

2013 BRIEFING BOOK

Federal Actions to Address Plastic Marine Pollution

Preventing Marine Plastic Pollution through Upstream Controls and Life-Cycle Management

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U.N. Environment Programme, U.S. Senate
Ocean Caucus, Natural Resources Defense
Council, & Surfrider Foundation



**Surfrider Foundation &
UCLA's Frank G. Wells
Environmental Law Clinic**

Surfrider Foundation is a non-profit grassroots organization dedicated to the protection and enjoyment of the world's oceans, waves and beaches through a powerful activist network. Founded in 1984 by a handful of visionary surfers in Malibu, California, the Surfrider Foundation now maintains over 250,000 supporters, activists and members, as well as over 100 chapters worldwide. Surfrider Foundation volunteers engage in their community through activities like beach clean ups to help protect our precious coastal areas. In 2007, the organization's Rise Above Plastics program was founded to reduce the impacts of single-use plastics on the marine environment by raising awareness about the dangers of plastic pollution and advocating for a reduction of single-use plastics and the recycling of all existing plastics.

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Marine Plastic Pollution Must Be Addressed

- The plastic produced in the first ten years of this century surpassed the amount produced in the entire last century.
- The five oceanic gyres are estimated to contain 100 million tons of marine litter,¹ and an estimated 20 million tons of plastic litter enter the ocean each year.²
- There is a grave need for additional regulation of single-use plastics that end up in our waterways.
- There are currently 118 single-use plastic bag local bans or fees in the United States, with the entire state of Hawaii and the District of Columbia covered by such regulations.³

Recommendations for federal action include:

- *Banning or imposing a fee on heavily littered items such as single-use plastic bags and food containers*
- *Establishing a federal deposit-refund system for heavily littered items such as single-use plastic bags and beverage bottles*
- *Implementing Extended Producer Responsibility (EPR) programs*

Marine litter is “any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment.”

UNEP (2009).

In the 1970s, the hole in the Ozone Layer was the most important global environmental problem.

Years of emissions of ozone-depleting chlorofluorocarbons (CFCs) had degraded the Ozone Layer in the troposphere, increasing human exposure to carcinogenic ultraviolet light.⁴ At the time, CFCs—like plastics—were used in a wide variety of consumer products such as air conditioners, refrigerators, furniture, auto parts, and insulation.⁵ Congress took action to address the problem by amending the Clean Air Act to allow the Environmental Protection Agency to regulate CFCs. The United States rallied the international community to pass the most successful international environmental agreement to date, the Montreal Protocol on Substances that Deplete the Ozone Layer. American and international policy efforts successfully reduced global consumption and production of CFCs by 95 percent.⁶ Today, the hole in the Ozone Layer is the smallest it has been in twenty years.

What CFCs were to the ozone layer in the 1970s, plastic marine litter is now to the ocean.

Plastic marine litter starves, poisons, strangles, and results in other harm to marine wildlife. Toxic chemicals sorbed onto plastic particles or used in the production of plastic can be transferred to wildlife through plastic ingestion, potentially impacting human health. Plastic marine litter also results in billions of dollars of damage and other costs to the fishing, tourism, and shipping industries.

Local governments incur high costs associated with municipal waste and litter clean-up services, of which plastic constitutes a significant percentage.

State and local governments have responded to these significant ecological and economic impacts with innovative policies to eliminate plastic waste, such as banning single-use plastic bags and expanded polystyrene packaging; recycling laws; deposit-refund systems; and Extended Producer Responsibility policies. Such efforts have garnered broad support in spite of intense opposition from the plastics industry. The success of state and local efforts demonstrates that Congress can adopt effective federal policies to reduce the production, consumption, and improper disposal of plastic.

As was the case with CFCs and the ozone layer, proactive federal measures to reduce plastic consumption and production would, over time, significantly reduce the problem of marine plastic litter.

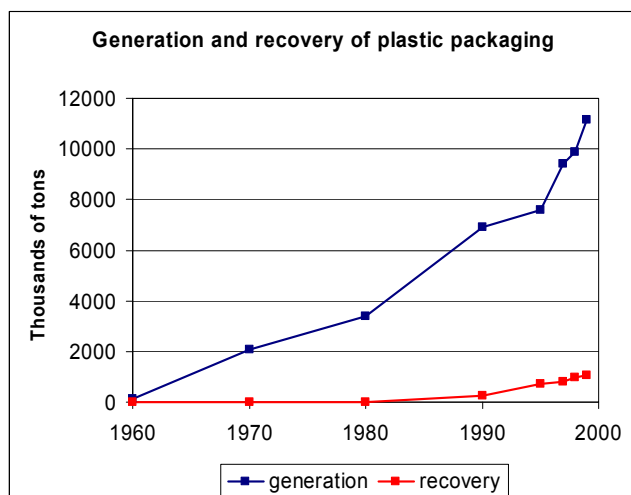


Successful state, local, and international policies can serve as a model for federal policies. For instance, a federal plastic bag and food container restrictions coupled with a federal bottle deposit law could significantly reduce the most common types of plastic litter. Experiences from other countries show that a federal Extended Producer Responsibility program would promote ocean-friendly packaging design, and reduce plastic production and use.

I. The Harms of Plastic Marine Litter

Plastic marine litter is one of the most pervasive and menacing problems affecting the marine environment. The volume of plastics produced in the world has sharply increased in the past decades,⁷ and an increasing amount of plastic litter ends up in

waterways and the ocean.⁸ The amount of plastic trash on beaches, including plastic bags and bottles, has increased 5.4 percent annually.⁹ An estimated 20 million tons of plastic enter the ocean each year.¹⁰ All marine litter can be linked to human activities on land or at sea. It is estimated that land-based sources of marine litter account for 60-80 percent of all marine litter, and plastic accounts for between 60-90 percent of this litter.¹¹



Generation and recovery of plastic packaging in the U.S. solid waste stream (Cal. Ocean Prot. Council 2008).

Marine litter tends to accumulate in a limited number of sub-tropical convergence zones known as **gyres** or garbage patches.¹² Currently, there are five gyres: North Pacific, South Pacific, North Atlantic, South Atlantic, and Indian Ocean.¹³ Studies have shown that marine litter deposited in coastal areas tends to accumulate in the gyres within two years of entering the ocean.¹⁴ The litter

remains cycling within these gyres for many years, with more than 200,000 pieces of plastic per square kilometer in some areas.¹⁵ The sizes of the gyres are difficult to determine because they are constantly expanding and moving, but the gyres are estimated to contain 100 million tons of marine litter.¹⁶

Plastic Marine Litter Harms Wildlife and Ecosystems

Plastic litter is particularly hazardous to the marine environment because plastics are durable, buoyant, waterproof, indigestible, and non-biodegradable.¹⁷ Plastics can starve, poison, and strangle marine life through ingestion and entanglement.



Ingestion of plastic can wound animals internally by piercing their gut. Animals at all levels of the food chain consume plastic.¹⁸ And, because plastic can resist biological degradation, it can fill animals' stomachs so that they have a false sense of fullness causing malnutrition and eventually starvation.¹⁹ Furthermore, scientific studies have shown that toxic chemicals from plastic particles can be transferred to wildlife through plastic ingestion.²⁰ Once an animal dies, its body will decompose and release the plastic again to harm or kill other animals. **Entanglement** in marine debris has been documented to affect 32 species of marine mammals including whales and sea lions, 51 species of seabirds, and 6 species of sea turtles.²¹ Entanglement can kill wildlife

or impair an animal's ability to swim, meaning entangled animals must eat more to accommodate for the increased weight and drag while swimming, and may have greater difficulty evading predators.²²

“Plastic marine litter starves, poisons, strangles, and results in other harm to marine wildlife.”

The Disturbing Statistics of Plastic Consumption

- 50 to 80 percent of dead sea turtles have ingested plastic. Plastic bags, which resemble jellyfish, are the most commonly found item in sea turtles' stomachs.²³
- Worldwide, 82 of 144 examined bird species contained plastic debris in their stomachs; and in some cases, 80 percent of the population had consumed plastic.²⁴
- Researchers found that 66 percent of Giant Petrel shorebirds regurgitated plastic when feeding their chicks.²⁵
- Commercial fish, such as Opah and Bigeye Tuna, consume plastic,²⁶ which could significantly reduce global populations.²⁷ A University of Hawaii study reports “[i]n the two [Opah] species found in Hawaiian waters, 58 percent of the small-eye opah and 43 percent of the big-eye opah had ingested some kind of debris.”

The Harms of Toxic Chemicals and Microplastics

Toxic chemicals in plastics can poison marine animals that ingest plastic. Polychlorinated Biphenyls (PCBs) in surrounding seawater accumulate on marine plastic litter. Concentrations of the pesticide DDT, polycyclic aromatic hydrocarbons (PAHs), and other persistent organic pollutants and pesticides have been found on samples of plastic litter collected from the North Pacific and coastal Hawaii and

California.²⁸ Pollutants added to some plastics at the time of manufacturing, including bisphenol A (BPA) and phthalates are linked to endocrine disruption, and are capable of being transferred to wildlife through plastic ingestion.²⁹ Plastics, their chemical additives, and the toxins that accumulate on them may impact the entire food chain through animal ingestion of **microplastics**.³⁰

Plastic Waste is Costly for Industry and Taxpayers

Plastic marine litter has adverse effects on ocean-dependent industries; local and state governments; and individual taxpayers. The economic costs of marine litter are often borne by those affected rather than those responsible for the problem.³¹

Marine litter causes millions of dollars in lost fishing and tourism revenue in the United States. The United States also spends an estimated \$10.8 billion annually on litter cleanup, with state and local governments picking up 11.5 percent of the cost.³² The direct costs of cleaning up marine litter for West Coast communities are more than \$520 million.³³ These costs include beach and waterways cleanup, street sweeping, storm water capture devices, storm drain cleaning and maintenance, manual cleanup, and public education.³⁴ One study found that small and medium-sized communities spend at least \$14 per year for each resident in these trash management and marine litter reduction efforts.³⁵

Marine Litter Costs the World Economy Billions of Dollars Each Year

- The Asia-Pacific Economic Cooperation estimated that marine litter **damage costs the fishing, shipping, and tourism industries within the region \$1.265 billion annually.**³⁶
- A South Africa study suggests that a drop in beach cleanliness standards could result in **the loss of up to 52 percent of tourism revenue.**³⁷

“The economic costs of marine litter are often borne by those affected rather than those responsible for the problem.”

II. State, Local, and International Efforts to Address Plastic Waste and Marine Debris

In recent years, state and local governments have considered and enacted various forms of legislation, market-based instruments, and waste management programs to address the adverse environmental and economic impacts of plastic waste, including: bans and fees on single-use plastic bags; recycling laws; deposit-refund systems; and Extended Producer Responsibility (EPR) policies.

✓ **POLICY SUCCESS:** Bans and Fees on Single-Use Plastic Bags

Countries on nearly every continent have enacted legislation to reduce the use of on single-use non-biodegradable plastic bags that clutter sidewalks, clog storm drains, and eventually find their way into the oceans.³⁸ Notably, the European Commission adopted regulations in November 2013 that would require member states to either start charging for single-use plastic bags or ban them altogether. More than 70 percent of commenters on the proposed regulations agreed that a ban was needed.³⁹

County and municipal governments throughout the United States have also begun to adopt bans or imposed fees on single-use non-biodegradable plastic bags in response to plastic bag litter that clutters sidewalks, clogs storm drains, and eventually finds its

way into the ocean. Local bag bans and fees have been widely successful in reducing the environmental harms and economic costs associated with plastic bag waste and litter. Many states legislatures also have considered plastic bag bans or fees, including Oregon, California, Maryland, and Virginia, but no state has yet enacted a ban or fee into law.

Washington, D.C.'s Plastic Bag Fee



All businesses selling food or alcohol are required to charge a five-cent fee for disposable plastic and paper bags. The retailer retains 1-2 cents of the fee to cover administrative costs; the remainder goes to the Anacostia River Fund, which is used for public education, providing reusable bags to residents, and upgrading storm drains.⁴⁰

Results: In the first month of implementation, bag use dropped from 22.5 million bags per month to 3 million bags.⁴² To date, the fee has generated more than \$6 million for the Anacostia River Fund.⁴³

San Francisco's Plastic Bag Ban



In 2007, the City of San Francisco became the first municipality to ban large retailers from distributing single-use plastic bags. San Francisco has since extended the ban to all retailers and take-out restaurants. The ordinance requires retailers to impose a 10-cent fee for each recyclable paper or compostable bag.⁴¹

Results: Prior to the ban, San Francisco produced an estimated 180 million single-use plastic bags per year.⁴⁴ In the first year of implementation, the ban resulted in 5 million fewer plastic bags every month.⁴⁵

Hawaii's De Facto State Bag Ban



All four counties in Hawaii prohibit retailers from providing non-biodegradable plastic bags. All counties except Hawaii County also prohibit paper bags that are comprised of less than 40 percent recycled material and are not 100 percent recyclable. The bans are enforced in part through civil fines up to \$1000.

Results: Consumers on Oahu have shifted mainly to paper bags.⁴⁶ Consequently, the Hawaii Congress introduced a bill that would charge a ten-cent fee for every single-use checkout bag; as of January 2013, this bill has seen no movement.⁴⁷

In the Ocean Conservancy's Annual International Coastal Cleanup, plastic bags are the second most common item removed from waterways, shorelines, and oceans around the world. Due to their lightweight nature and ubiquitous usage, plastic bags easily find their way into waterways that drain to the ocean.

UNEP Year Book:
Emerging Issues in Our
Global Environment
(2011).

The Plastics Industry's Opposition to Bag Bans

The plastics industry has responded to the growing movement of plastic bag ordinances at the local level with lawsuits, threats of endless litigation, and the pursuit of preemptive policies to prevent the imposition of bans or fees on plastic bags. California has served as the forum for much of the recent plastic bag litigation. One prominent group of plastic bag manufacturers and distributors, **Save the Plastic Bag Coalition**, has filed various lawsuits requesting courts to force cities such as San Francisco to perform extensive and expensive environmental impact reports under the California Environmental Quality Act.⁴⁸

Industry Blocked Oregon's Plastic Bag Ban Legislation

Oregonians use an estimated 1.7 billion plastic bags every year, and only 5 percent of those bags are recycled.⁴⁹ Plastic bags make up approximately 7 percent of the garbage on Oregon's beaches.⁵⁰ In response to these harmful impacts, in 2011, two Republicans and two Democrats in Oregon's state legislature co-sponsored **SB-536**, a bill that would have banned single-use plastic bags in grocery stores and other retail establishments, and required retailers to charge five cents for a paper bag.

The bill garnered support from almost 500 Oregonian businesses, including the Northwest Grocery Association and Fred Meyer grocery stores, Oregon's biggest bag user. Supporters argued that it was important for Oregon to adopt a uniform statewide policy to avoid a patchwork of local bag bans and fees across the state.⁵¹ The plastic bag industry, including the American Chemistry Council (ACC) and Hilex Poly, a leading plastic bag manufacturer, strongly opposed the bill. From 2009 to 2011, Hilex Poly spent at least \$104,000⁵² and ACC spent more than \$85,000⁵³ on lobbying for the ban to be replaced with language prohibiting local governments from passing their own plastic bag ordinances.⁵⁴ Ultimately, the bill died in committee. Shortly following the death of the state bill, the cities of Portland, Eugene, and Corvallis adopted ordinances to ban plastic bags, with more Oregon cities likely to follow suit.⁵⁵

POLICY FAILURE: State Plastic Bag Recycling Programs

Only six states have enacted some form of plastic bag recycling, labeling, or reuse laws.⁵⁶ According to the EPA, the United States consumes roughly 380 billion plastic bags each year and recycles less than 5 percent of them.⁵⁷

Plastic bags present a particular challenge to waste management companies and recyclers. For instance, Norcal Recycling, a garbage collector in San Francisco, spends approximately \$494,000 per year on "classifier" employees who separate plastic bags from other recyclable materials. It also spends \$100,000 per year on clearing machinery jams caused by plastic bags.⁵⁸ Similarly, SP Recycling, an Oregon recycling company, spends approximately 20 to 30 percent of its labor costs on dealing with plastic bag film that clogs and jams sorting equipment.⁵⁹ At each facility on a monthly basis, SP Recycling spends an estimated \$30,000 to \$40,000 to pull more than 5 tons of plastic bags and plastic bag film from their sorting equipment. The market value, however, for these 5 tons after baling and transportation is around \$250, if SP Recycling can sell it. This problem is prevalent in every state.⁶⁰

Additionally, unlike plastic beverage containers, plastic bags have a relatively low market value for used plastic bags, which means it may not be economically feasible for recyclers to expand their plastic bag recycling efforts. According to the Clean Air Council, recycling one ton of plastic bags costs \$4,000, while the recycled product can have a market value of around \$32.⁶¹ Furthermore, plastic bags can only be "downcycled" into other non-recyclable plastic products, and therefore cannot be recycled into new plastic bags,⁶² and recycling plastics can also be harmful to the environment because it often involves burning plastics.⁶³

The Poor Economics of Single-Use Plastic Bags

- California spends approximately \$25 million each year to send plastic bags to landfills, and another \$8.5 million to remove littered bags from streets.⁶⁴
- In Colorado, the Larimer County Landfill spends approximately 30 percent of its budget on on-site clean-up of plastic bags.⁶⁵ On any given day, employees at the facility spend at least two of the facility's four hours of down time removing plastic bags from the system.
- Each 1-cent plastic bag used at a retail establishment in Rhode Island costs over 10 cents to society as a whole after factoring in the costs of production (e.g., carbon dioxide emissions), litter disposal, landfill disposal, and improper recycling.⁶⁶
- From 2006 to 2009, Washington, D.C. spent an average of \$319,000 per year to operate and maintain two boats that removed floating litter from its waterways.⁶⁷

Opponents of bans on single-use plastic bags, particularly the plastics industry, argue that efforts should be made toward recycling, not banning single-use plastic bags. Yet, data shows that the recycling rates for plastic bags where recycling programs exist have remained low. Opponents of such bans also argue that single-use plastic bags often get reused for household purposes, such as trashcan liners. This argument fails to take into account that an overwhelming majority of these bags still enter the waste stream, storm sewer systems, and waterways leading to the ocean. Plastic bags also end up in landfills and materials recovery facilities, where they cause significant problems for waste management companies by damaging equipment and causing costly delays.

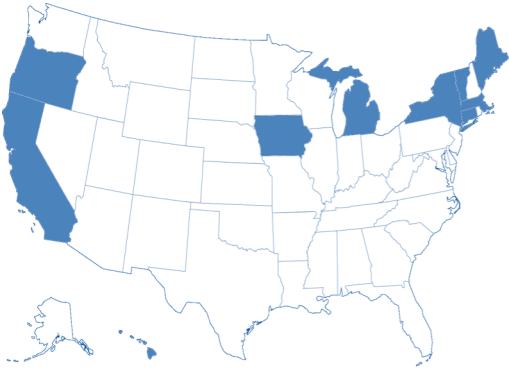
Rhode Island's Failed Plastic Bag Recycling Program

In 2005, Rhode Island became the first state to offer statewide collection and recycling for plastic bags.⁶⁸ The Rhode Island Resource Recovery Corporation (RIRRC) developed the "ReStore" recycling program in partnership with the Rhode Island Food Dealers Association (RIFDA) and more than sixty grocery stores around the state.⁶⁹ Every market within the RIFDA endorsed ReStore and promoted the program by placing blue ReStore barrels in their stores. ReStore was free for both consumers and the markets displaying the collection barrels, and allowed consumers to recycle all types of plastic film including produce baggies, plastic newspaper sleeves, and dry cleaner bags. The collected materials were either baled and marketed on their own, or delivered to the RIRRC's Materials Recycling Facility where they were baled and sold to plastic film remanufacturers.⁷⁰

During the first year of ReStore, consumers recycled approximately 18 million bags, but the overall recycling rate never even reached 10 percent.⁷¹ The recycling rate has not improved over time because of the lack of compliance with and enforcement of the program. It is estimated that 180 million plastic grocery bags are still sent to Rhode Island's Central Landfill each year.⁷²

✓ POLICY SUCCESS: State Deposit-Refund Systems

Deposit-refund systems create market incentives for proper disposal of potentially polluting products by combining a product charge (i.e., a **deposit**) and a subsidy for recycling or properly disposing of the product (i.e., a **refund**).⁷³ These systems are commonly applied to beverage containers because such containers make up a significant proportion of litter. Deposits for beverage containers range from **\$0.15 to \$0.25 per container**.⁷⁴ Manufacturers' and vendors' costs in handling returned products are partially offset by the interest earned on deposits, unclaimed deposits, and sales of collected products.



States with deposit-refund systems for bottles.

Bottle deposit laws have significantly reduced litter and increased the percentage of containers recycled in several states. For example, Oregon reported a 75 percent to 85 percent decrease in roadside litter only two years after enacting its deposit law. Deposit-refund systems have been shown to be more cost-effective than other methods of reducing waste disposal, such as recycling subsidies. Compared with curbside recycling programs, deposit-refund systems also generate higher percentages of materials returned and less contamination of collected materials.⁷⁵

The U.S. Congress has considered but not enacted federal legislation on deposit-refund systems. Industry has voluntarily implemented some deposit-refund systems, while state or local authorities have implemented others.⁷⁶ Although there are no deposit-refund systems for plastic bags, 10 states currently have deposit-refund systems for bottles.⁷⁷

DEPOSIT-REFUND SYSTEMS:

- Encourage recycling and careful stewardship of products of value.
- Discourage litter that is harmful to the environment but difficult to monitor.
- Reduce costs associated with litter clean-up.
- Divert recyclable items from the waste stream.

California's Deposit-Refund System

California retailers are not responsible for collecting deposits and issuing refunds to consumers, and containers are not returned to their original distributors. Instead, bottle manufacturers pay a \$0.05 fee for every container under 24 ounces and \$0.10 for every container over 24 ounces.⁷⁸ The revenues go into a state recycling fund, which then pays the same respective amounts to the party that redeems the containers. This means anyone can be a collector, and payment can be passed onto consumers as an incentive for returning the containers.⁷⁹ This system was the product of a compromise between retailers (who did not want to manage used containers at their locations) and environmentalists (who wanted to stimulate recycling through economic incentives). Like all other states with deposit-refund systems, all bottles must have the label "CA Redemption Value" or "California Redemption Value."

As a result of this system, California is more cost-effective than systems where redemption is managed through vendors. In 2012, Californians recycled more than 17.2 billion beverage containers, a recycling rate of 82 percent.⁸⁰ California's system generated \$200 million in 2011 revenues, which financed grants for private non-profit programs and public-sector activities that help reduce litter and promote recycling.⁸¹

✓ POLICY SUCCESS: Extended Producer Responsibility

Extended Producer Responsibility (EPR) is a producer-end mechanism to decrease waste, particularly plastic waste, by increasing recycling and decreasing dependency on raw materials. EPR shifts the cost of managing post-use products partially or fully from local governments to the producing industry.⁸² EPR is based on the “polluter pays” principle, which holds that those who produce the waste are responsible for recycling and disposal. By requiring industry to take back products at the end of a product’s life, industry can best design products to enhance their reusability.⁸³ In this way, EPR is similar to product liability law, in that holding companies responsible for the “injury” created by their products incentivizes companies to improve the design of those products to minimize that injury.⁸⁴ EPR laws for packaging serve as a means to divert waste from entering landfills and to increase recycling of reusable materials, thereby decreasing sources of marine pollution.⁸⁵

Although no U.S. state has passed legislation implementing comprehensive EPR for paper and packaging, at least thirty-three countries have implemented effective EPR policies. For example, Germany’s Packaging Ordinance dramatically increased recycling and reduced plastics packaging from 40 percent by volume to 27 percent.⁸⁶

Similarly, three Canadian provinces—Quebec, Manitoba, and Ontario—have EPR programs for packaging and printed materials. Each province’s law targets any package or container made from glass, metal, or plastic, and printed materials.⁸⁷ Industry is required to bear a significant portion of the net cost of municipal recycling, ranging from 50 percent to 100 percent. Within the first few years of its program, Manitoba saw a 42 percent reduction in single-use plastic bags supplied or sold.⁸⁸

Proposed EPR Legislation in California and Rhode Island

California Senator Mark Leno introduced the **Plastic and Marine Pollution Reduction, Recycling and Composting Act (SB 529)** in February 2013. The bill would require fast food facilities to distribute only compostable or recyclable food service packaging and carryout bags. Each facility would be required to demonstrate that the type of packaging distributed is being composted or recycled at a rate of 25 percent or more by July 2016; 50 percent or more by July 2018; and 75 percent or more by July 2020. Violators would be subject to civil penalties of \$100 to \$10,000 per day. Funds collected would be used for public education, to assist local governments in marine debris clean-up efforts, and administrative costs.

In 2013, Rhode Island legislators proposed the **Marine Debris Reduction Act (H. 5264)** to establish a manufacturer-financed system for collection, recycling, and reuse of discarded post-consumer packaging materials. House bill 5264 would have required producers of packaging to develop and submit a plan indicating how to achieve an 80 percent recycling rate by 2020 for each type of packaging for which the producer is responsible. The bill ultimately died in committee.

III. Federal Policy Recommendations

Plastic marine litter is a worsening tragedy of the global commons, and individual state and local action cannot solve this problem alone. Plastic products do not degrade, cause numerous environmental and economic externalities, and take up significant space in garbage dumps. Federal action is needed to address this problem because certain policy approaches such as EPR programs can have high start-up costs for state governments and industry. The lack of national legislation creates a race to the bottom where states will not pass laws for fear of increasing local costs and driving consumers and producers out of state. Yet, without regulation, waste generation in the United States will increase at considerable cost to local governments, and plastic marine litter will proliferate to the detriment of fishing- and tourism-dependent communities, the shipping industry, and marine wildlife.

Potential federal actions to address plastic marine litter include:

- **Banning or imposing a fee on heavily littered single-use plastic items (e.g., bags, food containers).**
- **Establishing a national deposit-refund system for heavily littered single-use plastic items (e.g., beverage bottles, bags).**
- **Implementing extended producer responsibility (EPR) programs.**

Banning or Imposing a Fee on Plastic Bags and Food Containers

Successful bag ban ordinances in cities and counties around the country demonstrate that a ban on single-use plastic bags or food containers can significantly reduce plastic litter without harmful economic impacts on consumers, small businesses, or large retailers. In order to prevent the ban from being overbroad, the ban could exempt plastic items with certain necessary uses (e.g., protecting unwrapped prepared foods; preventing contamination of other goods placed together in the same bag; or enclosing prescription drugs from pharmacies).⁸⁹

The combination of a plastic bag ban and a fee on paper bags would be the most effective tool in reducing plastic bag pollution. Imposing a fee on heavily littered single-use plastic items is a viable alternative to a ban. As with a ban policy, the fee policy should contain exceptions for certain plastic items. In order to facilitate monitoring and inform consumers of the fee, the policy should require businesses to list the fee as a single-line item on a customer's receipt. Additionally, the policy should provide for periodic or incremental increases in fees while also factoring in the rate of inflation. To avoid disproportionate effects on low-income individuals and families, the policy could exempt any transaction involving a food assistance or food stamp program.

Revenue generated could go entirely to retailers or food establishments to help cover the administrative costs, as in the San Francisco model. Alternatively, the policy could adopt a fee-sharing arrangement, as in Washington, D.C., where the retailer retains 20 percent of the fee.⁹⁰ The remaining revenue could go to a fund dedicated to litter clean up and prevention, education and awareness programs, and federal

*Recycled paper bags should be made with at least 40 percent post-consumer recycled content and should be subject to a charge of at least **\$0.10** when coupled with a plastic bag ban, while allowing retailers and food establishments to charge more if they so wish.*

administrative costs. A federal fee policy also could give retailers an economic incentive to promote reusable bags by offering retailers 30 to 40 percent of the fee if the retailers give at least a \$0.05 credit to customers who use reusable bags. Major retailers such as Whole Foods and Target already offer a 5- to 10-cent credit to customers who use reusable bags.⁹¹

An efficient recycling program must be in place for a deposit-refund system to be effective. Given the low market value for some recycled plastic materials such as plastic bags, a deposit-refund federal policy may want to incorporate market-based instruments, such as a tax incentive credit program, to make recycling more cost-effective.

(UNEP 2009).

Ireland's Successful Plastic Bag Tax

In order to reduce visual litter, Ireland implemented regulations in 2002 that imposed a €0.15 (0.21 USD) tax on each single-use plastic bag.⁹² In July 2007, the tax increased to €0.22 (0.30 USD) for each plastic bag. The tax revenue goes to an Environment Fund that promotes waste reduction, waste management, and environmental protection campaigns.

Before the tax, plastic bags constituted 5 percent of Ireland's litter.⁹³ Within one year of the tax, that number dropped to 0.32 percent. Overall, the tax decreased plastic bag usage from 328 bags per capita to 21 bags per capita.⁹⁴

Establishing a National Deposit-Refund System for Bags, Beverage Containers, and Other Single-Use Plastic Items

The federal government could create a deposit-refund system similar to California's beverage container system for plastic bottles, plastic bags, and other heavily littered single-use plastic items. Consumers would pay a deposit at checkout but would be able to redeem the deposit by returning the single-use plastic item to a designated collector or recycler for proper disposal or reuse.

5 FEATURES OF SUCCESSFUL FEDERAL LITTER POLICIES:

- 1) Incorporate **adaptive management** procedures that enable stakeholders to address new information about impacts.
- 2) Direct **economic incentives to producers and consumers**.
- 3) State and local governments should have **flexibility** to tailor the national policy to local needs.
- 4) Ensure that regulatory **compliance and monitoring** mechanisms are in place.
- 5) Inform the public about the policy through **awareness and education campaigns**.

Implementing Federal EPR Programs

A federal EPR policy could mimic the successful Canadian approach by imposing a fee on industry. Fees paid by industry could be placed into a federal fund, and municipal governments could apply to this fund to cover the cost of recycling programs. The fee imposed on industry could vary based on the quantity of material used in the packaging of consumer goods to incentivize companies to reduce packaging in products and thereby pay less in fees. On aggregate, the fees should aim to cover the cost of municipal recycling by 30 percent and increase over time eventually to 100 percent cost coverage.

Conclusion

Plastic litter poses a serious threat to the marine environment and imposes significant economic costs on governments and industries. As legislation to address plastic waste continues to grow in popularity at the state and local levels, the need for national cooperation and uniformity in tackling this environmental issue will also grow. Congress can show leadership and act now by drawing upon policies that have been proven successful domestically and abroad to develop a national guiding strategy for addressing the problem of plastic marine pollution.

References

- ¹ U.S. EPA, MARINE DEBRIS IN THE NORTH PACIFIC: A SUMMARY OF EXISTING INFORMATION AND IDENTIFICATION OF DATA GAPS 3 (2011).
- ² Raveender Vannela, *Are We “Digging Our Own Grave” Under the Oceans? Biosphere Level Effects and Global Policy Challenge from Plastic(s) in Oceans*, 46(15) ENVTL. SCI. & TECH. 7932, 7932 (2012).
- ³ See current list of regulations here: <http://www.surfrider.org/pages/plastic-bag-bans-fees>.
- ⁴ Basic Information About Skin Cancer, CENTER FOR DISEASE CONTROL & PREVENTION (Oct. 5, 2013), http://www.cdc.gov/cancer/skin/basic_info/.
- ⁵ Olga Goldberg, Note, *Biodegradable Plastics: A Stopgap Solution for the Intractable Marine Debris Problem*, 42 TEX. ENVTL. L.J. 307, 337 (2012).
- ⁶ *Id.*
- ⁷ OSPAR COMM’N, MARINE LITTER IN THE NORTH-EAST ATLANTIC REGION IV (2009).
- ⁸ UNEP, UNEP YEAR BOOK: EMERGING ISSUES IN OUR GLOBAL ENVIRONMENT 57 (2013).
- ⁹ CAL. OCEAN PROTECTION COUNCIL, AN IMPLEMENTATION STRATEGY FOR THE CALIFORNIA OCEAN PROTECTION COUNCIL RESOLUTION TO REDUCE & PREVENT OCEAN LITTER 8 (2008), available at http://www.opc.ca.gov/webmaster/ftp/pdf/opc_ocean_litter_final_strategy.pdf.
- ¹⁰ Vannela, *supra* note 2, at 7932.
- ¹¹ CAL. OCEAN PROTECTION COUNCIL, *supra* note 9, at 3.
- ¹² UNEP, *supra* note 8, at 23.
- ¹³ See *Global Research*, 5 GYRES INSTITUTE, http://5gyres.org/see_global_research/ (last accessed Oct. 5, 2013).
- ¹⁴ U.S. EPA, MARINE DEBRIS IN THE NORTH PACIFIC, *supra* note 1, at 6.
- ¹⁵ UNEP, *supra* note 8, at 23.
- ¹⁶ U.S. EPA, MARINE DEBRIS IN THE NORTH PACIFIC, *supra* note 1, at 3.
- ¹⁷ *Id.*
- ¹⁸ Richard C. Thompson et al., *Lost at Sea: Where Is All the Plastic*, 304 SCIENCE 838, Supplemental Online Material 3 (2004); C. Anela Choy & Jeffery C. Drazen, *Plastic for Dinner? Observations of Frequent Debris Ingestion by Pelagic Predatory Fishes from the Central North Pacific*, 485 MARINE ECOLOGY PROGRESS SERIES 155 (2013).
- ¹⁹ Murray Gregory, *Environmental Implications of Plastic Debris in Marine Settings*, 364 PHILOSOPH. TRANSACT. ROYAL SOCIETY 2013, 2016 (2009).
- ²⁰ Emma L. Teuten et al., *Transport and Release of Chemicals from plastics to the Environment and to Wildlife*, 364 PHILOSOPH. TRANSACT. ROYAL SOCIETY 2027, 2028 (2009).
- ²¹ GREENPEACE, PLASTIC DEBRIS IN THE WORLD’S OCEANS 14 (2006), available at http://www.greenpeace.org/international/Global/international/planet-2/report/2007/8/plastic_ocean_report.pdf.
- ²² *Id.* at 15.
- ²³ N. Mrosovsky, *Leatherback Turtles: The Menace of Plastic*, 58 MARINE POLLUTION BULLETIN 287 (2009).
- ²⁴ GREENPEACE, *supra* note 21, at 20.
- ²⁵ *Id.*
- ²⁶ Choy & Drazen, *supra* note 18, at 161.
- ²⁷ Christiana M. Boerger et al., *Plastic Ingestion by Planktivorous Fishes in the North Pacific Central Gyre*, 60 MARINE POLLUTION BULLETIN 2275, 2277 (2010).
- ²⁸ Teuten et al., *supra* note 20, at 2032.
- ²⁹ *Id.* at 2042.
- ³⁰ Thompson et al., *supra* note 18.
- ³¹ UNEP, *supra* note 8, at 28.
- ³² TEX. LEAGUE OF CONSERVATION VOTERS, THE POTENTIAL ECONOMIC IMPACT OF A TEXAS BEVERAGE CONTAINER DEPOSIT REFUND SYSTEM 8 (2013).
- ³³ U.S. EPA, REGION IX, THE COST TO WEST COAST COMMUNITIES OF DEALING WITH TRASH, REDUCING MARINE DEBRIS 11 (2012).
- ³⁴ *Id.* at 1.
- ³⁵ *Id.* at 18.
- ³⁶ ASIA-PACIFIC ECONOMIC COOPERATION, UNDERSTANDING THE ECONOMIC BENEFITS AND COSTS OF CONTROLLING MARINE DEBRIS IN THE APEC REGION 12 (2009).
- ³⁷ *Id.*
- ³⁸ METROPOLITAN WASHINGTON COUNCIL OF GOV’TS, CHESAPEAKE BAY & WATER RESOURCES POL’Y COMM., PLASTIC BAG REPORT 27 (2009).
- ³⁹ See Press Release, European Comm’n, Environment: Commission Proposes to Reduce the Use of Plastic Bags (Nov. 4, 2013), available at http://europa.eu/rapid/press-release_IP-13-1017_en.htm; Press Release, European Env’tl. Bureau, Overwhelming Public Support for EU Plastic Bag Ban (Jan. 17, 2012), available at <http://www.eeb.org/index.cfm/news-events/news/overwhelming-public-support-for-eu-plastic-bag-ban/>.
- ⁴⁰ Anacostia River Clean Up and Protection Act of 2009, D.C. CODE § 8-102.03.
- ⁴¹ S.F., CAL., ENV’T CODE ch. 17, §§ 1701-1709.

-
- ⁴² Lauren McGaughy, *Plastic bag tax proposed by Louisiana lawmaker*, TIMES PICAYUNE, MAR. 29, 2013, http://www.nola.com/politics/index.ssf/2013/03/plastic_bag_tax_louisiana.html.
- ⁴³ *Id.*
- ⁴⁴ Jennie R. Romer, *The Evolution of San Francisco's Plastic-Bag Ban*, 1 GOLDEN GATE U. ENVTL. L.J. 440 (2010).
- ⁴⁵ David Gorn, *San Francisco Plastic Bag Ban Interests Other Cities*, NPR, Mar. 27, 2008, <http://www.npr.org/templates/story/story.php?storyId=89135360>.
- ⁴⁶ Miguel Llanos, *Hawaii First State to Ban Plastic Bags at Checkout*, NBC NEWS, May 16, 2012, <http://usnews.nbcnews.com/news/2012/05/16/11720480-hawaii-first-state-to-ban-plastic-bags-at-checkout?lite>.
- ⁴⁷ Relating to Single-Use Checkout Bags Fees, H.B. 934, 27th Leg. (Haw. 2013).
- ⁴⁸ Eric Nicholson, *If Dallas Wants to Ban Plastic Bags, It Should Be Prepared to Get Sued by Retailers*, DALLAS OBSERVER, Feb. 27, 2013, http://blogs.dallasobserver.com/unfairpark/2013/02/retailers_are_suing_austin_ove.php.
- ⁴⁹ *Ban the Bag!*, Oregon League of Conservation Voters, <http://www.oleveducationfund.org/BantheBag> (last visited Sept. 18, 2013); see also Ted Duboise, *Oregon Legislature Ponders Plastic Bag Ban*, PLASTIC BAG BAN REPORT, <http://plasticbagbanreport.com/oregon-legislature-ponders-plastic-bag-ban/>.
- ⁵⁰ *Summary Report: Oregon*, OCEAN CONSERVANCY, <http://act.oceanconservancy.org/2007ICC/US/Oregon2007.pdf> (last visited Sept. 18, 2013).
- ⁵¹ *Ban the Bag!*, Oregon League of Conservation Voters, <http://www.oleveducationfund.org/BantheBag> (last visited Sept. 18, 2013); see also Ted Duboise, *Oregon Legislature Ponders Plastic Bag Ban*, PLASTIC BAG BAN REPORT, <http://plasticbagbanreport.com/oregon-legislature-ponders-plastic-bag-ban/>.
- ⁵² *Hilex Poly Co*, OREGONIAN, <http://gov.oregonlive.com/lobbying/clients/2011/2403/Hilex-Poly-Co/> (last visited Dec. 2, 2013).
- ⁵³ Jenny Smith, *The American Chemistry Council is Unfortunately Not a Group of High School Science Teachers*, OUR OREGON, <http://ouregon.org/sockeye/blog/american-chemistry-council-unfortunately-not-group-high-school-science-teachers>; *American Chemistry Council*, OREGONIAN, <http://gov.oregonlive.com/lobbying/clients/2011/1532/American-Chemistry-Council/> (last visited Dec. 2, 2013).
- ⁵⁴ Ryan Kost, *Plastic Bag Ban: Oregon Sen. Mark Hass Says Manufacturer Offers Recycling Center to Kill Bill*, OREGONIAN, Mar. 3, 2011, http://www.oregonlive.com/politics/index.ssf/2011/03/plastic_bag_ban_oregon_sen_mar.html.
- ⁵⁵ Beth Slovic, *Portland Adopts Ban On Plastic Bags That Takes Effect Oct. 15*, OREGONIAN, July 21, 2011, http://www.oregonlive.com/portland/index.ssf/2011/07/portland_adopts_ban_on_plastic.html; Shelby Sebens, *Paper or...paper? Plastic bag bans spread in Oregon*, WATCHDOG.ORG (Aug. 7, 2013), <http://watchdog.org/99787/paper-or-paper-plastic-bag-bans-spread-in-oregon/>.
- ⁵⁶ *State Plastic and Paper Bag Legislation: Fees, Taxes and Bans; Recycling and Reuse*, NAT'L CONF. OF STATE LEGISLATURES, <http://www.ncsl.org/issues-research/env-res/plastic-bag-legislation.aspx#summaries> (last visited Dec. 2, 2013).
- ⁵⁷ *The Past, Present and Future of Recycling*, NRDC, <http://www.nrdc.org/cities/recycling/fover.asp> (last visited Dec. 2, 2013).
- ⁵⁸ Romer, *supra* note 44, at 445-46.
- ⁵⁹ CHRIS THOMAS, SP RECYCLING CORP. PLASTIC BAGS AND THE MRF: AOR WINTER FORUM 2010, http://www.aorr.org/events/forum/2010_winter/thomas_aor_forum_012810.pdf (last visited Dec. 2, 2013).
- ⁶⁰ See, e.g., *Common Questions*, R.I. RESOURCE RECOVERY CORP., http://www.recycletogetherri.com/sites/default/files/RecyclingDonts_Printable.pdf (last visited Sept. 20, 2013).
- ⁶¹ *Waste and Recycling Facts*, CLEAN AIR COUNCIL, http://www.cleanair.org/Waste/wasteFacts.html#_ednref6 (last visited Sept. 29, 2013).
- ⁶² Romer, *supra* note 44.
- ⁶³ Chelsea M. Rochman et al., *Classify Plastic Waste as Hazardous*, 494 NATURE 169 (2013).
- ⁶⁴ Romer, *supra* note 44.
- ⁶⁵ CITY OF FORT COLLINS ENVIRONMENTAL SERVICES, TRIPLE BOTTOM LINE EVALUATION: PLASTIC BAG POLICY OPTIONS 10 (2012).
- ⁶⁶ AKULLIAN, ET. AL., *supra* note 71, at 4.
- ⁶⁷ *Marine Litter 101*, NOAA, <http://marinelitter.noaa.gov/marinelitter101/economics.html#effort> (last visited Sept. 21, 2013).
- ⁶⁸ Wendy Angel, *RI Debuts Statewide Plastic Bag Recycling Program*, WASTE360.COM (Sept. 1, 2005), <http://waste360.com/news/RI-plastic-bag-recycling>.
- ⁶⁹ R.I. DEP'T OF ENVTL. MGMT., BUSINESS ROUNDTABLE NEWS (2005), *available at* <http://www.dem.ri.gov/programs/ombuds/bround/pdf/sep05new.pdf>.
- ⁷⁰ *Rhode Island Program Overview*, NORTHEAST RECYCLING COUNCIL, <http://www.nerc.org/state-information/rhode-island/overview> (last visited Dec. 2, 2013).
- ⁷¹ ADAM AKULLIAN, ET. AL., PLASTIC BAG EXTERNALITIES AND POLICY IN RHODE ISLAND 2 (2006).
- ⁷² Frank Carini, *R.I. Needs to Reel In Plastic Bag Waste*, ECORI NEWS (Jan. 18, 2013), <http://www.ecori.org/pollution-contamination/2013/1/18/ri-needs-to-reel-in-plastic-bag-waste.html>.
- ⁷³ U.S. E.P.A., THE UNITED STATES EXPERIENCE WITH ECONOMIC INCENTIVES FOR PROTECTING THE ENVIRONMENT 57 (2001).
- ⁷⁴ Container Recycling Inst., *All US Bottle Bills*, BOTTLE BILL RESOURCE GUIDE, <http://www.bottlebill.org/legislation/usa/allstates.htm> (last visited Dec. 2, 2013).
- ⁷⁵ U.S. E.P.A., THE UNITED STATES EXPERIENCE WITH ECONOMIC INCENTIVES FOR PROTECTING THE ENVIRONMENT, *supra* note 73, at 63.

⁷⁶ *Id.* at 57.

⁷⁷ Container Recycling Inst., *Bottle Bills in the USA*, BOTTLE BILL RESOURCE GUIDE, <http://www.bottlebill.org/legislation/usa.htm> (last visited Dec. 2, 2013).

⁷⁸ Container Recycling Inst., *All US Bottle Bills*, BOTTLE BILL RESOURCE GUIDE, <http://www.bottlebill.org/legislation/usa/allstates.htm> (last visited Dec. 2, 2013).

⁷⁹ U.S. E.P.A., THE UNITED STATES EXPERIENCE WITH ECONOMIC INCENTIVES FOR PROTECTING THE ENVIRONMENT, *supra* note 73, at 62.

⁸⁰ CAL. E.P.A., BIENNIAL REPORT OF BEVERAGE CONTAINER SALES, RETURNS, REDEMPTION, AND RECYCLING RATES (2013), available at <http://www.calrecycle.ca.gov/BevContainer/Notices/2013/Biannual.pdf>.

⁸¹ U.S. E.P.A., THE UNITED STATES EXPERIENCE WITH ECONOMIC INCENTIVES FOR PROTECTING THE ENVIRONMENT, *supra* note 73, at 62; TEX. LEAGUE OF CONSERVATION VOTERS, *supra* note 32, at 8.

⁸² JOHN WILLIAMS ET AL., PUBLIC POLICY APPROACHES FOR THE REDUCTION OF PLASTIC BAG MARINE DEBRIS 37 (Columbia School of Int'l & Pub. Affairs 2012), available at http://new.sipa.columbia.edu/sites/default/files/FOR%20PUBLICATION_Ocean%20Conservancy.pdf (noting that the definition of extended producer responsibility by government entities is itself political).

⁸³ Amy Halpert, Note, *Germany's Solid Waste Disposal System: Shifting the Responsibility*, 14 GEO. INT'L ENVTL. L. REV. 135, 136 (2001).

⁸⁴ Noah Sachs, *Planning the Funeral at the Birth: Extended Producer Responsibility in the E.U. and the U.S.*, 30 HARV. ENVTL. L. REV. 51, 53 (2006).

⁸⁵ See GREENBLUE, CLOSING THE LOOP: ROAD MAP FOR EFFECTIVE MATERIAL VALUE RECOVERY (2011), available at <http://www.greenblue.org/publications/road-map-for-effective-material-value-recovery/>

⁸⁶ R.I. SPECIAL LEGIS. COMM'N TO STUDY PRODUCER RESPONSIBILITY MODELS FOR PAPER & PACKAGING, FINDINGS AND RECOMMENDATIONS 12 (2013), available at <http://www.rilin.state.ri.us/Reports/Paper%20and%20Packing%20Commission%20Final%20Report%206.13.13.pdf>.

⁸⁷ Environment Canada, *Manitoba: Packaging and Printed Materials Stewardship Program* (Oct. 5, 2013), <http://www.ec.gc.ca/gdd-mw/default.asp?lang=En&n=F78AE1E1-1>; *Quebec: Packaging and Printed Materials Stewardship Program*, ENV'T CANADA, <http://www.ec.gc.ca/gdd-mw/default.asp?lang=En&n=DB7979F8-1> (last visited Dec. 2, 2013); *Ontario: Packaging and Printed Materials Stewardship Program*, ENV'T CANADA, <http://www.ec.gc.ca/gdd-mw/default.asp?lang=En&n=FAA9FD12-1> (last visited Dec. 2, 2013).

⁸⁸ MULTI-MATERIAL STEWARDSHIP MANITOBA, ANNUAL REPORT 17 (2012), available at <http://stewardshipmanitoba.org/wp-content/uploads/2013/10/annual-report-2012.pdf>.

⁸⁹ S.F., CAL., ENV'T CODE ch. 17, §§ 1701-1709.

⁹⁰ OCEAN CONSERVANCY, PUBLIC POLICY APPROACHES FOR THE REDUCTION OF PLASTIC BAG MARINE DEBRIS: A SET OF CASE STUDIES COMPARING POLICY DESIGN AND RESULTS AT LOCAL AND NATIONAL LEVELS 6 (2012).

⁹¹ See Jessie Alonzo, *Reusable bags can save shoppers money*, WINSTON-SALEM JOURNAL, Mar. 15, 2013, http://www.journalnow.com/home_food/the_coupon_corner/article_425e8b42-8ce9-11e2-9f72-0019bb30f31a.html; *Sustainable Living*, TARGET, <https://corporate.target.com/corporate-responsibility/environment/sustainable-living> (last visited Dec. 2, 2013).

⁹² OCEAN CONSERVANCY, *supra* note 90, at 11.

⁹³ IRE. DEP'T OF THE ENV'T, COMMUNITY, & LOCAL GOV'T, *THE NATIONAL LITTER POLLUTION MONITORING SYSTEM—RESULTS REPORT* (2012), available at <http://www.litter.ie/Reports/6516%20Final%20Annual%20Report%202011%20300512.pdf>.

⁹⁴ OCEAN CONSERVANCY, *supra* note 90, at 13.