

January 10, 2014

Ms. Kathryn Ferrer
California Department of Resources Recycling and Recovery
1001 I Street
Sacramento, CA 95814

RE: Comments on the Draft CalRecycle Biobased and Degradable Plastics Report

Dear Ms. Ferrer:

First, I want to thank CalRecycle for sponsoring the recent workshop on Biobased and Degradable Plastics in California. It was a very informative session, and the topic of biobased and degradable plastics is both timely and important as California moves forward in its goal to reduce, recycle or compost at least 75% of its solid waste by 2020. After reviewing the Draft Biobased and Degradable Plastics report prepared by CalRecycle, NatureWorks is pleased to submit the following edits/comments.

1. Page 13, bottom of page: Reference is made to NatureWorks' plans to build a second manufacturing plant in Thailand of similar size to the U.S. facility, with a tentative opening date of 2015. NatureWorks has now announced confirmation of 2nd facility, most likely in Thailand, with an anticipated startup date of 2016. It should also be noted that as of last summer the capacity of the resin manufacturing facility in Blair, NE was increased to 350 MM lb/yr. from its original 300 MM lb/yr. capacity.
2. Page 34, third complete paragraph on that page: Reference is made to NatureWorks' shifting away from the bottle market. As an update to this, in mid-2013, NatureWorks made the business decision to completely exit the beverage bottle market in North America. Contracts with existing North American customers in this application will not be renewed, and as of the end of the first quarter of 2014, resin sales into this application in North America will cease.
3. Page 48, third complete paragraph under the heading "New materials in the mix": Reference is made to the one existing PLA reclaiming operation in North America. Just to clarify, this facility, located near Eau Claire, WI, is processing a small amount of NatureWorks' off-grade resin coming out of our Blair, NE manufacturing facility. This off-grade resin is chemically recycled (hydrolyzed) into lactic acid and sent back to Blair for reintroduction into the manufacturing process. We are not, however, sending post-industrial or post-consumer PLA to this facility for hydrolysis, and, instead, are focusing our efforts on developing mechanical recycling programs and applications for this material.

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4. Page 49, first paragraph: As in comment No. 2 above, we will be exiting the North American beverage bottle market completely, with North American resin sales into this application ending in March, 2014.
5. Page 58, second complete paragraph: As noted in comment No. 3 above, NatureWorks is sending only small amounts of off-grade resin from our Blair facility to the Eau Claire, WI plant at this time.
6. Page 65, first two paragraphs under the heading "Boosting market": In the third quarter of 2013, BioCor was dissolved as a separate entity and its activities have been brought in-house at NatureWorks. Prior to this decision, most of the BioCor founding members (many of whom were small PLA bottle manufacturers or bottled water companies) had already terminated their PLA bottle businesses and given up their BioCor ownership share, leaving NatureWorks as the sole "owner" of BioCor. This spawned the opportunity to consolidate these efforts in-house with NatureWorks taking the lead on purchasing post-consumer and post-industrial PLA. With a new post-consumer PLA bale specification in place, and new pricing for materials meeting these specs, NatureWorks is refocusing these efforts on post-consumer PLA and select post-industrial sources of PLA.
7. Page 67, Environmental Profiles of Plastic Packaging: Under this section, the draft report covers Life-Cycle Analyses (LCAs) that were done on PET beverage bottles, methane-based PHB, a multi-line biorefinery, and a general review of LCA studies. Two points not included in this section are mention of the peer-reviewed, EcoProfile on PLA (Ingeo) that was published in 2010¹, and a variety of LCA's conducted by 3rd parties. These LCA's are all available online², with one of the more recent, for example, a study conducted by PE Americas for Starbucks Coffee Company, which compares PET, PP, and Ingeo clear cold cups³. An eco-profile is a useful tool for fully determining Ingeo's environmental impact. The profile adds up all of the inputs & outputs from our manufacturing process (like water to grow feedstocks, CO2 sequestered, energy to produce farming equipment, greenhouse gases emitted by our plant) from the field to factory gate...or from the corn being grown to boxes of Ingeo leaving our plant in Blair, NE. This calculation helps us determine Ingeo's impact on several indicators including greenhouse gas emissions and non-renewable energy use.

¹ Erwin T.H. Vink, Steve Davies, and Jeffrey J. Kolstad, "The eco-profile for current Ingeo® polylactide production", Industrial Biotechnology, Vol. 6, No. 4, Aug 2010.

² <http://www.natureworkslc.com/The-Ingeo-Journey/Eco-Profile-and-LCA/Life-Cycle-Analysis>

³ "Comparative Life Cycle Assessment Ingeo™ biopolymer, PET, and PP Drinking Cups" for Starbucks Coffee Company, Seattle, WA and & NatureWorks LLC, by PE Americas, Boston, MA, Dec 2009

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Based on this eco-profile, manufacturing Ingeo produces 60% less GHGs than traditional polymers such as PET and PS, and uses 50% less non-renewable energy in manufacturing as compared to PET and PS. Along with these comments, I've included a copy of the Ingeo Eco-Profile and respectfully request you consider including this in the report when it is finalized.

Again, thank you for the opportunity to review and comment on the draft report, and should you have any questions, please feel free to contact me.

Sincerely,



Tim L. Goodman
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