PS: THINK RECYCLING

How to Implement and Administer a Successful Polystyrene Recycling Program

THINKING CLEAN.
ACTING GREEN.

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RECYCLE EXPANDED POLYSTYRENE

Recycling is not always easy. But many of the nation's businesses and organizations recycle expanded polystyrene (EPS) packaging products with success. EPS recycling programs vary from organization to organization but all demonstrate a commitment to the environment and to sound business practices.

The basic goal of PS: Think Recycling is to provide a realistic look at EPS recycling and solutions. The decision to implement an EPS recycling program should be based on sound economic and environmental considerations. If you decide that an EPS recycling program makes sense, this manual will help determine what form it should take, as well as offer specific guidelines to help the program run efficiently.

A dedicated, single-stream EPS recycling program is described in this manual, but the same steps can be used to incorporate EPS into an organization's existing recycling program. The four basic steps critical to implementing a successful polystyrene recycling program are:

- **Estimate the Amount of EPS**
- **Find a Recycler**
- **Design a Program**
- **Educate Participants**

UNDERSTAND EPS PACKAGING

Expanded polystyrene is a versatile, lightweight material that can be manufactured into a variety of products. EPS offers a high-performance yet economical way for a wide variety of items—from sensitive electronics to appliances to pharmaceuticals—to be safely delivered to market. Manufacturers rely on EPS packaging because of its ability to prevent or minimize product damage during transit and its excellent insulation properties required for food and medical shipments.

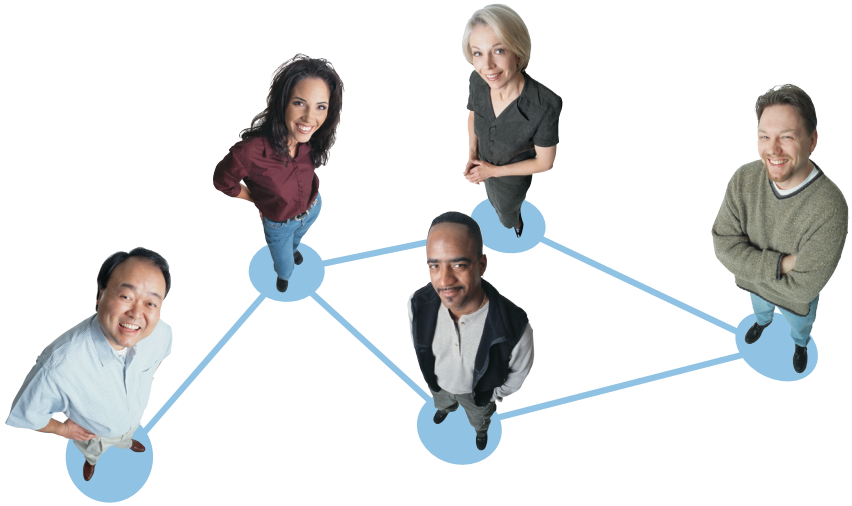
Yet EPS packaging, or any disposable packaging, will eventually become solid waste and have to be managed. There are a variety of disposal options for EPS—landfilling, waste-to-energy incineration and recycling—and each has both economic and environmental impacts. But all should be viewed as important elements of an integrated waste management system.

According to the U.S. Environmental Protection Agency, EPS packaging makes up less than 0.01 percent of the total municipal solid waste stream by weight.

EPS is an excellent fuel for waste-to-energy. It burns cleanly and efficiently with a high energy value, resulting in an end product of carbon dioxide, water vapor and trace amounts of inert ash. This makes it a valuable feed stock for waste-to-energy incinerators.

And EPS is recyclable. EPS packaging is being recycled at an ever-increasing rate. The 2006 Recycling Rate Report issued by the Alliance of Foam Packaging Recyclers (AFPR) shows over 56 million pounds of EPS were recycled that year, including 32 million pounds of post-consumer and 24.6 million pounds of post-industrial packaging. Post-consumer EPS recycling is increasing each year as more companies and communities develop recycling programs. This guide will help you determine if EPS recycling is right for your organization.

START AN EPS RECYCLING PROGRAM



The first step is determining who in your organization will manage the program. Select an EPS Recycling Coordinator or perhaps a planning team is needed. If a team is warranted, identify possible team members and designate a leader.

The recycling coordinator/team will need to:

- **Estimate the amount of EPS (perform a waste audit)**
- **Find an EPS recycler**
- **Procure recycling equipment (if needed)**
- **Establish material handling and storage procedures**
- **Train designated personnel**

Make sure that senior management is included in the decision-making process and continually kept informed of the program's progress. Involvement from the highest levels will assure ongoing commitment to the goals of the recycling program.

1

ESTIMATE THE AMOUNT OF EPS TO BE RECYCLED

Exactly how much EPS packaging does your organization have? To accurately estimate the amount of EPS to be recycled, conduct a waste audit to assess what types and how much EPS is being generated. A procurement audit will help identify what and how often items are purchased that use EPS packaging. Also, make sure to count only EPS (marked # 6) since other white plastic foam cannot be recycled with EPS.

What is a Waste Audit?

A waste audit is a method of estimating the total amount of EPS packaging discarded, the cost to dispose of it, and the amount that can be recycled or reused rather than discarded. A waste audit is not complicated but rather a simple and straightforward way to visually estimate what goes into the dumpster. A waste audit done before and after implementing an EPS packaging recycling program provides the means to document and monitor efforts.

How To Do an Audit

First examine waste disposal bills (or lease agreement) to determine the quantity and cost for disposal. Then determine how much EPS packaging your organization discards.

How does the organization receive EPS packaging? Is it a one-time occurrence such as the purchase of new computers? Or ongoing deliveries of component parts into a manufacturing facility? Or weekly deliveries of biomedical coolers?

How much EPS packaging is being discarded? Is it enough to fill a 12-foot dumpster each week? Or fill a 24- or 48-foot dumpster? Get the best possible estimate of the volume of EPS packaging.

Once the volume of EPS packaging is calculated and compared with the volume of trash disposed, it's time to find an EPS recycler and move toward setting up an EPS recycling program and eventually needing a smaller dumpster.

2

FIND AN EPS RECYCLER

It costs money to recycle any material, including EPS packaging. This must be figured into your budget. But in addition to disposal cost avoidance, various methods can be employed to minimize costs while maximizing the environmental contribution. Working with an EPS recycler will help make the most of the recycling program. The first step is finding a recycler for the EPS packaging. Selecting a recycler entails:

- **Identifying potential candidates**
- **Determining which recycler(s) fits your needs**
- **Soliciting bids for large volume EPS recycling**
- **Receiving bids and awarding the contract**

Identify Potential Candidates

A recycler is anyone who can feed EPS material into the recycling stream. It may be an independent recycling company, a city trash hauler or an EPS packaging manufacturer.

Talk with the local garbage company. Ask the EPS packaging supplier, since some product manufacturers provide recycling assistance as an added customer service. The Alliance of Foam Packaging Recyclers also maintains a national list of EPS recyclers; go to the AFPR Web site, www.epspackaging.org, for more information.

Before contacting a recycler, have figures about the volume of EPS: how much; how frequently it is available; material handling specifications. Discuss these details with several recyclers to find the best match for your organization's EPS recycling program.

Often recyclers will ask for a sample of the EPS packaging you have so they can test it for compatibility with their recycling equipment. Be sure to include all the different EPS packaging you have in the sample.

Recyclers accept EPS packaging in a variety of ways; it can be stacked, loose in bags, strapped in bundles, on a shrink-wrapped pallet, baled or densified. The recycler determines the manner that best contains the EPS for their system as well as provides cost-effective transportation.

The recycler must receive the EPS in a cost effective manner. Baling or densifying large volumes of EPS on site keeps the material cleaner and reduces transportation costs. A good rule in determining effective transportation is that 500-1,000 pounds of loose (or bagged) EPS packaging will fill a 48-foot truck trailer while the same truck can carry approximately 6,000- 18,000 pounds of baled EPS, depending on the type of baler used, and over 40,000 pounds of densified EPS.

Each recycler has very specific requirements for the EPS material it accepts for recycling. In discussion with the potential recycler, make sure to cover the material handling requirements and delivery options as well as volume.

Two main factors determine pricing: costs for transportation and for handling. Since EPS is lightweight, transportation cost is a major component of its recycling. Some recyclers offer transportation assistance. Material handling options may include recycling equipment procurement and/or leasing.

Transportation costs: Estimates for handling recyclables are usually figured on a per-pound basis, although they can also be calculated by the cubic yard. When considering transportation costs include:

- **Hauling between your facility and the recycler, including any on-site storage equipment, such as trailers, dumpsters, etc.**
- **Shipping to a reprocessing facility once collected materials have been compacted by the recycler.**

"We work closely with the organization to determine the best collection and transportation methods for their EPS. In some cases we provide equipment, offer incentives or transportation services. We try to find an efficient, cost effective system that works for the organization as well as for us."

Timbron International
Stockton, California

Handling costs: Recyclers can provide material handling suggestions and equipment recommendations based on their requirements. If baled or densified EPS is required, specific information will be available. Sometimes EPS can be baled in the same baler used for cardboard. If the EPS volume is large and consistent, the recycler may suggest using a densifier, a machine that compresses and/or melts EPS to form compact, easily transported blocks. Also consider:

- **Labor to collect and move materials**
- **Storage area**
- **Quality control, if needed**
- **Baling and compaction, including labor and equipment**
- **Disposal of contaminants**

Keep handling costs down and increase the value of the EPS by providing clean, contaminant-free material. The quality of the EPS is also important. It must be clean EPS packaging that is not contaminated by food, dirt, tape or paint or glued to cardboard or other plastics.

Agreement or Contract with Recycler

Once a recycler is selected, determine if a written contract is needed. For infrequent EPS recycling, a verbal agreement with the recycler is all that is necessary. For large, ongoing volumes of EPS, an organization may wish to have a written contract rather than a verbal agreement.

After identifying an EPS recycler, work with the recycler to develop a proposal that addresses the following areas:

- **Amount and location of recyclable material**
- **Method of collection**
- **Specific details about possible transportation assistance**
- **Payment to recycler for picking up/transporting EPS**
- **Payment to organization for recyclable EPS**
- **Recycled material volume report (if required)**

- **Pick-ups locations and times**
- **Contamination issues**
- **Time period of the contract**
- **Liability and property damage concerns**
- **Complaint resolution and corrective action**
- **Procedures to amend or terminate contract**
- **Cause for termination**

Most of these items are part of the normal bid specifications for solid waste disposal. But certain areas need special attention.

Reporting and billing: Request a monthly or quarterly report on the pounds of EPS collected if needed. Also, consider requesting detailed information regarding the frequency of pick-ups, total volume collected and any extra pick-ups required.

Contamination: Create a system for identifying and eliminating contamination problems. Eliminating contamination is important because materials that can't be recycled may be sent to the landfill. Some recyclers will charge for or return non-recyclable material.

Award the Contract

From the information and bids, select the recycler that offers the best combination of price, service and experience.

Before signing a contract, make an effort to find out the level of experience the recycler has and discuss in detail any areas of concern. This can help identify a responsible recycler at the beginning, making it unnecessary to replace the recycler when the contract ends.

Once the contract is signed, coordinate the program start date. Stay in close contact with the recycler during the early stages of the program and make periodic check-ups to ensure that things are running smoothly.

Recycle EPS in One Location or Organization-wide?

Economies of scale can affect the cost-effectiveness of recycling. Organization-wide programs offer opportunities to reduce costs through consolidated storage and more efficient hauling schedules. However, it often takes the initiative of a single location to demonstrate that recycling can work before an organization-wide program is considered.

If one location is recycling independently of other company locations, consider the following:

- **Keep corporate managers advised of the EPS recycling program and provide updates on its success, including the amount of EPS packaging diverted from the waste stream and any cost savings.**
- **If the organization regularly conducts meetings where managers gather to discuss significant issues, plan to include EPS recycling on the agenda.**
- **Draft a letter to each location outlining the important details and offering assistance in getting an EPS recycling program started in other locations.**

3

DESIGN A PROGRAM

Once the volume of EPS is determined and a recycler secured, the next step is to design an effective collection program. At this stage, the goal is to intercept EPS recyclables before they go into the waste stream. Keep in mind that the success of any program depends on quality control: the ability to separate high-quality recyclable EPS packaging that meets the recycler's specifications from the trash.

When designing a program, pay particular attention to:

- **Determining any equipment and storage needs**
- **Training personnel to separate EPS**

Equipment and Storage Needs

Collection areas for EPS packaging should be separate from other recyclables, kept clean and have easy access for loading. EPS can be stacked, bagged, baled or densified depending on the recycler's requirements. Increase the effectiveness of the EPS recycling program by making it as easy and convenient as possible to recycle.

Outside storage bins: If collected EPS awaiting pick-up by the recycler is stored outside, a suitable storage area is needed. It must be clean, dry and closed to outside elements since lightweight EPS can be blown about in windy areas. Wet, dirty EPS is not recyclable. Storage bins may be obtained from the recycler or design a method of containment, as long as it satisfies health and safety requirements. Place storage bins in a secured area that is convenient for the recycler.

Baling equipment: To maximize storage capacity, consider installing a small, on-site baler, or use an existing corrugated baler. If the volume of EPS is very large, a small densifier may be useful. Discuss equipment options with the selected recycler or go to the AFPR website, www.epspackaging.org, for a list of equipment suppliers.

Special Handling

Loose fill packaging ("packing peanuts"): If your organization receives packing peanuts, or EPS loose fill packaging, there is no need to recycle it. A national reuse program for polystyrene loose fill, the Peanut Hotline, provides a toll-free, 24-hour phone service that provides callers with the nearest location that accepts packing peanuts for reuse. These nationwide locations, primarily pack-and-ship stores or gift shops, use the returned loose fill. Call the Peanut Hotline at 1-800-828-2214 for local collection sites. If you have large quantities of packing peanuts, check with the local collection center before dropping off the material.

Modified EPS/fire retardant: Some EPS packaging, especially packaging entering the United States from Asia, has been treated with flame retardant chemicals. The flame retardant changes the recycling methods needed for EPS packaging. Some recyclers cannot accept fire retardant material. If you are unsure whether your EPS is fire retardant, send a sample to your recycler for testing. If the EPS packaging your organization receives is flame retardant material, go to the AFPR website, www.epspackaging.org, for a list of recyclers that can accept it.

ARCEL: ARCEL® packaging is also used to protect electronic items and is marked #6, the same as EPS packaging. ARCEL may be a minor component in an EPS collection stream. The similarity of the two materials makes it difficult to distinguish in small amounts and, in most cases, the material blends easily into the recycling system. Not every recycler can accept ARCEL for recycling but many can. If you have questions about recycling ARCEL packaging, contact AFPR or go to www.epspackaging.org for more information about ARCEL recyclers.

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EDUCATE PERSONNEL

Let employees know that the organization has started an EPS recycling program and how it will affect them. Provide simple information about keeping EPS packaging out of the garbage, keeping it clean and free of contamination.

The support and endorsement of an organization's management is essential to the viability of an EPS recycling program. Keep them informed on program operation, the amount of EPS recycled and any savings from reduced garbage collection fees.

Take every opportunity to communicate the successes of the program. Announce recycling results at all meetings, publish them in internal and external newsletters, and/or track them on a centrally located bulletin board.

Also, it is important to stay focused on the quality of EPS being collected to keep supplying a product that the recycler wants. Employees must make sure that EPS is kept separate and contaminated materials are omitted, leaving a clean, quality product that can—and will—be recycled.

5

ASSESS PROGRAM COSTS

The total cost of the EPS recycling program includes all costs incurred by the program, including any contracted price of collection and handling services by your recycler, any additional internal labor costs in the event personnel will be added to manage or implement the program, and collection and/or storage equipment purchased.

Factor in Waste Diversion Savings

When assessing overall program costs, bear in mind that by recycling EPS, it is diverted from the organization's waste stream. That means lower waste hauling costs. Be sure to consider the disposal costs saved when determining the costs of recycling.

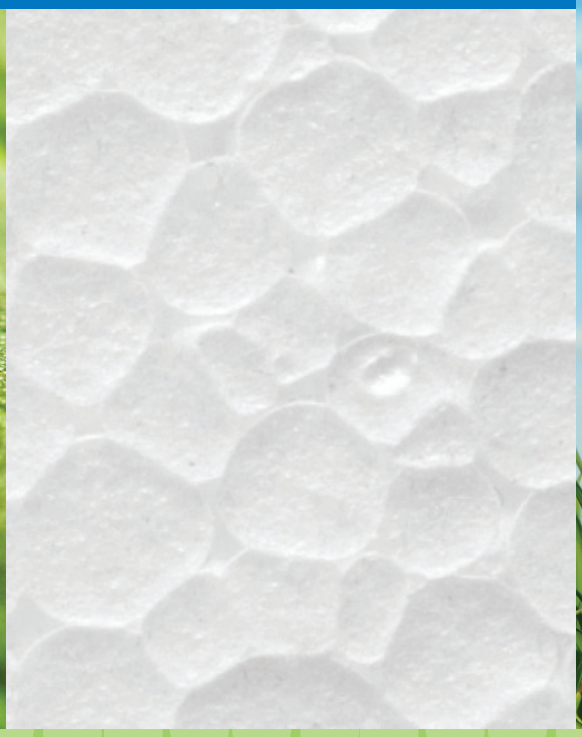
The waste diversion savings may or may not be large enough to offset the costs of recycling. That will depend on market conditions. But, again, savings are just one of the reasons organizations look to implement recycling programs. The extended environmental benefits of recycling have value that cannot be measured on a spreadsheet.

"We help our customers save money when they recycle. Separating the EPS packaging for recycling lowers their garbage hauling fees substantially and helps the environment at the same time."

Conigliaro Industries
Framingham, Massachusetts

A recycling program is not always easy. But it can reinforce the significance of environmental considerations for all employees—executive suite to warehouse floor—in a meaningful way.

We've outlined the things to consider when establishing a program to recycle EPS packaging. But we can't make the decision for your organization to establish an EPS recycling program. Only you can do that. If you believe that recycling EPS and other materials is the right thing to do, then you should be guided by that familiar saying: Practice what you preach.



For more information:

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