design's carbon impact, and develop solutions together.

HML Co-founder and Director Alison Mears gave the opening remarks at the Symposium and was a panelist for the discussion segment titled" How to move forward?".



This event, composed of eight segments created the space for in-depth exploration and collaboration of the intricacies of the building industries carbon impact and allowed both **advocates**, **unaware**, and **supporters** to not only learn from each other, but actively develop **new strategies**.



Gensler | Sustainable Materials Resource Group January 2023

Rethinking Materials for Design

Material Health Human Health Environmental Health Healthy Spaces

Jonsara Ruth

Co-Founder & Design Director, Hearthy Moterialet ab Associate Professor, Interior Design Parsons School of Design | The New School Leila Behjat Senior Researcher of Materials, Practice and Design Healthy Materials Lab (Parsons School of Design Architect

86,000+ chemicals

62,000 (99%)

chemicals were "grandfathered" in

1976

US CHEMICAL REGULATIONS

only 250 tested

5 chemicals (partially) restricted • Asbestos

Hexavalent

Chlorofluorocarbons

PCBs Dioxin

PARSONS

ATTERIALS LAB

THE 10-STEP PROCESS



45. GENSLER SUSTAINABLE MATERIALS RESOURCE GROUP

Our material choices have immense impacts. Jonsara Ruth and Leila Behjat presented to Gensler's New York practice. With 53 offices worldwide, Gensler is one of the world's leading firms in civic, residential, and commercial projects worldwide.

During the presentation, the HML team discussed how our decisions about which materials or things we include in a design directly impacts the future health of people, communities, ecologies, and ultimately, the future of health of the planet we all depend on.

As part of Gensler's commitment to sustainable and compassionate design, this presentation encouraged Gensler to reorganize their in-house materials library, change their design choices, and bring on healthy material researchers dedicated to developing the firm's resources and knowledge.

61 PARTICIPANTS

Hosting discussions with industry supporters who have immense impact on the world's built environment not only spreads awareness outside of NYC but allows HML to develop resources to better address a variety of cultural and civic needs.



Industry and Professionals



Slides from presentation.

46. NYSERDA EMBODIED CARBON PRESENTATION

NYSERDA is working to meet the requirements of Executive Order 22 to calculate embodied carbon for all projects and deliver EPDs where available.

HML's Alison Mears and Leila Behjat prepared a presentation and talk to explain the context of Embodied Carbon, environmental product declarations (EPDs), and try to establish what ideal tools could look like. This is profound, fundamental work. In the context of global calculations and debates, NY won't be able to manage to reduce carbon emissions if we cannot accurately measure carbon emissions and therefore design differently.

In addition to members of NYSERDA, members of from NYPA, DOS, NYC, OGS. were also in attendance. Highlights from this presentation included:

- Situating the United States as one of the leading contributors to growing Building Floor Area, the estimate for which is expected to double by 2060
- Emphasizing that buildings and the making of building products contributes a significant amount of carbon dioxide emissions annually
- Providing an understanding that the climate crisis and human health crisis are inextricably linked. Both are caused by the production and installation of chemical and fossil fuel-based products
- What an EPD is an how to read it
- Understanding the difference between embodied and operational carbon, and methods to reduce embodied carbon by paying attention to EPDs

61 PARTICIPANTS

Presentations to decision and policy makers not only help spread **awareness** but **demonstrate** the realistic and scalar solutions that are possible now.



IS IT AFFORDABLE?

This information is from 2017/18 it is interesting to think about when pricing these products

	VCT/SF	BBT/SF	MCT/SF
Material Cest	\$0.70	\$1.54	\$1.80
Adhesive Cost	\$0.15	\$0.15	\$1.25
Primer Coat	\$0.00	\$0.35	\$8.00
Installation	\$0.50	\$0.50	\$1.00
OCCUPANCY REQUIREMENT	\$	k	N
Stripping for Factory Finish	\$0.15	\$0.00	\$2.00
Step 1: Initial Maintenance Immed. after Flooring Install (2 coats)	\$0.00 (included in GC's cost)	50.00 (included in GC's cost)	\$0.00
Step 2: Preparation for Commercial Traffic (3-5 Coats)	5.45/cruts3-5 coats = 51.2542.05	5.45/coatx3-5 coats = 51.25-52.05	\$0.00
Post-Construction Professional Cleaning	NA	N/A	5.10/SF
Occupance Ready SF Install Cent	\$2.75-\$3.85/SF	\$3.79-\$4.59/SF	\$3.15/58

Hudson Inc. Healthy Building_Affordable Housing

Alleon Moore AIA

Materials Modeling Sets Teams Up for Success Early



Slides from presentation.

47. HUDSON INC. DEVLOPERS

Hudson Developers lead, finance, and develop numerous large scale projects across New York City, including a number of mixed-income residences.

This presentation followed by an open and candid conversation allow HML to provide Hudson Inc. with financial justification and practical methodologies to make healthier material choices in their projects.

Together, HML and Hudson Inc. reflected on how industry building standards have shifted towards more toxicity and convenience in the last decade, critically questioned this condition, and collaborated on realistic short-term and long-term goals an industry influencer like them could start working towards today.

16 PARTICIPANTS This presentation allowed for a mixed audience of **unaware**, **observers** and **supporters** to learn about threats to humand and environmental health to become **advocates**.



.....

From Field to Form: An Introduction to Building with Plants and Earth February 15, 2023

÷ The state of the s -th for the second second Int Inte PLAN. 6 hing land And Support SECTION HEMP + LIME PREMONS

48. ARCH LEAGUE NY: FROM FIELD TO FORM

HML's Jonsara Ruth participated in a presentation and round table discussion with other experts in From Field to Form: An Introduction to Building with Plants and Earth, hosted by the Architecture League New York.

During the presentation Jonsara discussed the impact architecture has on environmental and human health. In addition to this overarching theme, she demonstrated specific instances of material choices that increase toxicity in the built environment as well as presented the PA Hemp Home and other HempLime details from HML's selection of case studies.

343 ATTENDEES 262+ YOUTUBE VIEWS Innovators, design researchers, and manufacturers who are manifesting mycelium's potential across the fields of design, textiles, and architecture shared their work and insights with a mixed audience, creating new **advocates** for the use of this material.



Industry and Professionals



49. IDA WINTER SESSIONS

Hosted by the International Design Continuing Education Council, codirector Alison Mears and Senior Researcher Leila Behjat gave a presentation to the local chapter of Interior Designers at Mount Royal University in Alberta, Canada.

Part presentation, part Q&A, the HML team gave an overview of the Lab's research and programs, and took a deep dive into our practice tool - the HML Method Cards.

In this often difficult work, we look to tools and strategies to help make change within all of the constraints of a project. We find these method cards are useful to support our design practice in that they help us establish priorities specific to each project, set and manage goals with our clients, collaborate, and hold each other accountable.

The HML Method Cards are a free resource for all to use, accessible through our website. The cards can be used in multiple ways, from project planning for designers or as a tool to guide a discussion.

17 ATTENDEES

This panel for HML to present our colleagues with lessons learned regarding the concept of human health and building with hemplime, spurring them on a journey to become **supporters & advocates.**



Industry and Professionals



50. NYCHA A&E

HML co-director presented to the New York City Housing Authority (NYCHA) regarding updates to materials use.

Given the vast scale NYCHA works at, this project emphasized the immediate consequences of using toxic and wasteful materials. Additionally, knowing the limited time and resources NYCHA has to work on each project, HML presented them with our vetted list of material upgrades and conducted a demonstration on how to read and implement various material certifications.



NYCHA manages nearly 200,000 units of public and affordable housing across New York City. Conversations like this ensure that HML's work is continuously structured to be non-exhaustive, **practical**, and comprehensive.











Highest Growth: Polymeric Materials plastics, rubbers, thermoplastics, adhesives, foams, paints & sealants

Parsons Billion

unepirt, Belgium
51. DURACRYL PRESENTATION

Duracryl is one of the leading global flooring manufacturers who have expressed dedication to reducing material toxicity and regenerating environmental health. Their company is unique in that they have in-house interior designers who design and/or consult on projects across the world.

HML organized a curated presentation that shared the complex and vital ways all building materials interact with each other, the environment, and people. During this presentation, HML shared a number of material alternatives such as lime plaster and paper carpeting that Duracryl's designers can look towards and suggest on future projects.



This presentation observed key takeaways regarding the concept of human health and building materials, including healthy material alternatives, spurring participants on a journey to become **supporters** & **advocates**.



Industry and Professionals



Images from HML lead workshop with BIG

52. HML X BIG: HEALTHIER MODEL MAKING

A collaboration between BIG's Model Making Center in their Copenhagen Studio and the Lab in NY is researching products and methods to make Architectural Model Making a craft that avoids hazardous substances and helps set an agenda for healthier building practices.

Two members of the HML team (Alison Mears and Leila Behjat) visited BIG Studio during a stay in Copenhagen for a Building Green Conference in November 2021. We began the meeting with Katrine Juul and sustainability team members from BIG IDEA. We then toured the Model Making Center, managed by Artemis Antonopoulou. The Center's Model Making Leadership has taken steps to enhance health and sustainability in the space by installing air filter systems and adopting policies to reduce material waste.

The initial exchange sparked a collaboration that includes raising awareness of hazardous substances and establishing alternatives to products commonly used in Model Making, such as petrochemical-based foams, glues and paints. The ongoing investigation with BIG is twofold: finding healthier alternatives to products commonly used in model making on the one hand; on the other, offering and encouraging modelmaking methods with the adoption of principles of designing for disassembly. The explorations include using mechanical joining, and the incorporation of traditionally unconventional product options with the goal of avoiding harmful foams, glues and finishes and reducing waste.

In monthly team meetings, the project collaboration aims to elevate Model Making to be a gateway to healthier architectural design work. An awareness of health hazards in products, and ingredient disclosure for transparency are crucial at the building scale. Establishing frameworks for healthier Best Practices starts with a healthier Project Model.

The goal of this initiative is to create a platform on which healthy materials **advocates** can connect and share information with other advocates. The members of this network will ultimately impart their knowledge to **unaware** students.





53. CMW PROJECT CONTRACTOR PRESENTATION

Material health's human impact extends beyond the design industry and it's clients. A critical component of the topic that frequently gets overlooked is the health, skill, and expertise of the builders on these projects.

There are two barriers to healthier material implementation that are not frequently discussed within the industry. The first is the increased health risk contractors undertake when being using raw, toxic materials. The second, is the pride and complex knowledge that contractors have in their work.

When looking to make impactful change, HML knows that we have to education, protect, and collaborate with those in the building industry who, well, build the projects.

During our ongoing work with Community Music Works, we had the opportunity to host a curated presentation for their contracting team that specifically focused on how materials affect their health, what materials to look out for, and how to vet the materials that may show up on their sites

Presentations like this provide the opportunity for HML to directly engage and listen to realistic experience from those who are doing the building while providing the space for those who are **unaware** become **advocates.**



Industry and Professionals



Complete list of firms who participated or hosted discussions and workshops

54. DISCUSSIONS + WORKSHOPS

While HML conducts a number of presentations to various industries and professionals, one of the most important aspects of these are the discussions and workshops conducted afterwards.

Every organization and firm we talk to is different and have their own reasons for functioning the way that they do. It is important that we understand each audience's perspective and ensure that we are responding directly to them.

Each discussion and workshop provides us with the opportunity to clearly and practically present solutions in collaboration with our industry colleagues therefore ultimately increasingly the likelihood that healthier building practices and policies will be implemented.

703 PEOPLE REACHED These workshops and discussions allowed for HML team members to participate in multiple capacities, to further inform **observers** and encourage **advocacy**.



RESEARCH

This chapter is dedicated to researchrelated initiatives. Each chapter of this report is a from of our research in different ways, whether that be through conversations and workshops with others or design and consulting work. Here, we highlight a diverse range of the Lab's research specific projects and methods for addressing our overall goals of building knowledge and awareness. As shown in the Theory of Change, research iniatives are crucial to building pathways that enable people to change practices, and supporting advocacy efforts long term.

In conjunction with ongoing projects and iniatives that focus on Demonstration & Innovation, the Healthy Material Lab is dedicated to conducting rigorous designbased research with aims to contributing to the ever-changing and expanding field of material health. The Lab understands that expertise comes in many forms, from varied sources and experience. The research iniatives of the Lab are deeply collaborative and engaged with partners in fields of design, advocacy, public health, and more. Through engagement in diverse research iniatives, the Lab simultaneously gains from invaluable knowledge exchanges with researchers, practitioners, and advocates, while growing its network through meaningful and fulfilling partnerships.

The variety of research endeavors jointly launched and continued this year add to the every-shifting definition and application of measures for environmental health.



55 DHML TEXTILES COLLECTION



56 NEW COLLECTION



57 FUTURE AND ON-GOING COLLECTIONS



58 HEMPLIME



59 CARBON SEQUESTERING



61 RESEARCHER SPOTLIGHT

- sealth Product Declaration (MPD)
- ✓ Declare Label
- Environmental Product Declaration (EPD)
 Safety Bata Sheet (SDS)

60 PRODUCT DECLARATIONS

Research

105+

MANUFACTURES RESEARCHED

13+

PRODUCTS ADDED TO HML MATERIALS COLLECTION

100+

MATERIALS ADDED TO DONGHIA HEALTHIER MATERIALS LIBRARY

1. DONGHIA HEALTHIER MATERIALS LIBRARY: TEXTILES COLLECTION

With this new collection, HML is getting back to one of Parsons' greatest legacies: fashion and fabrics.

Healthier and more sustainable textiles can address two things. The first being the reducing the carbon footprint of fiber cultivation and production; the second is the toxicity of any applied treatments.

The production of both natural and synthetic textiles can require massive amounts of energy, water, and toxic chemicals. Selecting products from manufacturers that are committed to minimizing their environmental impact and to providing ingredient transparency can help to ensure healthier and safer interior environments.

Over the past year, HML researchers have curated a textile wall as one of the newest addition to the Donghia Healthier Materials Library in addition to approving thirteen products that meet the HML Collections' above industry standards. These textiles include mycelium leather, fruit leather, natural wool, hand woven hemp, and many others. Our researchers developed a series of guidelines to determine whether a textile is healthy. This includes a preference towards natural, renewable fibers; nontoxic surface treatments; low emission manufacturing; no-PVC; and life-cycle impact.

Examples of bio-based, recycled, and new material textiles that meet these standards are now available throughout the library.

Including textiles opens healthier material practice to a wide range of other industries outside of architecture and moves more people from **unaware** all the way to **advocate**.



Research



98+ MANUFACTURES RESEARCHED **16+** PRODUCTS ADDED TO HML MATERIALS COLLECTION

2. NEW COLLECTION: ADHESIVES, MORTARS, GROUTS & SEALANTS

When selecting healthier products, we must consider installation methods, which usually involve adhesives, mortars, grouts, and sealants. This category of products has many health and environmental concerns and yet they often cannot be avoided entirely.

Many adhesives contain chemicals of concern that are released as they cure. The contents are similarly harmful in the process of production and upon disposal they also emit toxicants. While PFAS (Perand poly-fluoroalkyl substances) are added for bonding strength and to increase water and stain resistance, they are linked to health disorders such as cancers, decreased fertility, thyroid problems, and other hormonal malfunctions.

Sealants can contain phthalates or isocyanates, which are linked to asthma. Fly ash and blast furnace slag contain harmful heavy metals and are commonly used as aggregates in mortars. Grouts and mortars typically contain persistent nanosilver antimicrobials that can leach into aquatic environments yet are often undisclosed. Optional additives to resist mildew or mold are usually harmful and should be avoided when possible.

Mortars and grouts can have high levels of Portland Cement, which emits high levels of carbon during manufacturing, adding to the carbon footprint of a building.

The healthiest strategy is to reduce or eliminate the need for adhesives. Instead, design for mechanical fasteners such as screws, nails, and interlocking joinery, which allow materials and systems to be reused or recycled - and eliminate toxics.

HML researchers curated a rigorous list of healthier adhesives, mortars, grouts, and sealants to not only help practitioners but help students build awareness in their own work, building healthy practices before they even enter the industry. This new collection will launch and be available for use in Fall 2023.

By researching and demonstrating how even the most minuet building materials can make an impact, we work towards creating fully holistic environments and products.





3. FUTURE AND ON-GOING COLLECTIONS

In addition to expanding our scope of work, we have continued researching and updating materials in existing collections including: wall coverings, wood, and biobased products.

As we continue these investigations, we disseminate with further specificity materials we began researching in previous years. This includes wood and it's various composites, uses, and form; recycled or bio-based structural forms; and finish types from ceramics; stains; paints; and stones.

Our researches also performed smaller instigations into hydrocarbons and methyl methacrylate to better understand the invisible compounds of popular material toxics. Furthermore, we expanded our understanding of bio based PUR and plastics with research on isocyanates.

Continuous research ensures that HML collections remain one of the highest and most rigorous standards as well as enables the Lab to work alongside, rather than react to, new innovations and goals in material spaces.

707+ MATERIALS VETTED Continuous research that can be disseminated in new ways allows us to continually provide clarity and justification when advocating for healthier practices.



Research



4. HEMPLIME

As the "superfood" of the building industry Hemplime continues to play an important role in not only our research and collections, but in our own work. The circular life cycle and economies this material presents aligns well with many of the Lab's missions.

HempLime products are naturally resistant to pests, mold, and fire, eliminating the need for toxic chemical additives. It also improves interiors because of its' excellent acoustic properties and natural regulation of humidity and heat. It is a naturally biodegradable product that can be fully recycled and reused to support a zerowaste economy.

Throughout the past year we have segmented Hemplime into its own material collection to reflect the wide-range of applications it has, and continued to update both our and industry standards regarding its use. We also continue to add new and exciting HempLime products to our resources.

40+ PRODUCTS RESEARCHED The burgeoning hemp industry in the US also supports regenerative economices and communities, tackling social justice issues through agriculture and workforce development.



CARBON

In 2018 the World Health Organization announced that climate change is now the single biggest threat to global health, and the energy-intensive building industry is a major contributor making up roughly 40% of global greenhouse gas (GHG) emissions.

To meet our goals of reducing global warming to 1.5" C by 2030, carbon emissions need to be cut by 65% over the next decade. This means reducing both the energy that buildings use in their operation, aka **operational carbon**, as well as the emissions associated with the materials that make up buildings, aka **embodied carbon**.

It is this embodied carbon and the materials we use over the next decade that have upfront immediate effects and will set the trajectory for whether we reach the 2030 climate goals, which is why it is critically urgent that architects and the building industry address embodied carbon now.

DESIGN STRATEGIES



Salvage or Recycle Existing Materials



Reusing existing materials can avoid the energy-intensive processes that, often go into makerials manufacturing. Sourtegies for reuse can range from salvaging local materials to adaptive-reuse of entire buildings, with the key consideration being to simply look at what exists already before using new materials.



Identify Carbon "Hot Spots"

Carbon "not Spots" are materials or systems that often contribute most to green house gas emissions, and should be priorities to focus on in recaring embodied carbon. Building elements such as foundations, structures, and facades are often primary hot spots, as these components not only make up a large portion of the building by volume, but also commonly use carbon-intensive materials, such as concrete, steel, and alumnum (WEBC).



Consider Low-Carbon or Carbon-Sequestering Materials



Given that plants absorb CD2 as they grow, plant-based materials can often here low embodied carbon and can even be carbon-sequestering (carbon-sequence) of the nime, energy is used in their production. Generally speaking, the more we can look towards less-processed organic materials, the more likely we are to reduce our carbon footprints.



5. CARBON SEQUESTERING

As both municipal standards here in NYC and initiatives around the world ramp up to meet global warming reduction goals by 2030, we have looked towards embodied and operational carbon as one of the key factors to guide not only the Lab's standards but how we educate others.

We have a number of ongoing research projects that monitor international carbon standards and continuously investigate how and where carbon exists in building materials and life cycle.

As part of these projects, the Lab has published a number of design strategies, and product considerations to guide people in becoming more informed of carbon's global impact and how to reduce it.

We also continuously reevaluate the products in our collections to ensure they are not only up to the highest industry standards but also continue to provide people with practical resources to push projects beyond the bare minimum. Our goal is to not only reduce carbon in material application but activley remove it from the environments in which we build.

86 TOTAL RESOURCES ON CARBON It is this embodied carbon and the materials we use over the next decade that have upfront immediate effects and will set the trajectory for whether we reach the 2030 climate goals, which is why it is critically urgent that architects and the building industry address embodied carbon now.



CERTIFICATIONS & DISCLOSURES

Health Product Declaration (HPD)

- Declare Label
- Environmental Product Declaration (EPD)
- Safety Data Sheet (SDS)

Other

- 1
- .

6. PRODUCT DECLARATIONS

We are constantly monitoring all declarations and standards internationally to ensure we are staying up-to-date on the benchmarks that are helping push the industry forward.

This year, we raised our low-embodied carbon benchmark to 5kg/m² to adopt a similar standard to the Danish Benchmark. This required reassessing the EPDs of all HML collection and DhML products.

The world of material health is changing quickly, especially as more people feel the pressures of climate change of socioeconomic inequities. For the Lab, this means a constant re-evaluation of our products to ensure we are continuously **advocating** for improvements.





Project image of Synthiesis

7. RESEARCHER SPOTLIGHT: SYNTHIESIS BY JESSICA THIES

At HML we are lucky to be situated within an acdemic environment, where many of our researchers are also students. This expands the breadth of work that the Lab informs and thus, is informed by.

One of our Student Researchers, now a Postgraduate Material Health Researchers at the Lab took the information she learned working here above and beyond in Masters thesis project. Here, we have highlighted Jessica Thies' project: Synthiesis.

Synthiesis is a research project exploring the potential of macroalgae for textile printing inks. Thies designed a novel algae-based ink for textiles and a new craft technique to create smocking effects. She displayed this through a footwear concept where the ink is printed on a hemp textile. The 2023 IPCC report outlines biological methods of carbon dioxide removal (CDR) to achieve netnegative CO2 emissions. Macroalgae farming is one method of CDR which can be supported through algae-based materials.

The craft technique has the potential to replicate hand smocking patterns and dimensionality through a much faster technology. In addition, my earlystage experiments tested the concept of integrating microalgae cells into the printing ink based on advances in engineered living materials, where living cells are added to materials for new functions.

This living material would be able to photosynthesize and absorb CO2. Thies speculates on a near-future world where living materials are used by designers, resulting in what she calls 'active objects' - objects which are alive and require care. The active object lives in a vessel connected to an aeroponics system and a cyanobacteria bioreactor. As living materials are currently being developed within science, active objects are a novel concept to address how these living materials will be cared for.

This innovation uses natural materials like hemp and algae to pose questions of how active objects could work in interconnected systems with humans, non-humans, other objects and our spaces, similar to naturally occurring ecosystems. Active objects could help us transition from human-centered to life-centered and from disrupting natural systems to partnering with them.

This project exemplifies the incredible potential of our research and serves as a reminder of the exciting prospects to be developed when **observers** become **advocates**.





Architizer 04/2023

Healthy Materials Lab

Hempcrete Revolution: How "Pot's Benevolent Cousin" Is Staging its Comeback Through Architecture

Eighty years after America's hemp industry was destroyed, Winoru LaDekr is placing hemp at the lose of the green building revolution.

BUSINESS OF HOME 04/17/2023



5 designers on the design courses that are worth it

🚱 by Marina Bella

08/24/2023



10 Architecture and Design Books Worth Adding to Your Reading List **Partnerships**

PARTNERSHIPS

FRIENDS OF HML



Ordbo

FLOORING SYSTEMS FORBO* Resilient flooring



DURACRYL Flooring Solutions



COLUMBIA FOREST PRODUCTS* Plywood

ARONSON'S FLOOR COVERING ARONSON'S FLOORING Flooring Solutions*

C

LAURENCE CARR LAURENCE CARR Interior and product design



DRAKE ANDERSON Interior design



MAFI Natural Wood Floors

THE REAL MILK PAINT CO.* Non-toxic paint



SHAW Flooring Solutions

INC ARCHITECTURE & DESIGN

INC ARCHITECTURE AND DESIGN Multi-disciplinary design

NATUREPEDIC NATUREPEDIC Organic Mattresses

COLOURS FOR EVER.



KEIM Mineral paints



VIEW Smart windows



Healthy Affordable Materials Project

The Healthy Affordable Materials Project is a four-part collaborative that seeks to improve the lives and health of affordable housing residents by reducing the use of toxic materials in building products.



Healthy Materials Lab is supported in large part by a grant from The JPB Foundation. Donghia healthier Materials Library is supported in large part by a grant from the Angelo Donghia Foundation.

We are a proud non-profit partner



Research Partners

Akling	Americhanute	American Sustainable Business Council	Bernhaimer Architecture	Building Product Ecosystems	Center for Environmental Health (CEH)
Citizen HKS	Danish Cleantech Hub	Determined by Design	DON Enterprise	The City University of New York (CUNY)	Habitat for Humanity - New York City and Westchester County
Harvard Office for Sustainability	Hanning Larsen Architecta	Icahn School of Medicine OCSM0 et Meuert Sinei	LTL Architects	Materially Better / Red2Green	MER Design
New European Bauhaus	New York City Housing Authority (NYCHA)	NVC Department of Health	NYC Mayor's Office of Contract Services	New York School of Interior Design	STAT Architecture
Sustainable Furnishings Council (SFC)	Trumbull Neighborhood Partnership (TNP)	West Harlem Group Assistance, Inc. (WHGA)			

Changemakers, Heroes & Influencers

BlueGreen Alliance Foundation	BuildingGreen	Children's Environmental Health Network (CEHN)	Clean Production Action	Collaborative for High Performance Schoole (CHPS)	Gradie to Gradie Products Innovation Institute
Environmental Working Group	Health Care Without Harm	Healthy Bables Bright Futures	International Living Future Institute	National Institute of Environmental Health Sciences	Perkins+Will
SmithGroupJUR	institute of Making				

