



Design for the Environment

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By Allan Gerlat

It all begins with a product. And the product begins with its design.

"That's the goal of product stewardship, to design for its end-of-life impact," said Scott Cassel, director of the Product Stewardship Institute. "The environmental aspects need to be considered equal to other design criteria."

And yet design is a component of the product life cycle that's been, to an extent, unincorporated. If the producer responsibility program is not well planned, for example, it might address the immediate issue, "but it doesn't address the underlying problem of design," said Reid Leifset of Yale University's School of Forestry and Environmental Studies.

The first driver to make this happen is "the producers thinking that consumers might prefer this," said Joanna Underwood, president of the environmental research group INFORM Inc. It's key that collection systems for products provide feedback to producers on design issues, Leifset said. Matsushita Electric Corp. of America, maker of Panasonic products, has a variety of controls, including a list of 30 to 40 environmental criteria on which to judge product design, from type of materials to ease of label removal. But more often, design and environmental concerns are pondered in separate parts of the building. "With design, you're concerned about function and costs. At what point you're concerned about the environment is not so clear," said Manbir Sodhi, professor of industrial engineering at the University of Rhode Island.

Selection of materials is central. "The challenge is understanding what the best alternatives are," said Philip White, chairman of the Industrial Designers Society of America Ecodesign Section. Steel might be chosen over plastic, for example, because it's easier to recover. "Designers work with a few materials that they are comfortable with. Those choices need to be broader," Sodhi said. There's a growing interest, Underwood said, in bio-based feedstocks for products, which require less energy and generate less toxics than hydrocarbon-based goods. For example, Nature Works has developed a corn-based polymer, which makes it a renewable resource.

Designers need to consider the environmental impact of each aspect of a product's life, from its manufacture, distribution, number of functions, energy consumption and life expectancy to how it's recovered, disassembled and recycled.

Getting the right information to both designers and consumers about these choices are obstacles facing environmental design, the IDSA's White said. Then there's the economic realities. "Until you're ready to replace the existing chemical, you do have a vested interest in the status quo," said Mary Ellen Weber, head of the U.S. Environmental Protection Agency's Design for the Environment program. Business is in the early stages of integrating design with environmental concerns; it's probably 20 to 30 years before it's industrywide, said Cassel of the Product Stewardship Institute. "This is a very big change for industry." Until genuine integration's achieved, "we'll continue to have interesting products, but we'll have environmental impacts that will reduce the enjoyment."

Still, a shift is under way. "I think it's going to be a more routine part of doing business," Weber said. "The time is very ripe for major change," added White. "The type of change remains to be seen. "Designers are in a wonderful position," White said. "We can offer solutions. We're in a position of action."

Contact Waste News editor Allan Gerlat at (330) 865-6167 or agerlat@rain.com