October 20, 2006

Dennis McGrew
President and Chief Executive Officer
NatureWorks LLC
15305 Minnetonka Blvd.
Minnetonka, MN 55345

Dear Mr. McGrew:

We support the development and introduction of biobased resins. Biopolymers will play a vital role in mitigating the environmental and public health impacts of fossil-fuel-based plastics and can help move us closer to a zero waste economy. We are particularly encouraged by the potential to use and compost biodegradable food service ware. Compostable plates, cutlery, cups, take-out containers, and packaging film will help increase composting of food discards, and will not interfere with current recycling systems as there is presently no infrastructure for recycling plastic food service ware. Unfortunately, this is not the case with biobased bottles. We are writing today to strongly object to any use of biobased resin, including that made from polylactic acid (PLA), in plastic bottles. A rollout of PLA *bottles* into the consumer market represents a potential devastating economic impact on the existing recycling infrastructure. During the last 18 months, many of us have raised serious questions with NatureWorks concerning PLA bottle recovery. These issues remain unaddressed. We now request NatureWorks commit to work constructively to find an economically viable recycling end-of-life solution to PLA in the next 12 months. Until this is done and validated by recyclers, we further request that NatureWorks maintain a moratorium on promoting, facilitating, and offering PLA for *bottle* applications.

A fact-based analysis shows that biobased resins are generally not appropriate in applications where they would displace successful recycling programs. Here are the facts for consumer plastic bottles:

Composting bottles is not as environmentally preferable as recycling. PLA bottles on the market such as those produced by Naturally Iowa, Biota, and EnviroWorks, are labeled and marketed as compostable. The widely accepted waste management hierarchy lists in priority order reduce, reuse, recycle and, of the recovery options, composting last. While composting is far preferable to landfilling, it does not recover the inputs that originally went into producing the feedstock used to make the bottle. Composting bottles represents downcycling. It is far better to recycle bottles back into bottles, which is now increasingly prevalent for recovered PET bottles.

PLA *bottles* would primarily displace PET bottles, which are presently a key part of successful recycling programs. Local recycling programs currently receive more than 20 cents per pound for the PET that they recover, and this high value is a critical part of the sustainable economics for recycling today. PLA *bottles* will most likely erode this system and its economics.

PLA bottles not tossed in the trash will likely enter materials recovery facilities (MRFs) mingled with other PET bottles where, if sorted out, will end up in the reject stream destined for disposal facilities. If not sorted out from PET, as PLA market penetration level rises, PLA will contaminate PET recycled resins.

Sorting PLA bottles from PET bottles presents major complications. PLA and PET are both heavier than water (which is the basis for the most simple and inexpensive sorting system). Establishing a positive sort for PLA would require adding costly and often insufficiently effective optical sorting equipment to a MRF. Indeed, the specific optical systems commercially available today have not been shown to reduce PLA contamination to manageable levels for current end market requirements when there are more than trace levels of PLA present. Even if there were such systems developed in the future, they would add a few cents per pound. The imminent prospect of other types of bioplastics entering the

market magnifies this problem further because each biopolymer resin type may well require its own expensive sortation.

Incurring costs to sort and bale PLA will reap no benefit if the PLA cannot be recycled. There is no facility in operation that recycles post-consumer PLA, nor has NatureWorks provided any indication that recycling programs for PLA bottles could be commercialized in the future.

Offering a buyback price for PLA bottles is not a sustainable economic option. Like one-month free loan advertisements, these temporary loss-leader offers bear no relationship to the ultimate impacts on recycling going forward. Indeed, recyclers have already been severely abused by this sort of approach in the past, including the case of OxyChem's 10 cent per pound buy back offer for PVC bottles, which was quietly ended immediately after the threat of legislative bans had waned.

Composting PLA bottles that have incurred sorting and baling costs is not an economically viable system. The cost to bail any separated PLA bottles and then ship them to non-revenue paying compost markets, would probably be more expensive than just landfilling them along with the rest of a material recovery facility's (MRF's) residues. There is also the additional difficulty in accumulating truckloads quantities of PLA. Few compost facilities now accept biodegradable biopolymers. As a result, substantial composting of PLA bottles is unlikely.

NatureWorks may believe that there will be no harm today because current levels of PLA bottles by Biota and Naturally Iowa are too low to cause any of the problems that we raise. We disagree. The whole purpose of these two companies' test runs is to initiate the commercialization of PLA bottles, especially among green consumers. Were we to wait until that market is created, it will then be too late to have prevented the problems in the first place.

Therefore, to be clear, the rollout of PLA bottles in the market would effectively destroy the thriving recycled PET market, which generates more than $200 million for local recycling programs across the country, and makes it possible for communities to afford to pursue their recovery efforts.

We are disappointed that NatureWorks has aggressively moved to create a PLA bottle market without first resolving these serious recycling issues. Over the past six months, representatives of the Plastic Redesign Project have repeatedly attempted to elicit a constructive dialogue with NatureWorks to find a constructive solution to these problems, but have been unable to get the company to return repeated calls. At the same time, NatureWorks has dropped dialogue with the recycling community started through the Future 500 organized "PLA Guidelines and Road Map" process. Recycling professionals started raising questions concerning PLA bottle recovery 18 months ago when this dialogue first began.

Three key questions must be adequately answered before the recycling community will embrace PLA bottles:

1. **Can PLA be economically depolymerized and recycled?** NatureWorks has previously outlined its hopes for depolymerization as the vehicle for recycling PLA. What existing facilities can depolymerize PLA? We need a demonstration of depolymerization, particularly post-consumer PLA. We also need information to validate that the cost to depolymerize PLA to its feedstock, lactic acid, could be approximately 20 cents less per pound than the cost to produce lactic acid from corn. At this cost, recyclers would not lose most of the high net revenues that they currently receive for PET. Can recycled PLA resin be recycled back into food-grade PLA bottles? PET bottles can be recycled into food-grade PET bottles.

2. **Can PLA be technically and economically mechanically recycled?** Can PLA bottles be recycled with current mechanical recycling technologies or with upgraded mechanical recycling technologies? If mechanical recycling is possible, what, if any, are the changes in performance characteristics and appearance between the virgin and recycled PLA? If mechanical recycling is

possible, what types of markets would be able to use the recycled PLA? Can PLA bottles be recycled back into PLA food-grade bottles? We need a demonstration of mechanical recycling of post-consumer PLA resin.

3. **Can PLA in volume be adequately sorted from PET to enable high-end markets for PET and high-end markets for PLA?** The information that NatureWorks has provided indicates that commercially available optical sortation systems cannot currently achieve adequate separation to prevent contamination of PET for high-end markets once more than trace levels of PLA bottles enter the market. Can NatureWorks facilitate the improvement in current technology to enable such systems to be available, effective and economic?

We call on NatureWorks for a moratorium on the promotion, facilitation or sale of PLA for bottles, and that, by November 1, 2007, it address the above questions and present the recycling community with a vision of how PLA could be used in bottles without injuring the existing successful plastic bottle recycling system. Until that happens, and we can corroborate the economic feasibility of a PLA recycling system, we will be left with no alternative but to continue to act appropriately to protect the interests of the 9,000 plus recycling programs in the United States.

Sincerely,

/s/ Tom Padia
Plastic Redesign Project

/s/ Peter Anderson
Executive Director
Center for a Competitive Waste Industry

/s/ Eric Lombardi
President
Eco-Cycle

/s/ Susan Hubbard
CEO
Eureka Recycling

/s/ Martin Bourque
Executive Director
Ecology Center

/s/ Brenda Platt
Co-Director
Institute for Local Self-Reliance

/s/ Linda Christopher
Executive Director
GrassRoots Recycling Network