

CRADLE-TO-CRADLE: THE NEXT PACKAGING PARADIGM?

AN ARCHITECT AND A CHEMIST MAKE A COMPELLING BUSINESS ARGUMENT FOR ECOLOGICALLY “INTELLIGENT” PACKAGING THAT’S ALSO GOOD FOR THE BOTTOM LINE.

How’s this for an environmental packaging strategy?

- Use more packaging material, not less.
- Instead of designing with the cheapest materials, design the best package possible, without worrying about per-package cost.
- “Littering” can help the environment.

Sound politically incorrect, and financially suicidal? Take a closer look. What if that ice cream wrapper lying on the side of the road were designed to “melt” into a biosafe liquid in a matter of hours at ambient temperatures? What if the foam food container was not only biodegradable, but incorporated essential nutrients to replenish the topsoil?

What if there were such a thing as fifth-class postage that existed solely for the purpose of returning packaging to the manufacturer? Instead of buying the cheapest possible packaging, you buy the best possible packaging because you are getting most of it back. And guess which package looks better on the shelf as a result?

Extreme? Yes. Possible? Only time will tell.

It’s all part of a new way of product and package design, called cradle-to-cradle design.

By contrast, traditional cradle-to-grave design practically guarantees a product or package will end up as unwanted waste that must be dealt with at some cost to the end user. Plus, the manufacturer loses the economic value of reusing the material, because it’s on a one-way trip out of the factory.

Technical and biological nutrients

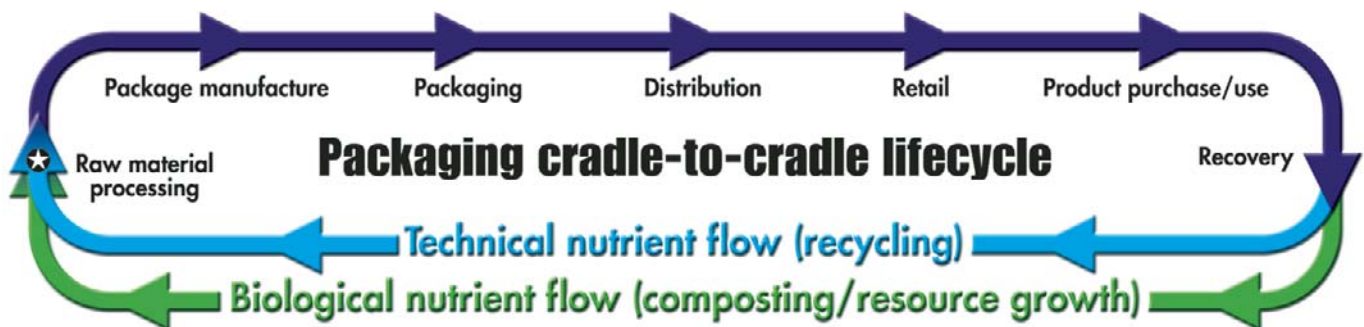
Cradle-to-cradle design means literally designing waste right out of the lifecycle of the package. Mimicking nature, a package is designed to be either a *technical nutrient* that can be reused, or truly recycled in a tight, closed-loop process with zero loss in material



Architect Bill McDonough and chemist Michael Braungart offer a new vision for packaging and the environment.

performance, or a *biological nutrient* that can safely break down into the soil (see illustration, page 2).

The originators of this concept, architect William McDonough and chemist Michael Braungart, recently published a book on the subject called *Cradle to Cradle: Remaking the Way We Make Things*. The authors’ design consultancy, McDonough Braungart Design Chemistry (MBDC), has worked with companies like Ford Motor Co., Nike, Herman Miller, and BASF to help redesign their products using the cradle-to-cradle concept. Though the authors have done a few packaging projects, their design concept is essentially brand new—and untested—in the field of packaging.



However, packaging is an area that's well suited to the cradle-to-cradle design concept, the authors say. They contend that cradle-to-cradle design has the potential to expand, not reduce, the choices of materials available to package designers. They say packaging can be designed to be an asset after use, rather than a liability, for customers. Finally, they argue that cradle-to-cradle packaging can cost the same or less than the packaging it replaces.

Instead of focusing on the moral argument, which traditionally pits environmentalism against business interests, the authors have made a compelling business argument for ecologically "intelligent" products and packaging that are also good for the bottom line.

We asked the authors, in a series of exclusive interviews, to flesh out their vision for how cradle-to-cradle design might play out in packaging.

No more 'ugly' packaging

McDonough and Braungart frown on what they term *eco-efficient* packaging, with its traditional focus on making packaging merely less damaging to the environment. For example, a bottle with recycled content is still headed on a one-way trip to a landfill, unless a consumer happens to recycle it.

Instead, the authors favor *eco-effective* packaging, which is designed at the outset to travel in either a biological or technical closed loop.

"For me, packaging is far too important to make it merely efficient," says Braungart. In other words, the trade-off associated with traditional eco-efficient packaging—duller colors and reduced performance characteristics—is not only not worth it, it's unnecessary, Braungart maintains.

What stands in the way of true closed-loop recycling, according to Braungart, is not the materials themselves—it's often the additives and inks, which were never designed or selected with closed-loop recyclability in mind. The result is that "you are highly limited in the next use of that material," says Braungart. "If you mix all these different types of

additives, you always end up with downcycling." In other words, a park bench instead of a pop bottle.

Instead, package designers can still use the same materials they're using now, but positively select the ingredients of that material for recyclability. That could mean a 100% post-consumer-recycled (PCR) package that looks and prints as good as new. "We have been testing polymers that can be reused up to 90 times with the same performance characteristics," says Braungart.

It's not just about plastic—paper-based packaging can be designed this way too. "If you design inks in a way that you can wash them out, then you get white paper again," says Braungart.

Or instead of becoming a technical nutrient, a pack-

The traditional way: eco-efficient packaging	The cradle-to-cradle way: eco-effective packaging
Minimize the amount of packaging materials to reduce impact on environment.	Use as much packaging as is desired to protect and differentiate the product because that package will become a biological or technical nutrient after its first use.
Discourage littering because materials don't break down for decades; and, if they do, toxic additives can enter the environment.	Discarded biodegradable packaging that incorporates soil nutrients would actually benefit the environment, not harm it.
Consumer is left with the liability of package disposal after product is consumed.	Consumer no longer has disposal liability because package will become a technical or biological nutrient after its first use. Customer is left with a positive impression of the product and the manufacturer.
Recycled-content packaging can result in reduced performance and attractiveness.	By positively selecting the right additives and inks, packaging can be cheaper to recycle in a true, 100% closed-loop process with no loss in performance.
Recycling often requires consumers to distinguish among unfamiliar types of materials, such as various types of plastics.	Consumers pitch all recyclables in a single bin and biodegradables in another, letting modern sortation technology do the work.
Deposits may be mandated by law.	Packagers can create their own deposit systems to recover expensive, desirable packages.
Packaging materials must be as cheap as possible, often leading to multilayer composites or laminates that are difficult or impossible to reuse or recycle.	Returnable packaging reduces or eliminates the need to create hybrids that don't readily disassemble into technical or biological nutrients.

age can be designed to be a biological one. “As soon as you add more than 35% linear polyesters to PET, the whole material becomes biodegradable,” says Braungart.

“I’m saying we should design for reincarnation,” says Braungart. “You plan the next use of the material into the package already.”

Reusability saves

The notion of reusable packaging is a big potential part of the cradle-to-cradle vision. “Today, packaging needs to be cheap, which limits the designer’s possibilities,” says Braungart. Viewing packaging as a technical nutrient that can be reused “means you can use far more valuable and expensive materials,” he says. This hinges, of course, on the cost-effective recovery of those materials.

William McDonough says some packaging, such as for consumer electronics, is ripe for return, via, say, fifth-class postage.

“There’s no reason we can’t create it,” says McDonough. “That can be our recycling system. We say to FedEx, UPS, the postal service, look, you guys have trucks moving around—they come full, they leave empty. How about they come full, they leave full? What you do is you just make it lowest priority. Nobody thinks about the positive aspects of low priority. Any postage truck that’s driving around empty at end of day is suboptimal. You’re driving air around.”

How to handle returnability for a package that’s been contaminated by the product? “Procter & Gamble may not be able to reuse that package,” acknowledges McDonough, “but BASF could use that polymer. So it might list BASF’s return address instead of Procter & Gamble’s.”

Adds Braungart: “You can give your customers a choice. ‘Here’s the eco-efficient ugly, cheap package; and here’s the nice package that you’d like to see in your bathroom, but it’s so valuable that we’d like to have it back.’”

Of course, returnable packaging has shown steady growth over the last few years for industrial applications. Manufacturers streamlining their supply chains find it’s easier to coordinate closed-loop package use-and-return systems when there’s only a handful of vendors or customers involved.

But returnable consumer packaging is quite another story. Back in 1960, of course, 95% of soft drink containers were refillable glass bottles. However, today, that number is less than half a percent, according to the Container Recycling Institute.



Book as information package: To illustrate the authors’ point, the book itself is made entirely out of polypropylene, which can be melted down to make another PP book. Today’s information packaging (books) are what the authors call “monstrous hybrids” of paper, board, adhesives, cloth and other materials, which can only end up in a landfill.

Why did the beverage industry move away from returnable packaging? Several reasons. One was the development of the recyclable aluminum can in 1962. Another was labor costs,

particularly the teamsters who operated the trucks that delivered product to the stores. Further, retailers didn’t like committing valuable space to returned containers awaiting pickup, nor did they like the labor involved in making refunds. And bottling plants didn’t like the space, labor, and energy required for bottle sanitizing systems. In the end, it was cheaper for the industry to switch to one-way packaging, which it did.

So though the notion of returnable consumer packaging is intriguing, there’s quite a history that would have to be overcome to make it a reality for most packagers.

Recycling varies

McDonough and Braungart’s notion of closed-loop biological and technical nutrient streams depends upon the existence of robust recycling and composting infrastructures. But recycling is inherently a local issue—recycling infrastructures can vary widely from one municipality to the next. Municipal composting is far from widespread, and returnable packaging infrastructures in this country are all but nonexistent, except in states with bottle deposit bills. Finally, getting consumers to figure out which type of material goes into which recycle bin is no easy task.

One municipality that seems to have hit on a viable recycling/composting collection infrastructure is San Francisco, according to MBDC’s Joe Rinkevich. In that city’s Fantastic Three program, all recyclables go into one recycling bin, sparing residents the burden of sortation. All organic waste such as food scraps goes into a second bin. Everything else goes into a third bin, whose contents are landfilled. Residents only pay for the waste they put in the third bin, thus creating a financial incentive to use the first two bins.

Both authors contend great strides have been made in

sortation technology. “In Europe, the green dot system has generated a lot of separation techniques,” says Braungart, who is German.

Regulation has long been a way to force packagers and their suppliers to take the environment into account when designing their packaging. Producer-responsibility laws on the books in Europe and elsewhere are a prime example. When asked if he supports the creation of an eco-tax that subsidizes eco-effective packaging at the expense of noneco-effective packaging, McDonough replied, “It would certainly help. But I don’t think it’s essential. That’s a cultural question that will play itself out in the political arena.”

Indeed, in their book, McDonough and Braungart view regulation as a failure of design: “In a world where designs are unintelligent and destructive, regulations can reduce immediate deleterious effects. But ultimately a regulation is a signal of design failure...good design can require no regulation at all.”

Waste to energy

If a package can be safely burned as fuel, that’s another way it can end up as a biological nutrient. Trouble is, most packaging was never designed for burning. Again, additives in the package, such as heavy metals in printing inks, that are released during incineration require expensive filtration technology that eats into the economic value of packaging as a fuel.

In countries where packaging waste is burned for fuel, Braungart says such packaging could be *designed* for clean burning. This can also be a financial benefit to, say, blow molders, who already find themselves manufacturing bottles on razor-thin margins. Trimmings and scrap take on new value because “you can generate your own energy from the waste that you have without needing several filters” required for conventional packaging.

Comes down to cost

For most packaging users and suppliers—and consumers, for that matter—cost outweighs the environment as a purchasing factor. But the authors insist eco-effective packaging can be the same or cheaper compared to traditional packaging. That’s one of the most important arguments in the cradle-to-cradle zeitgeist, yet it’s the hardest one to prove, because the idea is still so new. And it runs contrary to the industry’s experience with most new forms of, say, biodegradable packaging, which typically cost more, not less, than traditional materials.

Some of the basic arguments run like this: Returnable packaging is much more expensive to initially buy, but a much lower quantity needs to be purchased compared to

one-way packaging. Or the raw ingredients, such as the resin, of eco-effective packaging may cost more; but by carefully selecting the additives in the material, the material could be cheaper to manufacture or recycle into a package again, lowering or containing overall costs.

Braungart even suggests that eco-effective packaging can increase brand loyalty, possibly reducing marketing costs. That is, a consumer who can return, recycle or compost a package now becomes a crucial part of the cradle-to-cradle lifecycle, and is presumably won over by the brand’s lack of a disposal burden. “If your customer becomes your partner, you don’t need to repeatedly convince him to use your product,” says Braungart.

The authors contend that companies who have redesigned their *products* based on the cradle-to-cradle concept have done so at the same or less cost. They argue packaging should be no different.

Too utopian? McDonough and Braungart are unapologetic. They freely admit the cradle-to-cradle design philosophy is not a magic bullet or even a solution. They see it as a roadmap for manufacturers to take their packaging in a completely different direction.

“It’s going to take a while,” McDonough admits. “But it doesn’t mean you can’t start down that path and put that forth as your vision. At least you have a vision instead of no vision. At least you have a strategy instead of no strategy.”

McDonough Braungart Design Chemistry
Phone: 434/295-1111
www.mbdc.com

PACKAGERS REACT TO CRADLE-TO-CRADLE DESIGN

PACKAGERS EXPRESS INTEREST IN CRADLE-TO-CRADLE DESIGN. IN JULY, AN INITIAL MEETING WILL BE HELD TO SEE IF A CROSS-INDUSTRY CRADLE-TO-CRADLE PACKAGING WORKGROUP SHOULD BE ORGANIZED.

A new book, *Cradle to Cradle: Remaking the Way We Make Things*, by architect William McDonough and chemist Michael Braungart, sets forth an entirely different vision for environmentally effective products and packaging (see separate story, p. 62). To gauge the packaging field's reaction to this new philosophy, we floated the cradle-to-cradle idea to several companies in a survey on Packworld.com. The vast majority personally supported the idea of a cradle-to-cradle packaging initiative at their companies (see chart). And half said their company would be receptive to such an initiative.

This research comes with two important caveats. First, survey respondents read only a brief paragraph summarizing the cradle-to-cradle concept, versus the authors' entire book. Second, when it comes to packaging and the environment, there has always been a big difference between what people say in a survey and what they actually do in real life.

Nevertheless, the findings are significant on two counts. First, it's often assumed by people outside the packaging field that people in the field do not care about the environment because they are associated with the manufacture and use of packaging. That couldn't be further from the truth, a fact that is documented by the findings of the survey.

Second, the research documents an awkward disconnect between what packaging people want as individuals versus what their employers require for their businesses to run smoothly.

coordinator for Unilever Bestfoods, based in the Netherlands. That company is embarking on a global sustainable packaging strategy that echoes the cradle-to-cradle philosophy.

"The thinking is very sound," Houlder said, regarding cradle-to-cradle. However, for food packaging, Houlder has doubts about biodegradability. "The current biopolymers that are out there don't offer us the barrier properties we need for our food products. If you're going to biodegrade something, you need it to be sensitive to heat, moisture, oxygen, and probably light, and those are the things we try to barrier our products against."

A representative from one leading supplier of biopolymers takes such constructive criticism in stride. "No one polymer is perfect for every application," acknowledges Michael O'Brien, communications manager for Cargill Dow Polymers. Cargill Dow manufactures NatureWorks™ PLA, a polymer derived from renewable resources such as corn. "We focus on where it does work—in our case, fresh prepared foods for grocery retailers," says O'Brien. "The barrier properties are suitable for it. Grease- and aroma-resistance are our strong performance benefits."

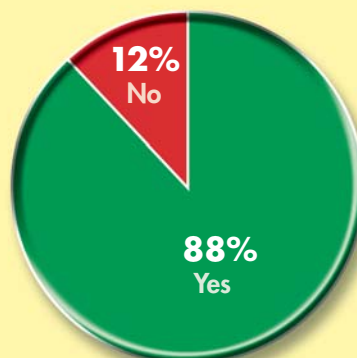
Unilever's Houlder also points out that reusability and returnability are obviously a problem for single-use food packaging. "Legislation prevents us from using recycled materials in direct contact with food because of the risk of contamination. The only real technical cycle

Sound thinking

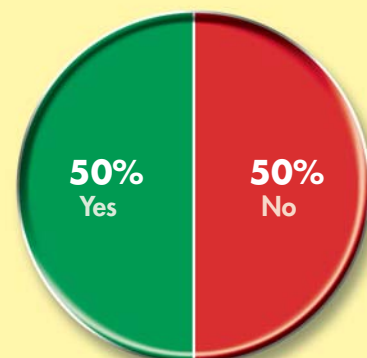
We also interviewed some key packaging people to get their reaction to the cradle-to-cradle concept. A few who knew of the concept reacted favorably when contacted for this report, but they could not obtain permission to speak to us on behalf of their companies.

One person who is familiar with the cradle-to-cradle concept is Graham Houlder, global packaging

Would you personally support a "cradle-to-cradle" packaging initiative at your company?



Would your company support such an initiative?



Source: 111 respondents surveyed on Packworld.com

that would allow us to do that is, for example, the repolymerization of PET.”

For the moment, Unilever’s sustainable packaging effort is focusing on paper. “For our cartons and shippers, we’re looking at how much fiber comes from forests that are being replanted, versus indigenous forests that are not being replaced,” says Houlder. “We’d like to move to a completely certifiable source for 100% of the packaging.”

Is Unilever willing to pay an upcharge for sustainable packaging? “That decision hasn’t been made yet,” says Houlder. “But we’d be hard-pressed to see a reason why, particularly in the paper area, we should take on cost. In the future, there should be plenty of sources of sustainable fiber.”

Moving to the next level

Another convert to the cradle-to-cradle concept is John Delfausse, vp of packaging at Minneapolis-based Aveda, a maker of upscale cosmetics and health and beauty products.

“The whole concept makes an awful lot of sense,” says Delfausse. Aveda is already pushing post-consumer-recycled (PCR) content of its packaging to unprecedented levels (see p. 74). But Delfausse says the company is looking to move to the next level of sustainable packaging. Closures could be a test case. Currently all Aveda’s closures use virgin polypropylene resin. In an attempt to create a PCR PP closure, the company’s suppliers have been hampered by supply issues.

“Based on the whole cradle-to-cradle concept, we realized we’ve got a tremendous source—all of our consumers. If we could actually ask our customers to return our caps, we’d have an unlimited source of PP that could go back into the same sort of caps.”

Delfausse acknowledges there’s not currently an effective infrastructure for returning closures, most of which are PP. Many closures aren’t marked with the Society of the Plastics Industry’s chasing-arrows recycling coding; and, even if they were, PP is simply not recycled in any significant volume in this country.

A solution might involve placing a collection bin in stores where its products are sold, or possibly examining some sort of deposit system similar to soft drinks, according to Delfausse. Still, Aveda would have to overcome history. The company tried to collect its packaging years ago, and “we got everybody’s garbage,” says Delfausse.

Yet he remains undeterred. “What cradle-to-cradle really does is get the industry to start thinking about what we need to do to collect these things,” he says. For now,

Aveda will investigate conducting a closure collection program in a limited market test.

Reusability can be tough

Alison Kent, manager of the global corporate packaging team at Hewlett-Packard, was reading the book at the time we went to press. “The case that [the authors] lay out seems very provocative,” she says. However, returnable packaging would nevertheless be challenging for HP. “We change our products so frequently that there’s only a limited period when the packaging material would be relevant to reuse,” she says.

Regarding the argument that cradle-to-cradle can be done at the same or lower cost, she responds, “In our own investigations to use more environmentally responsible materials and designs, it’s often at a cost. That’s always the trade-off.” But, Kent allows, “what we’ve been looking at is one slice of the whole system cost. So maybe if you look at it end to end, it can be less.”

Although there are many obstacles to be overcome before the cradle-to-cradle concept can be said to have caught on in the packaging arena, a growing number of packagers and suppliers are showing interest. That’s why Cradle to Cradle authors McDonough and Braungart are hosting a one-day industry meeting in July, at which attendees will receive an overview of the cradle-to-cradle philosophy and will discuss whether to form a working group focusing on cradle-to-cradle package design. For details, visit the link below.

GreenBlue
Phone: 434/817-1424
www.greenblue.org

Cargill Dow LLC
Phone: 952/742-0400
www.cargilldow.com

Originally published May 2003

CRADLE-TO-CRADLE CATCHES ON **LEADING CONSUMER PRODUCTS COMPANIES AND MATERIALS SUPPLIERS INTEND TO FORM AN INDUSTRY** **WORKING GROUP TO TACKLE CRADLE-TO-CRADLE PACKAGE DESIGN.**

In early July, some of today's leading consumer products companies and packaging suppliers walked away from the first industry-wide meeting on cradle-to-cradle package design wanting more. More answers. More collaboration. And more knowledge about the potential benefits of cradle-to-cradle package design.

Cradle-to-cradle package design has the potential to radically change the way packaging is designed and consumed in this country and abroad. Modeled on nature, where waste becomes fodder for growth, cradle-to-cradle packaging is designed to make a full return or reuse cycle. Today, nearly all packaging is designed only through the point of use by the end consumer. Proponents of cradle-to-cradle packaging say potential benefits include lower costs, a wider choice of materials, and packaging that adds value for end consumers. But packagers who've been exposed to the principles of cradle-to-cradle design acknowledge there are many hurdles to overcome before cradle-to-cradle packaging becomes a reality.

One example of a cradle-to-cradle product cited at the meeting is Kodak's single-use camera. Kodak, which controls the entire lifecycle of the cameras, including recovery, keeps much of the content of this product traveling in a continuous loop. As a result, they boast 86% recycled or reused materials, with some camera content back on the store shelf in as little as 30 days. Better, Kodak recovers the economic value of the materials, ostensibly reducing its raw materials costs. Cradle-to-cradle proponents say the same is possible with packaging.

Get retailers involved

Participants in the meeting learned more about the principles of cradle-to-cradle design and heard a short but dynamic talk by architect William McDonough, who along with chemist Michael Braungart originated the cradle-to-cradle concept. The two wrote a book titled *Cradle to Cradle: Remaking the Way We Make Things*.

At the meeting, one of the most frequent themes among participants was the loss of control over their packaging that many manufacturers have experienced at the hand of the large retail chains who now call the shots.

"It's the [retailers] who are dictating the most egregious of our packaging designs," said one packaging executive who preferred to remain anonymous. "I've tried to ask them if we could have a different design that's [more environmentally sustainable] and the answer is 'Sure, but we won't sell it.'" (Because of the sensitive nature of some of the discussion at the meeting, most attendees preferred to be quoted anonymously.)

Both packagers and suppliers at the meeting felt that retailers must be educated on the principles of cradle-to-cradle design because they could potentially be a part of a package-recovery solution. At the minimum, any package-recovery solution needs to be a multi-company effort. It cannot be accomplished by any one company alone, attendees agreed.

Designing for recovery

One big concern was the environmental and economic viability of any package-recovery cycle. "At what point does the impact of the recovery cycle outweigh the value

Seven reasons to start a cradle-to-cradle packaging workgroup

Participants in the July meeting identified at least seven reasons a cradle-to-cradle packaging workgroup would have value to them:

- Distribution packaging, which has the potential to affect the greatest number of companies first, could be targeted for streamlining.
- Packagers can speak with a common voice to counter mass merchandisers who dictate environmentally unsustainable package designs.
- Demand for more materials having a higher percentage of recycled content can be increased, thus increasing the economic viability of such materials.
- Collection and recovery issues can be addressed by a group in recognition of the fact that tackling the issue is beyond the means of any single company.
- The cradle-to-cradle concept can be leveraged to create new kinds of packages that add value for consumers.
- The industry can learn more about the additives and chemicals used in the manufacture of packaging materials and work together to substitute environmentally sustainable alternatives where appropriate.
- Being perceived as proactive about sustainable packaging is better than being reactive, especially in the eyes of consumers and regulatory bodies.

of the materials themselves?" asked one participant.

The question of economics, say the proponents of cradle-to-cradle, can be addressed at the design stage. One reason today's packaging is often not economical to recover or recycle is because it was never designed for true closed-loop recovery or recycling. That's according to Ken Alston of GreenBlue, which conducted and facilitated the meeting. GreenBlue is a new non-profit founded to facilitate the adoption and implementation of the principles of cradle-to-cradle design. Alston also spent a number of years at S.C. Johnson, much of that time on environmental packaging issues.

One attendee articulated it this way: "We have to start thinking [closer to the beginning of the design phase], instead of saying, 'This is what we're stuck with, now how do we recycle it?'"

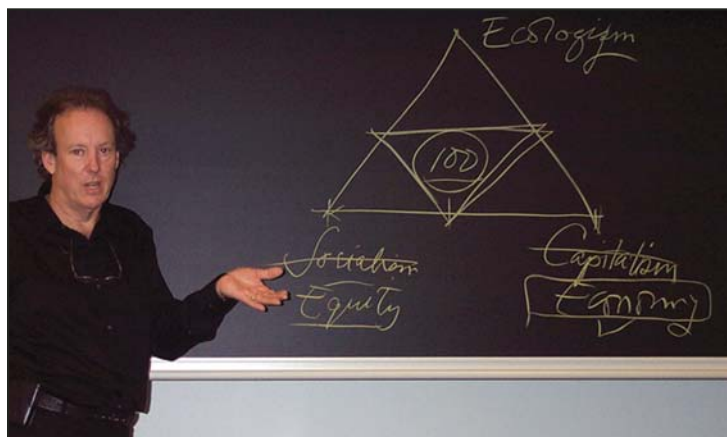
However, achieving cradle-to-cradle packaging involves more than just the design phase, noted another participant. At most companies, said this executive, the packaging people work on design issues, environmental affairs people work on collection issues, and end-market development may even be the responsibility of a third group. Often these groups don't work together. Only an integrated approach that brings together expertise around all three critical issue areas—design, collection, and end use—can lead to environmentally optimized packaging, the participant noted.

Perhaps one of the biggest hurdles for cradle-to-cradle packaging to overcome is the on-the-go lifestyle for which most value-added packaging is ultimately designed. "If you go to focus groups and ask people what they want, they want to save time," said one attendee. "What is a replacement for time? Convenience. You gain time by buying disposable products because you don't have to clean them. Convenience is what's driving the purchasing cycles of consumers." Meshing consumer convenience with the cradle-to-cradle design philosophy will be challenging, the group acknowledged.

Next steps

The cradle-to-cradle design concept clearly engaged the participants. The consensus at the meeting was to proceed with the formation of an industry working group. At press time, it appeared the next meeting will likely be held at Pack Expo Las Vegas. Details can be obtained by contacting GreenBlue.

No one is under any illusions that moving toward cradle-to-cradle packaging will be easy. That was best captured in the comments of Bob Giangiorgi, recently retired from Sonoco, and also on the board of the Clemson University Packaging Science program.



Bill McDonough spoke eloquently on cradle-to-cradle design.

"The way the industry operates today is going to have to change in many ways to capture the potential value of the cradle-to-cradle concept. There are many key issues influencing effective implementation. For example, more collaboration earlier in the product/package development process will be required. An industry working group is something that's very important to address the key issues. If it's not tackled by a group like this, then I think we'll continue on with the current approach and no significant improvements will be made."

*GreenBlue, Phone: 434/817-1424
www.greenblue.org*

Who attended

More than 30 people attended the cradle-to-cradle meeting held July 11 in Charlottesville, VA. The meeting was co-hosted by MBDC (the consulting firm of William McDonough and Michael Braungart, originators of the cradle-to-cradle concept) and the University of Virginia's Darden School of Business, which provided the meeting facilities. The event was conducted and facilitated by GreenBlue, a new nonprofit founded to facilitate the adoption and implementation of the principles of cradle-to-cradle design.

Below is a list of companies and other interested parties represented at the meeting:

PACKAGERS

Aveda, Coca-Cola, Hewlett-Packard, Nike, PepsiCo, Starbucks Coffee Co.

SUPPLIERS

Alcoa, Dow Chemical, DuPont Packaging, Klöckner Pentaplast, MeadWestvaco, Printpack, R.S.V.P., Inc.

GOVERNMENT AND TRADE GROUPS

Packaging Machinery Manufacturers Institute, U.S. EPA, Environmentally Preferable Purchasing Program, U.S. EPA, Office of Solid Waste, U.S. Dept. of the Interior, Office of Environmental Policy and Compliance

SUSTAINABLE PACKAGING COALITION

A BRIEF OVERVIEW OF THE INDUSTRY WORKING GROUP THAT FORMED TO BRING THE CRADLE-TO-CRADLE VISION TO PACKAGING

In Spring 2003, cradle-to-cradle principles began drawing attention in the packaging industry with a Packaging World cover story (May 2003) and an EPA-sponsored Cradle to Cradle Design Challenge focused on e-commerce shipping packaging and logistics. Seeing an opportunity for the industry to build on this attention, David Newcorn, author of the Packaging World cover article, suggested holding a meeting to invite members of the packaging industry to consider forming a working group around cradle-to-cradle concepts.

GreenBlue, the newly formed non-profit organization dedicated to promoting and developing cradle-to-cradle principles and methods, organized a workshop and meeting held in July 2003, hosted by the Darden Graduate School of Business Administration at the University of Virginia and sponsored by McDonough Braungart Design Chemistry. The first meeting revealed significant interest among the attendees from throughout the packaging value chain, and a follow-up meeting was held in November 2003 to adopt a mission and develop strategy and organizational structure for an industry working group. Founding members include: Cargill Dow; Dow Chemical Company; Estee Lauder/Aveda; EvCo Research; MeadWestvaco; Nike; Starbucks Coffee Company; Tropicana; and Unilever.

VISION, MISSION, AND GOALS

The Sustainable Packaging Coalition envisions packaging designs and systems rooted in cradle-to-cradle principles. Packaging that does not need to be minimized because of negative environmental impact but can be celebrated because it provides positive benefits to society and the environment throughout its life cycle. Packaging that complements products' and companies' pursuit of sustainability.

A sustainable, cradle-to-cradle package achieves excellence by a variety of measures: meets performance and cost criteria; productively circulates either in nature's healthy biological cycles or in safe industrial cycles of production, use, and recycling; is manufactured, transported, and recycled using renewable energy; and provides positive benefits to individuals and communities throughout its life cycle.

The Sustainable Packaging Coalition is a working group of packaging professionals, ranging from paper and resin manufacturers to consumer product companies.

The organization's mission is to 1) advocate and communicate a positive, robust environmental vision for packaging and 2) leverage innovative, functional packaging materials and systems that support economic and environmental health.

The goals of the Sustainable Packaging Coalition are to:

- Educate packaging stakeholders and participants in the Coalition, through conferences, seminars, and publications about cradle-to-cradle principles for packaging.
- Bridge the communication gap in the packaging value chain to facilitate the development of sustainable packaging solutions.
- Support the development of recycling and composting infrastructures for safe, healthy materials that have the potential to perpetually cycle in a manner that is economically viable.
- Increase demand for environmentally intelligent, cradle-to-cradle materials to reduce cost and ensure quality and availability.

PROJECTS

Sustainable Packaging Definition

The definition project will build on the cradle-to-cradle vision to create a common framework for the packaging industry that facilitates the design and development of sustainable packaging and systems. In addition, the definition will create shared values among group members from which to select future projects and can be used to educate the packaging industry about the activities of the coalition.

The definition will be based on the EPA's Cradle to Cradle E-commerce Shipping Packaging Design Challenge Guidance Document and GreenBlue's Sustainable Product Criteria. It will provide principles for designing sustainable packaging using bio-based and synthetic materials; will be international in scope; and will reference international environmental packaging legislation and best practice. Short-term and long-term considerations specific to packaging material types (bio-based, synthetic plastic, metals, glass) will be discussed. As part of the project, the definition will be peer-reviewed by NGOs and other packaging stakeholders TBD.

Intelligent Materials Pooling

Intelligent Materials Pooling is a collaborative, business-to-business approach to managing materials in

closed loops. Partners in an intelligent materials pool agree to share access to a mutually important material to generate a healthy system of closed loop material flows.

The Coalition will develop intelligent materials pooling strategies for a bio-based and a synthetic packaging material that could potentially be optimized (either by material (re)formulation or through life cycle design) to facilitate the cradle-to-cradle cycling of these materials, with the added benefits of reducing costs and ensuring quality and availability. Participants will begin by pooling information regarding performance criteria, environmental concerns associated with the cycling of the materials, and the material's ideal life cycle. Strategies will then be developed for the two materials.

ORGANIZATIONAL STRUCTURE

The Sustainable Packaging Coalition is a project of GreenBlue, a non-profit, 501c3 tax-exempt organization created to provide the theoretical, technical, and information tools required to transform industry into an economically profitable, ecologically regenerative and socially empowering activity through intelligent design. (www.sustainablepackaging.org)

GreenBlue provides leadership, research, and coordination services for the Sustainable Packaging Coalition. Through teleconferences and meetings, Coalition members advise GreenBlue on project direction and industry needs.

MEMBERSHIP

Membership is open to any company that manufactures, sells, or uses packaging materials as part of its business operations and to any non-governmental organization or government agency with a demonstrated interest in the manufacture, sale, or use of packaging. Click here for a membership application.

To become involved, please visit the Sustainable Packaging Coalition's Web site:
<http://www.sustainablepackaging.org/about.htm>