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Promoting the Scientific and Engineering Knowledge of Plastics

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Post Conference Reviews: GPEC[®] 2008

Exec: Industry needs to re-educate public

By Mike Verespej
PLASTICS NEWS STAFF

ORLANDO, FLA. (April 11, 4:25 p.m. EDT) -- Misconceptions among the public and legislators — including the idea that bioplastics are good and traditional plastics are bad — are a significant challenge for plastics manufacturers. It is up to the industry to re-educate people about the realities, said Seetha Coleman-Kammula, co-founder of Simply Sustain LLC, a Newark, Del., consulting firm focused on the environment.

“Plastics are useful,” Coleman-Kammula said at the Global Plastics Environmental Conference, held March 11-12 in Orlando. “We have to go back and engage society about the benefits and the realities surrounding plastics.”

But the task won't be easy. State and local attacks on plastics increased by 70 percent in 2007, according to the American Chemistry Council, in Arlington, Va.

“Regulators and legislators are challenging the credibility of industry-funded science,” said Coleman-Kammula. “They just simply don't believe you. If you say, ‘The jury is out. We need to do one more test,’ They say, ‘Come on, make up your mind. Do something.’”

Part of the problem is an inadequate recycling infrastructure in the United States and many other countries and the belief that bio-based products will simply break down, even in a home compost pile, she said.

“Petroleum-based plastics are not necessarily bad if you recycle them, because you recover a lot of the nonrenewable energy you put into them,” Coleman-Kammula said. But, she added, more than 85 percent of plastics in the U.S. winds up in landfills.

“We need to engage communities in recycling because it is completely in their hands. Many materials recovery facilities and municipalities don't understand the value of plastics,” she said.

Other countries face the same dilemma, said Edward Kosior, managing director of Nextek Pty. Ltd. of Sydney, Australia, a consulting firm specializing in environmental and recycling solutions for plastics.

Other than for PET and high density polyethylene, “there is no existing infrastructure for recycling in the United Kingdom,” said Kosior, who also is technical director for Closed Loop Recycling Ltd., a recycler and adviser in Dagenham, England. “We have to develop a simple way to deal with mixed plastics waste because the volume of other plastics in the U.K. is twice as much as the bottled plastics that are recycled.”

Nextek is researching how to adapt its HDPE bottle-to-bottle technology to other plastics, and testing what sorting techniques and technologies can best separate the different types of plastics, he said. “Rapid technology development, if viable, can be put in place quickly,” said Kosior, adding that resin manufacturers, packaging manufacturers, brand owners, retailers, consumers and reclaimers need to work together to develop solutions.

The recycling challenges are similar in the U.S., said Coleman-Kammula. When there is a uniform polymer from which a product is made, like PET bottles, it can work. Otherwise, it is difficult.

But, at the same time that the industry works on solving recycling challenges, it must also dispel the myths surrounding the biodegradability and compostability of products made from bio-based resins.

“Bioplastics are potentially biodegradable and compostable, but they are not necessarily good unless systems to compost them exist,” said Coleman-Kammula. “And we don’t have an industrial compost structure in the U.S., let alone a recycling structure.

“The premise is that you put them in the soil and they will decompose,” she said. “But when you put them in your own backyard, it doesn’t compost. And, if they end up in landfills, which is where they end up today, they release methane gas — which is 23 times more potent than carbon-dioxide emissions.”

Robert Dvorak, European project manager at Nextek Ltd. in London, agreed. “Recycling of products made from [polylactide] today is poor,” he said. “It ends up in landfills, creating the issue of methane gas.”

It is a point on which even the Biodegradable Products Institute of New York concurs.

“The overwhelming majority of consumers believe that these products will ‘biodegrade’ in landfills,” BPI said in a Feb. 29 news release. “Yet, today’s landfills are engineered to eliminate moisture and retard biodegradation.”

BPI said there is no scientific data showing that biodegradable plastics in landfills will break down completely into nothing in 12 months or less. In the release, the group also advised manufacturers, consumers and communities to pursue solutions that encompass not just biodegradability, but also source reduction, reuse and increased use of recycling and composting.

Industry asks if going green is only way

By Mike Verespej

PLASTICS NEWS STAFF

ORLANDO, FLA. (April 11, 4:15 p.m. EDT) -- The scramble among petroleum-based plastic manufacturers to be viewed as green and sustainable and to ward off environmental criticism is taking on an added dimension, if the Global Plastics Environmental Conference is any indication.

The focus on sustainability continues to gain momentum. But there also is an increased effort to counter claims of bioresin manufacturers that their resins and products have a better environmental footprint.

More and more companies and organizations are developing data that measure their total carbon footprint from greenhouse-gas emissions to energy and material use and recovery, and from resin to end-of-life.

A case in point: Heritage Bag Co. in Carrollton, Texas, is studying how the use of 10-20 percent recycled content in its bags would change the impact on the environment, product performance and the manufacturing process, said Lan Nguyen, technical director of Heritage Bag. Nguyen spoke during the Global Plastics Environmental Conference, held March 11-12 in Orlando. The event was sponsored by the Society of Plastics Engineers.

"Although it appears to be less green, the use of virgin resin at a reduced gauge of 16.6 percent is greener" than many combinations with recycled content that Heritage has tested, said Nguyen. "You use less energy and the handling, storage and transportation costs are lower.

"When you use recycled content, you reduce your costs per pound of material," he said, "but you get inconsistencies in processing. There are fluctuations in the melt pressures and temperatures. It is more labor-intensive. And, if there is a change in the bubble size, you have to put in more air and that often generates more scrap."

The bag testing is part of several initiatives Heritage has begun to see "what we can do right now to contribute to a sustainable environment and still maintain or improve product performance," said Nguyen. "We are looking at what we can do to reduce the use of nonrenewable resources, reduce solid waste, reduce greenhouse-gas emissions, reduce costs, as well as what we can do to practice the 3Rs: reuse, reduce and recycle."

In a similar vein, using polypropylene, Simply Sustain LLC is developing a 200-page report comparing the sustainability of PP vs. several bio-based resins, including polylactic acid, said Seetha Coleman-Kammula, co-founder of the Newark, Del., environmentally focused consulting firm.

"It is a very complex, evolving methodology and is easy to misuse for materials comparisons," said Coleman-Kammula.

In addition, the concerns about whether a product can be recycled at the end-of-life has triggered more emphasis on designing products to aid in disassembly or reduce the prospect of them ending up as litter.

To improve the recyclability of its vehicles, manufacturers are looking to "commonalize" the use of plastics, said Steve Sopher, technical director of JSP International in Butler, Pa., a supplier of engineered plastics foam.

"Companies are trying to commonalize materials to create enough mass for recyclable materials streams," he said. The effort is sparked, in part, by the European Union's restriction of hazardous substances directive. "The goal is to design products with as many common elements as possible and make the products recyclable across the board."

The EU's upcoming end-of-life directive for motor vehicles will further accelerate that push toward design for disassembly, he said. "Over the next decade, 1,500 new dismantling plants are expected to be built in Western Europe. The goal is to reduce hidden costs to society."

But what is "green" and "clean" still continued to perplex many at the conference.

Eric Koester, a lawyer who focuses on emerging companies in the clean technologies market, echoed what many at the conference discussed informally and posed in question-and-answer sessions after presentations.

“Just because it comes from plants is it really clean?” asked Koester, who is based in the Seattle office of the Venture Law Group of Heller Ehrman LLP. “Is the use of corn the best use of ethanol? Is recycling or biodegradability better?”

Koester also said it was too early to pick “winners” in the clean and green competition.

“Bioplastics are fairly young in its development,” he said, with competition between agricultural-based, biotech-based and those of microbial origin. “No bets have been made that take any alternatives off the table. Companies who can use technology to produce tangible results” will succeed.

However, one area that likely will continue to be fertile for bio-based manufacturers because of the green movement is in packaging, particularly food packaging, said Robert Dvorak, European project manager at Nextek Ltd. in London.

“There is a significant growth in organic foods and the desires of those companies are to have packaging that matches that,” said Dvorak. “Bioplastics companies see this as a point of differentiation.”

Dvorak pointed to the retail climate in Europe where Marks & Spencer Group plc has embarked on a \$500 million plan and 18-month initiative to make themselves greener; the stated intent of food retailer J Sainsbury plc to have packaging that is recyclable or home compostable; and the \$1 billion effort by food retailer Tesco plc to switch to packaging that is either bioplastic, or lightweight and recyclable.

“There is consumer sentiment for change in packaging and supermarkets and brand owners are under pressure to change because consumers expect them to solve solid waste issues,” said Dvorak.

Companies garner environmental awards

By Mike Verespej

PLASTICS NEWS STAFF



Soliant LLC's Fluorex bright film is used as chrome plating on a heavy truck bumper.

ORLANDO, FLA. (April 11, 4:05 p.m. EDT) -- Henry Sullivan calls his plastic composite railroad tie “an environmentally positive cradle-to-cradle product,” a label that many companies would like to use for their products today, given the focus on sustainability and environmental impact.

But the 67-year-old Sullivan — founder, chief strategist and chief scientist at TieTek LLC in Marshall, Texas — is proof that creating sustainable products that reduce environmental impact doesn't happen overnight.

His 14-year-old company has 700,000 ties in place today, made from recycled high density polyethylene and recycled tires. But annual production just recently hit 300,000 ties, and the company didn't have its own factory until 2000. TieTek is the wholly owned subsidiary and only business of North American Technologies Group Inc., also in Marshall.

Sullivan's company was one of eight that received environmental awards from the Plastics Environmental Division of the Society of Plastics Engineers at the Global Plastics Environmental Conference in Orlando. Sullivan had some advice to others trying to create products with a better environmental

footprint: find patient investors, and remember that the product must perform within the existing system — only better than the product you are trying to replace.

“Railroads have 100-man crews and 22 pieces of equipment they use to replace ties,” said Sullivan. “They weren't about to change anything for us. If you don't have patient strategic investors, you can't do something like this.”

The annual production of TieTek composite railroad ties uses 50-60 million pounds of HPDE, and rubber from 1 million recycled tires. Use of the ties preserves 75,000 mature hardwood trees annually, conserves 1 trillion BTUs of energy, and eliminates the need to use creosote, which can be carcinogenic, said Sullivan. They cost twice as much as a hardwood railroad tie.

Working within existing parameters also is what Lear Corp. and Ford Motor Co. — which won the SPE award for the use of plastic materials from renewable sources — had to do in developing a flexible polyurethane foam from soybean oil to replace a polyol foam.

“This research project began six years ago,” said Cynthia Flanigan, a technical specialist with Ford's Materials Research and Advanced Engineering Department.

In addition to the standard performance issues that had to be achieved, Flanigan said the two companies “found that we had to develop different formulations for each different application. We also had to develop a new method of synthesis to reduce the associated odor of soy, and make sure we didn't increase cycle time” in manufacturing.

According to a Ford/Lear life-cycle analysis, the use of the soybean-based foam product on seat backs and seat cushions of 2008 Ford Mustangs reduces carbon-dioxide emissions by 605,000 pounds annually, based on the replacement of 110,000 pounds of petroleum oil with soybean oil.

Brookfield, Conn.-based SPE also recognized three companies for creating closed-loop recycling systems, one for the use of recycled content, another for using a waste product to create a nonchlorinated carpet backing and another for creating a recyclable film alternative to chrome plating on vehicles.

The closed-loop winners:

* Interface Inc. of Atlanta for creating the industry's first completely closed-loop carpet-recycling system to turn recycled nylon 6/6 fiber back into new carpet fiber. Interface estimates that it will process 30 million pounds of carpet fiber annually on its first machine, which began operations last September. Interface has plans to install up to 20 machines across the United States during the next five years. The technology separates carpet face fiber

from backing in a way that preserves the materials in a form suitable for recycling. It was developed by Post Consumer Carpet Processing Technologies in Capalle, Italy.

* Nextek Pty. Ltd. of Sydney, Australia, was recognized for its closed-loop recycling technology that enables the recycling of HDPE milk bottles back into food-grade milk bottles. In June, Dagenham, England-based Closed Loop Recycling Ltd. will open the first plant, in Dagenham, to use the Nextek technology.

* Hewlett-Packard Co. of Palo Alto, Calif., for developing a process that allows them to make inkjet cartridges with 70-100 percent recycled content, using glass-filled PET from returned cartridges and PET bottle flakes. After pilot projects the previous four years, HP said that it used more than 5 million pounds of recycled plastics in its inkjet cartridges in 2007, and expects to use twice that amount in 2008. HP said it has made more than 200 million cartridges with recycled PET to date.

The other winners are:

* Tandus US Inc. of Dalton, Ga., for its 4-year-old Ethos nonchlorinated carpet backing that has 76 percent recycled content. It is made from polyvinyl butyral film recovered from recycled automotive windshields. PVB is an adhesive used in the windshield-manufacturing process.

* Injection molder Cascade Engineering Inc. of Grand Rapids, Mich., for its EcoCart solid-waste and recycling containers that debuted in 2007. The EcoCart uses 30-50 percent post-consumer resin that is layered between two layers of virgin HDPE.

* Soliant LLC of Lancaster, S.C., for its Fluorex bright film that can be used for chrome plating, eliminating the need to use plating chemicals and processes.

Learning to embrace sustainability

By Mike Verespej

PLASTICS NEWS STAFF

TAMPA, FLA. (March 25, 12:25 p.m. EDT) -- The message is clear: Sustainability is a mainstream issue.

Companies that make petroleum-based plastic products should examine how they use energy and design products, Seetha Coleman-Kammula advised at the *Plastics News* Executive Forum, held March 10-12 in Tampa.

"Sustainability is bigger than just simply an environmental movement," she said, adding that a lot of powerful shareholders are demanding that businesses invest in sustainability. "It is going to start impacting the bottom line."

Coleman-Kammula, a former executive with Shell Chemical Co. and Basell North America, in 2005 co-founded Simply Sustain LLC, an environmentally focused consulting firm in Newark, Del.



"Sustainability is bigger than just simply an environmental movement. It is going to start impacting the bottom line," said Seetha Coleman-Kammula of Simply Sustain LLC. (PN photo by Joe Wilssens)

She told forum attendees that, right now, sustainability is a playing field where others are setting the ground rules.

Some large retailers are triggering product and material de-selection. For example, Wal-Mart Stores Inc. uses its packaging scorecard, and U.K. supermarket Tesco prints a message on plastics packaging that it considers non-recyclable because it is not collected at curbside.

In addition, because makers of bio-based plastics are focused on driving down the amount of nonrenewable energy that goes into creating their feedstocks, they are "setting the scoreboard on sustainability, and petro-plastics companies now have to come along," she said.

"Slowly, but steadily, they are setting different kinds of metrics and measures for what constitutes a sustainable plastic," said Coleman-Kammula. "We have to play in their playing field."

However, the movement will allow companies to rethink their approach to design and operations and to develop data on the sustainability of the products they make.

"It is about what we can learn on the petro-plastics side from this whole evolution of bioplastics, and what they are doing on their side. How do you improve the design, how do you innovate for the sustainability of plastics?" she said.

"At one level, sustainability is no different than really good business sense. It is really about protecting the business and the environment in which business operates," she added.

To achieve the greatest benefits from sustainability efforts, she said companies need to partner with others in the supply chain and learn how to use life-cycle analysis to improve their operations.

"The change that needs to happen before businesses can see the bottom-line benefit is no longer one that can occur by companies acting alone," she said. "It is a systemswide change."

She cited a case study from a polypropylene sustainability report that Simply Sustain will be publishing at the end of March. A manufacturer of packaging trays for chicken has partnered with the chicken processor and the retail chain to achieve sustainability and cost savings for all three.

A reduction in the tray depth from 35 millimeters down to 30mm cut the manufacturer's use of PP by 273 tons in 2007 and reduced its transportation cost. Because the chicken processor was able to include one extra tray in each outer casing, the move reduced its weekly use of outer cases by 2,000 and its weekly use of pallets by 57. That cut the cost of delivered chicken for the processor by 20 percent. The retailer increased its in-store shelf capacity and reduced transportation costs, use of pallets, frequency of reloading and storage costs.

“That is an indication of how much more sustainable petro-plastics can be with small changes in design,” said Coleman-Kammula. “There was money savings for the whole value chain and also savings in carbon footprint.”

But at the same time, she cautioned companies not to use life-cycle assessment simply to evaluate competing materials.

“It is a very complex, evolving methodology and is easy to misuse for materials comparisons,” said Coleman-Kammula. “If anyone tells you PP is better than [polylactic acid], or that PLA is better than PP, I would advise you to question how they got those numbers.

“You have to design for the total delivery function and not just get caught up with ‘this material is better than that,’ because the material is only a part of the equation,” she said, suggesting that companies use life-cycle assessments in evaluating the entire equation and tradeoffs from design to end-of-life.

Coleman-Kammula said companies should view life-cycle assessment as a “powerful tool to look inside their operations, to benchmark and to improve their carbon footprint, their energy usage and ultimately, their bottom line.

“Today, we look at bringing performance up and cost down and then worry about what it is going to do in the next life.” In addition, she said “we are designing things that only need to last a week to last months or years,” and conversely, “things that need to last months or years are breaking down faster and faster.

“There is a different way to look at plastics design,” said Coleman-Kammula. “If you start in the design process with the next life’s performance requirements and then work backwards, it really opens up a new design space for you,” she said.

“We have it in our hands to go back and redesign all of the plastics stuff we are creating” with a different mind-set, she said.

Mailbag

Plastics News Magazine, March 03, 2008

Conference supports industry's green push for sustainability

Sustainability doesn't happen by accident. The plastics industry is becoming greener because of our commitment and innovation. Achievements in sustainability in recent years have been significant. The Global Plastics Environmental Conference is our opportunity to push that movement even further.

On March 11, the Society of Plastics Engineers Environmental Division will hold that conference in Orlando, Fla. Our theme, "Sustainability and Recycling for a Greener Environment," was chosen because our goal as plastics engineers is industry-driven sustainability effectively spread throughout the globe.

By bringing together people from different parts of the plastics industry and beyond, we are creating new opportunities for learning and developing. Conference participants come from all over the world, making this a conference that is truly global in scope.

Among our special guests are two speakers who are experts in sustainability and recycling. Seetha Coleman-Kammula is the founder of Simply Sustain LLC, a management consulting company guiding companies to be profitable in ways that benefit the environment.

Our other speaker, Jerry Powell, is the editor and publisher of Resource Recycling Magazine and "Plastics Recycling Update." Each will offer a unique perspective into the current state and future development of sustainability and recycling.

In past years we have seen an advance in the area of biopolymer activity at our conference.

This year we will introduce the Clean-Technology Business Plan Forum & Competition. This creates an opportunity for innovative ideas to obtain the support they need to become real and effectively implemented.

We know the ideas are out there, and we also know this is the perfect forum to bring them out.

So as we bring together new ideas and technologies with the leading companies, industry experts and members of the investment community, we will be doing even more to make plastics greener.

If you are interested in entering the competition or attending the conference, please visit our Web site at www.sperecycling.org.

We believe the best way to achieve sustainability within the plastics industry is by involving people throughout the plastics industry. GPEC 2008 is open to anyone or any company that manufactures resins, processes plastics, buys plastic products, or wants to learn more about how plastics are becoming greener.

I have been involved with SPE and the Plastics Environmental Division for more than 16 years. I have seen a significant shift in the way people perceive sustainability in plastics. While the focus was once limited to just recycling plastics, sustainability is now a key issue for people in every facet of the industry.

Dennis Denton

Denton Plastics Inc.

Gresham, Ore.

HP Uses Recycled Plastic In Ink Cartridges

The company used more than 5 million pounds of old plastic last year and plans to use twice as much recycled plastic in cartridges this year.

By Antone Gonsalves

InformationWeek

January 31, 2008 02:38 PM

Hewlett-Packard (NYSE: HP) has developed a process that uses recycled plastic to make cartridges for ink-jet printers.

The company used more than 5 million pounds of old plastic last year in piloting the process that produced more than 200 million cartridges, executives said. HP plans to use twice as much recycled plastic in cartridges this year.

The computer maker's recycling process makes it possible to combine multiple sources and grades of old plastic, whether it's from common water bottles or old ink-jet cartridges. Since first testing the process, HP has recycled enough plastic to fill more than 200 tractor-trailers.

"By developing the technology to use recycled plastics in original HP ink-jet print cartridges, we have the opportunity to reduce the environmental impact HP products have on the planet," Michael Hoffmann, senior VP of HP's supplies, imaging, and printing group, said in a statement released Wednesday.

The amount of recycled content in new ink-jet cartridges ranges from 70% to 100% of the total plastic used, HP said. The company is expected to receive an award for its work from the Society of Plastics Engineers. The trade group is expected to hand out the award at the Global Plastics Environmental Conference in March.

The latest advancement is part of HP's Design for Environment program, which tries to reduce the environmental damage caused by HP cartridges. The company's Planet Partner program for returning and recycling cartridges operates in more than 45 countries, regions, and territories.

Recycling electronics and parts is not an easy process, and a lot more work is needed. Wal-Mart, for example, has set a goal of one day using only renewable energy and creating zero waste. As part of that effort, the retailer is gathering scores on suppliers' environmental efforts to decide which products to stock on shelves.

Among the problem Wal-Mart has faced with electronics is in tracking the separate recycling efforts of each supplier. The company has nearly 61,000 suppliers. In addition, there are no uniform U.S. guidelines that Wal-Mart can use to find methods to recycle the millions of phones, TVs, and computers it sells.