

## **SB 342: Maryland Beverage Container Recycling Refund and Litter Reduction Program**

Hearing Date: 2/10/26

Position: **SUPPORT**

To Members of the Committee:

I am an MD/PhD candidate at Johns Hopkins University School of Medicine. I completed my PhD in May of 2024, and my thesis characterized how plastic-associated compounds (like BPA, BPB, and other bisphenols/phthalates) are involved in inflammatory disease, particularly hidradenitis suppurativa, a chronic debilitating skin disease. Our findings were alarming and obvious: *plastic compounds are present in both the tissue and cells of patients and cause molecular changes to normal cells that create the disease phenotype.*<sup>1</sup> We have now begun counseling patients in clinic on how to best avoid these compounds, and discussions often center around how plastic pollution is related to human health.

These data are not the first example of plastics in human disease. While scientists have long known plastic compounds are capable of harm in animal and cell models, findings in recent years have shown these chemicals are present in human bodies and are associated with worse health outcomes. For example, higher microplastic content in atherosclerotic plaques are linked with worse cardiovascular outcomes, like stroke and heart attack.<sup>2</sup> Similarly, a recent study evaluated post-mortem brain tissue from patients with dementia, and found greater microplastic burden than those found in healthy brains.<sup>3</sup> Plastic contamination – in our dirt, air, and most importantly diet – are being revealed as a growing systemic issue that requires top-down level structural changes.

Global production of plastics has skyrocketed in the last 20 years and is only expected to increase.<sup>4,5</sup> In 2022, global plastic production reached 400.3 million metric tons, a 1.6% year-over-year increase.<sup>6</sup> Since 1950, approximately 1 metric ton (Mt) of plastic has been produced for every person on the planet.<sup>7</sup> It is not surprising, given this, that plastic exposure and accumulation in humans has also exploded; as of 2024, 100% of 62 placentas tested positive for microplastics.<sup>8</sup> In a urine biomonitoring study of over 2,500 subjects from 2003-2004 in the United States, BPA was detected in 92.6% of the study population.<sup>11</sup> We can only predict this percentage has risen as plastics have become more common in food packaging, and at least in China from 2004 to 2019 this was confirmed in both serum and urine analysis.<sup>12</sup> Ingestion of contaminated food and beverage is by far

the most abundant source of human exposure to bisphenols, and likely other plastic compounds, by an order of magnitude,<sup>9,9,10</sup> and we need to take steps to mitigate this damage.

Curbing plastic contamination of the environment, for both planetary and human health, is essential. I have lived in Baltimore City for 7 years and constantly see plastic bottles as litter in the parks, streets, and most alarmingly, the water. Without incentive to prevent this, plastic waste will continue to leach into our water system and contaminate our food and drink. I predict we will continue to see worsening environmental impacts and human disease the more plastic we allow to remain contaminating our system. Caring for health implications goes beyond human decency: The Minderoo-Monaco Commission on Plastics and Human Health in 2023 predicted a 920 billion dollar economic loss in the United States related to disease and disability due to plastic-associated chemicals PBDE, BPA and DEHP alone.<sup>13</sup> It is prudent to note the lead economist on the commission, Dr. Maureen Cropper, is a UMD Distinguished Professor of Economics. This same commission notes an egregious deficit in the recovery and recycling of single use plastic containers, like bottles. One of the main recommendations of the commission was “enhancing plastic waste recovery and recycling”, which may be the first and most implementable step in our society addressing this rising concern.<sup>13</sup> SB 342 seeks to address this.

I did not expect to become an advocate against plastic pollution during my medical training, but the science implicating it in disease is incredibly disturbing and convincing.

I therefore urge a favorable report on SB 342.

Sincerely,

A handwritten signature in black ink, appearing to read "Kaitlin Williams". The signature is fluid and cursive, with a large initial "K" and "W".

Kaitlin Williams

MD/PhD Candidate

Johns Hopkins University School of Medicine

## Works Cited

1. Williams, K. L. *et al.* Plastic associated endocrine disruptors reduce Nicastrin protein and potentiate inflammation in hidradenitis suppurativa skin disease. *Nat. Commun.* **16**, 10755 (2025).
2. Marfella, R. *et al.* Microplastics and Nanoplastics in Atheromas and Cardiovascular Events. *N. Engl. J. Med.* **390**, 900–910 (2024).
3. Nihart, A. J. *et al.* Bioaccumulation of microplastics in decedent human brains. *Nat. Med.* **31**, 1114–1119 (2025).
4. Tsai, W.-T. Survey on the Environmental Risks of Bisphenol A and Its Relevant Regulations in Taiwan: An Environmental Endocrine-Disrupting Chemical of Increasing Concern. *Toxics* **11**, 722 (2023).
5. Wang, Y. & Qian, H. Phthalates and Their Impacts on Human Health. *Healthcare* **9**, 603 (2021).
6. Jaganmohan, M. *Annual Production of Plastics Worldwide from 1950 to 2022 (in Million Metric Tons)*. (2024).
7. Geyer, R., Jambeck, J. R. & Law, K. L. Production, use, and fate of all plastics ever made. *Sci. Adv.* **3**, e1700782 (2017).
8. Garcia, M. A. *et al.* Quantitation and identification of microplastics accumulation in human placental specimens using pyrolysis gas chromatography mass spectrometry. *Toxicol. Sci.* **199**, 81–88 (2024).
9. Geens, T. *et al.* A review of dietary and non-dietary exposure to bisphenol-A. *Food Chem. Toxicol.* **50**, 3725–3740 (2012).
10. Vandenberg, L. N. *et al.* Urinary, circulating, and tissue biomonitoring studies indicate widespread exposure to bisphenol A. *Environ. Health Perspect.* **118**, 1055–1070 (2010).
11. Calafat, A. M., Ye, X., Wong, L.-Y., Reidy, J. A. & Needham, L. L. Exposure of the U.S. population to bisphenol A and 4-tertiary-octylphenol: 2003-2004. *Environ. Health Perspect.* **116**, 39–44 (2008).
12. Zhang, W. *et al.* Distribution and potential risk factors of bisphenol a in serum and urine among Chinese from 2004 to 2019. *Front. Public Health* **12**, 1196248 (2024).
13. Landrigan, P. J. *et al.* The Minderoo-Monaco Commission on Plastics and Human Health. *Ann. Glob. Health* **89**, 23 (2023).