PRODUCT TRANSPARENCY IN PRACTICE

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The Durst Organization (TDO) has a long history of developing environmentally responsible buildings that reduce energy and water consumption, incorporate innovative design strategies and technologies, and promote the well-being of their occupants. In 2012, at the onset of developing three new multifamily, mixed-use buildings in New York City, we developed a company-specific green building policy that combined lessons learned from previous green projects with new environmental goals. The goals included an aggressive emphasis on building occupant and ecological health, and the use of newly defined product transparency data to make informed product selections. Pursuing these goals required a more integrated process between TDO and our designers, construction teams, and consultants, as well as detailed interactions with various product manufacturers.

One of the first things we realized is that product transparency integration requires a mix of professional expertise. Collecting and evaluating the new information available through EPDs, HPDs, emissions testing, and other sources require both a robust outreach effort and the technical background to understand the data. We have subsequently developed an expanded project team that includes TDO's dedicated sustainability project managers, green building consultants with an in-house industrial hygienist (Vidaris), materials health research experts (Healthy Building Network), and sustainability project managers at the construction management companies assigned to each project.

This expanded team, working in close coordination with the project designers, trade contractors, and product manufacturers, has proven critical in meeting our combined procurement goals: to select products with improved health and sustainability profiles while also meeting critical performance, aesthetic, schedule, and cost parameters.

We started by identifying a set of "focus materials"—material types we felt had the highest potential for health or environmental impacts due to likely exposure and/or scale of application—within each specification section. Examples range from paints and carpet tiles to kitchen cabinetry, countertops, gypsum wallboard systems, concrete, and duct insulations and sealants.

For each focus material, we assembled initial sustainability characteristics based on rating systems, standards, and criteria culled from our team's knowledge base. These parameters guided the initial materials selections proposed by our design teams. As products were proposed, we worked with manufacturers to obtain product transparency resources, with an emphasis on health and environmental product declarations (HPDs and EPDs), emissions testing data, European Commission REACH reporting, GreenScreen analyses, and Declare or Cradle to Cradle certifications. This expanded information was then evaluated both to iteratively vet the proposed products and to recalibrate our sustainability characteristics (which ultimately become integrated

into the specifications). The sustainability research was consistently checked against performance and costs to ensure that proposed products were acceptable to all parties.

Data for many products are becoming more available, and in some cases we've found enough information to perform a "deep dig"—comparing EPDs on multiple similar products while also using HPD data and/or evaluations from the Healthy Building Network's Pharos tool and other resources. We've found that the combination of use-phase health data along with life cycle environmental data gives the most complete profile of a product or material type.

LESSONS LEARNED

It's been somewhat surprising to realize how often the data present trade-offs that require further team dialogue for careful prioritization. We've found that it's rare for a product or product type to be clearly superior in all pertinent areas to a competing product. Table 1, for instance, shows how our assessments of carpet tile backings varied between environmental and health-related profiles. Note that product 1A has higher environmental impacts than products 2A and 2B based on EPD data alone. The product content assessment data, however, indicate that product 1A avoids hazardous compounds more than the other listed options.

These situations require the following approaches:

- Look into the issues behind the data (e.g., what factors cause the products to score higher or lower in the evaluations). A set of preferred-product sustainability criteria often begins to emerge even if an "ideal" product can't be identified.
- Use other performance criteria as screens to assist in the selection process. This requires critical judgments from the whole project team to make selections that best meet integrated performance, health, and environmental goals.

One final issue is how best to communicate the advantages of our decisions. A method we are currently testing is the Avoided Hazards Index, developed by the Healthy Building Network. In this process, the amount of hazardous material in a given product is quantified based on HPDs or other information. It's then possible to estimate the quantities of hazardous substances that have been avoided through the informed selection process, compared with one or more alternatives.

For example, we have calculated that for a 50,000-square-foot installation of carpet tiles in residential corridors, the use of carpet backing type 1A (from Table 1) would avoid approximately 4,750 pounds of persistent bioaccumulative toxicants and 1,650 pounds of asthmagens, compared with product type 2C. Although no product may be perfect, these reductions represent significant next steps toward our stated goals of developing more ecologically responsible buildings with reduced health hazards.

Table 1. Carpet tile backing comparison, EPD and product content evaluations

Manuf.	Product #	EPD Cradle to Gate Impacts (Higher impacts in red, lower impacts in green)					
		GWP	ODP	Acidi-fication	Eutrophi-cation	Smog	Total Primary Energy
		kg CO2-Eq	kg CFC11-Eq	mol H+ eq	kg N eq	kg O3 eq	MJ
Mfr 1	**Type 1A** (Baseline)	11.90	1.1 E-06	2.60	0.024	0.59	195.0
Mfr 2	**Type 2A**	-47%	-1%	n/a	-96%	-39%	-46%
Mfr 2	**Type 2B**	-16%	-5%	n/a	-61%	-22%	-12%
Mfr 2	**Type 2C**	-4%	17%	n/a	-85%	-7%	43%
Mfr 3	**Type 3A**	75%	595%	12%	-86%	30%	98%

Manuf.	Product #	Product Content Assessment (Primarily obtained from the Pharos Tool)							
		Direct Content Hazard	Potential Residual Hazards	Meets Product Content Exclusions					
				Formald. Cmpnds.	PFCs	Phthalates	Flyash	Asphalt	Anti-microbls.
Mfr 1	**Type 1A** (Baseline)	Medium (Respiratory)	Very High (PBT)	Y	Y	Y	Y	Y	Y
Mfr 2	**Type 2A**	High (Cancer)	Very High (PBT)	Y	Y	N	N	Y	N
Mfr 2	**Type 2B**	High (Cancer)	Very High (PBT)	Y	Y	N	Y	Y	N
Mfr 2	**Type 2C**	Very High (PBT)	Very High (PBT)	Y	Y	Y	Y	N	N
Mfr 3	**Type 3A**	Very High (PBT)	Very High (PBT)	N	N	N	Y	Y	N