

Trevor Walls
Department of Agriculture and Consumer Services
Division of Food Safety
3125 Conner Blvd., Ste. D
Tallahassee, FL 32399

September 22, 2021

Dear Mr. Walls,

We, the undersigned, strongly urge the Florida Department of Agriculture and Consumer Services, Division of Food Safety to adopt and implement a rule to phase out the sale and distribution of polystyrene packaging in food establishments, including relevant provisions in F.A.C. 5K-4.020, 5K-4.035 and 5K-4.045.

The Division of Food Safety is directly responsible for assuring the public of a safe food supply, from manufacturing and distribution to retail. Phasing out the sale and distribution of polystyrene foodware is needed in Florida because of polystyrene's impact on human health. Research has found that styrene can leach out of polystyrene containers at all temperatures, but even more so when heated (Amirshaghghi et al., 2011; Genualdi et al., 2014; Hahladakis et al., 2018; Lestido-Cardama et al. 2020). Styrene and other toxic chemicals found in polystyrene have been identified in foods that come packaged in it, as well as in human blood and urine (Capella et al. 2019; Hahladakis et al. 2018; Lestido-Cardama et al. 2020). In a recent study, certain polystyrene foodware was found to leach chemicals that were toxic to cells (Zimmerman et al. 2019).

A 2018 American Academy of Pediatrics (AAP) report stated that parents should avoid plastics made of polystyrene — indicated by recycling code No. 6 — due to their health risks (Trasande et al 2018). Styrene, the major building block of polystyrene, is a suspected carcinogen, according to both the International Agency for Research on Cancer and the [National Toxicology Program](#) (Huff and Infante 2011). In fact, the World Health Organization in 2018 reclassified styrene from a “possible carcinogen” to a “probable carcinogen” (Aarhus University, 2018).

Brominated flame retardants, which are recognized as endocrine disruptors, have been detected in consumer polystyrene products, including foodware (Rani et al. 2014). These flame retardants are added to polystyrene foam to counter its extreme flammability, and detections in foodware raise a troubling concern about exposure to these persistent toxic chemicals.

Endocrine-disrupting chemicals (EDCs), like brominated flame retardants, are linked to reproductive problems, including low sperm counts, infertility, early puberty and chromosomal abnormalities passed onto children, as well as inflammation, thyroid and neurological

disorders, and several chronic diseases (Flaws et al. 2020). The AAP said children are at particular risk when exposed to these chemicals: "The potential for endocrine system disruption is of great concern, especially in early life, when developmental programming of organ systems is susceptible to permanent and lifelong disruption."

Recently, environmental and reproductive epidemiologist Shanna Swan and journalist Stacey Colino co-authored [a book](#) about the impact of endocrine-disrupting chemicals on the human reproductive system. They detailed warnings about toxic kitchen chemicals and food packaging. Their advice is to avoid No. 6 polystyrene, which is consistent with the American Academy of Pediatrics' messaging noted above.

The economic cost of exposure to hormone-disrupting chemicals in the U.S. population is estimated at \$340 billion a year due to the disease and dysfunction they cause (Attina et al. 2016).

According to the Center for International Environmental Law ([CIEL](#)), plastic, including polystyrene, poses risks to human health at every stage of [its lifecycle](#), from extraction of fossil fuels to consumer use, disposal and beyond. A 2019 CIEL [report](#) stated that "significant, complex and intersecting human health impacts occur at every stage of the plastic lifecycle: from wellhead to refinery, from store shelves to human bodies, and from waste management to ongoing impacts of microplastics in the air, water and soil." Exposure to plastic's toxic chemicals has been linked to cancers, reproductive and nervous system disorders, obesity, diabetes, birth defects, impaired immunity, [endocrine disruption](#) and more.

When polystyrene is exposed to nature's elements, it starts breaking up into smaller and smaller pieces, known as microplastic. Microplastics now contaminate our [food, water, air and soil](#). A growing body of research is documenting plastic and the toxic chemicals associated with it in human blood, feces and tissues.

Colorado, Maine, Maryland, New Jersey, New York, Vermont, Virginia, Washington and the District of Columbia have passed policies to reduce the use of polystyrene foam. More information can be found on the [Surfrider policy map](#), which shows there are over 268 local and state polystyrene foam laws nationwide. These states, cities and counties have paved the way for new markets for alternative materials at cost-effective rates for vendors.

[More than 20 municipalities](#) in the state of Florida have already passed some type of ordinance reducing or eliminating polystyrene foam, and more have passed resolutions and internal purchasing policies.

For businesses, the economic impacts of switching to alternative products often range from minimal to net positive as a result of growing demand continuing to drive down the price of alternative materials, some of which are now comparable or even cheaper than conventional

materials. Additionally, there is evidence that customers are unlikely to stop frequenting a business as a result of price increases necessary to cover the additional cost of alternative materials (typically in the order of a few cents). In fact, a 2020 survey showed that 74% of consumers are willing to pay more for environmentally friendly packaging, and nearly one-fourth are willing to pay for an increased cost of 10% or more. To further reduce cost and waste, businesses can encourage customers to bring their own reusable containers.

We, the undersigned, support this Florida DACS Rulemaking to phase out polystyrene in an effort to protect human health. However, we recommend a shorter timeline for implementation of the rule with a higher percentage of reduction required sooner than currently outlined. These types of policies are already implemented and functioning in many states and municipalities across the nation.

Thank you for your efforts on this important rulemaking.

Sincerely,

Oceana

1000 Friends of Florida

Surfrider Foundation

Waterkeepers Florida

VolunteerCleanup.org

Turtle Island Restoration Network

Toxic-Free Future

The Alliance of Nurses for Healthy Environments

Sierra Club Florida

Sea Turtle Conservancy

Safer Chemicals Healthy Families

Rethinking Plastic

Mind the Store

Greenpeace USA

Friends of the Everglades

Florida PIRG

Florida Keys Environmental Coalition

Environment Florida

Debris Free Oceans

Climate Reality Project, Boca Raton Chapter

Beaches Go Green

Aquatics for Life

Literature cited

- Aarhus University (2018) After 40 years in limbo: Styrene is probably carcinogenic. In: *ScienceDaily*. Available: <https://www.sciencedaily.com/releases/2018/05/180530113105.htm>. Accessed May 24, 2019.
- Amirshaghghi Z, Djomeh ZE and Oromiehie A (2011) Studies of Migration of Styrene Monomer from Polystyrene Packaging into the Food Simulant. 8: 7.
- Attina TM, Hauser R, Sathyanarayana S, *et al.* (2016) Exposure to endocrine-disrupting chemicals in the USA: a population-based disease burden and cost analysis. *The Lancet Diabetes & Endocrinology* 4: 996–1003. doi: 10.1016/S2213-8587(16)30275-3
- Capella KM, Roland K, Geldner N, *et al.* (2019) Ethylbenzene and styrene exposure in the United States based on urinary mandelic acid and phenylglyoxylic acid: NHANES 2005–2006 and 2011–2012. *Environmental Research* 171: 101–110. doi: 10.1016/j.envres.2019.01.018
- Flaws J, Damdimopoulou P, Patisaul HB, *et al.* (2020) PLASTICS, EDCs & HEALTH. Sweden: IPEN; Endocrine Society. 92p.
- Genualdi S, Nyman P and Begley T (2014) Updated evaluation of the migration of styrene monomer and oligomers from polystyrene food contact materials to foods and food simulants. *Food Additives & Contaminants: Part A* 31: 723–733. doi: 10.1080/19440049.2013.878040
- Hahladakis JN, Velis CA, Weber R, Iacovidou E and Purnell P (2018) An overview of chemical additives present in plastics: Migration, release, fate and environmental impact during their use, disposal and recycling. *Journal of Hazardous Materials* 344: 179–199. doi: 10.1016/j.jhazmat.2017.10.014
- Huff J and Infante PF (2011) Styrene exposure and risk of cancer. *Mutagenesis* 26: 583–584. doi: 10.1093/mutage/ger033

- Kedzierski M, Lechat B, Sire O, *et al.* (2020) Microplastic contamination of packaged meat: Occurrence and associated risks. *Food Packaging and Shelf Life* 24: 100489. doi: 10.1016/j.fpsl.2020.100489
- Lestido-Cardama A, Sendón R, Bustos J, Lomo ML and Losada PP (2020) Dietary Exposure Estimation to Chemicals Transferred from Milk and Dairy Products Packaging Materials in Spanish Child and Adolescent Population. : *Foods*: 22.
- Rani M, Shim WJ, Han GM, *et al.* (2014) Hexabromocyclododecane in polystyrene based consumer products: An evidence of unregulated use. *Chemosphere* 110: 111–119. doi: 10.1016/j.chemosphere.2014.02.022
- Trasande L, Shaffer RM and Sathyanarayana S (2018) Food Additives and Child Health: Policy Statement. *PEDIATRICS* 142: 10.
- Zimmermann L, Dierkes G, Ternes TA, Völker C and Wagner M (2019) Benchmarking the in Vitro Toxicity and Chemical Composition of Plastic Consumer Products. *Environmental Science & Technology* : acs.est.9b02293. doi: 10.1021/acs.est.9b02293