From: "David Cornell" <dcornell@usit.net>
To: <fb4p@oce.usda.gov>
Date: Sun, Dec 10, 2006 4:29 PM
Subject: Recycling and USDA Proposed Designations of Biobased Items for Federal Procurement

Sirs:

Attached are comments from the Association of Postconsumer Plastics Recyclers on proposed designations of biobased plastics.

Regards,

David Cornell
Technical Director

CC: "Steve Alexander" <salexander@cmrgroup4.com>

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Via Email Submission
Dr. Marvin Duncan
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Room 4059, South Building
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Re: Recycling and USDA Proposed Designations of Biobased Items for Federal Procurement

Dear Dr. Duncan:

The Association of Postconsumer Plastic Recyclers, APR, appreciates the opportunity to provide comments concerning the U.S. Department of Agriculture's (USDA's) Proposed Designations of Biobased Items for Federal Procurement (e.g., RIN 0503-AA30; RIN 0503-AA32).

APR is the trade association whose members represent over 90% of the installed plastic bottle reclamation capacity in North America. APR members operate in Canada, the United States, and Mexico. We are the people who reclaim post-consumer plastic food and beverage

bottles. As the American Plastics Council (APC) has published ("2004 National Post-Consumer Plastics Recycling Report", 2005), 96% of all plastic bottles produced in the United States are made of PET (polyethylene terephthalate) or HDPE (high density polyethylene) and over 99% of all post-consumer plastic bottles recycled in the United States are PET or HDPE. APR reclaimer members do offer to reclaim other than HDPE and PET, but find very limited supplies of the needed raw material.

APR acknowledges USDA's role in the Federal Biobased Products Preferred Procurement Program through the Farm Security and Rural Investment Act (FSRIA) of 2002. APR would like to bring to USDA's attention several comments shared with the public at the Degradable Plastics Symposium held June 14, 2006 in Chicago, Illinois, sponsored by the Society of the Plastics Industry (SPI) and the BioEnvironmental Polymer Society (BEPS).

1. Plastics recycling requires a significant critical mass to be successful.

The few non-PET or HDPE bottles in the post-consumer bottle stream are typically polypropylene or PVC with very small amounts of bottles from other resins. The usage of polypropylene into virgin bottles is about 190,000,000 pounds annually. The amount of PVC is a little less, 113,000,000 pounds annually. While these amounts may seem large, compared to the 8 billions pounds of HDPE and PET, they are not. Neither polypropylene nor PVC is collected, sorted, and reclaimed independently. The historical evidence from HDPE recycling shows that over 400,000,000 pounds of bottle resin must be used annually and be readily identifiable to achieve commercial recyclability using the systems of collection utilized in the

United States.

Many resins, including the various biopolymers, are not and are not likely soon to be present in sufficient quantity to justify free-standing recycling.

2. Each resin must be self-supporting and not rely on subsidy from other resins for successful recycling.

Some have suggested the PET and the HDPE reclamation programs can subsidize the inclusion of "other" polymers by paying for the isolation of the "other" resins from the streams of PET and HDPE bottles. The long standing principle of cost allocation in reclamation is that each material pays its own way. If the presence of a new "other" polymer causes a separation to be conducted to preserve the quality of the PET or the HDPE stream, the convention has been to expect that new "other" to pay for the separation. The cost can be significant for the "other" polymer. If the cost of examining every bottle to find an "other" bottle is $0.01/lb and the "other" is present at 1% in the stream of either PET or HDPE bottles, the cost to the "other" would be $1/lb.

Today in the PET recycling stream PVC is removed as a matter of course. This separation has been done since the inception of PET recycling and is considered by all reclaimers as both a burden and a normal activity. If the "other" polymer can be isolated with the PVC bottles and then separated from that stream at much higher concentrations, the added sorting costs for "other" polymer bottles could be much lower. Considerable development

would be needed to make this possibility a working reality.

If the "other" polymer, be it a biopolymer or petroleum-derived polymer, is not removed, then the impacts of potential contamination must be considered. Like many variants in the recycling stream, the effects of inclusion of "other" resins starts as a nuisance, rises to a problem with higher levels of occurrence, and finally becomes an opportunity when critical mass is achieved.

3. Effects of bio-polymer "other" resins on PET and HDPE recycling

The impacts of interest for the presence of biopolymers are on the reclamation process and on the appearance and functionality of the recycled PET and HDPE plastic products.

The specific gravity of bio-polymers all seem to be greater than 1.0 and all should separate from HDPE during the HDPE reclamation process. HDPE material is floated away from heavy contaminants. We are not aware of incompatibility of any biopolymer with HDPE at levels below what might be included in HDPE recyclate product.

Unfortunately, it appears bio-polymers will not separate from PET during its reclamation process as both PET and all bio-polymers to date sink in water. Today's systems do not have the ability to cheaply isolate bio-polymers from PET. NatureWorks®, the maker of polylactic acid, PLA, has stated at its website,

http://www.natureworksllc.com/News%20and%20Events/Press%20Kit/Overview/NatureWork

s%20Polymer%20Technical.aspx, that the upper limit of no adverse effects for PLA in PET recycling is about 0.1% polylactic acid in PET. Above that amount of PLA in PET appearance of the PET is adversely affected by the presence of PLA. This is not a surprising observation as the two resins are immiscible and form two separate phases when liquid, just like oil and water. I would expect other bio-polymers to behave similarly as molten PET is immiscible with most other polymers. The incompatibility is a function of the molecular configuration and not inherently related to the raw material source.

PET must be dried before extrusion. The PET drying temperature must be in excess of 160°C to be practical. The melting points of at least some of the commercial biopolymers are reported to be below 160°C. And since PET is often processed at even higher temperatures in solid state polymerization, the presence of low melting contaminants is a serious problem and can disrupt PET processing and seriously degrade the PET product.

We have concluded the following:

- Biopolymers are unlikely to justify an independent recycling business any time soon.
- Biopolymers could be a technical nuisance to HDPE reclaimers, creating a yield loss with some economic cost.
- Biopolymers could be a technical problem for PET reclaimers, creating degraded PET product quality and serious economic cost.
- Biopolymers may be an opportunity for current reclaimers if the value exceeds costs and the presence does not disrupt current operations.

- Until critical mass is achieved, biopolymers will likely represent some level of cost and technical challenges to reclaimers and must pay their own way in collection, sorting, and processing.
- Biopolymers should target product applications not currently included for recycling.

Some biopolymers are targeted for packaging applications that are not typically recycled, such as food storage containers, bowls, and blister packaging. These packages may become included with bales of bottles destined for recycling. And, some parties have advocated the use of biopolymers for packaging applications such as juice and other beverage containers that are frequently recycled. As such, the impact of the USDA program on existing recycling streams and programs needs to be considered.

In its proposal, USDA describes the three established arms of the Federal government's "green" purchasing program as follows:

> *Federal Government Purchase of 'Green'' Products.* Three components of the Federal government's green purchasing program are the Biobased Products Preferred Purchasing Program, the Environmental Protection Agency's Comprehensive Procurement Guidelines for products containing recovered materials, and the Environmentally Preferable Products Program. The Office of the Federal Environmental Executive (OFEE) and the Office of Management and Budget (OMB) encourage agencies to implement these components comprehensively when purchasing products and services . . .

> *Overlap with EPA Comprehensive Procurement Guidelines program for recovered content products.* Some of the biobased items designated for preferred procurement may overlap with products designated under the Environmental Protection Agency's (EPA) Comprehensive Procurement Guidelines program for recovered content products. Where that occurs, an EPA-designated recovered content product (also known as ''recycled content products'' or ''EPA designated products'') has priority in Federal procurement over the qualifying biobased product. In situations where USDA believes there may be an overlap, it plans to ask manufacturers of qualifying biobased products to provide additional product and performance information including the various suggested uses of their product and the performance standards against which a particular product has been tested. In addition, depending on the type of biobased product, manufacturers may also be asked to provide other types of information, such as whether the product contains petroleum-, coal-, or natural gas-based components and whether the product contains recovered materials. . . . [w]here a biobased item is used for the same purposes and to meet the same requirements as an EPA-designated recovered content product, the Federal agency must purchase the recovered content product.

71 Fed. Reg. 59862, 59865 (Oct. 11, 2006). APR thinks that it is consistent with the above quoted policy for USDA to stress that it is not requiring procuring agencies to limit their choices to biopolymer-based packaging that is incompatible with current reclamation.

APR acknowledges that USDA instructs that:

> Federal agencies may also ask manufacturers for information on a product's biobased content and its profile against environmental and human health measures and life cycle costs (the Building for Environmental and Economic Sustainability (BEES) analysis or ASTM International (ASTM) Standard D7075 for evaluating and reporting on environmental performance of biobased products) . . . [i]n considering the life cycle costs of items proposed for designation, USDA uses the BEES analytical tool to test individual products within each proposed item. (Detailed information on this analytical tool can be found on the Web site *http://www.bfrl.nist.gov/oae/software/bees.html.*) The BEES analytical tool measures the environmental performance and the economic performance of a product. Environmental performance is measured in the BEES analytical tool using the internationally-standardized and science-based life cycle assessment approach specified in the International Organization for Standardization (ISO) 14000 standards. The BEES environmental performance analysis includes human health as one of its components. All stages in the life of a product are analyzed: Raw material production; manufacture; transportation; installation; use; and recycling and waste management.

71 Fed. Reg. at 59863, 59865. Beyond the lifecycle of the product itself, however, USDA must ask agencies to consider the impact of the introduction of a new or non-traditional polymer for a specific application on existing recycling streams.

At APR we believe container being recycled is as valuable to sustainability as is a container being made of renewable material. For this reason, APR further asks that USDA establish sustainable solid waste management, i.e. recycling, as one of the product performance standards for procuring agencies to request information on and consider. We, the commercial reclaimers of post-consumer plastic bottles, consider that the definition of sustainable solid waste management must include the economic ability of items to be processed for recycling and sold profitably. Similarly, an item that meets sustainable solid waste management criteria must not significantly degrade the ongoing, successful recycling of other items.

In closing, a packaging material should be selected if it meets the functional and aesthetic requirements for the intended application, is commercially available and competitively priced, and does not disrupt existing, sustainable solid waste management programs.

APR respectfully requests that USDA consider this information when forming its decisions. APR appreciates the opportunity to provide you with our experience on the important issue of the impact of material choice decisions on recycling. APR has published Design for Recycling Guidelines to help packaging professionals make choices that enhance recyclability of rigid plastic packaging. If you have any questions or require additional information, please contact me at (423) 245-3648 or apr.technical.director@earthlink.net .

Respectfully submitted,

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Technical Director
Association of Postconsumer Plastic Recyclers