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Two Words: Biodegradable Plastic

Stewart Taggart  04.25.02 | 2:00 AM

SYDNEY, Australia -- In the 1960s film *The Graduate*, a meddling family friend takes aimless collegiate Ben aside to proffer unwanted career advice: "plastics."

More than 30 years later, the planet is choking on the stuff -- plastic packaging in particular. With green consciousness now taking root from Boston to Bangalore, the new hot career tip might be: "biodegradable plastics."

The business involves using non petroleum-based commercial wrappings that look, feel and act like traditional plastic, but break down later into organic components.

One example is starch-based packaging, generally made from agricultural commodities such as corn or potatoes. These dissolve in prolonged contact with water and heat.

However, if you're hoping you can toss your disposable plastics into the shower and watch them disappear any time soon, you'll be disappointed. Most biodegradable packaging takes weeks, often months, to break down. Furthermore, eco-friendly packaging probably needs a few more years, and a few more breakthroughs, before it's ready for prime time.

Nonetheless, early birds are staking out positions.

Earthshell of Santa Barbara, California, now provides biodegradable packaging to fast-food giant McDonald's, as well as selling biodegradable picnic utensils. These are all made from a proprietary mixture of limestone and potato starch.

Others players -- which include Minneapolis-based Cargill Dow LLC; Novamont SpA of Novara, Italy; and the German BASF Group -- provide biodegradable packaging that is based largely on corn starch. These companies and others are being drawn to a global market now estimated at about \$25 billion a year.

A key testing ground for biodegradable packaging was the 2000 Sydney Summer Olympics. Thanks to pre-Games pressure from environmental groups, food vendors for the Games used only biodegradable and recyclable packaging. More than three-quarters of the 660 tons of garbage generated each day at the Games was kept out of landfill, with much of it composted instead.

But that was the Olympics, the ultimate controlled environment. The challenge now is for biodegradable plastics to succeed in the chaotic real world, closing a roughly 2-to-1 price gap with traditional packaging.

The good news is that consumers and most businesses are keen on greenery. The bad news is they don't want to pay anything more for it.

Without government mandates, this price differential is likely to hinder the spread of biodegradable packaging in the short-term.

"I figure it will be at least five years before fully biodegradable packaging becomes really widespread," says Leo Hyde, research and development manager for DuPont Australia. "Without legislation to help it along, this packaging will just have to be price competitive."

DuPont's entry in the race is a water-soluble form of the more traditional recyclable material polyethylene terephthalate.

Meanwhile, Melbourne's Plantic Technologies is commercializing a form of corn starch-based biodegradable plastic packaging, which it claims will break down into carbon dioxide and sugar in as little as an hour after contact with water, says David MacInnes, Plantic's managing director and chief executive.

If the company can deliver, it really would pass the "shower" test. But it's too soon to know, and the company has no firm contracts.

Nonetheless, research points to the emergence over time of a viable, biodegradable packaging industry offering competitive prices. Some researchers already assert that biodegradable packaging is price-competitive when environmental costs such as greenhouse gas emissions, energy usage in production and total life-cycle costs are properly accounted for.

For instance, some corn-derived food packaging requires almost one-third less non-renewable energy to produce than packaging made from conventional sources such as petroleum-based polypropylene, according to Greg Bohlman, assistant director of the Process Economics Program at SRI consulting, a technology markets consulting firm in Menlo Park, California.

While environmentalists are cheering the market on, they add that further work needs to be done to reduce the environmental costs of biodegradable packaging.

These include developing ways to create packaging from agricultural waste rather than actual crops and reducing pesticide and chemical use in its production. But greenies do believe that biodegradable packaging is a big step forward from the nasty status quo.

"They can't be any worse than wrappings such PVC (poly-vinyl chloride), which basically is just a bunch of toxic chemicals," said Matt Ruchel, a toxics campaigner for Greenpeace in Sydney, Australia.

PVCs are a common element in robust plastics such as plumbing piping. But derivatives are used in such things as moisture-proof clear plastic wraps.

One ace that the starch-based biodegradable packaging industry may have up its sleeve is the relative price stability of commodities such as corn and potatoes compared to the volatile price of petroleum. Another added benefit may be that you could -- if you really had to -- eat biodegradable packaging.

"It's unlikely to taste very good, but it won't kill you," McInnes said. "And it could keep you alive -- at least for a short time."