



Polystyrene

Polystyrene is one of many types of plastic but it is of particular environmental concern. Production requires significant energy and use of non-renewable resources. There are limited recycling services available and the properties of polystyrene mean that it often escapes from landfill and becomes rubbish.

The Problem

What is Polystyrene?

Polystyrene is a type of plastic that is used for a variety of functions including in rigid items such as refrigerator crispers, coat hangers, DVD cases and printer cartridges ¹.

Polystyrene foam is a derivative of polystyrene known as Styrofoam or expanded polystyrene (EPS). It is used in protective packaging for appliances and in products such as insulated disposable cups, meat trays and panel insulation ².

Environmental Impacts

Non-Renewable Resources

All plastics are derived from crude oil¹ which is a non-renewable fossil fuel. Fossil fuels are formed from the decomposition of organisms over millions of years. They are considered non-renewable because our rate of fossil fuel extraction far outweighs the rate in which they are generated. The burning of fossil fuels to make plastic products, releases carbon dioxide which is a greenhouse gas. Air and water pollution is also generated from the energy-intensive process of fossil fuel extraction³.

Single Use Products

Polystyrene foam is generally used once before disposal. Given that there is a high amount of energy embodied in foam products, their single use is particularly wasteful.

Life cycle analysis traces the energy used and waste generated from producing, transporting and disposing of polystyrene products. It is a useful way of comparing alternatives, for example, impacts of polystyrene versus plastic cups ⁴.

Litter Impacts

Polystyrene foam is bulky and non-degradable, meaning that it takes up a significant volume of landfill over long periods. Because it is composed of around 98% air ², foam is highly mobile and escapes from garbage bins and landfill. It tends to flake, with small pieces of litter travelling long distances and harming wildlife upon ingestion ⁴.

On Clean Up Australia Day 2016, Expanded polystyrene accounted for 5% of the rubbish removed. Of the total polystyrene items, food packaging made up 79%⁵.

Lack of recycling

Polystyrene foam is not generally recyclable in municipal collections. Only a limited range of products are currently being recycled, such as foam produce boxes and coat hangers ².

Did You Know?

Enough Styrofoam cups are used in America each year to circle the world 426 times¹

In 2006-2007, around 33,000 tonnes of polystyrene foam was manufactured in Australia².

When a banana peel is exposed to light and air it takes 3-5 weeks to decompose.

It is not known how long it takes a Styrofoam cup to decompose ⁷.

Polystyrene packaging is prohibited in Antarctica. The ingestion of polystyrene fragments kills wildlife ⁸.

New York City ban of single-use Styrofoam products from 1 July 2015, will remove nearly 30,000 tons of trash¹⁰



Polystyrene

Refuse, Reduce, Reuse, Recycle

Refuse Polystyrene

Because of the particular threats that polystyrene foam represents, it is best to refuse polystyrene packaging or buy alternate products.

For example, rather than buying disposable foam cups, invest in lightweight plastic cups. Rather than accepting frozen goods in foam containers, take your own durable cooler.

Reduce Consumption

Rather than buying over-packaged items, try to buy items with minimal or no packaging.

Reuse

If you have any old foam boxes in your possession, you can divert them from landfill by putting them to use in a worm farm or to grow plants from cuttings of another plant.

Recycle Every Item Possible

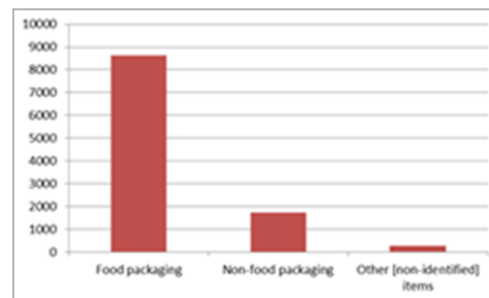
Ensure that any packaged items you buy are able to be recycled.

For plastic items, check the Plastics Identification Code.

Recyclable products include Polyethylene Terephthalate (PET - soft drink bottles and water bottles), High Density Polyethylene (HDPE – Juice Bottles, shampoo containers and cleaners) and PVC (detergent, shampoo and cordial bottles) ⁹.

Other items that can usually be placed in municipal recycling collections include glass, aluminium, paper and clean cardboard.

Composition of Polystyrene Litter (Clean Up Australia Day 2016) ⁵



Special Recycling of Expanded Polystyrene (EPS) Foam

Some councils accept rigid polystyrene containers in kerbside recycling bins, but Expanded Polystyrene foam is very rarely accepted.

In 2011/2012 just 2,712 tonnes of Expanded Polystyrene was recycled in Australia out of 40,335 produced, a mere 6.9%. ⁹

This very low rate of Expanded Polystyrene recycling prompted cities like New York to ban single use Styrofoam products from 1 July 2015. ¹⁰

There is one EPS collection centre in each of the mainland cities of Australia. Please click on the link [EPSA affiliated recyclers](#) for your nearest centre ².

References

1. [Plastics Europe – Polystyrene](#)
2. [Expanded Polystyrene Australia EPS](#)
3. [Union of Concerned Scientists The hidden costs of fossil fuels](#)
4. [Andrea Kremer, “Cradle to grave: the life-cycle of styrofoam”](#)
5. [Clean Up Australia, “Rubbish report 2016”](#)
6. [Department of Environmental Quality Oklahoma, “Eco Views Volume 2 Spring 2004”
 <http://www.deq.state.ok.us/pubs/pdf/ecoviewvol2.pdf>](#)
7. [City of Tucson, “Trash: It lasts a long time”
 \[http://www.outreach-scheduling.org/downloads/TTT_Lssn1_Aug07.pdf\]\(http://www.outreach-scheduling.org/downloads/TTT_Lssn1_Aug07.pdf\)](#)
8. [Australia Department of the Environment,
 \[Antarctic Treaty \\(Environment Protection\\) Act\]\(#\)](#)
9. [The Plastics and Chemical Industries Association,
 \[“Plastics identification code” 2011–12 National Plastics Recycling Survey\]\(#\)](#)
10. [Scientific American,
 \[New York City bans single-use Styrofoam products from 1 July 2015\]\(#\)](#)