

Keynote Presentation

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The Natureworks business model is based on “the 3 P’s”: Properties, Price, Preferences. Preferences include lower carbon footprint, renewable resources, and health and safety of materials. Selling the health and safety of materials has more traction than carbon footprint. When you have five seconds to get the consumer’s attention, a global warming message is harder to convey than consumer safety. Currently, messaging about the hazardous properties of styrenics and phthalates is easier than messaging around carbon footprints. That could change over time, particularly if impacts from climate change become more extreme. Natureworks is confident about the safety of polylactic acid (PLA).

Key drivers

- Ingeo, Natureworks’ PLA-based material, competes today in all petroleum commodity markets. The commodity business is 70% based on price, 30% everything else, assuming the same properties. PLA can now compete with polypropylene.
- Using PLA-based food serviceware in contained venues such as sports stadiums helps achieve one of the 3 P’s -- environmental “Preference” -- because used serviceware can be captured separately from other plastics and composted. It is cheaper to compost than landfilling these materials. Stonyfield Farms has been using Ingeo in its multi-yogurt packs and found that it has provided great performance for the same or slightly lower cost. In the future, it can be used in 3D printing. PLA sales are growing 25% per year, with 2013 aggregate production of over 1 billion pounds.
- Natureworks has “rich parents.” Not all start-ups have them. How do you weather the first 10 years? Wealthy parent companies can help provide financing for the first 10 years, such as Cargill did for Natureworks. Today, PLA is where PET and PS were in the 1950s. Today the company is making money so parent company is happy! It is better to have “rich parents.”

Barriers

- The lack of incentive programs is a barrier to siting additional manufacturing in the U.S. The bioplastics industry is ready for rapid expansion, but like the petro plastic industry, it is very capital intensive. Financial markets are scared to invest in such start-ups, so government assistance is needed. The U.S. competes globally for investments – an incentive basket like what Thailand offers is needed.
- Long time needed for R & D. It has taken 10 years to achieve this level of competition because it takes significant time and effort to develop the polymers for specific applications.
- Lack of infrastructure. Technically, PLA can be recycled. In a controlled venue, such as Yankee stadium, it can be easily recycled. If it could be sorted as part of a municipal solid waste (MSW) stream, recycling is feasible. However, there is not enough volume in any metro area for the municipal recycling facility (MRF) to separate out PLA.

Helpful Actions to Advance Green Chemistry

- Governments can offer incentives that encourage companies to build plants in the U.S.