

Plastic Foam Packaging Reduction Project

Public Agency Benchmarking, Research and Definitions

October 1, 2012

Provided as part of a collaborative project between the cities of Palo Alto, San Jose, Sunnyvale and the Watershed Management Initiative in consultation with the Green Purchasing Institute to reduce foam plastic received in City shipments of purchased goods.

Overview

In 2012, the Cities of Palo Alto, San Jose and Sunnyvale began working collaboratively on a project to minimize waste and water pollution generated from expanded foam plastics received with the goods they purchase such as polyurethane, polypropylene and expanded polystyrene (EPS, a.k.a. Styrofoam™).

This *Supply Chain Plastic Reduction Project* seeks to determine which vendors in participating agencies use plastic foam for packaging, is contacting vendors that sell goods to these cities to inform them of each city's requirement to discontinue use of plastic foam with the broader goal of minimizing all packaging to the maximum extent feasible while protecting the product. This collaborative effort is coordinated by agency staff responsible for zero waste and water pollution prevention programs in partnership with each city's Purchasing Department and is driven by both policy goals and regulatory requirements.

As part of this project, benchmarking research was conducted to determine what other jurisdictions as well as vendors (such as HP and Dell) are doing to reduce difficult-to-recycle plastic foam packaging. This document also includes key (and often misunderstood or problematic) terms. Sample surveys, vendor letters, contract Terms and Conditions, case studies, and other related resources are available at www.responsiblepurchasing.org.

Public Agency Efforts and Strategies to Reduce or Eliminate Plastic Foam Packaging from Vendor Deliveries

The Green Purchasing Institute (GPI), in partnership with Green Spectrum Consulting, conducted extensive phone, email, and web research to identify efforts by public agencies and other large institutions to reduce or eliminate plastic foam from vendor deliveries of office supplies, computer equipment and other products commonly purchased by local governments. The vast majority of work to-date on plastic foam by public agencies has focused on bans of EPS cups, foam trays, and other foam-based food serviceware in their facilities or at their events. Some bans even extend to restaurants and retail food vendors. However, there are a few examples of policies and programs that address the use of plastic foam packaging for vendor deliveries. Most are aimed at reducing or eliminating packaging overall, but we have framed them in terms of expanded foam packaging. We have also provided examples of these green purchasing and zero waste policies, where available.

Examples of Policies and Programs that Reduce or Eliminate Plastic Foam Packaging

City of San Diego, California

In December 2010, at the request of the City Council, the City of San Diego began examining legal issues with regulating the use of EPS at City facilities and permitted special events. The mayor's office developed a report and recommendations that took effect on January 1, 2012.

The recommendations include revisions to AR 35.80, the City's Environmentally Preferable Purchasing Policy, to block EPS food service ware in citywide supply contracts, develop standard bid language requiring vendors to reduce EPS in packaging material, and implement EPS recycling at City facilities, where practicable.

City of Palo Alto, California

In 2010, in conjunction with the City's efforts to ban plastic bags from grocery stores (2009) and EPS and non-recyclable take out food containers (2010), Palo Alto also discontinued use of these same containers at City-sponsored events and disallowed the purchase of EPS and non-recyclable food containers for its own program use. www.cityofpaloalto.org/plastics

City of San Jose, California

In April 2012, San Jose will approve a revision to its *Environmentally Preferable Procurement (EP3) Policy* that prohibits the procurement of food service ware made from EPS. This supports the City's efforts to lead by example as it works to reduce the presence of EPS food service ware in City storm drains and waterways.

City of Seattle, Washington

In 2003, Seattle and Gateway partnered to develop a reusable cart for equipment deliveries and storage. The cart holds up to 24 computers, eliminating the need for packaging such as cardboard, polystyrene, and plastic wrap. The cart is not only easy to use, but its efficient design helps save storage space. The cart is also used to return old computers to Gateway at their end-of-life as part of the City's asset recovery program.

City of Sunnyvale, California

In 2009, the City of Sunnyvale passed a Zero Waste policy that encourages staff to put in place procurement procedures that favor environmentally and economically sustainable practices in order to lead by example. As a result, the use of City funds to purchase single-use water bottles and EPS foam food and drink cups is prohibited. The City is in the process of updating its Environmentally Preferable Purchasing Policy and contractor bid language to include language about eliminating plastic foam packaging from shipments. A copy of the policy can be accessed at <http://sunnyvale.ca.gov/Portals/0/Sunnyvale/DPW/recycling/ZWPolicyFinal.pdf>.

Practice Greenhealth

Practice Greenhealth, a nonprofit organization that helps institutions in the healthcare community implement sustainable practices, recently developed a set of standardized environmental questions to ask suppliers of medical products. One of the questions asks if the packaging is free of polystyrene (defined as any polystyrene – extruded, oriented, expanded, etc.). It also asks whether the product's primary packaging contains post-consumer recycled content and, if so, what percentage. (See attached questions.)

Five of the largest Group Purchasing Organizations (GPOs), representing \$135 billion in annual health care-related purchasing, have agreed to use the questionnaire. Practice Greenhealth will also be asking all hospitals and health care systems to utilize these questions. A copy of the Practice Greenhealth Standardized Environmental Questions for Medical Products, Version 1, published in October 2011 can be accessed at <http://practicegreenhealth.org/>.

City of Portland, Oregon

In June 2011, the City of Portland, Oregon issued a *Request for Proposals (RFP 112644) for Electrical and Electronics Supplies* that asks vendors several questions about the packaging they plan to use to deliver products to the City. This bid solicitation document states:

Describe the delivery packaging, and the recyclability thereof, that will be used for the proposed products. Specifically address:

- a. Packaging materials used (cardboard, plastic film, hangers (metal or plastic), etc.)*
- b. Recycled content of packaging materials*
- c. Recyclability of packaging at City facilities (NOTE: the City does not have the capability to readily recycle Styrofoam®, molded plastics, or plastic film)*
- d. Whether packaging is taken-back by your firm (as part of delivery services) for reuse or recycling*
- e. Your firm's efforts to minimize packaging without compromising product quality and integrity.*

This RFP can be accessed at

<http://www.portlandonline.com/omf/index.cfm?c=53454&a=373989&showpollresults=1> .

University of British Columbia

Over the past two years, the Brain Research Centre at the University of British Columbia has worked to reduce and recycle EPS packaging. The university developed a questionnaire asking labs to provide a list of products they receive in EPS packaging. The school's supply management department then negotiates with vendors to offer better packaging alternatives.

The university also worked to provide convenient EPS recycling on campus. However, before a building can launch an EPS recycling program, they must complete the questionnaire and participate in efforts to reduce EPS packaging.

Strategies for Public Agencies to Reduce or Eliminate Plastic Foam Packaging

Public agencies can implement some or all of the following steps to minimize the amount of expanded polystyrene (EPS) and other foam plastics that are utilized by their vendors to package products delivered to their facilities.

- 1. Require packaging materials to be recyclable in the jurisdiction's recycling program.** Although plastic foam packaging is technically recyclable, recycling options are limited in most areas, if they exist at all. Furthermore, most residential and commercial recycling programs do not accept plastic foam packaging. Requiring or giving preference to vendors whose packaging is readily recyclable (defined as recyclable in the municipality's residential and commercial recycling programs) discourages the use of plastic foam recycling.

Many delivery companies use sealed polyethylene (plastic #2 or #4) pouches filled with air instead of polystyrene packing peanuts. Some recycling programs accept this material, although plastic may not be the preferred alternative. Another option is shredded or crumpled newspaper or loose fill **paper packing “peanuts”** (e.g., PaperNuts.com) made from kraft paper.



“PaperNuts”—a paper alternative to foam peanuts or plastic pillows

- 2. Require postconsumer recycled content.** Plastic foam packaging does not generally contain postconsumer recycled content. Giving consideration to packaging material with recycled content puts plastic foam packaging at a disadvantage. However, some vendors have been voluntarily using packaging with recycled content, including foam. In 2010, Hewlett-Packard launched a new packaging strategy that involved replacing plastic cushions with recycled and recyclable molded pulp and switching to expanded polystyrene or expanded polyethylene foam cushions that contain 100 percent recycled content. Given that markets for expanded foam are generally unavailable this option is not usually preferable.
- 3. Require reusable materials.** Many vendors are now offering reusable shipping containers that are returned to vendors for reuse. For example, Office Depot employs reusable totes – made with 60 percent postconsumer recycled plastic – as part of its GreenerOffice Delivery Service. Specifying reusable packaging materials in commodity contracts not only reduces the use of plastic foam packaging, but reduces packaging waste overall.
- 4. Require or allow commercially compostable materials.** Compostable alternatives to traditional plastic foam packaging, including plant-based foams made from polylactic acid (PLA) or potato or corn starch (plant starch materials, or PSM) can be considered as an alternative. The PLA- and plant starch-based foams compost under certain conditions. Giving preference to compostable foam packaging is another way to limit the use of EPS and other types of petroleum-based plastic foam packaging. However, selecting this option must be done with in consultation with local commercial composting facilities as on-the-ground feedback about these products’ compostability varies. At a minimum, acceptable packaging materials should be certified as “commercially compostable” (see definition below). Many commercially compostable products and packaging materials are certified by the Biodegradable Products Institute (BPI). In addition, it is important for plant-based packaging be “Biobased Certified” by the US Department of Agriculture (USDA), which means it has at least a minimum amount of plant-based material.

One new product to watch is called EcoCradle Packaging, which is designed to replace polystyrene and other types of plastic foam packaging materials. It is a USDA-Certified Biobased product made from mushrooms and inedible plant fiber such as rice hulls. "Agricultural waste is inoculated with fungal spores and, over 5 days, fills a shape mold with a natural chitinous materials, which is then dried to kill any spores and halt further growth," according to the manufacturer, Ecovative Design, which claims that this product line is "compostable" in both commercial facilities and under backyard conditions according to laboratory tests based on the ASTM D6400 test method (although the manufacturer is in the process of becoming certified by the Biodegradable Products Institute (BPI). The manufacturer also states that it costs about the same as polystyrene



Mushroom-based packaging material from www.ecovatedesign.com that could help replace plastic foam products.

foam packaging but weighs about twice as much, although it expects the weight to decrease in future formulations. Like plastic foam protective packaging, it is currently available in both pre-formed and custom shapes. While its availability is currently limited to custom orders, it is expected to be more widely available available in the near future. Visit www.ecovatedesign.com.

5. **Require bulk orders/reduced deliveries.** Buying in bulk and/or reducing the number of scheduled deliveries can be effective packaging reduction strategies. Not only do they reduce the quantity of plastic foam and other types of packaging, they lower costs and environmental impacts from multiple shipments .
6. **Require takeback programs.** A packaging takeback program puts the responsibility of package disposal back on the vendor. Takeback programs encourage vendors to cut costs by reducing packaging and choosing packaging options that can be easily recycled or reused. Because plastic foam packaging is difficult to recycle and reuse, it's not an ideal candidate to collect through takeback programs. Conversely, reusable packaging, which has residual value, is ideally suited for product takeback programs assuming that municipal warehouses receiving shipments have sufficient storage capacity. Seattle's reusable shipping cart initiative is an example of a successful packaging takeback program.

Communicate Requirements to Vendors and Follow Up

1. This can be done in several ways (**examples of each below can be found on www.responsiblepurchasing.org**):
 - a. Address packaging in your sustainable purchasing policy or zero waste plan.
 - b. Include packaging specifications in product requirements
 - c. Use a questionnaire about the company's packaging and evaluate that as part of the bid process.* Questions can include:
 1. Has your company developed a sustainable packaging policy? If so, please present a copy.
 2. List the packaging materials you plan to use to deliver products on this contract.
 3. What is the percent of pre- and post-consumer recycled content in your packaging materials?
 4. Are any of the packaging materials used in this contract reusable?
 5. Is your packaging certified by the Forest Stewardship Council as sustainably managed and harvested?
 6. Does your company offer a packaging takeback program? If so, please describe.
 7. Please list any additional environmental attributes of your packaging materials.
 8. Are any of the packaging materials offered in this contract made of polystyrene or other types of plastic foam?
 9. Are any of the packaging materials offered in this contract certified as biobased by USDA or commercially compostable?
 - d. Survey* warehouse staff and those who receive and unpack shipped goods at individual sites to identify agency sources of plastic foam packaging and work directly with the vendors who are using that material to seek alternatives.

- e. Notify all vendors of the jurisdiction's requirements prohibiting plastic foam packaging via letter,* which can also discuss your Environmentally Preferable Purchasing policies and procedures.

2. Revise Purchasing Terms and Conditions

Revise Purchasing Terms and Conditions* for agency acquisitions to prohibit EPS and other plastic foam packaging and establish liquidated damages if prohibited packaging is used. Liquidated damages can include a percent or total of the amount purchased to establish enforceable standards for packaging requirements. Terms and Conditions can allow designated staff to authorize exemptions. For example, this excerpt from the City of Palo Alto's Terms and Conditions referencing environmentally preferred purchasing requirements states that:

- *All secondary and shipping (tertiary) packaging generated shall first be minimized/reduced to the maximum extent feasible while protecting the product shipped.*
- *All paper packaging must be Forest Stewardship Council (FSC) Certified.*
- *Expanded plastics (e.g., foam or cushion blocks, trays, packing "peanuts"), such as but not limited to polystyrene (aka Styrofoam™), polypropylene, or polyurethane shall not be used as secondary or tertiary/shipping packaging. Liquidated damages of \$235 or a minimum of \$50 if the combined product and shipping cost is \$235 or less will be assessed by City for failure to adhere to this requirement.*
- *All secondary and shipping packaging shall be recyclable in the City's recycling program. A complete list of items accepted for recycling are found at www.zerowastepaloalto.org or by calling (650) 496-5910. If any portion is received that does not meet this requirement, liquidated damages of \$235 or a minimum of \$50 if the combined product and shipping cost is \$235 or less will be assessed by City for failure to adhere to this requirement.*
- *If approved by the City's Environmental Services Division and Administrative Services Department, a packaging takeback program may be proposed by the vendor or manufacturer for City use if the service is provided at no additional cost to the City. Staff will review proposed takeback programs to ensure the program meets City needs.*
- *If approved by the City's Environmental Services Division, a packaging requirement may be waived if no other viable alternative exists and not using the current packaging presents the likelihood of product damage.*
- *Reusable/returnable pallets shall be used and taken back by the contractor, at no additional cost to the City. Contractor shall provide documentation upon request ensuring reuse of pallets and/or recycling of broken pallets. Liquidated damages of \$262 or a minimum of \$50 if the combined product and shipping cost is \$262 or less will be assessed by City for failure to adhere to this requirement.*

3. Track and monitor

Establish points of contact within each agency (e.g., those who unbox shipped goods) to monitor when EPS and other undesirable packaging is received and ask them to communicate with program managers responsible for EPS reduction so that follow-up on noncompliance can occur.

4. Support and establish regional efforts

Support national and regional efforts to apply pressure on vendors, such as collaborative purchasing requirements and support of nonprofit organizations that are promoting producer

responsibility for packaging such as the California Product Stewardship Council (CPSC), the Product Stewardship Institute (PSI)—see Resources at end of this document.

Case Study: Plastic Foam Packaging and Hewlett-Packard

A summary of the HP's sustainability approach to plastic foam materials

Initiatives to Reduce Plastic Foam Packaging

Over the last 10 years, Hewlett-Packard (HP) has redesigned the packaging used to ship its electronic equipment, accessories and other products in ways that have moved the company towards its environmental sustainability goals. These initiatives have reduced the amount of packaging material shipped with each product, used more easily recyclable materials, and eliminated several chemicals of concern. As part of these efforts, the company has reduced its use of EPS and other plastic foam packaging for many product lines, including printers, notebooks, consumer desktop computers, and some smaller displays. The company has reduced plastic foam mostly by switching to packaging designs that utilize molded pulp (made from recycled paper) to protect products. However, in some cases, the company has also used bulk delivery methods to reduce the amount of packaging material needed. A complete timeline of HP's plastic foam reduction initiatives can be found in various An overview of HP's current environmental strategy for packaging can be found at <http://www.hp.com/hpinfo/globalcitizenship/environment/packaging.html>.

Currently, the company's packaging designers are focused largely on reducing the weight and size of product packaging and increasing the recycled content of packaging materials.

The company's 2011 sustainability goals for packaging are as follows:

For inkjet supplies

- *Achieve 35% minimum recycled content for corrugate, globally*
- *Achieve 80% minimum recycled content for paperboard, globally*

For desktop and notebook PC products

- *Reduce the ratio of total packaging weight to total packaged product weight to 28%*
- *Achieve 35% minimum recycled content for corrugate, globally*

Definitions

1. **"Foam plastic"** is a category of rigid or spongy plastic packaging materials that are extruded or molded into blocks, peanuts or other shapes. This category of packaging materials includes expanded polystyrene (EPS), polyurethane and polypropylene.

"Expanded Polystyrene" (EPS) is a thermoplastic petroleum product made of styrene and processed by a number of techniques including molding, form molding and extrusion-blow molding (extruded foam polystyrene) and made into rigid packaging materials such as "peanuts" or blocks. It is used widely for food service applications due to its insulating ability and as a general packaging material due to its ability to protect products from damage during transport and its light weight nature. While EPS is technically recyclable, it is rarely accepted in commercial or residential recycling programs because it is costly and bulky to transport. Polystyrene foam packaging debris is a major component of the non-biodegradable plastic waste that is found in the ocean and other waterways, which threatens the health and safety of fish and other wildlife.

2.

3. **“Reusable shipping containers”** including pallets, boxes and crates that can be returned to the vendor or manufacturer at no cost to the City;
4. **“Recyclable shipping materials”** A packaging material is considered “recyclable” if it is acceptable in the receiving jurisdiction’s recycling program. The City of Palo Alto’s recycling program will accept paper, molded paper and unwaxed corrugated cardboard. Film plastics are also accepted in the City’s recycling program but vendors are discouraged (but not prohibited) from using them. For a full list of materials that are accepted and not accepted in the City of Palo Alto’s commercial and institutional recycling program, see <http://greenwaste.com>.

5. **“Compostable packaging materials”**

Increasingly, environmentally preferable foam plastics are entering the market that are made with plant-starch, mushrooms and other biobased materials, that sometimes can be composted at the end-of-their useful life. A bio-based plastic packaging material is considered “compostable” if it:



- a) Is certified by the Biodegradable Products Institute (BPI) and has received the BPI Compostable Logo or another acceptable certifying body. Biodegradable packaging materials could include “biobased” peanuts and plastics or waxed cardboard.

<http://www.bpiworld.org/BPI-Public/Approved/4.html>

- b) Meets one of the following ASTM standards:

- D6400 (for compostable plastics) or
- ASTM D6868 (for compostable paper with a bioplastic liner or coating).
- Equivalent commercial compostability standards include: ISO 17099, DIN EN 13432 or AS 4376.

- c) Other acceptable eco-labels, which demonstrate that a biobased plastic packaging material is certified as “commercially compostable” include:

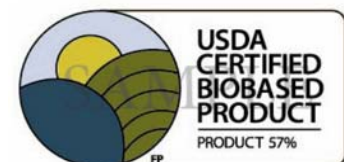
- Green Seal GS-35 (USA)
- AIB Vincotte Inter (Belgium)
- Din Certco (European Union)
- Australian Environmental Labeling Association
- Japan Bioplastics Association



Check with local composting facilities to ensure acceptance of these materials.

6. Biobased: According to the US Department of Agriculture (USDA) biobased products are commercial or industrial products (other than food or feed) that are composed in whole, or in significant part, of biological constituents, renewable agricultural materials (including plant, animal, and marine materials), or forestry materials. Biobased content is the percentage of carbon content that is derived from renewable agricultural materials.

The USDA has established and proposed minimum biobased-content standards for many product categories, including several types of packaging. A product or package must meet or exceed the minimum biobased content



percentage in its given category in order to use the Certified Biobased Product label. For example, USDA has established a minimum biobased- content standard of 82% for non-durable thermal shipping containers, which includes “insulated containers designed for shipping temperature-sensitive materials. These are thermal shipping containers that are designed to be used once.” It has proposed the same minimum biobased content standard for other types of packaging materials, which includes “pre-formed and molded materials that are used to hold package contents in place during shipping.” For more information about the USDA’s BioPreferred Program, including a list of Certified Biobased Products, go to http://www.biopreferred.gov/Biobased_Products.aspx.

Additional Resources

California Product Stewardship Council (CPSC), which works to promote producer responsibility for products and packaging waste, has a webpage that describes packaging reduction strategies, policies and other resources, which can be accessed at <http://www.calpsc.org/products/packaging.html>.

City of San Diego, California, *Reducing the Use of Expanded Polystyrene and Bottled Water Products*; Presentation to the Natural Resources and Culture Committee, May 18, 2011; http://docs.sandiego.gov/councilcomm_agendas_attach/2011/NRC_110518_6ppt.pdf. See also letter from several nonprofit organizations to Mayor Jerry Sanders of San Diego Re: Request for Executive Policy Restricting Bottled Water and Plastic Foam at City Facilities and Committed Events, May 6, 2011; http://docs.sandiego.gov/councilcomm_agendas_attach/2011/NRC_110518_6c.pdf.

Hewlett-Packard provides detailed information on many of its environmental sustainability initiatives relating to its product and packaging in its *Global Citizenship Reports*, which can be accessed at http://www.hp.com/hpinfo/globalcitizenship/environment/environmental_sustainability.html.

Product Stewardship Institute (PSI) is a nonprofit membership organization that promotes sustainable product and packaging design changes by mediating dialogues among manufacturers, public agencies and other stakeholders. For more information, go to <http://productstewardship.us/index.cfm> and click on the projects link for more information about PSI’s package-related initiatives and resources.

Sustainable Packaging Coalition is an industry working group that promotes sustainable packaging systems through supply chain collaborations and outreach. The SPC offers a wide range of resources, including *Design Guidelines for Sustainable Packaging*, targeted primarily at product and packaging manufacturers, which can be accessed at <https://www.sustainablepackaging.org/resources/default.aspx>.

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