

Protecting Our Future: An Examination of Plastic Waste Reduction

Acadia C. L. Bunin

Grade 12

Avon View High School, Windsor Nova Scotia

### Executive Summary

The province of Nova Scotia is known as a waste management leader (PHA Consulting Associates, 2017). As of 2012, the province produced the lowest amounts of waste per capita in Canada (The Conference Board of Canada, 2012). Reductions in the amount of plastics accepted by China has led to the accumulation of plastic films in our province and Nova Scotia's waste management leadership is more important than ever. Recently, the province has had to rethink its relationship with plastics usage and recycling as plastic films continue to accumulate in regional recycling depots. Previously, municipalities such as Halifax have had their plastic waste shipped to locations like China to be recycled. China had been processing 20% of Canada's plastic waste up until the new law stating that recycled materials with a contamination level above 0.5 percent would be refused (Bula, 2018). This has caused certain Canadian municipalities to have piles of plastic with no eco-friendly destination. Reducing our plastic waste is now a top priority for many countries worldwide as they search for new laws or initiatives that will positively impact the problem.

There are many alternatives being explored in an effort to reduce plastic waste such as bans on plastic bags, making reusable bags more accessible and even substituting portions of sand with plastics in concrete. There are various examples of success from these endeavors that can be an inspiration to the rest of the environmental community. By following in the footsteps of these other waste management leaders, Nova Scotia can begin to challenge its own sustainability practices for a cleaner tomorrow. There are a myriad of opportunities to establish more sophisticated and environmentally friendly waste reduction practices and they are all within reach for our province.

### **Protecting Our Future: An Examination of Plastic Waste Reduction**

Our plastic waste has reached a new height, as evidenced by the growing piles of used bottles and bags at recycling depots around the world. There is now an entire island of garbage in the ocean that is roughly twice the size of Texas (Earl, 2018). Consumers have become dependent on plastic materials such as plastic grocery bags, straws, takeout containers and water bottles. Each year, 490 million bags are used in Atlantic Canada alone (Mobius Loop) and 300 million tonnes of plastic are produced and distributed worldwide (Plastic Oceans, 2018). Approximately 150 million tonnes of product are single-use plastics, which are among the most harmful materials to our environment (Plastic Oceans, 2018). Plastic makes up over 90% of all the waste currently polluting our oceans and each year, millions of sea birds and a hundred thousand marine animals are killed due to the excess of non-biodegradable plastic (Ocean Crusaders, 2018). These facts should be even more alarming because Nova Scotia is a province surrounded by water. Despite this environmental crisis, Canadians still produce up to 720 kilos of waste per capita a year (Wilkins, 2017).

China, who purchases most of the world's recyclables, has initiated new regulations in an effort to curb pollution in its own country (Bula, 2018). These regulations place stricter limits on the contamination levels of the recycled material bought from other countries, which has substantially reduced the amount of recyclables Nova Scotia can send overseas. Growing mountains of plastic bottles and bags at recycling depots make it difficult to ignore the impact that our plastic use has on the environment. With the issue of plastic films brought to the forefront, consumers and waste management programs need to discover ways to reduce plastic usage and recycle plastics more effectively.

### **Plastic Waste Reduction in the European Union**

Countries in the European Union (EU) are currently trying new methods they hope will lead to progress in waste management. Brussels has launched a new initiative with the aim to make all packaging reusable or recyclable by 2030 (Boffey, 2018). Their target is the reduction of straws, non-degradable plastic bottles and other single-use packaging plastics. One of the strategies being discussed for this potential reduction is taxing the use of these materials, both as an inhibitor for consumers and a source of income for the EU. The implementation of a 15 cent plastic bag tax was very effective in Ireland resulting in an overall reduction of 90% in their bag use. The EU has also stated that they will be clearly labelling their plastic packages to make it easier for consumers to understand which to recycle. Within this same initiative, they have put upwards of a hundred thousand million euros towards research on improved practices within their countries. The EU has come to terms with this mounting problem and realizes that it is time to be an agent for change in the world of environmental protection. Frans Timmermans, the vice president of this commission has stated that “we are going to choke on plastic if we don’t do anything about this” (Boffey, 2018). He has also spoken candidly about the negative effects that small everyday items such as plastic straws are having and how it is imperative to make a move to reduce them in our world before it’s too late.

### **Plastic Waste Reduction in British Columbia**

Closer to home, the city of Victoria in Vancouver is has banned businesses from giving or selling plastic bags to consumers. Like most of Canada, Victoria has been looking for new ways to fight against the piles of plastics. It has been found that 17 million plastic bags are used each year by residents and that these numbers make up a 15 percent of landfill waste. In order to reduce these numbers, Victoria passed a by-law that states that no business is allowed to sell

plastic bags to customers. The city has instead decided to turn to reusable bags only and will begin programs to encourage citizens to make the sustainable switch. Victoria has also decided to put money into educating residents on these new laws and why they are valuable (Pawson, 2017). The city has launched a contest for consumers to come up with creative ideas to promote the use of reusable bags. Reusable shopping bags have been seen as a good alternative to plastic bags, but a new family-owned company, Simple Ecology, has challenged sustainability to go a step further by producing environmentally friendly produce bags to replace the bags given out by stores to transport loose vegetables (Czinski, 2009). These organic cotton and mesh bags are stated to be easily reusable and are able to be washed for multiple uses. With both reusable shopping bags and produce bags, there is the opportunity to dramatically reduce the plastic we find in our environment.

### **Solutions for Nova Scotia**

Here in Nova Scotia, there is a need to educate consumers about the severity of the plastics problem. Grocery stores, which account for the bulk of plastic bags used in Nova Scotia, would be useful allies in the education of consumers. While many already sell reusable grocery bags, plastic bags are still an option when purchasing groceries. The convenience of plastic bags has made the shift to more eco-friendly bag options less pressing for many shoppers. If Nova Scotia stores stopped supplying plastic bags as they do in Brussels and Victoria, plastic film waste could be reduced dramatically. Grocery stores need to be part of the solution when it comes to the education of consumers about the problem. Furthermore, they need look at innovative ways to provide consumers with a convenient shopping experience that is less harmful to the environment. The example set in British Columbia by Simple Ecology could be expanded into reusable and washable grocery bags made with eco-friendly fibres. For other new

alternatives, we can look to the EU for environmental inspiration. This year, an Amsterdam grocery store opened Europe's first plastics-free grocery aisle. Environmentally-conscious consumers can choose from over 700 plastic-free products (Taylor, 2018). This innovative move has been an inspiration and motivator for the rest of the environmental world.

### **Innovative Solutions: Plastics to Concrete**

While engaging the consumers in the struggle against plastic, another alternative may lie in grains; more specifically, grains of sand. A recent study of building materials has shown that structural concrete can create benefits for both the environment and natural resources. Sand is in huge demand within the concrete industry and some sources, such as the sand taken from India, are limited due to over-dredging. In an attempt to curb the excessive use of natural sands, the industry has now turned to synthetic sand made from plastic waste (Orr, 2017). The results of this new study reveals that replacing even 10% of the sand used within concrete mixtures can preserve 820 million tonnes of sand each year and create a new outlet for plastic waste. It has been shown that plastic-based material maintains the structural integrity of the concrete. In addition to this, the production of this synthetic sand is cost effective (Orr, 2017). With this potential opportunity to repurpose a portion of our plastic waste, further study is needed to change plastic waste management in a huge, environmentally (and economically) friendly way.

### **Conclusion**

There are no quick or easy solutions to Nova Scotia's plastic problem but the study of innovative ways to repurpose our plastic waste and decrease consumer plastics use is a critical first step. The actions taken by Nova Scotia will support its reputation as a waste management leader but more importantly strengthen its role as an environmental steward to protect our

beautiful province. A solution is to be found at the very root of the problem and will allow Nova Scotia to move forward in its pursuit of plastic waste reduction.

References

Earl, J. (2018, March 23). *Great pacific garbage patch is now twice the size of Texas*. Retrieved from <https://nypost.com/2018/03/23/great-pacific-garbage-patch-is-now-twice-the-size-of-texas/>

Bula, F. (2018, January 8). *China's tough new recycling standards leave Canadian municipalities in a bind*. Retrieved from <https://www.theglobeandmail.com/news/national/chinese-ban-on-foreign-recyclables-leaving-some-canadian-cities-in-the-lurch/article37536117/>

Boffey, D. (2018, January 16). *EU declares war on plastic waste*. Retrieved from <https://www.theguardian.com/environment/2018/jan/16/eu-declares-war-on-plastic-waste-2030>

Czinski, R. (2009, October 3). *The Heavyweight Fight Over Shopping Bags*. Retrieved from <https://www.simpleecology.com/eco/the-heavyweight-fight-over-shopping-bags>

Mobius Loop. (2018). *Waste Reduction Facts*. Clean Nova Scotia. Retrieved from <http://clean.ns.ca/wp-content/uploads/2011/11/wastereductionfacts.pdf>

Ocean Crusaders. (2018). *Plastic Statistics*. Retrieved from <http://oceanrusaders.org/plastic-crusades/plastic-statistics/>

Orr, J. (2017). Performance of structural concrete with recycled plastic waste as a partial replacement for sand. *Construction and Building Materials*, 161(2018). 63-69

Plastic Oceans. (2018). *The Facts*. Retrieved from <https://plasticoceans.org/the-facts/>

Pawson, C. (2017, December 17). *Plastic bags no more: Victoria to implement ban July 1*. Retrieved from <http://www.cbc.ca/news/canada/british-columbia/victoria-plastic-bag-ban-to-start-july-1-2018-1.4453617>

Taylor, M. (2018, February 28). *World's first plastic-free aisle opens in Netherlands supermarket*. Retrieved from <https://www.theguardian.com/environment/2018/feb/28/worlds-first-plastic-free-aisle-opens-in-netherlands-supermarket>

Wilkins, C. (2017, November 4). *Canada's Dirty Secret*. Retrieved from <https://www.canadiangeographic.ca/article/canadas-dirty-secret>