MICROBIOMES AND THE BUILT ENVIRONMENT
...the effects of millions of materials choices have massive consequences for ecosystem and human health...

Better Building Materials: Understanding Human Health and Environmental Attributes, USGBC
We are the first generation to spend **87%** of our time indoors

Many indoor environments have pollutant levels [that are] 2-5X and occasionally more than 100X higher than outdoors levels”

NEW YORK ADOPTS PASSIVHAUS STANDARDS
what are building materials made of? | Not renewable carbohydrate

In 1900, 41% of U.S. building materials were natural renewables.

By 2000, 6% of U.S. building materials were natural renewables.
QUESTION 1:
How does total reliance on mechanical ventilation impact the interior microbiome?
what about sunlight?  

High performance glass filters
DO YOU WORK IN A TOXIN FACTORY?

Printers and fax machines

They all ooze ozone. Scientists have yet to figure out definitively what happens when that ozone mixes with the workplace’s other volatile organic chemicals.

Smoking

When people in your office smoke -- even if it’s behind closed doors -- the second-hand stuff funnels through the ventilation system to the rest of the office.

Exterminators

It doesn’t help that exterminators spray pesticides that may contain carcinogens over your workspace.

What fresh air?

Believe it or not many fresh air vents are located over loading docks and parking garages, sucking in carbon monoxide and other contaminants.

Hidden Dangers: A Glossary

HVACs: Heating, ventilation and air-conditioning systems. Often they circulate contaminated air.

VOCs: Volatile organic chemicals. They're.

Sealed windows

Most people now work in enclosed offices. Not being able to crack open a window means that you’re relying on building managers to pump through enough fresh air -- something they don’t always do.

Carcinogenic cleaning products

There are 70,000 chemical cleaning products on the market, many of which are used to clean up your office. Some of these products may contain carcinogens.

Copy machines

These also emit ozone. What’s worse, they are not always next to vents, so their emissions stay trapped in the office air.

The office bathroom -- the modern mold machines

Who hasn’t seen a clogged toilet? Flooded bathrooms can create molds.

The stack effect

Co-workers who smoke may think they are doing you a favor by taking it outside. But experts say this can be even worse. When you open the revolving door, the building sucks in the second-hand smoke like a chimney.

The modern office is home to as many as 350 different volatile organic chemicals released by building materials, furnishings, and office equipment. That’s not to mention the molds and bad indoor air that often flourish in these sealed-up environments. Some of the biggest offenders.
Indoor air quality
QUESTION 2:
What is the role of the interior microbiome in hospital-acquired infections?
Paint Shield® Microbicidal Interior Latex Paint

Not Yet Rated | Write a review

Paint Shield® is the first EPA-registered microbicidal paint that kills greater than 99.9% of Staph (Staphylococcus aureus), MRSA (Methicillin-resistant Staphylococcus aureus), E. coli (Escherichia coli), VRE (Vancomycin-resistant Enterococcus faecalis) and Enterobacter aerogenes within two hours of exposure on painted surfaces. It continues to kill 90% of these bacteria even after repeated contamination on painted surfaces. The effectiveness lasts for up to four years as long as the integrity of the surface is maintained.

Learn more at www.swpaintshield.com

See Colors for This Product**

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Product: 6508-61685
Antimicrobials in Hospital Furnishings: Do They Help Reduce Healthcare-Associated Infections?

Ted Schettler MD, MPH

March 2016
QUESTION 3:
What effect does the introduction of added-antimicrobial building products have on the interior microbiome?
Precautionary list

Chemical Compounds

Perfluorocarbons (PFCs)

Where is it commonly found?
Stain protecting fabric treatment, water repellent fabric treatment, food packaging, and consumer products.

HEALTH EFFECT SUMMARY

The Living Building Challenge publishes a “Red List” of materials to be avoided in buildings seeking certification under the Living Building Challenge. What’s on it?

- Asbestos
- Cadmium
- Chlorinated Polyethylene and Chlorosulfonated Polyethylene
- Chlorofluorocarbons (CFCs)
- Chloroprene (Neoprene)
- Formaldehyde
- Halogenated Flame Retardants
- Hydrochlorofluorocarbons (HCFCs)
- Lead
- Mercury
- Petrochemical Fertilizers and Pesticides
- Phthalates
- Polyvinyl Chloride (PVC)
- Wood treatments containing creosote, arsenic or pentachlorophenol
Project Team User Guide: 
Using Health Product Declaration® (HPD) 
Open Standard, version 2

September 2016

Health Product Declaration Collaborative
www.hpd-collaborative.org
Indoor Dust Contains Numerous Chemicals

Click on a chemical class to add or remove it

Graphic: Silent Spring Institute
QUESTION 4:
What effect do introduction of synthetic chemicals and VOC’s have on the interior microbiome?