Acknowledgment

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The Healthy Materials Lab
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The New School
New York, NY

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

The Healthy Materials Lab, housed at Parsons School of Design at The New School, is one of four partner organizations of the Healthy Affordable Materials Project. 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.

The Context of the Project

Low income families across the United States suffer disproportionately from exposures 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 are subject to the highest levels of toxic exposures, 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.

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.

This migration is an unintended consequence of green building standards and government incentives that encourage recycling and reuse of older products containing toxic chemicals. Recycling is also 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 toxins in all building products as the most effective means of reducing these hazards in affordable housing communities. The Healthy Affordable Materials Project, a collaboration of the Healthy Building Network (HBN), the Healthy Materials Lab (HML), Health Product Declaration Collaborative (HPDC), and Green Science Policy Institute (GSPI), provides a systemic platform for change.

**Project Goal**

The best way to prevent exposures to toxics is the reduction or elimination of their use at the source. The Healthy Affordable Materials Project will reduce toxins for families living in low income and affordable housing by scaling the use of new transparency and disclosure tools such as the Health Product Declaration, making it easier for decision makers (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. The project will advance the use of the Avoided Hazard Index (AHI), a new tool developed by HBN which is used to quantify the amount of toxic substances avoided by specifying and installing healthier alternatives. The project will target specific classes of chemicals of concern that are used in building products despite a lack of proven health or safety benefits, such as flame retardants and antimicrobials.

**Parsons School of Design’s Role**

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 a social justice context. Working on a range of projects that address systems change, Parsons brings an understanding of the intricacies of the global supply chain and the importance of communication design to drive change, a historic ability to develop and implement innovation in a range of business and management scenarios, and extensive expertise in the built environment. This project’s goal of improving the lives of the most vulnerable communities through the transformation of building products provides an important opportunity to leverage our expertise and partnerships in support of this critical imperative.

The Healthy Material Lab (hereafter “HML”) was formed at Parsons at the launch of this grant, and is focused on four main 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 is using a case study methodology to understand and document the better building products currently being specified. We are creating a new resource for transparency and awareness in the newly conceived Donghia healthier Materials Library at Parsons. The goal of the materials library is to create simple resources and tools to support healthier specification practices for the next generation of 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 is calling upon our communications expertise to translate complex concepts and data into accessible forms. Finally, 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’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 within the three year time frame of the grant. This year end report from HML is a summary of our activities over the last 12 months.
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PARTNERSHIPS

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PRESS
The theory of change described in the original grant application relies upon the adoption of full transparency and the comprehensive and complete disclosure of building product contents in order to drive behavior change. It also depends on access to educational programs that share new knowledge to accurately document the contents of typical building products. A fully informed decision-maker will select alternatives to toxic materials when the information about product toxic contents is 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 executed communications materials to empower decision makers to make informed choices. We are also developing new healthier product specification tools to support more accurate specification, and are providing healthier product samples to aid decision makers in selecting healthier affordable products.
THE DONGHIA healthier MATERIALS LIBRARY

HEALTHIER PRODUCT SPECIFICATION SHEET

HEALTHIER PRODUCT SAMPLES

PROVIDING ACCESS TO MATERIAL EVALUATION TOOLS
Parsons has historically maintained a Materials Library adjacent to Architecture, Interior Design, and Product Design studios. The library has provided materials samples and a connection to manufacturers. As a result of the grant from The JPB Foundation, HML is reconfiguring the library with an enhanced mission to create a range of new physical and digital materials resources for students and faculty at The New School, the AH community, and the NYC design community. The library will become a critical resource for both the university as we educate future designers and specifiers, and for the industry at large which looks to Parsons as an innovator in the field of design.

To support these substantial changes underway, we have hired a Director for the library with a deep knowledge of potential health implications of building products. Further, we are in the process of forming an advisory board to guide the library and inform the new mission.

In order to position the library at the forefront of the industry, we are researching precedents of national and international libraries and resource centers. Over the remainder of the grant, we will continue to collect and build lists of healthier products currently specified and installed in AH developments across the country.

As part of our work with the materials library, we are collecting and exhibiting physical samples of the healthiest materials currently available on the market. This materials collection necessarily involves outreach to product manufacturers. In this process, we advocate for increased transparency and manufacturer engagement via the Health Product Declaration tool as a recommendation for inclusion in our library. Based upon data shared by manufacturers, we aim to ease the process of identification, prioritization, and action on toxic chemical hazards, and we work with manufacturers to drive innovation through market demand.

Another important aspect of the library work is the documentation of best practices and product databases extracted from our ongoing case studies research. This involves the alignment of current certification and evaluation tools to increase their accessibility to the AH audience and the next generation of designers at Parsons.

Ultimately, the library will create new streamlined resources and tools for the AH sector to support healthier specification practices.
Floor Tile
Wrap and Span

Striation BBT

Material Composition: 88% Calcium Carbonate (limestone), 11% Biobased Polyester Resin

Country: US.

Manufacturer: Armstrong

Size: 12”x24” (tiles) - 22 tiles/carton

Color: Available in variety of colors

Technical Use: Flooring

Trade Price: $5.72 sq.ft / $126,00 carton (2016)

Health: Potential Hazards
- PBT
- Cancer
- Gene Mutilation
- Endocrine
- Respiratory
- Eye irritation
- Skin Irritation
A priority of the Healthy Materials Lab is to make our research a resource for others. The Donghia Healthier Materials Library is an existing resource, which we have begun to permeate as a resource for healthier and affordable materials and building products.

One central initiative is to create a database of the healthier materials used specifically in affordable housing and make the information easily accessible. With information collected from our nationwide case studies, we have gathered lists and information about healthier products and we are creating specification sheets for each. These sheets explain both basic information, such as material manufacturer, product name, size, etc, as well as detailed information about material ingredients, approximate cost and place of manufacture. The intention is to share information and research about healthier building products so that others can easily specify them for future products. These sheets are also designed to clearly list the ingredients of healthier building products so that people begin to be curious about the material content of all building products. Additionally, we are working on a graphic language to describe the potential health hazards of each building product.

With these HML Spec Sheets, architects, designers, students and faculty will be able to compare not only the performance, color, size and cost characteristics but also the health impact of building products that are specified.
A priority of the Healthy Materials Lab is to make our research a resource for others. The Donghia Healthier Materials Library is an existing resource, which we have begun to permeate as a resource for healthier and affordable materials and building products.

Through research of national case studies of affordable housing developments that are using healthier products in the construction of their buildings, we are creating a database of healthier building materials as a resource for the larger community. As the information is collected, a physical sample is also collected. Each of these products are be available as a physical sample, for loan, through the Donghia Materials Library. These samples correspond with specification sheets, which describe the material composition of each building product as well as its relative cost and potential health hazards. If an HPD is available for a particular product, that is also collected.

While gathering the physical samples, discussions with manufacturers have began to create a larger network of interest in the Donghia Materials Library and its goal to provide access and information about healthier building materials. Manufacturers committed to producing materials that are healthier will be invited to give presentations in the Library in the coming semesters.
The Donghia Healthier Materials Library is a multidisciplinary resource available to all students and faculty within Parsons The New School for Design. Working in conjunction with the Healthy Materials Lab, the library aims to educate the designers of today and tomorrow about the health implications of the products and materials they specify. Physical samples are available for loan and the library offers links to digital resources and databases that offer an analysis of a range of building materials and products. Visitors can search and evaluate impacts, both environmental and health, revealing a deeper knowledge of what is being specified. It is recommended that the material evaluation tools are used concurrently as each in themselves are not a definitive resource, but together they provide a richer understanding of certification and material composition. The process of assessment can be laborious and time consuming but the library has created a map, with direct links to each of the certification and evaluation tools to help facilitate the process. The tools we are currently recommending are:

- Pharos Project
- Declare
- Eco Scorecard
- Cradle to Cradle
- Quartz
- HPD Collaborative
- The HPD Library
- Perkins + Will
- Building Green
- GreenScreen
- Healthy Building Network
- Toxipedia
Parsons is a hub for national and international research and has 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.

As the largest art and design school in North America, we are 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.
5 MFA INTERIOR DESIGN
ALLIED STUDIO 3 CLASS

6 CURRICULUM DEVELOPMENT

7 DESIGNING NEW LIVE WORK PLAY SPACES:
Warren, Ohio

8 6 CLASSES

9 KEN GEISER LECTURE
Chemicals without harm
10.05.15 @ PARSONS

10 ROLF HALDEN LECTURE
Urban Metabolism Metrology
Measuring the Chemical Burden of Cities
11.09.15 @ PARSONS
Allied Design Studio 3, a graduate level studio taught by HML Director Alison Mears and HML Director of Design Jonsara Ruth in Fall 2015, focused on issues of health and affordability by focusing on a specific development site as an example. The site was Carmel Place, a notable development by Monadnock Development on 27th street between 1st and 2nd avenues in Manhattan. A pilot study by New York City for micro housing, Carmel Place offers units with 260-360 sq ft of living space, 14 of which are designated as affordable. The students studied what constitutes a healthy community, home, and individual through an understanding of the food we eat and the food cycle; the materials that surround us and their life cycle; and the impacts of our exposure to unwanted toxins, all within the context of affordability.

As part of the Allied Design Studio, MFA Interior Design students worked intensively with their peers in MFA Lighting Design and Master of Architecture at the beginning of the project to establish an understanding of the site, neighborhood and community in relation to human health.

Within the interior design component there were two design projects: 1. an interior of a micro living unit; and, 2. the interior of a public space. The public space, chosen by the students, lies either within the common space of the apartment building or in an adjacent grocery store designed by their architecture and lighting design peers. A driving factor behind the public space design component was the idea that people residing in small spaces live a large percent of their lives outside of the home.
HEALTHY LIVING with GROCERY

Health: (fr. hale, sound, whole)
state of being hale or sound in body, mind or soul
esp. freedom from dis/ease

Within a dense metropolis such as New York City, eating, working, playing, dreaming, socializing and exercising often occur outside of the small footprint of the home. As the value of land increases our living spaces decrease in size, sometimes approaching the microscopic. What happens in the city when our daily life is displaced to the immediate surroundings? When living is displaced to occupy space outside, our homes grow to occupy space outside of the walls of a private room. Where and how do people live when their private space is small and shared?

The urban interior is connected to the private interior by the activities of daily living. How does an environment affect human health? What constitutes a healthy environment? And how can an environment be designed to thrive and flourish anchoring the lives of those who inhabit it?

What is a “healthy home? How do people maintain “health”?
Parsons offers an extensive range of undergraduate, graduate and associated art and design degree programs that all approach materials culture in unique ways. Beginning with the School of Constructed Environments’ nine degree programs, HML is prototyping new syllabi and curriculum models to explore healthier materials. New studios are being offered that take on human health as a starting point, new modules are being created to specifically address health and materials in different contexts, and we are leveraging the library as a resource point to expand materials knowledge across Parsons.
This course is a collaborative project between The New School Milano Finance Lab, Parsons School of Design's School of Design Strategies, and the city of Warren, Ohio. The course applies tools of community finance, grassroots development, and art and design strategies to rethink housing in Warren.

**What is a family in the 21st Century?**

**How will we work going forward:**

**How does a small shrinking city reinvent itself?**

The studio explores new ways of living and working in cities, with a focus on re-envisioning abandoned houses in a small shrinking US city, Warren, Ohio. In collaboration with HML, the studio brings together environmental materials thinking, architecture, landscape, interior design, and urban design. Students’ studio work is focused on a case study house in Warren.

The group is entering its third year of the collaboration in Warren and has collected a large body of research and archived a range of design explorations. The collaboration with the Trumbull Neighborhood Partnership and other community partners will continue to map both a long-term strategy in Warren and explore the city’s capacity for community development, while advancing an understanding of integrated design and community finance that supports further work in the field.

**Why Warren?**

Once a thriving center of innovation in industry and progressive labor conditions, Warren Ohio is now a rapidly shrinking city. Warren’s Garden District was once the home to its wealthiest residents, but is now an area facing multiple challenges, among them abandonment, unemployment and drug-related crime. There has been a combination of tactics developed locally to respond to local conditions including the demolition of numerous houses in the area. This course will ask what the community can do with one house previously slated for demolition. What new networks of support can be established? How can a house and other neighborhood houses and the surrounding lots be re-designed and re-imagined to create work, educational and recreational spaces for this community? The studio will present the people of Warren with alternative proposals that will make a contribution to the collective vision of the city. This project is inclusive of people of all income levels and backgrounds, and empowers citizens to be active change-agents, creating a brighter future for the city of Warren.

**The Process:**

Environmental and social issues will be explored and urban design analysis undertaken, including transportation, location of civic and retail buildings, demographics, particular site conditions, relationship to other neighborhoods, and particular local characteristics. This information will be collated to formulate and document particular characteristics of the chosen neighborhood and applied to the case study house where we are working. Students are asked to identify the critical problems and opportunities in the neighborhood. Based on the background and historical research and the physical on-the-ground research, students will identify sites ripe for design interventions.

The Parsons students will be developing the design component of this proposal in close collaboration with the Milano policy and finance students. Through design research, conceptualization, iterations and development, students will produce a sustainable and financially viable proposal that the city and community groups can implement in their future plans. The Milano/Parsons proposal will be structured in such a way that allows it the highest probability for implementation. The design should incorporate and confront critical neighborhood issues.

In addition to the work of the spring semester, Parsons Design Interns will prototype and implement projects over the summer 2016. (See Warren Demonstration Project section 16)
Highly Fluorinated Antimicrobials
Flame Retardants
Bisphenols + Phthalates
Organic Solvents
Certain Metals

Six Classes
Six Classes
Six Classes

1 Highly Fluorinated
2 Antimicrobials
3 Flame Retardants
4 Bisphenols + Phthalates
5 Organic Solvents
6 Certain Metals

SIXCLASSES.ORG
Green Science Policy Institute

CLASS 1
highly fluorinated
DRAFT

CLASS 2
antimicrobials
DRAFT

CLASS 3
flame retardants
DRAFT
In collaboration with the Green Science Policy Institute, the Healthy Materials Lab has been working to create short slide presentations to introduce the Six Classes premise to audiences of architects and designers.

“Six Classes” is a strategy, developed by Arlene Blum and Green Science Policy Institute to teach people about the “many harmful substances found in everyday products” and those which should be avoided. “Instead of worrying about tens of thousands of untested chemicals... six classes presentations explain many of the bad actor chemicals in consumer products. In addition, the series will move us towards solutions by asking, “Do we need these chemicals?” and when the answer is “Yes,” we will explore safer green chemistry alternatives.”

We have been working together to create slides with images that visually and quickly communicate potential health hazards of these classes of chemicals, everyday products where the chemicals are currently used, regrettable substitutions and alternative ways to think about the attributes that these chemicals provide.

In the 3rd and 4th quarter of the year, we have compiled a draft of slide decks for “Highly Fluorinated Chemicals”, “Antimicrobials” and “Flame Retardants”. Each slide deck is accompanied by a script which will be read and recorded so that the 2-3 minute “webinars” can be widely distributed.
DR. KENNETH GEISER is a past Distinguished University Professor and Professor Emeritus of Work Environment at the University of Massachusetts Lowell. Dr. Geiser is past Co-Director of the Lowell Center for Sustainable Production and served as Director of the Massachusetts Toxics Use Reduction Institute from its founding in 1990 to 2003. His research and writing focus on cleaner production, toxic chemicals management, international chemicals policy, safer technologies, and green chemistry and, in 2001, he completed a book, Materials Matter: Towards a Sustainable Materials Policy published by MIT Press. As a recognized expert on environmental and occupational health policy, he has served on various advisory committees for the U.S. Environmental Protection Agency, and the United Nations Environment Program and the governing boards of several environmental organizations. Recently, he has completed a Chemicals in Products Project for the United Nations, served as a Senior Fellow with the U.S. Green Building Council, and published a new book, Chemicals without Harm: Policies for a Sustainable World also available from MIT Press.
In a revealing lecture hosted by HML and Building Product Ecosystems, Professor Emeritus at University of Massachusetts Lowell, Ken Geiser, spoke on building materials in relation to his new book: *Chemicals Without Harm: Policies for a Sustainable World*.

The book takes a sweeping approach to examining chemicals found in nearly all US manufacturing supply chains, building products being just one of them. Nevertheless, Geiser noted early in the lecture—to an audience comprised of many Parsons design students—that he started off as an architect. “I have a soft place in my heart for design,” he said.

The lecture was titled “Safer Building Materials”, and he spoke on various chemicals commonly found in buildings that pose threats to those who occupy them. These chemicals, such as formaldehyde and polyvinyl chloride (PVC), are “used ubiquitously in the building industry,” and can cause long term health problems. He explained the process of how these chemicals show up in the air of those buildings, and in turn in the building occupants.

Importantly, Geiser’s lecture did not focus solely on chemicals to avoid. He spoke hopefully of an industry pushed in a healthy direction by consumers, noting that we should “force the system to move toward safer chemicals.”

And this is working already, according to Geiser, who spoke of Nike phasing out PVC in its products, Johnson & Johnson phasing out formaldehyde, and large retail corporations such as Wal-Mart and Target drawing up lists of chemicals to avoid. Even though government is not regulating companies, many of them are responding to consumer pressure and making changes.

“Standards are often out of date,” Geiser said of government regulation. And “most standards are risk based” as opposed to hazard based, meaning specific chemicals are phased out only when health risks reach a certain level in consumers en masse, and no positions are taken preventing substances that could be hazardous in the first place.

Geiser said we need to “encourage the development of safer chemicals,” instead of discouraging harmful ones. And this starts with raising awareness within the profession in an effort to create new norms throughout the supply chain.

A critical lesson from Geiser’s lecture was that the pursuit of healthier building materials is a journey. “You aren’t going to answer your question with ‘Ah-ha! I found the safest chemical.’” Instead, he said, you’re going to find one that’s better than the last.
Healthy Materials Lab

Rolf Halden

lecture series 3

Urban Metabolism Metrology
Measuring the Chemical Burden of Cities

Monday
November 9th 2015
6:30 pm
University Center room L105
63 Fifth avenue, NYC

Rolf Halden, PhD, PE

Rolf is a Professor in the School of Sustainable Engineering and the Built Environment and Founding Director of the Biodesign Institute’s Center for Environmental Security and the Biodesign CES Mass Spectrometry Facility at Arizona State University, where he also holds affiliate appointments in the School of Biomedical Engineering and Health Systems Engineering and the Barrett Honors College. He has 20 years of experience in environmental monitoring, human health assessment and sustainability science. Rolf has authored 150 peer-reviewed articles, reports, and patents, a book on emerging contaminants, as well as 300+ presentations at national and international symposia. Rolf was a co-founding member of the Center for Water and Health at Johns Hopkins University, where he maintains an adjunct faculty appointment in the Department of Environmental Health Sciences. Rolf received his M.S. in Biology (1992) from the Technical University of Braunschweig, Germany, and his M.S. (1994) and Ph.D. (1997) in Civil/Environmental Engineering from the University of Minnesota. Prior to joining academia, he was a postdoc and project engineer (1998 - ’01) at the Lawrence Livermore National Laboratory, where he directed a team engaged in groundwater and soil remediation. Rolf has been invited repeatedly to brief the U.S. Environmental Protection Agency (EPA), Food and Drug Administration (FDA), the National Academies, and U.S. Congress on emerging contaminants and sustainability issues.

This event is supported by a grant from The JP8 Foundation
On November 9, 2015, Dr. Rolf Halden PhD, professor at the School of Sustainable Engineering and the Built Environment at Arizona State University, presented a lecture titled “Urban Metabolism Metrology: Measuring the Chemical Burden of Cities,” at The New School. The event was open to the public and hosted by HML.

Dr. Halden’s work investigates the question: “How do you take the temperature of an entire community?” by taking a close look somewhere unexpected: our sewage.

“Centralized wastewater treatment plants can serve as a currently underutilized diagnostic tool to assess the chemical exposures, behavior, and health status of rural and urban communities,” Dr. Halden said over email. His ongoing study, which started a decade ago, takes sewage samples from more than 160 communities across America, both before and after they pass through the local wastewater treatment plant.

Among those substances that persist through processing and end up in the biomass—a sludge byproduct of wastewater treatment—are “brominated flame retardants, polychlorinated antimicrobials, and perfluorinated consumer chemicals and their industrial precursors,” said Halden. “The problem with these substances is that their chemical structure is mostly foreign to nature, leaving existing natural breakdown mechanisms and enzymes [used in wastewater cleansing] ineffective in destroying them.”

And these chemicals find their way into the bodies of community citizens, according to Dr. Halden. “In the built environment, it is us, the creators and inhabitants, who store the non-green, recalcitrant chemistry in our body, mostly in adipose tissue and in women, breast milk,” he said.

The study is based in the Biodesign Institute’s Center for Environmental Security at ASU, where Rolf Halden is the Founding Director. Currently about 10 percent of the nation’s population has been tested, giving researchers unique insight into everything from chemical biomarkers that have worked their way through the human body to “elemental signatures in wastewater coming from the earth’s crust.”

“Characterizing and interpreting the chemical and biological markers in wastewater is a new science that holds great promise for assessing and managing population health,” Dr. Halden said. “It can be done on differing scales, from buildings, to city blocks, neighborhoods or the nation as whole.”
HML brings a range of expertise to the project 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 in the AH industry. Drawing from industry consultants and in house expertise, we are able to develop tactics and strategies to advance the mission of the project and accelerate change.
11 HAMP WEBSITE

12 HML WEBSITE, STORIES AND SOCIAL MEDIA

13 HPDC AND PROJECT COMMUNICATIONS ADVOCACY

14 GREENBUILD CONFERENCE BOOTH
   11.18.15 - 11.20.15
Every home should be healthy.

Exposure to toxic materials used in building products can have serious long-term health implications, but homes can be built to be healthier.

The best way to prevent hazardous exposure is to eliminate the source.

The Healthy Affordable Materials Project seeks to improve the lives and health of affordable housing residents by reducing the use of toxic materials in building products.
HML led the design and communications team for the development of the HAMP website, which launched in April 2016.

The partnership worked with two key consultants in New York to strategize the look and feel of the site and to help develop clear, impactful language.

Through the careful selection of simple, effective imagery and the creation of content text and copy, the group developed a website that accurately reflects the intentions of the project from each of the partners’ perspectives. Each of the partner websites are linked to the HAMP site, creating a powerful coalition of groups all deeply invested in improving the health of AH residents.
Over the last year, the Healthy Materials Lab is becoming a known quantity across Parsons, The New School and around New York City. Healthymaterialslab.org is our virtual address, which also becomes a resource for research about healthier affordable materials, related stories, events, conferences and exhibitions. The website is an evolving platform.

The most popular pages of the site are the stories. This year we published over 50 stories on the HML site - ranging from unique written pieces, conducted interviews, and photo essays by research fellows at HML as well as relevant republished stories from expert sources on subjects of chemicals, materials and human health.

In addition, stories and events are published on the social media platforms Instagram, Facebook and Twitter. A recent count showed over 17,000 facebook members enthusiastic about the Lab and its goals. This has substantially broadened our audience who now can follow the lab’s activities.

Moving forward we strive to use these platforms to provide usable knowledge to our communities in practice who build affordable housing, specify materials and design spaces for people to live.
DO YOU KNOW WHAT’S INSIDE COPPER PIPE?

LOOK AT THE HPD TO FIND OUT!
HPD-COLLABORATIVE

DO YOU KNOW WHAT’S INSIDE PREFINISHED HARDWOOD FLOORING?

LOOK AT THE HPD TO FIND OUT!
HPD-COLLABORATIVE.ORG
HPDC and Project Communications Advocacy
Parsons HML worked with the HAMP Partners on a number of communications assets as takeaway information for the HAMP booth at the Greenbuild 2015 conference. We created postcards and brochures for the lab that described the initiative of the project: “Healthy Materials=Healthier Lives”. In addition the team worked closely with HPDC to create compelling communication material to support the launch of the new HPDv2. Using the common unbranded construction materials typically used in affordable housing we created a printed version of the to continue advocate for the importance of transparency. All these documents were distributed to a broad range of public as the 2015 Greenbuild Conference and a selection were displayed as part of the ‘What’s inside’ Exhibit help at Parsons the New School for Design.
Greenbuild is the largest convention and expo dedicated to sustainable building, and this year, HML had a presence through a carefully and intentionally designed booth in the expo hall that represented the work of HAMP. The design of the booth embodied our project’s mission and displayed seven healthier building product alternatives in a manner that encouraged engagement from visitors. Every aspect of the booth promoted transparency and disclosure, and was a platform for our HAMP partners to communicate the importance of our work.

Through conversations with booth visitors and our social media coverage of the event, we effectively shared our passions for affordable healthy building alternatives and socially engaged design with Greenbuild attendees from around the globe.

Members of HML attended Greenbuild to promote the benefits of industry transparency in the push to make our homes safer to occupy. We also provided a compelling argument to companies already producing landmark healthy materials to encourage them to rethink their product lines and open them up to affordable housing developers.
HML is using demonstration projects as a tool to test material properties and installation in a variety of high use areas. Prototyping new materials use at The New School (TNS) to demonstrate adoption of healthier affordable material practices for the institution while also allowing us an opportunity to explore potential future uses of those products in the affordable housing sector. Taking this local knowledge we are also proposing to test installation and performance of new affordable products at the New York City Housing Construction Agency (NYCA) and other affordable housing locations in NYC and as well as in Warren, Ohio. Specification and installation of healthier, affordable interior products situates human health as a core criteria influencing decisions from the persons in charge of specifying. In addition, we are also conducting more experimental demonstrations in an exhibition format to highlight healthier materials currently used in affordable housing. In this context we look to surprise and inspire existing design students and provoke current designers to rethink their practices.
The New York City Housing Authority (NYCHA) and the HML are collaborating on a minor renovation project of a community public space on the first floor of a building owned by NYCHA in New York City. In this project, the HML team will propose and specify new resilient flooring, baseboard and wall, ceiling and trim paint for the chosen space, preferably a Day Care Center or a community space used by children. The intention of the project is to test new materials uses for future minor renovations in NYCHA housing across NYC.

Working with NYCHA’s Senior Manager for Community Health Initiatives, the HML team will coordinate community outreach activities to determine the uses of the spaces that might impact the choice of materials. The HML team will work with local community leaders and members, in particular youth, to develop the project. We will fully document the interaction with community groups via video, photography, story telling and other media to capture the community voice, including all preparatory work and feedback as well as an archiving of any assets created to support engagement.

All product specifications, installation and any maintenance criteria will be fully documented. The design and engagement process will also be fully documented via photography, video and story telling. The final report will include the baseline/renovated space report, the collection of pre- and post-occupancy reporting, recommendations for future installations, timelines, toolkits and other assets that will ensure that the project could be replicable in other NYCHA spaces. Documentation will also be used to develop educational materials to support the training of maintenance staff to successfully clean the space and ensure that any new materials are appropriately cleaned and maintained.
As described previously, Warren is the focus of a multipronged approach to understanding the challenges of post-industrial urban life in the United States. In Warren we directly confront the problems of an aging, often toxic urban infrastructure. Warren is surrounded by federally designated “brownfields”, and is adjacent to old industrial sites that have a history of chemical discharges that creates a challenging environmental context. Combining this with the aging housing stock often containing lead paint, lead piping and asbestos wallboards, We have to confront almost insurmountable problems in remediation and renovation of these properties. We have been working in the city for the last three years reimagining how the city can turn itself around working in a series of courses-- design focused studios and finance and policy focused seminars. Our partner in the last two years has been the Trumbull Neighborhood Partnership (TNP), TNP is tasked with either remediating 100 years old houses and turn them into affordable single or two family homes or alternatively demolishing them and leaving vacant lots. Our project is to help TNP with their major renovation projects in Warren OH, to adaptively reuse old single-family houses and convert them to new uses including multi-family housing. To date the group has specified the cheapest often most toxic products for their renovations. Our goal is to transform that practice to create specifications for healthier, affordable interior products. In addition, Parsons supports summer student interns in Warren who will work with TNP to conduct some phytoremediation demonstration projects to test this process as a cleanup tool in gardens in the city and to support the implementation of the new healthier, materials specifications.
HML is working with the Healthy Living by Design Unit at the NYC Department of Health and Mental Hygiene to explore the design of healthcare centers with a specific focus on Women’s Health Suites. This demonstration project will focus on women and vulnerable populations, particularly babies in their first year of life. Maternal Health programs support and provide education to mothers on infant health and safety issues, pair doulas (trained childbirth assistants) with pregnant women, and work with local residents and organizations to promote breastfeeding.

Building on the success of the Active Design Guidelines, the NYC Department of Health and Mental Hygiene will work with the HML Research fellows and Parsons design students to explore and identify evidence-based interior design strategies for public facilities that promote nurturing and restorative spaces, with potential for implementation. Special attention will be given to the specification of affordable, healthier materials for project inclusion.

The Design team will be tasked with developing preliminary design concepts that are engaging, educational, and motivational. The team will also provide sample healthier interior product specifications. Research for the project will begin in the Healthy Materials Lab and will then become a focus for a fall MFA Interior Design Studio.
In 2015, the Healthy Materials Lab partnered with paint manufacturer of Roma Paints, Romabio Company, on a multipronged plan to reduce the risks associated with chemicals found in household paints. The first step was to identify the point at which toxicity enters the product, and then to omit the problem chemicals from the final result, reducing harm to those with Roma paint–covered walls, as well as the workers exposed to the product throughout its manufacturing and distribution.

Most paints are created from petrochemicals in factories. People living near those factories are often exposed to the processing byproducts—while working at, or living adjacent to the plant, for example—and they’re often people living in poverty. The paints are applied on walls and ceilings in homes, often through the work of a painter who comes into contact with the paint’s volatile chemicals. After application, the paint continues to off gas over a period of time, creating potential health impacts for the occupants.

Today the nontoxic Roma Paints has been installed on the walls of HML’s offices and the Donghia Healthier Materials Library at Parsons, while ongoing efforts are in place to make the product available to AH developers. To that end, HML is working with the company to create a program whereby 5 percent of Roma’s annual sales could be used to fund a program that would be make a premium product, Roma Paint, available to AH developers to safeguard residents’ health. The HML team is also testing the paint’s performance on-site at Parsons, and documenting the results in the materials library archive.

The Roma partnership highlights a crucial goal of HML’s work: addressing the impact of material toxicity on selected populations. Research shows that factory and construction workers and residents of lower-income housing are disproportionately exposed to harmful chemicals in their living and work environments. The New School is committed to making society more equitable, and HML is focusing on building materials as a platform to do so, in this case by concentrating on populations that are most vulnerable to environmental toxicity: people living in poverty, children, and pregnant women.

We previously believed that the toxicity in products like paint was widespread knowledge. The Roma Paints project, however, demonstrated that the contracted painters were not aware of the risks. These issues need to be raised publicly. This project was small in scale; scaling it up to large AH developments involves addressing the added cost, time, and resistance to trying new products with ‘unknowns’ including application, performance, and durability. We believe that close collaboration with suppliers and contractors can ease some of this resistance.
DONGHIA HEALTHIER MATERIALS LIBRARY AND HEALTHY MATERIALS LAB CELEBRATE THE #FINAL7 BUILDING MATERIALS FROM THE ROSE BUILDING IN MINNEAPOLIS

HEALTHYMATERIALSLAB.ORG
Healthy Materials Lab hosted the Final 7 event in September 2015, highlighting the most healthy and affordable materials used in The Rose housing development in Minneapolis, MN that we discovered through our case study research. The event, which took place at the Donghia Healthier Materials Library at Parsons School of Design also served as an opening of the library as a resource for information on health-conscious constructed environments.

HML is working with partners together to transform materials for affordable housing. Organizations and nonprofits partnered with HML, including MSR Architects, Aeon, and Hope Community in Minneapolis generously provided the resources that enabled the completion of HML’s first case study, and enabled the creation of the Final 7 product categories. Representatives from businesses and manufacturers of healthy materials, as well as Parsons students and faculty were in attendance. To showcase the chosen materials, HML commissioned installation artist Del Hardin Hoyle to create original sculptures for the event.

Materials featured included Columbia Forest Products “PureBond” plywood, Forbo Flooring Systems Marmoleum, and INTERFACE carpet tile, all of which were used either in units and/or common spaces in The Rose development. ReWall, a wallboard made of compressed beverage carton scrap, was used to make the Final 7 event wine bar.
In the spirit of transparency, HML designed the “What’s Inside?” exhibition that was featured the windows of the Kellen Gallery in December 2015 and January 2016. The purpose of the exhibition was to encourage people to ask “What’s inside the various products that make up our daily environment—in the walls of our buildings or the chemicals in our home?”, in the same way that consumers are curious about the ingredients of food. The exhibition focused on the importance of transparency and celebrated a selection of seven common building products that have declared their contents.

The seven products were illuminated in transparent bell jars and were displayed next to their ingredient list, along with a description of their common applications. This design intentionally encouraged pedestrian engagement, and provided educational information once viewers became engaged.
Each year, MFA Interior Design students create a remarkable temporary installation and immersive experience, constructed with sustainable strategies for reception. They work with a local chef to make the food & drink components, which align with the celebratory event and musicians from The New School.

This year students collaborated with the Healthy Materials Lab and worked with premises of 1930s Futurist Dinner Parties and healthier affordable flooring materials, donated by five manufacturers as the basis for the design:

**HOUSE OF TAI PING** • Carpet Samples  
• 100% Wool & 50% wool 50% Silk • Non-Hazardous Flooring Material

**FORBO** • Marmoleum Tiles • Linseed oil 20%, Gum resin 2%, Tall oil 6%, Wood flour 31%, Calcium carbonate 8%, Reused Marmoleum 23%, Titanium dioxide 3%, Various other pigments 1%, Polyester 5%, Lacquer 1• 13”x13” • Affordable alternative to Vinyl Composition Tile

**ARMSTRONG** • Biobased Striation Tiles  
• 88% Calcium carbonate (Limestone), 11% Biobased polyester resin • 12” x 24” • Affordable alternative to Vinyl Composition Tile

**NORA** • Rubber Flooring • Norament Round tiles & Noraplan Sheets • Rubber 40%, Silicon 46%, Titanium dioxide 8%, Sulfur 4% • 19.72” x 19.72” • Affordable alternative to Vinyl Composition Tile

**SHAW CONTRACT GROUP** • Carpet Tiles  
• Eco solution Q nylon • Backing - polyolefin composite • Surface treatment - non e8 fluorocarbon chemistry • 36.2% recycled, pre-consumer • 24” x 24” • Affordable alternative to Vinyl Composition Tile

**THERMOCORK** • Insulation • 100% Cork • 36” x 12” x thickness or 36” x 24” x thickness • Non-hazardous alternative to polystyrene insulation

Guests were alumni and friends of the Healthy Materials Lab as well as NYC’s Design and Architecture community. The event was attended by over 150 people who were treated with an immersive exhibition of unexpected uses of flooring as wall installation, buffet, tables, curtains and lounge. Musicians entertained guests with experiments of percussive rhythms and sounds made by striking the flooring materials. Nora rubber flooring acted as a factory-like pathway to a cafeteria-like buffet made of Forbo Marmoleum. Wool and Silk carpet were mounted on the wall to act as a ‘cloud’ above lounges made of the same. Heat-formed Biobased Striation Tiles made bar tables look like ribbons. Another rubber pathway led to the newly re-invigorated Materials Library where student staff explained attributes of healthier materials, particularly flooring. People wore paper glasses and drank cocktails made with cotton candy.
The Parsons Healthy Materials Lab is using a case study methodology to ground its research in year 1 of the grant. We have been researching the process of development of five different affordable housing developers. This research records systems, processes and decision-making that contribute to the building of new affordable housing developments across the United States. The research team investigates particular developments that incorporate healthier building products and developers that have a stated mission to advocate for and transform standard building practices within the Affordable Housing industry.

The case studies approach is based on a systems thinking methodology that investigates the quantitative and qualitative factors that determine key decision-making factors in the Affordable Housing sector. The reports examine and identify the important decision making relationships that exist within these systems to specifically identify how, why and when building product decisions are made.
The case studies undertaken by the HML record systems of processes and decision-making that go into the building of new AH developments across the United States.

The team investigates specific developments that incorporate healthier building products and developers that have a stated mission to advocate for and transform standard building practices within the AH industry.

Our case study approach is based on a systems thinking methodology that interrogates the quantitative and qualitative factors that determine key decision-making factors in the AH sector. The reports examine and identify the important decision making relationships that exist within these systems to specifically identify how, why, and when building product decisions are made. The case studies will create a current baseline of existing best practices for healthier buildings within the affordable housing industry. Understanding the various construction visions adopted by AH developers allows us to catalogue the distinct lenses and the variety of approaches that are characteristic of this sector.

The case studies have an intentional regional distribution. By understanding the regional variation of AH across the US, we are able to identify key regional drivers and obstacles in the process of healthier construction. In particular, we explore healthy building products selection, procurement and installation processes.

A systems approach highlights the challenges, drawbacks and compromises that take place when specifying and installing building products. This approach enables a critical analysis of the current processes of funding, design and construction in place within the. Ultimately, such research has the potential to impact the overall housing sector through demonstrating both the health benefits for residents associated with using healthier products, and future new market potential for sales of better products. Finally, case studies enable a critique of the existing benchmarks and certifications that exist in the industry such as the Living Building Challenge, LEED, Enterprise Green Communities Criteria, Delos® Well Build, and state policies that promote better building practices. Positioning these tools within the context of affordability permits an analysis of their accessibility, implementability and replicability.

Case study analysis brings together both quantitative and qualitative research to draw conclusions, allowing a nuanced and in depth analysis of particular situations. We adopted a range of research methods to capture the range of key factors including stakeholder interviews, videography, photography, analytical mapping and diagramming, media coverage, stakeholder analysis and a review of current census and other data sources.

The results of these studies reveal the innovative approaches that various developer teams utilize for achieving healthier, affordable housing. Additionally, the results provide a list of existing healthy and affordable building products that can be broadly shared. This list will contribute to the making of a library of better building products to be showcased in a number of different contexts including the Donghia healthier Materials Library at Parsons School of Design. The case studies have also revealed a number of notable affordable building products worthy of analysis. Finally, evaluation tools used by the various designers nationwide can be collected and shared to ease the specification process and to continue paving the road to innovation through collaborative practices.
The Rose is a mixed-income housing project in Minneapolis developed by Aeon and Hope Community. Investigating this project offers an introduction to understanding the processes and challenges of designing and building affordable, sustainable housing. It is particularly interesting to explore such a development and connect with key stakeholders of the project as all parties have demonstrated an intention to prove that sustainable, net-zero-ready, healthier housing development can be built affordably. Such a common motivation between stakeholders in the housing development industry is timely and offers a momentum to work together towards tools, mechanisms, and propositions to make the process more transparent, practical, affordable, and replicable, and thus, more easily accessible to other housing developers. The transparency and commitment to share information on promising practices from the developers, architects, contractor and consultants demonstrates a real desire to work together for positive change, moving beyond competition towards collaboration in the affordable housing sector.

Our hope is that this report is a resource for the organizations involved in the building of The Rose and an aid to widely disseminate and replicate better building practices.

Dissecting the challenges of specific moments, key decisions, and negotiations brings to light the road to innovation for the creation of more sustainable, healthier buildings. The network of complex relations, partnerships and decision-making processes existing between National and State policy, Developer, Architect, Contractor, Manufacturer and local communities is an important characteristic of the project. This development would not have been as successful without the dedication and perseverance from members of the design team and the leadership of Aeon and Hope Community.

Examining The Rose as a pilot project also enables an understanding of the current benchmarks for sustainable and affordable developments. In understanding the guidelines of the two certifications the development subscribed to, the Living Building Challenge (LBC) and Enterprise Green Communities Certification (EGCC) allows for a critical analysis of the implementability and replicability of their requirements in relation to human health and affordability. LBC is a philosophy and tool for the construction industry that is defining the current highest measures of sustainability. The LBC criteria is based on seven different petals: Site, Water, Energy, Materials, Beauty, Equity and Health. Each petal requires its own individual certification, and each petal certification must be achieved in the development in order to gain full certification. The EGCC is encouraged for Multifamily and Single Family new construction and rehabilitation projects requesting Minnesota Housing financing. EGCC has created a standard that is based on health, energy efficiency, and environmental responsibility, and encompasses the design, construction, and operation of a development. The EGCC method is based on a point system and promotes an integrated design throughout the entire lifecycle of the development.

This case study uses a particular lens on the specification and procurement process of the interior building products of the development in order to uncover the relationship between affordability and the challenges of purchasing less toxic construction products. This study is part of the Healthy Affordable Materials Project that seeks to improve the lives and health of residents living in affordable housing by reducing the use of hazardous materials in the building supply chain. The long term vision for the Healthy Affordable Materials Project includes firstly to understand best practices in the building industry; secondly, to create tools that aid the decision-making process around product specification for all stakeholders designing, constructing and occupying homes; and thirdly, to bring transparency in the building supply chain through the introductions of mechanisms for declaring product ingredients. The success of The Rose as seen in the sharing of resources and information is a first step that supports the Healthy Materials Lab’s initiative.

This research was carried out from May to November 2015, and includes excerpts from interviews carried out with numerous stakeholders who participated in this development. MSR Design and their documentation of the process and Aeon’s expertise in affordable housing development were key resources to this research. The Rose opened in October 2015 and a post-occupancy survey and analysis has been set up to be completed and ongoing in the coming years.

Video on The Rose:
https://www.youtube.com/watch?v=M1sz-wCWv2A
First Community Housing (FCH) is an award-winning, nonprofit, Public Benefit Housing Development Corporation, located in San Jose, California. Since 1986, FCH has created housing for more than 3,200 low-income residents in 19 affordable rental housing developments (in over 1,380 units) throughout the San Francisco Bay region. The low-income populations served include families, senior citizens, and the formerly homeless, as well as special needs populations such as the chronically ill, the developmentally disabled, and consumers of mental health services.

‘There is a need for everyone to have a place in the community’, explains Geoffrey Morgan, FCH President and CEO. This inclusive vision is further complemented by designing each development specifically to enhance and harmonize within its unique neighborhood and to be accessible by residents in particular need of supportive housing. The mission of FCH is to provide quality and healthy environments. Dedication to this mission is apparent throughout the design, construction and leasing stages.

FCH engages an integrated design process in their approach from the earliest stages of a project. Members from the distinct design teams, alongside the building management team and contractor, are involved in the design and procurement process to ensure collaborative and thoughtful development. From the time of land acquisition, FCH engages with city officials and their partners, including architects, general contractors, and sustainability advisors to ensure the designs promote sustainability and health for the builders, residents and staff. Specific consideration is given to choosing less toxic products that will be recyclable in a healthy way. Long-term partnerships have been developed over the years. For example FCH has worked with OJK Architects for over 21 years on many of their projects. These partners are exemplary in what Morgan describes as the ‘informed decision makers who break down the silos between housing and healthcare’ (Morgan, FCH, 2015).

Over the last few decades, FCH has been developing a baseline approach for building healthier, more sustainable buildings. They now have a long standing product list they specify from for each project. This facilitates the procurement process along with reducing cost of research and risks of testing new materials in their properties. FCH also continues to learn from their design successes or drawbacks through long-term active post occupancy work. Their in-house management leaders, the Sustainable Facilities Manager and the Sustainable Site Manager, train the building managers to incorporate healthy products in their practice as well as running workshops with residents on how to use affordable and healthier products in their households. This ongoing relationship enables a feedback loop to ascertain what materials or spaces are working better than others, and informs future projects. It also ensures that buildings work efficiently, ultimately saving FCH in repair and energy costs down the line.

There are few market rate developers building to LEED standards in Santa Clara County, but FCH has been dedicated to building healthier buildings for decades. FCH is not a certification seeking organization, but has followed green practices ‘before green was cool’ (Morgan, FCH, 2015). Their holistic approach and belief that ‘housing is healthcare’ brings the developers outside the standard remits by providing other services that encourage residents to be mobile and engaged within their city. For example, each resident living in any FCH property receives a free EcoPass which allows unlimited use of the network of VTA Bus, Light Rail and Express Bus service throughout San Jose, ensuring residents have convenient access to the city. Many of the properties are built in locations with proximity to transportation hubs in mind.

At a time when there is increasing understanding that housing can be integrated with other services such as healthcare, transit, and education, FCH has for a long time understood this integrated design approach. For example, a 2016 study conducted by Center for Outcomes Research & Education (CORE), with support from Enterprise Community Partners, focused on access to healthcare and explored how “we live in a profoundly interconnected world. In the emerging era of accountable care, health care systems and affordable housing providers may want to mutually consider the potential benefits of stronger cross-sector collaboration.” (Saul, Amanda et al., 2016) FCH demonstrates their commitment to bettering lives through integrating their housing with the services described above. Their vision that “housing is healthcare” extends to materials selection, and their dedication to making access to health, as well as healthier living environments, has positively affected their residents.

The Healthy Affordable Materials Project case study focuses on the process undertaken for three FCH developments, all of which are at different design or development stages: Mountain View Studios (opened June 2014), Japantown (opening December 2015) and Orchard Gardens (construction beginning 2016). These developments were chosen as they, together, demonstrate FCH’s innovative process, the various types of housing and services provided, and a spectrum of materiality and interior products installed.

Video on First Community Housing:
https://www.youtube.com/watch?v=0iTrSBASkJ8
Carmel Place is a mixed-income, micro-unit housing development in the Kips Bay neighborhood of New York City, owned by Monadnock Development and the Lower East Side People’s Mutual Housing Association. This project is an example of an innovative approach to Affordable Housing in a myriad of ways - it is the first multi-family building in Manhattan developed using modular construction; the only housing development in New York to have secured a zoning override which allows construction of new apartments under 400 sf; the first micro-unit development in New York City and distinguishes itself even further by being 100% micro units. The 55-unit development is 40% affordable, with eight of those twenty-two apartments made available to formerly homeless veterans. The remaining fourteen units were available within the City’s affordable housing lottery system and garnered an astonishing 60,000 applications. The construction of the units adhered to green guidelines to achieve LEED silver status and the Enterprise Green Communities checklist (2011).

The Carmel Place development was a result of a study conducted in 2007 during Mayor Bloomberg’s administration which showed a projected 9.1 million New York City residents in 2030 (note: by 2015 we had already reached the projections of 8.5 million for 2020). The Citizens Housing Planning Council (CHPC) – a research and education organization whose goal is to advance public policies to support NYC’s housing and neighborhoods – inspired by the projected spike in population in PlaNYC, created a research initiative – Making Room. This study focused on examining the current living situations in NYC households. The study revealed that 33% of New York City’s housing units are occupied by single people living alone with the statistics rising to an surprising 46% in Manhattan. The study also identified solutions as to how the city’s housing stock could accommodate both the change in habitation for singles in New York City, and also address the potential increase in population. In a response to this research in July of 2012, NYC Housing Preservation and Development launched adAPT NYC, a pilot program to develop a new model of housing to adapt to the city’s changing demographics. The Request For Proposal, that resulted from this study was downloaded 1,600 times and had a record 33 submittals.

While the focus of other case studies conducted by HML has been on developments which have made healthier building material choices a priority, the driver for our study of Carmel Place was the innovative response to the large number of New Yorkers living alone and the potential to signal a new typology of affordable housing for New York City. The case study also presented an opportunity to examine the building materials that were used in this project and compare them to those used in other developments which actively pursued the inclusion of healthier building materials.
Foundation Communities is a 25 year old non-profit affordable housing developer based in Austin, TX. Their properties are primarily located in Austin, along with 3 properties in the Dallas/Fort Worth Area. Their portfolio includes 15 properties and they are currently working on the development of 3 new properties in 2015-2016 alone. Their mission is to provide affordable, healthy, attractive homes and free on-site support services for thousands of families, as well as veterans, seniors, and individuals with disabilities. They integrate an innovative model to empower residents and neighbors to achieve educational success, financial stability, and healthier lifestyles.

Green building strategies have been a baseline approach for Foundation Communities development. They have pursued the Enterprise Green Communities certification since its inception in 2003, and continue to exceed LEED Platinum criteria.

Foundation Communities has been aligned with Austin's S.M.A.R.T. Housing™ Initiative, a municipal program, launched in 2000, that incentivizes the construction of quality affordable housing. One of the program's requirements is to meet a minimum threshold under the Austin Energy Green Building, which was one of the first municipal green building programs in the country. Foundation Communities have now adapted these guidelines for all projects. They are also exploring new certifications, including the Living Building Challenge to support their commitment to using healthier materials in their developments and intend to submit Lakeline Station (construction to begin in 2016) as a pilot project for the certification.

Green initiatives are integrated into post occupancy outreach including maintenance and resident education with a focus on energy efficiency practices, on-site recycling, and community gardening. In 2014 Foundation Communities doubled their solar capacity 433 kilowatts, making them the largest private solar owner in Austin. Their dedication to health, financial stability and green education encourages residents to conserve energy and use homemade cleaning products to maintain indoor air quality safe. Furthermore, their on-site Learning Centers offer after-school and summer school curriculum for children to learn green habits.

Healthy Affordable Materials Project focus their study of Foundation Communities on 3 sites: M Station (opened 2011), Capital Studios (opened in 2014) and Lakeline Station (opening 2016).
Once a thriving center of innovation in industry and progressive labor conditions, Warren Ohio is now a rapidly shrinking city. Warren's Garden District was once the home to its wealthiest residents, but is now an area facing multiple challenges, among them abandonment, unemployment and drug-related crime. There has been a combination of tactics to respond to the local conditions including the demolition of numerous houses in the area.

This case study serves to document the current practices in demolishing and renovating existing housing stock. The age and original materials of these houses present health challenges from lead and asbestos in both the buildings as the surrounding soil. We will document the history of the air and soil pollution in the area, note the current practices of abatement and remediation, and make further suggestions for the future. Finally, this case study will include recommendations of building material choices that are affordable and accessible enough to become a new standard of building as the renovations and repairs continue in this underserved community.
The following partners have donated products to the lab for demonstration projects.

- **FORBO**
  - Resilient flooring
- **Armstrong**
  - Resilient flooring
- **NORA**
  - Resilient flooring
- **SHAW CONTRACT GROUP**
  - Carpet flooring
- **HOUSE OF TAI PING**
  - Carpet flooring
- **ThermaCork**
  - Insulation
- **ROMA PAINTS**
  - Paint
PARTNERSHIPS

NATIONAL

FIRST COMMUNITY HOUSING
San Jose, CA

FOUNDATION COMMUNITIES
Austin, TX

TRUMBULL NEIGHBORHOOD PARTNERSHIP
Warren, OH

INTERNATIONAL

HENNING LARSEN
COPENHAGEN, DENMARK

LOCAL, NY

Mount Sinai
MOUNT SINAI

NYCHA

STATE OF NEW YORK DEPARTMENT OF HEALTH

WEST HARLEM GROUP

MONADNOCK
CONSTRUCTION, INC.

THE NEW SCHOOL
We are working within the university to change construction practices.
CONFERENCES AND OTHER EVENTS
ATTENDED

LIVING BUILDING CHALLENGE
PITTSBURGH
September 2015

ULI AND ENTERPRISE CONVENTION
MINNEAPOLIS.
July 2015

HEALTHY HOMES/REGIONAL ASTHMA
SUMMIT (JOINT EPA-HUD-HHS
REGIONAL SUMMIT) MOUNT SINAI
HOSPITAL
ALISON MEARS AND JONSARA RUTH
November 2015

COMMUNITY OUTREACH AND
ENGAGEMENT CORE
MOUNT SINAI TRANSDISCIPLINARY
CENTER ON EARLY ENVIRONMENTAL
EXPOSURES. ICAHN SCHOOL OF
MEDICINE. MOUNT SINAI HOSPITAL.NYC
ALISON MEARS AND JONSARA RUTH ON
ADVISORY COUNCIL

WEST HARLEM GROUP HEALTHY
BUILDING FORUM. GUEST SPEAKER,
ALISON MEARS
April 2016

METROPOLIS MAGAZINE
MATERIALS PALETTE, INVITED
CONTRIBUTOR, JONSARA RUTH
April 2016

GIDEST ETHNOGRAPHY DIALOGUES
A CONVERSATION ON ETHNOGRAPHY
AND PEDAGOGY WITH TERRY
WILLIAMS AND JONSARA RUTH
April 2016

SCHOOL OF DESIGN STRATEGY
RESEARCH EVENT. ALISON MEARS
April 2016

PRESENTATIONS TO THE NEW SCHOOL
DESIGN AND CONSTRUCTION COMMITTEE
April 2016

CELEBRATING 110 YEARS OF INTERIOR
DESIGN AT PARSONS. DESIGN WITHIN
REACH, GUEST SPEAKER. JONSARA
RUTH
February 2016

MASTERS OF ARCHITECTURE PROGRAM,
PARSONS. ENVIRONMENTAL
TECHNOLOGY 2, GUEST SPEAKER,
JONSARA RUTH
November 2015

OPENING OF THE ROSE. MINNEAPOLIS,
ALISON MEARS INVITED SPEAKER TWO
SESSIONS
September 2015

SCHOOL OF ART, MEDIA & TECHNOLOGY
CONVOCATION EVENT. GUEST SPEAKER,
JONSARA RUTH
August 2015

SUMMER STUDIES IN CONSTRUCTED
ENVIRONMENTS, GUEST SPEAKER
JONSARA RUTH
July 2015

SIX CLASSES RETREAT CALIFORNIA,
JONSARA AND ALISON
June 2105

PARTICIPATED

LIVING BUILDING CHALLENGE
PITTSBURGH
September 2015

ULI AND ENTERPRISE CONVENTION
MINNEAPOLIS.
July 2015

HEALTHY HOMES/REGIONAL ASTHMA
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CENTER ON EARLY ENVIRONMENTAL
EXPOSURES. ICAHN SCHOOL OF
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ALISON MEARS AND JONSARA RUTH ON
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WEST HARLEM GROUP HEALTHY
BUILDING FORUM. GUEST SPEAKER,
ALISON MEARS
April 2016

METROPOLIS MAGAZINE
MATERIALS PALETTE, INVITED
CONTRIBUTOR, JONSARA RUTH
April 2016

GIDEST ETHNOGRAPHY DIALOGUES
A CONVERSATION ON ETHNOGRAPHY
AND PEDAGOGY WITH TERRY
WILLIAMS AND JONSARA RUTH
April 2016

SCHOOL OF DESIGN STRATEGY
RESEARCH EVENT. ALISON MEARS
April 2016

PRESENTATIONS TO THE NEW SCHOOL
DESIGN AND CONSTRUCTION COMMITTEE
April 2016

CELEBRATING 110 YEARS OF INTERIOR
DESIGN AT PARSONS. DESIGN WITHIN
REACH, GUEST SPEAKER. JONSARA
RUTH
February 2016

ヶ月

NOVEMBER 2015

SCHOOL OF ART, MEDIA & TECHNOLOGY
CONVOCATION EVENT. GUEST SPEAKER,
JONSARA RUTH
August 2015

SUMMER STUDIES IN CONSTRUCTED
ENVIRONMENTS, GUEST SPEAKER
JONSARA RUTH
July 2015

SIX CLASSES RETREAT CALIFORNIA,
JONSARA AND ALISON
June 2105

BOOTH DESIGN, CONSTRUCTION AND
COMMUNICATION MATERIALS AND
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“Parsons - led initiative to improve health and transparency of building materials”
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Taylor-Hochberg, Amelia
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