



EXPANDED POLYSTYRENE FOAM (EPS, “STYROFOAM”)

Expanded polystyrene foam (EPS), which is popularly but incorrectly referred to as Styrofoam, is a lightweight petroleum-based plastic material comprised mostly of air. EPS products are one of the cheapest and most efficient means of maintaining the temperature of hot or cold food and beverage products. Their lightweight design makes EPS a favored packaging material.

Historical barriers to recycling EPS material has led to EPS bans in more than 125 states and municipalities even as new means of recycling begin to take hold. Environment America and U.S. PIRG are running coordinated campaigns in more than 25 states to ban plastic foam cups and take-out containers. In addition to local bans forcing foodservice companies to scramble to implement EPS alternatives in small market segments, activist investment firms like As You Sow have garnered success forcing shareholder votes on EPS phase-outs.

Recently, anti-EPS groups have staged protests outside Texas-based restaurant chains [Whataburger](#) and [ThunderCloud Subs](#). Following repeated filings (and subsequent defeats) of an As You Sow shareholder resolution, [McDonalds](#) recently agreed to eliminate EPS packaging from its global system by the end of 2018. Amazon and Target faced similar activist shareholder resolutions in [2017](#).

OVERVIEW: HEALTH CONCERNS

Styrene, used in manufacturing EPS, is hazardous. The [U.S. EPA](#) notes that chronic exposure to styrene, the monomer used in manufacturing both expanded and solid polystyrene, can result in headache, fatigue, weakness, and depression, Central nervous system dysfunction, hearing loss, and peripheral neuropathy. Human studies of women employed in plastics manufacturing have yielded inconsistent results regarding the reproductive and developmental effects of styrene, with some reporting no effect and others reporting an increase in spontaneous abortions. Several epidemiologic studies also suggest an association between styrene exposure and leukemia and lymphoma. Styrene was added to the [Proposition 65](#) list of carcinogens in 2016, and [IARC](#) classified the chemical as “probably carcinogenic” in 2018. However, EPA has not yet issued a formal carcinogen classification to styrene.

There are concerns that styrene can leach from polystyrene products. Studies have found that small amounts of [styrene can leach](#) from both solid and expanded polystyrene products, and does so at a more rapid rate when the product is in contact with a hot food or beverage.

OVERVIEW: ENVIRONMENTAL CONCERNS

EPS manufacturing can create hazardous waste and utilizes nonrenewable resources. In [1986 the EPA](#) released a report identifying the polystyrene manufacturing process as the fifth largest creator of hazardous waste. Polystyrene manufacturing techniques at the time released up to fifty-seven chemical byproducts, which tended to breach the air, land, water and communities near manufacturing facilities. Additionally, components used in polystyrene manufacturing are derived from crude oil, a nonrenewable resource.

EPS resists biodegradation and can stay in the environment for hundreds of years. Polystyrene is relatively inert and scientists have not yet discovered an effective EPS decomposition method. By volume alone, EPS accounts for [25 to 30 percent](#) of landfill space around the world.

The U.S. lacks widespread EPS recycling infrastructure, and existing programs are costly. Although individual companies have had success recycling EPS material disposed of in-store, many communities (especially throughout the Midwest) still lack curbside EPS recycling programs. In May 2017, the [New York City Department of Sanitation](#) determined that foodservice polystyrene foam products cannot be recycled in a manner that is economically feasible or environmentally effective for New York City. Small, broken pieces of foam from compacting EPS products in collection trucks gets covered in food residue and is unable to be cleaned. Broken pieces are blown throughout the recovery facility and ultimately contaminate other valuable recycling streams, like paper.

Many foodservice companies have successfully switched to EPS alternatives. [Jamba Juice](#) began rolling out a paper alternative to its polystyrene cups in 2013, aiming to eliminate foam cups across its entire system by the end of that year. In January 2018, [McDonald's](#) announced a global phase-out of EPS packaging would be complete by the end of the year. The chain has faced public and activist shareholder pressure to phase out EPS clamshell containers since 1990. [Dunkin Donuts](#) soon followed suit, announcing in February that the chain would eliminate EPS cups throughout its global supply chain beginning in spring 2018.

TALKING POINTS: HEALTH

Polystyrene is already regulated as a food contact material. The [FDA strictly regulates](#) all food packaging materials, including polystyrene, to ensure that the normal migration of trace elements do not impact human health.

There is a negligible amount of styrene in finalized polystyrene containers. Data from a 2013 study indicate that exposure to styrene from food products yields actual human exposure levels more than 10,000 times below the styrene safety limit set by the FDA.

Health and safety agencies agree that styrene exposure from polystyrene isn't dangerous. Dr. Linda Birnbaum, Ph.D., director of the NTP, [stated in 2011](#) that "In finished products, certainly styrene is not an issue." In August of that same year, NTP Associate Director John Bucher noted "The risks, in my estimation, from polystyrene are not very great" and that "It's not worth being concerned about." NIEHS notes that "Styrene should not be confused with polystyrene (foam). Although styrene, a liquid, is used to make polystyrene, which is a solid plastic, we do not believe that people are at risk from using polystyrene products." Similarly, American Cancer Society Chief Medical Officer Otis Brawley said, "Consumers don't need to worry about polystyrene cups and food containers."

TALKING POINTS: ENVIRONMENT

EPS bans have not reduced overall trash. Three years after banning EPS, [San Francisco](#) saw a 41% reduction in the amount of EPS litter in the city. However, non-foam cup litter jumped significantly. A report from California's [Water Resources Control Board](#) also found that eliminating single-use products would not reduce trash.

All packaging leaves an environmental footprint regardless of material type. A polystyrene hot beverage cup requires about [50 percent less energy](#) to produce than a similar coated paperboard cup with a corrugated cup sleeve, and their lighter weight means fewer air emissions when transporting products.

Major companies have successfully implemented EPS recycling programs. Where recycling programs exist, EPS material is 100% recyclable. Beginning in 2014 and widely publicized in a [2016 campaign](#), Chick-fil-A launched a program to recycle foam cups disposed of in-store. Recycled cups are used to create park benches. Although Chick-fil-A is privately held, thus negating the threat of activist shareholders, the company has not experienced a significant coordinated attack from environmental groups on their continued use of EPS. [Dart Container Corporation](#), a major manufacturer of EPS products, has recycled EPS since the 1990s. The company provides a list of several hundred recycling centers across the United States and Canada that utilize EPS material in manufacture everything from picture frames to crown moulding.

EPS recycling is increasing. By 2017, 65 California cities representing 22 percent of the state's total population [offered curbside EPS recycling](#). According to an August, 2017 issue of [Packaging Digest](#), although the EPS recycling rate has averaged about 18% over a 25-year period, 38% of EPS packaging was recycled in 2016. That amounts to a total of 118.7 million pounds of material, with 63 million pounds coming from post-consumer and post-commercial streams, and the remaining 55.7 million pounds from post-industrial operations.

EPS alternative materials marketed as biodegradable may not be environmentally friendly. Technically speaking, every material biodegrades if given enough time. Claims that materials are "biodegradable" are not regulated, and [may be used to 'greenwash'](#) otherwise environmentally unfriendly products. ASTM D6400 standards for compostability materials are better indicators of whether or not a product will actually break down in a reasonable timeframe.

EPS alternatives are more expensive and less effective. According to a 2013 study from [MB Public Affairs](#), for every dollar spend on foodservice foam containers and cups, businesses will need to spend at least \$1.94 on alternative replacements.

EPS isn't the main contributor of land or ocean pollution. EPS foodservice packaging currently accounts for less than 1 percent by weight and volume of landfill materials. [More than half](#) of ocean plastic pollution originates in a small number of rapidly developing economies that have yet to invest in systems to collect and manage that waste.

EPS bans sacrifice money and jobs. The [American Chemistry Council](#) estimated that New York City's proposed ban on EPS in 2015 would cost the city and state nearly \$100 million per year, and put 1,200 jobs in jeopardy.

EPS collection and consolidation is the last remaining piece of the recycling puzzle. Kim Holmes, director of recycling for The Plastics Industry Trade Association [notes](#) that once EPS collection and consolidation is addressed, the actual recycling process is very straightforward. As a framework, Holmes notes that companies that successfully recycle EPS "have created a collection system in which the EPS is shipped over short distances to a facility where material can be aggregated and either compressed or densified."