FACT SHEET – Sudbury, MA Town Meeting Article: Polystyrene (PS) Reduction Bylaw

What Does this Article Do if Approved?

Prohibits food and retail establishments in Sudbury from using or distributing disposable food service ware – including raw meat/fish trays and egg cartons – made of foam or solid polystyrene.

Prohibits retail establishment in Sudbury from selling or distributing 1) packing peanuts, 2) coolers or other containers, 3) pool or beach toys, or 4) floats/buoys made from foam polystyrene that is not fully encapsulated in a more durable material.

This bylaw does not apply to prepared food or non-food goods packaged with polystyrene outside of Sudbury, if these products are sold without repackaging or alteration. Exemptions can also be made in cases where it can be shown that not using a specific item would cause undue hardship to an establishment.

Why Vote Yes for this Article?

Styrene, the chemical used to produce polystyrene, is a likely human carcinogen. In 2018, the International Agency for Research on Cancer increased the risk classification for styrene from "possibly carcinogenic to humans" to "probably carcinogenic to humans."[1]

Residual styrene from PS food service ware can be leached into food and drink during reasonable, common uses. Styrene transfer is maximized by contact with hot liquids, fat-containing foods, or acidic food and drink.[2] While some foods (*i.e.*, cinnamon) eaten in small quantities contain natural styrene, styrene content in food is mainly caused by migration from polymer packaging.[3]

45+ years of studies have consistently found that an appreciable fraction of food or drink samples touching PS can have styrene levels nearing or exceeding drinking water guidelines.[4] The World Health Organization guideline for styrene in drinking water is 20 parts per billion (ppb), roughly 1 drop in ~700 gallons.[5] The highest levels found in commercial food samples are typically 100-200 ppb, with one study showing 23% of samples analyzed with >10 ppb.[6]

Unencapsulated PS foam is an especially harmful type of plastic pollution. Even more than other plastics, PS foam is easily transported and readily breaks up into tiny microplastic pieces.[7] These will persist in the environment for centuries, absorbing and concentrating toxins,[8] being mistaken by wildlife for food, disrupting food webs, and potentially contaminating the human food supply.[9]

Extensive work has already been done in other communities to identify effective, cost-competitive alternatives to most PS products. Sudbury will not be the first to take action to reduce its use of PS items.[10] Less toxic and less polluting alternatives have been on the market for years[11]. The proposed bylaw allows exceptions when a good faith effort fails to find a reasonable alternative to specific items.

PS pollution and PS waste are costly for Sudbury and its residents. Especially when food-contaminated, foam PS is not acceptable for curbside or Town recycling.[12] Reducing generation of such waste is a key part of mitigating the skyrocketing costs of recycling and waste disposal.[13]

You can help reduce polystyrene pollution in your own community! To learn more or to join this campaign, please email: campaigns@ma.surfrider.org

References

[1] International Agency for Research on Cancer (IARC), *Agents Classified by the IARC Monographs, Volumes 1–123.* *https://monographs.iarc.fr/agents-classified-by-the-iarc/*, World Health Organization, Lyon, 2018.; Styrene Information Research Center. https://styrene.org/international/

[2] Pilevar, Z., et al. "Migration of styrene monomer from polystyrene packaging materials into foods: Characterization and safety evaluation." *Trends Food Sci. Tech.,* 2019, **91**, 248-261. https://doi.org/10.1016/j.tifs.2019.07.020

[3] Tang, W.; Hemm, I.; Eisenbrand, G. "Estimation of human exposure to styrene and ethylbenzene." *Toxicology,* 2000, **144**, 39-50.

[4] Genualdi, S.; Nyman, P.; Begley, T. "Updated evaluation of styrene monomer and oligomers from polystyrene food contact materials to foods and food simulants." *Food Addit. Contam. A,* **2013**, *31(4),* 723-733. https://doi.org/10.1080/19440049.2013.878040

[5] *Guidelines for drinking-water quality: fourth edition incorporating the first addendum*, World Health Organization (WHO), Geneva, 2017.

[6] Gilbert, J.; Startin, J.R. "A survey of styrene monomer levels in foods and plastic packaging by coupled mass spectrometry—automatic headspace gas chromatography." *J. Sci. Food Agric.,* **1983**, *34*, 647-652. https://doi.org/10.1002/jsfa.2740340616

[7] "What Are Microplastics?" National Ocean Service, NOAA, US Department of Commerce, 8 February 2020. https://oceanservice.noaa.gov/facts/microplastics.html.

[8] Hirai, H., et al. "Organic micropollutants in marine plastics debris from the open ocean and remote and urban beaches." *Mar. Pollut. Bull.* **2011**, *62*, 1683. https://doi.org/10.1016/j.marpolbul.2011.06.004; Wardrop, P., et al. "Chemical Pollutants Sorbed to Ingested Microbeads from Personal Care Products Accumulate in Fish." *Environ. Sci. Technol.* **2016**, *50*, 4037. https://doi.org/10.1021/acs.est.5b06280; Lee, H., Shim, W.J., Kwon, J.H. "Sorption capacity of plastic debris for hydrophobic organic chemicals." *Sci. Total Environ.* **2014**, *470-471*, 1542. https://doi.org/10.1016/j.scitotenv.2013.08.023

[9] Seltenrich, N. "New link in the food chain? Marine plastic pollution and seafood safety." *Environ. Health Persp.,* **2015**, *123*, A34. https://doi.org/10.1289/ehp.123-A34; Cox, K.D., et al. "Human consumption of microplastics." *Environ. Sci. Technol.,* **2019**, *53(12),* 7068-7074. https://doi.org/10.1021/acs.est.9b01517; Rotjan, R.D., et al. "Patterns, dynamics, and consequences of microplastic ingestion by the temperate coral, *Astrangia poculata*." *P. Roy. Soc. B-Biol. Sci.*, **2019**, 20190726. https://doi.org/10.1098/rspb.2019.0726

[10] "Polystyrene & Food Packaging" Massachusetts Sierra Club, 8 February 2020. https://www.sierraclub.org/massachusetts/polystyrene-food-packaging

[11] "Polystyrene foam take-out packaging and price comparable alternatives." Clean Water Action California, 8 February 2020. https://www.cleanwateraction.org/files/publications/CWA%20EPS%20Foam%20Cost%20Comparison.pdf

[12] "Sudbury Recycling Guide." Town of Sudbury, Massachusetts, 8 February 2020. https://sudbury.ma.us/transferstation/2017/06/28/sudbury-recycling-guide/

[13] Abel, D. "Recycling is becoming so expensive that some towns don't know what to do." *Boston Globe* 11 January 2020. https://www.bostonglobe.com/metro/2020/01/11/national-recycling-crisis-hits-hard-western-massachusetts/cn6o05CAvXmYzwyqWFCniJ/story.html