



Expanded Polystyrene (Styrofoam) Policy Analysis

August 2019

Background

Polystyrene is a polymer made from the monomer styrene that binds with other monomers to form repeating chain molecules through a process known as polymerization. Polystyrene is identified by its resin identification code #6. Polystyrene can be produced in a solid form, extruded or molded, or a foamed form. Extruded polystyrene is used to make a smooth packaging material commonly used for trays for meat, poultry, fish, deli items, egg cartons, etc. Molded polystyrene is used to make disposable cups, cutlery, and containers for deli and salad bars, dairy products, etc. Expanded polystyrene (EPS), commonly referred to as Styrofoam, has a small bead-like form and is used to make take-out food containers such as: cups, plates, hinged-lid clamshells, bowls, etc. Styrofoam has become ubiquitous due to its low cost, insulating properties, durability and lightweight nature.

Policy Options and Approach

Polystyrene regulations are increasingly being implemented by cities across the country to reduce the amount of Styrofoam pollution in their local environments. Peer cities that deal with this issue almost universally ban the use of polystyrene to-go containers in restaurants, food service and convenience stores that sell food and drinks to-go. A small number of cities and states, such as Rockport, Maine, have also adopted ordinances that prohibit the sale of polystyrene picnic supplies at retail stores for personal use.

Staff assessed the following options for addressing single-use polystyrene to-go containers:

- Option 1 -Status Quo. No regulations adopted.
- Option 2 – Polystyrene Food Service Ban. All restaurants and food service businesses prohibited from using polystyrene to-go containers and cups.
- Option 3 – Polystyrene Food Service and Retailer Ban. All restaurants, food services and retailers prohibited from using/selling polystyrene to-go containers, cups, and picnic supplies.

The status quo option is included because as the community continues to grow and add population the pollution from polystyrene entering our natural waterways will continue to increase. Option 2, the ban on polystyrene to-go containers is the most common form of polystyrene used by peer cities across the country. Option 3 – banning polystyrene from restaurants and retail establishments is more comprehensive, however, it has been implemented in fewer peer cities.

The Problem with Styrofoam in Fayetteville

Environmental, Economic and Equity Considerations: The City spends significant resources and community volunteer hours cleaning up litter, primarily in our urban stream corridors. A large amount of this litter is plastic and Styrofoam. A 2014 Town Branch waste audit found that Styrofoam was second only to plastic for the litter collected.¹ Because Styrofoam is light and buoyant it commonly gets blown out of vehicles or trash containers to escape into the environment where it is washed into our urban waterways to break into smaller and smaller pieces. Styrofoam's buoyancy, breakable small bead-like form, and polymer resin base that will never decompose, combine to make this material especially damaging to the environment: wildlife can consume the small pieces mistaking them for food, tourism can be negatively impacted by highly visible litter in waterways and lakes, and the cost to clean-up this material up once it is out in the environment is substantial and not especially cost or capture effective.

Recycling Considerations: The other significant challenge with Styrofoam in the community is that it is extremely hard to recycle. Styrofoam is generally not recycled either here or across the country. This is due to several factors, primarily:

- Styrofoam has very little weight but substantial volume making it expensive to transport,
- High rates of contamination, primarily from food, which make it less desirable for re-use than raw material, and the fact that
- A Styrofoam recycling commodity market does not exist, and in any case, would be a loss-making proposition due to high collection and transportation costs.

Per the Environmental Protection Agency 80% of Styrofoam ends up in landfills with much of the remaining 20% finding its way into waterways.²

Litter Abatement Costs

The City of Fayetteville and concerned community volunteers spend a significant amount of time picking up litter from along city streets, trails, parks and streams. The City's Recycling and Trash Division works with Keep America Beautiful to utilize volunteers for litter clean-up events, primarily along city streets. Keep America Beautiful places a volunteer labor value of \$21.36/hour. In the last four years the volunteer labor used to pick up litter from city streets and rights-of-way amounted to 8,458 hours for an estimated dollar value of \$180,674.

The Parks and Recreation Department also uses volunteers to pick up litter in the City's parklands, along trail corridors and from our urban streams. Data from Parks and Recreation indicates that over the time-period of 2015-2018 there were a total of 22,290 hours of volunteer labor estimated at a value of \$545,971. Combined, the volunteer labor used to pick up litter from City rights-of-way, parks, trails and streams over the last four years (2015-2018) is the equivalent of \$726,645.

Costs of Alternative Materials

The costs of alternative materials are higher than polystyrene containers. The cost difference will vary depending upon multiple variables such as; material type, container type, where the business sources its materials and the volume of containers purchased. Typically, the smaller the business, or the fewer polystyrene containers a business uses, the higher the cost to transition to alternative material containers. Many large chain businesses have already transitioned away from polystyrene containers to other materials and may not be as directly impacted because they have already accounted for this cost. To aid businesses many cities provide lists of local suppliers that offer alternatives to polystyrene. Some cities have also established purchasing co-ops to help small businesses purchase alternative containers in bulk.

Staff researched the costs of common single-use to-go containers from popular websites to determine the price difference small businesses could expect if they purchase their products from similar on-line retailers. The following chart illustrates these cost differences:

Product	Polystyrene Cost/Unit	PET Plastic Cost/Unit	Paper-Cardboard/Unit	Compostable /Unit	Vendor
9" Plate	0.05	0.25	0.11	0.10	Sam's
12 Oz. Bowl	0.03	N/A	0.06	0.10	Sam's
16 Oz. Cup	0.04	0.08	0.08	0.06	Sam's
To-Go One Compartment	0.09	0.17	0.17	0.17	Sam's
Spoon	N/A	0.02	N/A	0.04	Sam's
Fork	N/A	0.02	N/A	0.04	Sam's
Knife	N/A	0.02	N/A	0.04	Sam's
9" Plate	0.03	0.20	0.02	0.08	Webstaurant
12 Oz. Bowl	0.03	0.06	0.10	0.05	Webstaurant
16 Oz. Cup	0.05	0.05	0.04	0.06	Webstaurant
To-Go One Compartment	0.08	0.16	0.20	0.18	Webstaurant
Spoon	N/A	0.02	N/A	0.04	Webstaurant
Fork	N/A	0.02	N/A	0.04	Webstaurant
Knife	N/A	0.02	N/A	0.04	Webstaurant

Policy Options Matrix

Policy Goal	Impact Description	Policy Option 1 - Status quo	Policy Option 2 - Ban on Restaurant Polystyrene	Policy Option 3 - Ban on Restaurant and Retail Use/Sales of Polystyrene
Environmental Benefit	Litter abatement	Negative	Positive	Very Positive
Lifecycle Benefit	Cost of the material over its useful life	Neutral	Unknown*	Unknown*
Education and Outreach	Expand awareness of polystyrene	Neutral	Positive	Very Positive
Political Feasibility	Likelihood of support of community	Neutral	Very Positive	Positive
Financial Feasibility	Impact on City budget	Neutral	Neutral	Neutral
Operation Feasibility	Impact on City time and resources for management	Neutral	Neutral	Neutral
Enforcement Feasibility	Costs of compliance	Neutral	Negative	Very Negative
Equity	Financial assistance or credits	Neutral	Negative	Negative
Economic Impact	Financial impact on Businesses	Neutral	Negative	Very Negative
Replicable Ordinance	Ease of Implementation and Minimization of Legal Exposure	Neutral	Negative	Very Negative

* Depending on the container material selected lifecycle costs will vary

Policy Option 1 – Status quo

This policy option maintains the current condition with no changes. The status quo option would see accelerating environmental degradation due to increasing population. There is no additional impact on businesses or city government.

Policy Option 2 – Polystyrene Food Service Ban.

All restaurants and food service businesses prohibited from using polystyrene to-go containers and cups. This would have very positive impacts on the environment because it would eliminate the number one source of polystyrene getting into the natural environment. The lifecycle costs for alternative containers may or may not have a reduced total impact depending on the containers materiality and how it is disposed of. However, it is generally accepted that the materiality of any container that gets into the environment and the communities waterways is preferable over polystyrene containers.

A polystyrene ban would require a significant education and outreach initiative to both the food service providers and the residents in order to be successful. Residents need to understand the negative environmental and life cycle impacts that Styrofoam possesses, and food service providers would need to identify and source alternative containers. Polystyrene bans are usually set-up to be implemented after a sufficient amount of time has lapsed for food service providers to exhaust any remaining polystyrene stock and the public is aware that this change is happening, typically 6 months to a year.

The economic impact will be felt by the food service providers that will be required to switch to costlier, albeit more environmentally friendly options. This will ultimately be reflected in an increased cost passed on to consumers. People that are economically disadvantaged will necessarily be impacted to a greater extent.

Polystyrene bans are being challenged in numerous other States over issues of constitutionality and individual state laws. Notably, a New York State court upheld New York City's polystyrene ban in June of

2018, while the Florida Supreme Court found Coral Gables polystyrene ban in violation of State Statutes in August of 2019. The City Attorney's office will provide counsel regarding any real or perceived legal exposure for instituting a food service provider polystyrene ban.

Policy Option 3: Polystyrene Food Service and Retail Ban.

This policy option would have the same implications as Option 2 but would also include the prohibition of the sale of polystyrene plates, cups and bowls at retail stores. This option would be environmentally very positive because it would eliminate an additional source of Styrofoam pollution in the community.

Implementation of the policy would require education and outreach to residents and business owners which would bring additional awareness to the environmental impacts of Styrofoam. Operationally and financially this policy option would have no impact on the City's resources, however, an enforcement mechanism and process would need to be developed to ensure compliance.

There will be an adverse economic impact on retailers and food service providers as they are required to switch to costlier alternatives. The equity impact will be similar to Policy Option 2 with economically disadvantaged populations negatively impacted through increased consumer costs.

The City Attorney's office will provide counsel regarding any real, or perceived, legal exposure for instituting a retail and food service provider ban on polystyrene to-go containers.

Single-Use Plastics Survey Results

The City developed an online residential survey and a business survey to gauge the communities interest in pursuing plastic bag and/or Styrofoam legislation. The survey was located on the Speakup Fayetteville website and it was distributed through various on-line and traditional means including; business license email contacts, digital media, print media, television, radio and word of mouth. The Resident and Visitor Survey had 2,167 responses with and the Business Survey had 154 responses. Both surveys went live on July 7th and were closed on August 22nd.

Results from the City's Residential Single-Use Plastic survey indicates that 74 % of respondents support a ban on polystyrene to-go containers. Because this survey was only available online and primarily opened during the summer months it may not be representative of the community's overall support.

Operationally and financially this policy option would have a limited impact on the City's budget. An enforcement mechanism would need to be developed and implemented to ensure compliance. This cost is identified but unknown.

The Business Survey was also advertised through various on-line and traditional media sources. Additionally, a link was sent by email from the City's Business License Registry to over 400 retailers that could be potentially impacted by a SUPB ordinance, and 600 restaurants that could be impacted by a ban on Styrofoam to-go containers.

Some of the take-aways from the business survey include:

- Restaurants, convenience stores and grocery stores made up 43% of the businesses that responded to the survey.
- 43% of businesses responding offered to-go containers for food and beverage take-out.

- When asked what types of materials their businesses to-go containers were made of? - 79% said plastic, 68% paper, 44% Styrofoam, 37% waxed paper, 30% compostable, and 25% aluminum foil.
- When asked what the barriers are for switching to compostable or recyclable to-go containers? - 65% said concerns about compostable/recyclable containers may cost too much, 35% said that compostable/recyclable containers would not work for their food/drink products, 11% said they were not sure where to purchase compostable/recyclable containers, 24% said that they would need to switch suppliers to purchase compostable/recyclable products, and 25% said that they had already switched to compostable/recyclable containers.
- When asked what programs or policies that their business would support in reducing litter and waste from single-use plastics and Styrofoam? – 64% said that they would support providing educational materials and resources to businesses on where they can purchase cost-effective compostable/recyclable products, 54% supported banning polystyrene/Styrofoam, 42% support banning single-use plastic straws, and 28% answered other.

Recommendation

The Keep Fayetteville Beautiful Committee met on August 15, 2019 to discuss the City Council’s proposal to look at policy options for single-use plastic bags and Styrofoam. Following the discussion, the Committee members voted unanimously to support the City Councils development of ordinances that would regulate single-use plastics in the city. Staff also presented this analysis to the Environmental Action Committee on Monday August 19, 2019. The Environmental Action Committee unanimously recommended the development and adoption an ordinance that would implement Policy Option 2 – Polystyrene Food Service Ban.

Bibliography

1. <https://www.beaverwatershedalliance.org/pdf/Town-Branch-Cleanup-Survey-and-Audit-Report.pdf>
2. https://www.epa.gov/sites/production/files/2018-07/documents/2015_smm_msw_factsheet_07242018_fnl_508_002.pdf