

## EARTH 911 Conversation about Expanded PolyStyrene

This article can be found at:

<http://www.earth911.com/home/family/recycling-mysteries-styrofoam/>

It's the eternal question: Can I recycle expanded polystyrene?

It's everywhere: It holds your food, secures items in packages, provides insulation in homes and it's even in your bike helmet. It's also known as plastic #6, which you've seen used in plastic cups and CD and DVD cases.

Fun fact: In 2006, the Alliance of Foam Packaging Recyclers reported that 56 million pounds of EPS were recycled that year alone. That's an astonishing amount considering that EPS is 98 percent air.

Here's the thing: Even if your community recycles plastic #6, it may not accept EPS. It's a similar case to the plastic bag conundrum, where different versions of plastics require separate recycling streams.

Because it's so lightweight, EPS takes up 0.01 percent of the total municipal solid waste stream by weight, but as you may have guessed, its volume is a greater problem than its weight. It takes up space in landfills and doesn't biodegrade. If you haven't recycled EPS before, here's how:



Packing peanuts are often the most difficult type of EPS to recycle. Keep it simple and save them for your next shipment! Photo: Achildgrowsinbrooklyn.com

### Methods of Recycling

Like we mentioned earlier, the most convenient method for consumers utilizes curbside recycling programs; however, due to transportation coordination and contamination rates, most communities do not have EPS recycling programs.

But don't despair, you have a number of options at your fingertips:

**Drop-off sites** – Check Earth911.com to find where you can find polystyrene recycling in your area. Make sure to call local sites beforehand to make sure EPS is accepted and in what form. If they do take EPS, most accept packing materials but not food or medical containers. Bring empty containers free of tape, labels, plastic film, etc. As you know, contaminants can ruin the recycling process.

**Mail-back** - If a drop-off site doesn't exist in your area, you can also use a mail-back program such as the Alliance of Foam Packaging Recyclers. Remember to remove all debris from the EPS before breaking it into smaller pieces that fit into a box for shipping.

**Reuse for loose fill** – What about packing peanuts? Their simplest reuse is in another package you need to ship. You can also donate them to UPS or other shipping stores, who will gladly reuse the material.

Not sure where to go? Call the automated, 24-hour Peanut Hot line at 800-828-2214 to find a site near your residence that will reuse them.

**Large volume** - Working with a recycling company for pick-up service is best if your business receives mass amounts of EPS. Company requirements for storage and equipment vary, but it's typical for storage containers to remain outdoors in a bin where EPS is kept clean, dry and unexposed to the elements. It is wise to check with the company to see how they accept EPS, whether it be stacked, bagged, bailed, condensed, etc.

**On-site (for industry)** – In the event that your business needs to routinely condense large pieces of EPS, look for devices from companies like RecycleTech or Styromelt™. For example, Styromelt™ is a device that uses thermal compaction to not only reduce the volume of EPS, but also to sterilize the briquette.

### **Advancing Technologies**

Biodegradable packing materials are definitely in style. Puffy Stuff produces a plant-based product that can be used as fertilizer on your lawn. It breaks down into inert proteins after coming in contact with water and is consumed by soil bacteria. Puffy Stuff claims its product is so natural, you can eat it (although we haven't tried it – yet!).

Also, scientists at Sony discovered that EPS completely dissolves when sprayed with limonene, a natural oil extracted from the skin of oranges or other citrus fruits. The EPS dissolves at room temperature and can be processed for reuse.

Because of the varied uses for EPS, recycling requirements are a little more complex than, say, paper and other plastics, but it is worth taking the time in order to keep this prevalent material in use and out of landfills.

Comments

March 10, 2009 at 7:32 am

That is a very good question regarding recycling. Recently, I've visited several recycling sites. I was surprised to find that in our area most of the recycling is done by a commercial company. The city brings the recycled materials into the recycling facility where the commercial company sorts the materials. I was also surprised to see that most of the stuff we put in our recycling bin ends up in the landfill. Recycling companies are a for profit organizations, they sort out the materials that they can sell to some one....metals, plastics, etc. It seems that we (the public) throw a lot of the stuff in our recycling bins that don't have any commercial value and therefore most of our recycled items end up in the landfill. The good news is that some of our garbage is being recycled.

Max  
ensobottles.com

Eric Wood says

March 10, 2009 at 12:23 pm

It is important for folks to check out what is happening with the items they recycle. Call the entities that collect it, whether it is government or private. Track down what happens. Of course, the more items we purchase that have recycled materials in them, the greater the need for materials to recycle, so it becomes more profitable to use recycled material.

<http://www.goinggreenaccidently.blogspot.com>



Hao says

March 11, 2009 at 11:07 am

Great idea on packing peanuts! I am not sure it's wise or eco friendly for those in the rural/suburb area where one needs to drive to give the packing peanuts back at a UPS store. For those living in a city, especially New York City, there is usually a UPS, MailBox etc, Kinko/Fedex, Staples in a 2-4 blocks radius. You should ALWAYS bring packing peanuts back to them. I've given mine to my local UPS stores, they always take them back with a smile. Use the time to get some exercise by bringing the packing peanuts back. Some will also take bubble wrap. Just call or ask them. For those living in hi rise apt in NYC, walking down the stair is also a great exercise not to mention saving energy on the elevator.



Al says

March 11, 2009 at 2:03 pm

okay. I understand that consumers need to recycle. But how about companies ?? Shouldnt they take the initiative? What about major companies using Puffy stuff? Especially when delivering computer hardware, pottery or other such items for shipping?

I understand the individual has to do their part. Some articles mention that if we cant recycle it we shouldnt use it. Not practical. So you dont go buying that pc via internet or anything?

No article mentions any of this. Its always up to the individual. I think this should all be done on a corporate level since its pumped out to the public in large volumes. Cut it off at the source!

[Samhainaz@yahoo.com](mailto:Samhainaz@yahoo.com)



Ivana says

March 11, 2009 at 8:18 pm

I never though of the idea of being able to recycle it.  
I was also told never to put it in the recycling bin at school.



Ann says

March 12, 2009 at 9:03 am

If someone offers me coffee in a styrofoam cup, I politely decline: “No thanks, drinking coffee that touches styro is gross!” If I’m going out to dinner and anticipate leftovers, I bring my own container, which fits just fine in my purse. If I forget, I request that the leftovers be wrapped in foil – not a great solution, but better than triggering the production of yet another foam clamshell by pulling one off the stack. EVERYBODY needs to simply avoid this stuff – like the plague! It’s one of those items that belongs in the “REDUCE” part of the 3 R’s...reduce 1st, reuse if you end up with it, recycle when and where you can. It’s not biodegradable and, as you probably just read, it is difficult to recycle, and therefore, recycling opportunities are few and far between. DO return you packing peanuts to local UPS or other shippers. Keep fighting the “good fight” and we’ll change our consumptive ways. I promote recycling in a South Dakota city. For good ideas and information, go to <http://www.rcgov.org> and find the Dept. of Public Works – Solid Waste Division.



Cheryl says

March 12, 2009 at 2:42 pm

Thank you Ms. Seaver for this eye-opening article.

Just to let you all know, Puffy Stuff is constantly working to develop new products from our great 100% biodegradable material. We are also working hard to get large corporations to make the changes necessary at their level. It’s very difficult because we are battling big oil. Yes, it takes a lot of oil to manufacture styrofoam and polystyrene. The change needs to start with you the customers. If you demand that the companies you buy from use green products, they will get the message. A good example of this is Whole Foods. Their customers demanded it, now the change has been made. So make your voices heard. We at Puffy Stuff will continue our mission of eradicating single-use foams from our oceans and landfills.

An interesting statistic: Manufacturers of polystyrene and styrofoam make bold claims that they only consume 2% of landfills. This is based of weight. By volume it’s over 30% ! This statistic was my sole purpose for starting Puffy Stuff.

Refuse to buy it and refuse to buy from those who use it.

Thank you all for your great comments!

Cheryl Riddle  
CEO- Puffy Stuff



Kristi Michels says

March 13, 2009 at 11:11 am

Learn more about the Solid Waste Authority of Central Ohio and our exhibit, "My House" at the Columbus Zoo and Aquarium at the above URL. The house is constructed of recycled polystyrene lunch trays collected from approximately 50 local elementary schools. The product called Rastra is made from recycled polystyrene and cement. Learn more at: <http://www.rastra.com/>



Larry Lutz says

March 16, 2009 at 12:09 pm

I thought you might find it interesting the the Dallas paper had a story today on this subject; The themes are familiar with the local details for this audience. It's on the dallasnews.com website here

[http://www.dallasnews.com/sharedcontent/dws/news/city/dallas/storiesDN-styrofoam\\_16met.ART0.State.Edition2.4a78db5.html](http://www.dallasnews.com/sharedcontent/dws/news/city/dallas/storiesDN-styrofoam_16met.ART0.State.Edition2.4a78db5.html)



George Dreckmann says

March 16, 2009 at 1:27 pm

Styrofoam recycling is very problematical. Is it really worth the carbon to ship this light weight material hundreds of miles for recycling? Generally, I think not. Local reuse of packing materials by mailing firms is a good option. As is having a local company that can recycle the stuff. We have a local mail order firm that takes packing "chunks" and cuts it into peanuts for packing which is a good reuse. But, it is not practical for a municipal recycling program to take it at the curb (imagine thousands of peanuts floating in the air at a processing center or flying off the back of a truck). There is also the issue that most recyclers or reuse options do not want food or beverage Styrofoam. Kudos to Puffy Stuff and thanks to Cheryl for her great comment and to Kasen for good ideas on individual action.



Caroline says

March 18, 2009 at 2:38 pm

How long does it take for a piece of styrofoam to decompose? I have searched the internet and found results varying from 50 years to 1 million years.



GreenvsGreedy says

March 20, 2009 at 6:03 am

Cheryl/Puffy Stuff

“An interesting statistic: Manufacturers of polystyrene and styrofoam make bold claims that they only consume 2% of landfills. This is based of weight. By volume it’s over 30% !”

I will remember that statistic! Thanks

GreenvsGreedy

<http://greenvsgreedy.blogspot.com/>



Myrl Trimble says

March 28, 2009 at 9:39 am

Publix stores in Macon, GA have been collecting styrofoam for years. I asked once if the styrofoam used in big boxes was also acceptable and they said yes. I wash all foam trays that are under many foods at the grocery store and when I get a big bag in my closet it’s time for a trip to Publix. I know ofo noone else who takes it here.



Bob Haddock says

April 19, 2009 at 8:35 pm

Packing styrofoam IS recycleable — FOOD styrofoam is NOT. I put my food, drink, and “trays” in my shredder. I make sure they have been cleaned as throughly as possible. I mix in used paper coffee filters, news paper and office paper and put it in the garden. The paper decomposes and the little styrofoam pieces aerate the soil.

The styrofoam “peanuts” can be used in the bottoms of plant containers, to aerate and use less soil, but may have to water more often.

Happy Trails



Spinmaker says

April 27, 2009 at 12:27 pm

Capturing enough material with economic value is the challenge. It is reasonable to recycle styrofoam EPS with cardboard as the two are often together and logically can be set-out together for curbside collection. However, if the EPS is separated cost efficiently, how is the dissolved EPS now with the limonene oil recycled competitively with virgin Poly styrene?



Wallace 'J.' Nichols says

May 15, 2009 at 11:45 pm

Just avoid using plastic and styrofoam whenever possible...it's not that hard.



Princess Ezeuzoh-Ngwu says

June 18, 2009 at 5:51 am

Thanks Cheryl for good efforts. I was told that if you dissolve EPS with gasoline(PMS) you will get adhesive of fairly good quality. You could try this and see how it goes tell me the result pls.  
asso4wasterecovery@yahoo.com



Jim says

July 23, 2009 at 6:53 pm

Another alternative to reusing styrofoam is in your garden. Most potting soil comes with those white little bits which is actually either styrofoam or a similar component. It adds aeration to the soil, helping plants grow. You can chop, cut, or crumble bits of foam and add them to the soil yourself. Since your styrofoam will most likely end up in the ground at a landfill, why not at least put it in your backyard to help plants grow?

Also, many landfill facilities have free tours. I visited a local one that took us through the whole gamut of the trash being brought in and filtered to various locations within the site for reuse/recycle or disposal via incinerator or underground. It is quite an education on what happens with our trash. Most

people don't give it a second thought other than what day they have to take their trashcans to the curb for pickup.



Rich says

August 26, 2009 at 8:20 am

In my area, the local coffeeshops (Dunkin Donuts) have a tendency to place a plastic cup of iced-coffee inside a styrofoam cup to prevent wet hands when the plastic cup "sweats"! This is a ridiculous practice. Some places do it automatically (they're under pressure to serve their customers quickly).



Cheryl says

August 26, 2009 at 6:50 pm

I got bit by the recycling bug bigtime about 2 years ago. I researched where I could recycle foam, and found a place locally in Central NJ that accepts large block, similar to what you'd get from computers, etc. This totally came in handy when we remodeled our kitchen this year and all of the cabinets were shipped with some type of foam. My entire Volvo was crammed with foam, but it was worth it.



laura rodriguez says

September 1, 2009 at 9:47 pm

Casen et. al.,

I'm an elementary school teacher. Last year I noticed the styrofoam trays that were being wasted (sent to landfill) from our cafeteria, and started a school recycling program for our polystyrene food trays. My district has tried similar programs with cardboard trays, but the local recycling center backed out because the kids can't get the card board clean enough. A number of school's (and many businesses) currently send cardboard to landfill because they think it is more ecofriendly because it is biodegradable. (sp?)

Anyway, as a result of our tray recycling we were able to cancel a day of trash pickup, and reduce our school's refuse output by 20%. The trays we recycle can be made into; CD cases, video cases, computer cases, picture frames, plastic lumber, computer equipment, insulation, agricultural trays/containers, etc. The widely held assumption currently is that polystyrene fills landfills forever, though actually it is only a "pre-step" on the way to other longterm use products like the ones above. Polystyrene only fills landfills because people don't recycle it into the other plastic products that they accept as necessary. According to my research since the onset of our program, styrofoam is less wasteful in terms of energy, and water usage the production/recycling processes as compared to cardboard products. . . . and I've also heard

that fewer harmful emissions are produced in the production/recycling and transport processes compared to cardboard alternatives.

When we started, all we knew is that we could get the trays clean, and that we didn't want to send them to landfill.

Overall, at my school, since last January, we've been able to cut down our contributions to used landfill space by quite a bit, and we've also saved our district 20% of our refuse bill. We plan to put back another 20% over the course of the next 2 months through other processes.

It seems so simple. Is there something I'm overlooking? Please send me any information you have about polystyrene that I am unaware of.

I think most consumers would participate in any recycling program offered by businesses (fast food etc.), and if elementary students can cut refuse by 20% in 4 or so months, would similar programs be helpful on a broader basis? Is styrofoam getting an old fashioned "bad rap"? Would it be reasonable to see it a pre-step in a longer term stream of products. Maybe the time has come for us to re-think a few things, or educate people about green practices and the larger green picture.

Please help me out by sending me any information you have about polystyrene (#6) that I am unaware of.

Thanks,  
Irods818@comcast.net



Manny says

September 3, 2009 at 1:17 pm

Styrofoam peanuts are no problem. Any mailing business will take them. The problem is what to do with formed styrofoam that is used to package electronics and other merchandise. Here, in Santa Rosa, CA, it goes into the landfill. I looked on earth911 for a recycling place, and it came up with nothing. I don't know what distance earth911 searches. If I can find a place as much as 100 miles or even more, if it's a place I might pass on some trip, I can save the styrofoam and drop it off on that trip. Any help?



Environmental Stewardship says

September 14, 2009 at 6:49 pm

Manny et. al.,

If you want to drop off the foam packaging, foam food service products (used cups, plates, hinge trays), school lunch trays, foam egg cartons, meat trays, etc., Dart Container offers several polystyrene foam

drop off locations that are open to the public (including one location less than 100 miles from Santa Rosa in Lodi, CA).

They also offer foam recycling programs to restaurants and other food service operators that would like to be more environmentally responsible with their foam foodservice products.

Here is the web address for more information: <http://www.dart.biz/web/enviro.nsf/pages/enrecy.html>

Finally, did you know that paper cups are lined with plastic and according to Starbucks own website their paper hot cups "cannot be recycled in many paper recycling systems because of their plastic liner..." (<http://www.starbucks.com/SHAREDPLANET/environmentalInternal.aspx?story=paperCups>)

At least foam cups can be recycled and it sounds like Dart is offering a viable option to the food service industry.



ZaCloud says

October 15, 2009 at 2:46 am

Washable, reusable plastic dishes are better than using styrofoam dishes or carry-out cases. Though glass or ceramic would be best of course, but plastic is less breakable. The more corn-based and plant-based plastics we get in use though, the better; chemical based plastics leech chemicals.

The process of creating polystyrene uses benzene, which is a known and proven carcinogen.

[http://en.wikipedia.org/wiki/Polystyrene#Health\\_and\\_fire\\_hazards](http://en.wikipedia.org/wiki/Polystyrene#Health_and_fire_hazards) And it's been proven that when styrofoam is heated or broken, it releases the benzene into the surrounding air, or the food or drink it is in contact with. This is why I would rather NOT use it in potting soil (I dig up soil from the woods instead of buying it, or use my own compost), and try NOT to use it to carry food or coffee.

While I applaud folks for reusing it, keep the chemicals in mind when you make your decisions. It's ridiculous what the EPA and FDA and such allow with known harmful substances. Can't place trust in all that they deem "safe".



Marji says

October 19, 2009 at 12:39 pm

My son runs a small fish business and makes very little money. He relies on the medical and food service styrofoam shipping boxes he can scrounge to make any profit at all. He is constantly on the lookout for them. If anyone wants to help recycle these boxes and has coolers, feel free to email. Usually the people who get these fish also sell or trade fish and will then reuse the carton again. Since the fish are bagged, there is no harm to the fish by reusing the cartons. Now that energy is being used to crush and reform all the styrofoam boxes, we are having trouble getting them, even though we can safely reuse them with no additional expended energy (other than our own in getting them and peeling the labels off). A better way to recycle these containers is to reuse them in the shape they are in before recycling them. I've

seen piles of brand new containers that have been sent to recycling that we can no longer get. They can easily be reused by many industries without being crushed and reformed. Its become a racket. No one sells used styrofoam shipping boxes.



Sunny says

December 8, 2009 at 8:56 am

hi Marji,

I am writing from China,we are a PS frame factory, EPS( styrofoam) is our production material, we are looking to purchase them all over the world.

Styrofoam fish box is one big source for us,we do want to buy it, but they need to be densified by a densifier. We have started with many others fish companies for years.

If have any interests in selling us the fish box, email me pls: sunnyzhu@intco.com.cn

Thank you

Sunny



joanne says

January 29, 2010 at 12:57 pm

Because of Dunkin Donuts policies such as these and their failure to convert to paper instead of styrofoam I haven't been to a D D in years. We speak of Reuse, Recycle and Reduce. I have one that should come before all and that is to Refuse. I too always carry a to-go container into restaurants and believe that if a company offers their meat in a styrofoam #6 tray it is their responsibility to take it back and recycle it. It is time that corporations take some responsibility. I'm thinking of stomping into our local Hannaford or Price Chopper Supermarket and just dumping out all of the trays I've been saving. I'm still working up the nerve.

Onward!



eishimachinery says

February 21, 2010 at 8:41 pm

That Peanuts way is not working good because these days, it hard to find the material.

Also recycling the styrofoam have one big work is for how to clean it.

For instance, I am now want to recycle the blocks which was used for roof panel between the two floor.

The block is mixed with cement and eps.  
How can I separate them and make the right way to recycle them?  
Any good idea?



irene king says

August 27, 2010 at 3:20 pm

I was wondering what products the eps is recycled into. Can they heat and recompress it into another product like for example wall insulation sheets? Someone once said it can be ground up and put into some sort of roofcoating . Irene...



George says

September 12, 2010 at 10:36 am

We have started collecting packing peanuts at work and one of the employees that lives near a UPS store drops them off at the weekend. This certainly helps a little but I have noticed that many delivery companies have stopped using packing peanuts and instead use air filled plastic bags (polyethylene). These seems to be much better as they require a lot less plastic in the first place and can be easily taken to the local supermarket and dropped in the plastic bag recycling collection there so there are far more options in the local area for recycling them.

There is no excuse for businesses to use disposable polystyrene trays and cups. What is so hard about putting drinks and food in reusable cups and plates and using a dish washer. Stopping the stupidity of single use and then trash it culture is the real key to cutting waste. Recycling is good but reuse is much much better.



jk says

September 19, 2010 at 12:57 pm

the easiest and most convenient way is to bring it to a neighborhood "mail boxes etc" type outfit. it just cuts down the amount of peanuts they would normally have to order to fulfill customer requirements. haven't tried it, but if you have a neighborhood industrial park where you see daily ups/fedex shipments going out, their shipping department might also welcome just adding it to their bin.



Al says

September 22, 2010 at 1:49 pm

Thank you Kasen for posting this article and thank you so much Cheryl for posting a response to my question earlier in the year. It was really helpful.

For those people who are unable to recycle the styrofoam, boxes, bags etc. There are groups that try to keep things out of the landfill its free and people really do want these things and keep reusing these items.

I'm sure people are aware of this but just in case <http://www.freecycle.org> is one of them. People who are moving are the biggest users ive seen on this site.



Sarah says

February 8, 2011 at 3:58 pm

Almost every day I see dozens of EPS cups and plates thrown away. Is there any way to practically clean and recycle all this? I could collect large quantities if there is.



2groggy says

February 11, 2011 at 9:07 pm

Does anyone know of a way to take shredded or crumbled EPS and re-bond it into another rigid shape without a huge investment in industrial equipment. Maybe a heat gun, spray adhesive or something like that.

Given that there is so much used EPS from packaging, it would be better to use the crumb as a material for making more foam packaging rather than resort t the original petrochemicals.

I have a specific hobby in mind that would benefit from filling a hollow mold with foam and I would prefer to re-use what would otherwise go to landfill than buy a new spray-in expansion foam.



Evan says

March 15, 2011 at 1:06 pm

Sarah,

We would be happy to help you, or anyone out after the items are cleaned properly. Please check out the information in <http://www.Recyclewhite.com> and let us know if you have any questions. Thank you!



William Post says

March 21, 2011 at 1:44 pm

I thought that polystyrene was for the most part not recycled due to light weight and not existing curbside collection. I wonder what happens to polystyrene once it is mixed with the other plastics such as PET or with corrugated fiber? I also hear that it can become toxic when in contact with salt water regardless of the fact that it is inert.