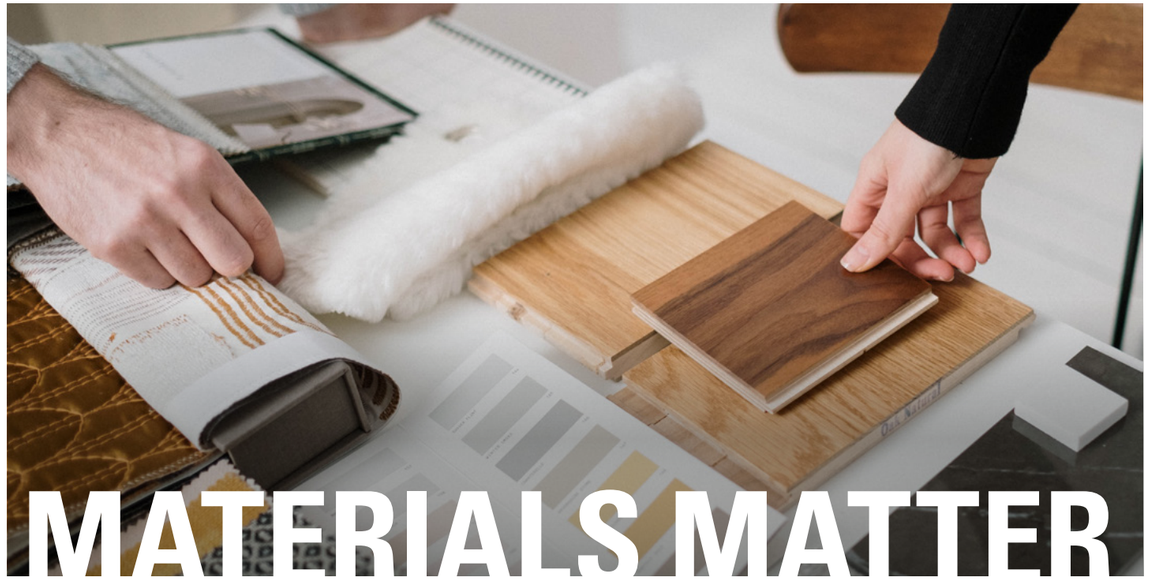


MATERIALS MATTER

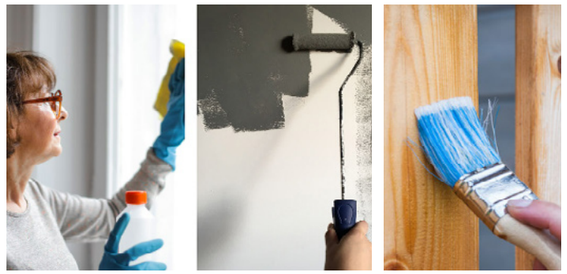
A Guide to Selecting for Material Health

"Material health" is shorthand for strategies to improve the impact of materials on human health. People spend 90% of their time indoors, **where pollutants can be 100 times higher than outside.** Research shows that common building materials contain harmful chemical substances that can cause both mild and severe effects on health and well-being.

The number of chemicals identified as actually or potentially harmful is growing, and many manufacturers do not disclose the ingredients in their products. The list below is by no means exhaustive, but can be useful to keep in mind when selecting interior furnishings. **Some harmful yet highly common materials used in interior environments include:**

1 REDUCE VOLATILE ORGANIC COMPOUNDS (VOC'S)

Common sources of VOC's are cleaning supplies, paints, coatings and lacquers.



VOCs are emitted as gases from certain solids or liquids and can have harmful health effects. Concentrations are often up to 10 times higher indoors than outdoors. VOCs can also cause eye, nose, and throat irritation, headaches, dizziness, nausea, allergic skin reaction, and damage to liver, kidney, and central nervous system. Some can cause cancer. Urea formaldehyde, common in many composite VOC wood products and insulation, emits formaldehyde, a toxic carcinogen and can cause watery eyes, nose irritations, wheezing and coughing, fatigue, headache, insomnia, skin rash, severe allergic reactions, burning sensations in the eyes and throat, nausea, difficulty in breathing, respiratory irritation, and increased cancer risk.

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How to prevent exposure:

- Only select paints with no VOCs, and only use "low VOC" materials when there are no non-VOC product alternatives.
- Specifically avoid any glues and adhesives with urea formaldehyde, especially in composite wood products (MDF, plywood, particleboard).

2 REDUCE CHLORINATED PLASTICS (PVCS)

PVCs are often found in window shades, carpet, and wall coverings.

Chlorinated Plastics (PVC), contain carcinogens, and its manufacture involves toxic substances, such as cadmium, lead, and phthalates. Under certain conditions, PVC creates the by-product dioxin, which the American Medical Association identifies as the worst man-made toxic substance. PVC has been called the "poison plastic," and is known as one of the most toxic substances saturating our planet. Kaiser Permanente and other organizations have banned its use. Short-term exposure can cause eye and nasal irritation, respiratory and central nervous system ailments, dizziness, drowsiness, headaches, and asthma. Long-term exposure can harm the immune, endocrine, and reproductive systems, damage the liver, and cause cancer. Note that many product manufacturers claim that PVC is "sustainable" because it can be recycled easily, but the total effect of PVC is extremely harmful, both in manufacture and use.

How to prevent exposure:

Prioritize flooring with no PVC in the backing and try some of these alternatives.

Carpets:

- Milliken w/ PVC-free cushion backing
- Mohawk with Encycle backing
- Tandus with Ethos backing only
- JJ-Kinetex with PET backing

Specialty Floors:

- Shannon Barenaked CS Sheet
- Shannon Barenaked LT Plank

3 AVOID BROMINATED FLAME RETARDANTS (BFR)

BFRs are commonly found in insulations, plastics, and furnishings.

Many flame retardants contain a variety of harmful substances that accumulate and persist in the human body and the environment and do not break down into safer chemicals. BFRs are associated with endocrine disruption, immunotoxicity, reproductive toxicity, cancer, and adverse effects on fetal and child development and neurologic function.

How to minimize exposure:

Prioritize eliminating or reducing BFRs in foam-cushion furniture.

NEXT STEPS

When approaching materials selection, it is often a matter of balance and harm reduction. In some instances there simply are no alternatives that are free of problematic substances, or budget can become a challenge.

It is important to remember that a single decision can have a great impact if one healthier material replacement is selected that covers a large area or has the greatest contact with users. For example, if the project is an affordable housing development: replace the vinyl windows with fiberglass but keep PVC roofing for affordability. One is much closer to users on a daily basis and will have greater health impact over time.

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At HED, great design is about thinking creatively to overcome challenges and improve real world outcomes. If you'd like to learn more about material health and material selection in your upcoming space, or strategic material replacements or substitutes, click the link above, our teams are here to help.