



BIOCOR – The business of BioPlastics Recycling

BIOCOR – A Way Forward

- Background founded in 3/2010
- BIOCOR Business description
- Pilot Project activities first 24 months



Background: Why do we need BioCor?

The industry needs an economic reason to recycle PLA.



The Business of BioCor

- BioCor is a for profit company that is looking to buy post consumer PLA from recyclers and assist the recycling industry, in developing methods to recycle a package that is not made of 1, 2, tin, Aluminum, glass, or fiber.
- The recycling industry needs a roadmap for how to handle innovative packaging that, for the consumer, is compelling alternative to many traditional plastics.
- BioCor believes that packaging materials used today will not be the packaging materials consumers will embrace 10, 5 or 2 years from now. (Glass to Alum to Plastic)
- I believe as well as the founding members of BioCor that the package choice will be plant based plastics. (Coke also sees this trend given the plant bottle which has plant content.)



Recycling Potential of PLA

This product has unique end of life characteristics and we believe volumes will grow at material recovery facilities.

- The economics to process PLA back into a product for resale or back into PLA has promise
 - **Ability for cradle to cradle at high content levels**
 - **Ability to recycle many types of PLA products**
 - **Ability to convert to RPLA for reuse in new products**
- This product is already in our recycling infrastructure but not in quantities that are having an impact.



Ongoing Pilot Projects at BioCor

- Cal Recycle/Future 500 Bioplastics Grant
 - Stakeholder presentations
 - Stakeholder Surveys
 - Demonstrating Optical sorting at a MRF
- Closed Loop Recycling
 - Galactic Loopla process
 - Stadiums, fairs and events
- Post Industrial
 - Clear rigids (cups, bottles, and clamshells)
 - Other (yogurt cups and gift cards)



Pilot Project: Post Consumer MRF Sponsors/Stakeholders

Future 500 Bioplastics Project received funds from CalRecycle to construct, test and prove that an optical sorter can separate Bioplastics from other plastics to work toward a clean Bioplastics stream, and guard against unacceptable Bioplastics in the PET stream.



Pilot Project: Closed loop events

Successful closed loop collection:

- **San Francisco 49ers Stadium**
- **Oakland A's/Raiders Stadium**
- **Several fairs and festivals**
 - Chicago, L.A., and Bay Area



Pilot Project: Bio Bags for closed loop events and MRF storage



PLA in closed loop feedstock Recovery: Brussels Music Festival



Ingeo cups collected for
feedstock recovery at the
June, 2011 Brussels
Couleur Café music festival



Lactic Acid Feedstock Recovery from PLA Carpet



**Ingeo Carpet
in use at the
COP—15, the
UN's Climate
Change
Conference**



PLA in closed loop feedstock Recovery: Netherlands Music Festival



Ingeo
Cups in use
at EU music
festival
managed by
LOC7000



Pilot Project: BioCor post Industrial Recycling:

- 2010:
 - 170,000 lbs converted to lactic
 - Estimated 40,000 lbs converted to R PLA
- 2011:
 - 60,000 lbs converted to lactic
 - 200,000 lbs in queue
 - Estimated 600,000 lbs converted to R PLA

Key issue: Samples of Post industrial PLA vs. full loads delivered?



Converting PLA back to Lactic Acid:

“Since 2002, NatureWorks has reclaimed lactic acid from 26.5 million pounds of off-grade / wide-spec polymer through the end of 2011.”



Energy is going toward end of life for BioPlastics

Future 500 generated an additional \$800,000 via partnering with Pellenc and Titus.

- Future 500 Bioplastics Grant: \$1,200,000
- Additional Industry matching: \$ 800,000

Total invested in understanding end of life?

BioCor

PLARCO

Galactic

Zero Waste Programs

Boston

San Francisco

Many others



BioCor is a for profit company that changes Conventional Wisdom for recycling PLA:

- BioCor is an end market
- BioCor will buy:
 - **post-consumer**
 - Closed Loop
 - Collected at MRFs or reclaimers
 - **post-industrial**
 - Dependent on clarity and purity
 - Ongoing development in and out of BioCor



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