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Testimony
In opposition to:
LD 39 An Act To Remove the Plastic Bag Ban (SP0047)
LD 108 An Act To Improve Public Safety by Repealing the Single-use Plastic Carry-out Bag Ban (HP0074)
LD 244 An Act To Repeal Maine's Single-use Plastic Ban Law (SP0105)

This testimony summarizes Shaw Institute's opposition to LD 39, LD 108 and LD 244.

Shaw Institute is a nonprofit scientific research organization based in Blue Hill, Maine with a mission to improve human and ecological health through innovative science and strategic partnerships. Over three decades, the Institute's pioneering research on plastics, ocean pollution, flame retardants, and climate change has fueled public policy nationally and internationally.

Shaw Institute scientists pioneered microplastics research on the Maine coast[1,2] and were first to report plastic particles in coastal waters and commercial seafood (oysters, mussels, fish, lobster). To date, we have amassed almost 10 years of data on microplastic contamination of Maine waters, based on analysis of more than 900 samples from 200 sites in Blue Hill Bay. On average, we found 10 plastic particles in every liter of water, roughly 40 pieces of plastic per gallon and totaling over 1 billion pieces of plastic in the Bay. It is reasonable to assume similar levels of plastic are present along the Maine coastline. Our subsequent study[3] showed that plastic fibers make up about 50% of the diet in blue mussels, replacing algae and causing nutritive stress and weakening over time.

Why is plastic pollution a cause for concern?

Plastics are the largest source of solid waste on Earth and microplastics, particles smaller than five millimeters, have permeated the biosphere. Approximately 60% of the eight billion tons of plastic produced since 1950 has found its way into the environment in landfills, dumps, and oceans, while only 9% or less has been recycled. Plastic pollution is compounded by the degradation of larger plastics into microplastics, and single-use plastic bags, bottles, and food and polystyrene containers are primary contributors. In today's market, most of this plastic is not recyclable.

Plastics contaminate the human food chain. Human exposure to microplastics occurs mainly via ingestion and inhalation. Microplastics have been detected in vegetables, fruits, seafood, salt, and in bottled water, tap water and beer, meaning we are literally eating, drinking and breathing hundreds of thousands of microplastics everyday.

Plastics are toxic. Most plastics are petroleum-based and contain hazardous chemical additives, plasticizers, and byproducts including polybrominated diphenyl ethers (PBDEs), polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), perfluorinated compounds (PFASs) as well as phthalates and other plasticizers added for stability, flexibility, and clarity. Some of these plastic chemicals are known or suspected carcinogens, while others are associated with harmful effects such as infertility, endocrine disruption, immune suppression, type 2 diabetes, birth defects, and neurodevelopmental deficits. Styrofoam, the Dow Chemical trademark name for extruded polystyrene, contains toxic hydrocarbons styrene and benzene, suspected carcinogens and neurotoxins that contaminate the food chain and air when the products break down.

The plastic health threat to children. The plastic diet of every child begins in the womb. According to alarming new research, particles are shed from mother's blood into the placenta and fetal membrane, implying that plastic may affect fetal growth. Throughout childhood, exposure to plastics and associated chemicals continues via ingestion and inhalation, and through contact with everyday products such as food packaging, clothing, and plastic toys. The health impacts of our plastic diet are unknown, but there is an urgent need to assess whether exposure at current levels poses a serious health risk to infants and children.

Plastic on fire. The open burning of plastic waste and e-waste is extremely dangerous,[5] especially for children, as it releases a high-volume toxic soup of pollutants which are mutagenic, carcinogenic, and cause DNA damage and effects on the developing brain. Exposure to plastic fire smoke represents a global health disaster for children in the developing world who live and work as scavengers on burning plastic dumps and e-waste processing sites. In 2021, Shaw Institute is launching new research on high-risk children to advance our understanding of human health effects of plastic and serve as a benchmark for defining the plastic health threat for children with varying levels of ambient exposure.

Summary

Plastic and microplastic pollution are serious concerns for Maine coastal communities. Our ocean environment is choking with plastics and human ingestion of microplastics is increasing with unknown consequences. Recycling plastic is an unrealistic option that is complicated, expensive, and can concentrate hazardous plastic chemicals in the process. At preset, reducing the demand for single-use plastic is the only viable solution for reducing plastic waste. Passing LD 39, LD 108 and LD 244 would undo hard-fought efforts to reduce the amount of new plastic introduced to an already burdened environment and undermines efforts to facilitate the use of available, less toxic alternatives.

Shaw Institute supported these strong first legislative steps towards curbing the amount of plastic that ends up in our ecosystem, and strongly opposes these misguided efforts to repeal them.

References

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3. Woods, M.N., Stack,M., Fields, D., **Shaw, S.D.**, Matrai, P.A. (2018). Microplastic fiber uptake, ingestion, and egestion rates in the blue mussel (*Mytilus edulis*). *Marine Pollution Bulletin* 137: 638-645.

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