

Ban on EPS Food Containers in Virginia Policy Brief

Summary

Expanded polystyrene (EPS), commonly known as Styrofoam™, is polluting our planet. Its accumulation in landfills and waterways has economic, environmental, and health impacts. Local bans or a statewide ban on the sale and distribution of EPS food containers in Virginia would greatly reduce the harmful effects associated with contaminated polystyrene waste and bolster an eco-friendlier plastics market in the Commonwealth.

Description of Problem

Polystyrene is a petroleum-based plastic composed of the styrene chemical. EPS is a form of polystyrene that is known for its insulating and light-weight properties. This plastic is utilized in the packaging and cold-chain shipping industries, and is commercially labeled as a #6 plastic.

Despite its disposable and easy-to-use nature, the long-term effects of EPS waste are alarming. Generally, EPS is resistant to photolysis, which is the breaking down of compounds by absorption of light. As a result, EPS products are **non-biodegradable or take hundreds of years to break down**. This, in turn, leads EPS to accumulate in landfills and waterways to threatening levels.

Landfill Space

Due to Virginia's low fees and relative abundance of space, many waste companies import out-of-state waste into Virginia landfills. For the 8 Virginia counties with mega-landfills (Sussex, Charles City, Cumberland, King George, King and Queen, Gloucester, Amelia, and Brunswick Counties), the waste importation industry has been a vital source of revenue, earning counties around \$2.5 to \$6 million per year. In 2018, the waste company Green Ridge promised to increase the annual revenue of Cumberland county by 10-20% with the approval of a new landfill site. Not only does the industry generate wealth, but partnerships with waste companies come with community-strengthening resources, like new recreational centers and scholarships, that are often lacking in these less industrialized counties.

EPS takes up a lot of volume in landfills, as it is made up of 95% air. In fact, **EPS makes up over 30% of all plastic waste by volume**. Because of this, it is physically and economically difficult to transport and recycle. Styrofoam food containers, more specifically, cannot be recycled due to food contamination and the expensive cost associated with cleaning the containers. This is why **EPS threatens to consume the limited landfill space in Virginia**. With less space for the waste importation industry, Virginia counties may be forced to weaken the partnerships that offer a lifeline to industrial development.

Waterways

Approximately ¼ of EPS landfill waste is projected to end up in waterways in the form of microplastics (small plastic fragments). These microplastics then persist in waterways

and attract chemical contaminants. Economically-important marine life often die due to accidental ingestion of contaminated microplastics. Those that survive can negatively affect fisheries and seafood vendors in coastal regions as well as pose health hazards to consumers.

The Virginia Department of Environmental Quality (DEQ) places heavy emphasis on marine debris reduction initiatives to protect not only the cleanliness and safety of coastal regions but also their economy. As highlighted by the DEQ, food containers and plastic bags take up **80% of marine debris**. Additionally, based off of data gathered over 20 years, food wrappers/containers were in the **top 5 most collected items in Virginia coastal zones**.

Every 3 years, the Virginia DEQ hosts a Mid-Atlantic Marine Debris Summit where avid environmentalists, policy-makers, and community members join hands to develop solutions for protecting our waterways from debris pollution. In 2014, the Coastal Zone Management (CZM) program wrote a report titled “Developing a Marine Debris Reduction Plan for Virginia.” The CZM was the first program in the east coast to set forth a long-term, detailed plan for targeting this issue, which is still underway. The report lists “**beverage and food related litter**” as one of the top 3 priorities for reduction in the state of Virginia and “**enforcement**” as one of the “most effective strategies” for mitigating marine debris.

Additionally, in March 2016, the CZM published a “Virginia Marine Debris Reduction Plan Summary and Look Ahead” to follow up on their efforts outlined in the 2014 report. In this more recent paper, the CZM lists different ways they hope to rid Virginia waterways of marine debris by 2021, including their plan to “support ongoing **waste source reduction** efforts, and facilitate collaboration and the transfer of knowledge about successful marine debris prevention programs, **policies**, and campaigns.”

Our policy proposal closely aligns with the goals of the Virginia DEQ, as it aims to reduce Styrofoam waste and subsequent microplastic pollution in waterways by means of enforcing a ban on disposable Styrofoam food containers.

Proposed Legislation

Currently, there are **approximately 100 ordinances across the United States that have banned the sale or distribution of EPS food containers**. This year itself, the entire state of Maine has enacted the ban. However, Virginia has no such legislation. Bans on EPS food containers in localities across Virginia would mitigate its accumulation in landfills and subsequent waterway, economic, and health hazards listed above.

Limitations

One limitation of this ban is that sustainable alternatives to EPS food containers cost slightly more per piece than the EPS food containers themselves. Seeing that hundreds of localities, including Washington D.C., have smoothly dealt with the transition to Styrofoam foodware alternatives and seeing that the entire state of Maine is confident in their statewide initiative, local governments in Virginia have the potential to present economically feasible options to big and small businesses alike. Methods such as organized bulk purchasing can be

used to facilitate this transition. Additionally, the ban would not place restrictions on the types of alternatives, contributing to an array of options.

Past legislation from other U.S. localities gave businesses years' time to adapt to the changes resulting from the ban, allowing for them to make decisions best-suited for continual commercial success.

According to a sustainable materials organization in Charlottesville, many companies intend to get rid of unsustainable materials because of reputational and regulatory risk. For this reason, many foodware and plastic companies will be willing to go through the transition of becoming EPS-free.

Alternatives

Food service container companies understand that biodegradable and recyclable plastics are the future. In fact, many food container companies in Virginia have already included alternatives to Styrofoam containers in their inventory. For example, Petersburg's Plastic Container City offers biodegradable cutlery and fruit carriers, and Eastern Virginia company, Crest Food Service, offers compostable spoons, forks, and bowls. In addition, large public institutions such as the University of Virginia only use bio-based plastics in dining facilities, eliminating the need for Styrofoam.

It is also important to note that multiple materials-production companies in the United States are using biotechnology to develop novel alternatives that can replace petroleum-based plastics like polystyrene. This process involves feeding a carbon source to specific strains of bacteria so that the microbes can produce biodegradable plastic. In essence, the starting materials come from nature and return back to nature in a way that does not negatively impact the environment.

The trend toward Styrofoam alternatives has already begun to change the container industry. Virginia has the chance to be ahead of the curve by supporting Styrofoam alternatives.

Concerns

People argue that it takes much less energy and is cheaper to produce EPS as opposed to other packaging materials. While that is an accurate claim, it is a short-term benefit that feeds into many long-term economic and environmental costs. Once produced, EPS food containers are neither recyclable nor reusable. By increasing production of more sustainable plastics that can be recycled or reused, the need to continually produce single-use EPS to match demand will be reduced. The plastic foodware industry will follow a more circular system rather than a linear system that damages ecosystems and shortens product lifetime.

Although polystyrene fulfills the food-packaging safety regulations set forth by the FDA, there are still health hazards to be considered. The National Institute of Occupational Safety and Health under the Center for Disease Control and Prevention has identified styrene exposure as a risk to workers in the plastics industry. Those exposed to styrene for long periods of time have

the potential of inhaling neurotoxins, which can slow visual perception and cognition. Post-production and use, styrene is known to leach into foods served in polystyrene containers.

An identified threat of biodegradable alternatives is methane release in landfills. However, polystyrene production yields CO₂ emission costs equivalent to \$4,604,576,457, according to the 2016 “Real Cost of Styrofoam” life cycle analysis conducted by Saint Louis University. Also, organizations in Virginia are making efforts to reduce methane emission by extracting the gas and converting it into a power source. For example, the New River Resource Authority collects waste from “Montgomery, Pulaski, Giles, Floyd, Wythe and Bland counties as well as the city of Radford,” and extracts landfill gas for Ingenco facilities in Virginia to convert into energy. Methane gas from landfills provides a cheaper fuel source for energy plants.

A major concern about biologically produced plastics is that the yields are too low for industrial mass production. To combat this problem, synthetic biology or genetic engineering techniques are being utilized to optimize plastic production. This raises another concern: the use of GMOs. This negative stigma around GMOs exists due to the misconceptions around its impacts on health. However, the scientific community is in consensus around the safety of GMOs. In fact, many scientists believe that GMOs are a *necessary* component to building a sustainable future.

Lastly, a solution often proposed to reduce polystyrene waste is to recycle it. However, there are many logistical roadblocks that make polystyrene recycling impossible. Firstly, recycled goods need to be clean in order to be accepted in the materials market. Since EPS food service containers are often dirty from food after use and are oddly shaped, they are very difficult to properly clean, which disincentivizes EPS recycling. Also, because EPS is made of 95% air, shipping polystyrene is essentially shipping air. Thus, it is not economically efficient to recycle polystyrene. These two obstacles make EPS recycling hardly the effort or cost, causing many recycling facilities to reject any polystyrene waste.

Conclusion

The continued sale of EPS food service containers poses major threats to many aspects of the Commonwealth. The littering of EPS results in microplastic contamination in the Chesapeake and surrounding waterways, harming our vital aquatic ecosystem. In addition, the sheer volume of EPS exhausts landfill space that could be used for waste importation, a million-dollar industry that supports less industrialized counties. Lastly, polystyrene has been flagged as a potential human health risk as styrene has neurotoxic properties. Thus, a ban on EPS food containers, whether at the state or local level, is necessary to preserve the health of Virginia’s ecosystems, economies, and communities. We can join the hundreds of localities around the United States in facilitating a clean environment and smart economy.

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