



# 40 Days & 40 Ways to Reduce Single-use Plastic

**"The earth,  
the air, the land  
and the water  
are not an  
inheritance from  
our forefathers but  
on loan from our  
children.  
So we have to  
hand over to  
them at least as  
it was handed  
over to us."**

**"There is a  
sufficiency in  
the world for man's  
need but not for  
man's greed."**

Mohandas Karamchand Gandhi

# There is Always a Catch

We love love love them because they make our lives better. In \*some\* ways, that is! There is always a catch, isn't there... hence this missive.

What is this little word "plastic" - and the items to which it refers - that we take for granted? "Plastic" as an adjective means malleable, moldable. "Plastic" as a noun long ago came to mean an item that is made from moldable materials. Lots of things have inherent plasticity - including, thankfully, our brains! Our experiences, our deliberate thoughtful choices in how we conduct ourselves contribute to the changes in our perspectives, our understanding of this world, our place in it, responsibility for it - and to it. "Plastic" the noun has become a name for any malleable material that is synthetic - made from raw materials found in nature.

Plastics are made from synthetic polymeric materials. A polymer is a long chain whose links are specific chemical building blocks. Poly-ethylene, poly-propylene, poly-ester, poly-amides (nylon!) and poly-methylmethacrylate (acrylic!) are just a few of the synthetic polymers from which our everyday plastics are made. ("poly" simply means multiple). Acronyms abound in this industry: LDPE = low-density polyethylene; SBD = poly styrene butadiene; PVC = poly vinyl chloride, to name just a few.

Humans have been using naturally-occurring materials for eons: waxes and oils and tars, silk, rubber, latex, cotton, hemp... By the early part of the twentieth century, our understanding of chemistry allowed us to see that these materials are indeed polymeric, and further we could identify the individual building blocks. With that understanding, we humans, being inquisitive and industrious sorts, sought to mimic nature and devise our own new synthetic polymers.

Bakelite (patented in 1909) was the first synthetic plastic material – molded and then ‘set’ under high temperatures and pressures, its properties were suited to an incredibly wide-range of uses: billiard balls, telephones and radios, electrical switches & insulators, jewelry, tools, components for manufactured items.... This was the beginning of the plastics industry, an industry that has greatly enhanced our lives. At a cost, though, that was not obvious to us at the time.



# Plastics are a Problem

By the mid-twentieth century we were using nature – mostly oil reserves - as a source of an incredible variety of building-blocks from which to synthesize an even more incredible variety of plastics that are now ubiquitous. Cheap, widely available products that make our lives safer and more enjoyable. And the production of which contributes to economic growth, employs tens of thousands of people, and supports families and communities. Sounds perfect, right? However, so-called single-use plastics consume a great deal of our natural resources, and require a great deal of energy in their production and transport. Our present-day perspective now reveals the threats to our planet, to our only home that these products pose. Climate change, environmental contamination, ecosystem degradation. Contemplation of the wider societal context within which science & technology resides reveals further dangers to us from a moral and ethical point view, the threats from the consumptive lifestyle associated with our single-use-plastics habits. Human rights, child labour, exploitation...

SO... Plastics are a problem. Chemically they are difficult to break down. They don't burn without creating environmental problems. They cause air pollution, they litter the land and the ocean. Their disposal can cause health and respiratory problems. The environment pays a significant price for our convenience.

In 1982, reports indicated that up to 8 million pieces of marine debris (mostly plastic) entered the world's oceans daily. By 2014 the United Nations confirmed that there were at least 270,000 tons of plastic waste in the oceans. This impacts not just aesthetics, with beaches being engulfed with debris and large "garbage islands" created in the ocean, but impacts wildlife through entanglement, ingestion, smothering and loss of habitat.



# So What Can You Do?

Plastics take a long time to break down. What it does do is break into smaller and smaller pieces. These pieces are known as micro plastics. In the ocean they can be mistaken for plankton and eaten by wildlife. They can exist stably for thousands of years.

On land the issues are no better – soil pollution, overfilled landfills, and changes in climate, loss of ecosystems and destruction of habitat, aesthetic issues and possible effects on human health.

So what can you do? This is a list of 40 things for 40 days that will hopefully make you think and change your practice! Some will be doable for you, some will not. Some will be sustainable, some will not. Even incorporating 1 or 2 new practices makes a difference. Awareness is important.

Use the Checklist at the end of the book to record your progress and to make other suggestions.

The challenge has been made!





# Small Changes

1. **Give up bottled water.**  
Avoid beverages in plastic bottles.
2. **Carry a water bottle – stainless steel if you can. Fill it from the tap.**

Tap water is strictly regulated by Health Canada and the provinces and territories, whereas bottled water is not. Bottled water is almost 2,000 times more energy intensive to produce than tap water. A million plastic bottles are bought around the world every minute - which breaks down to 20,000 plastic bottles a second - and that number will jump another 20% by 2020.<sup>1</sup>

3. **Carry a coffee mug with you.**

UK throws away 2.5 billion disposable coffee cups every year. Less than 1% of coffee cups are recycled. Half a million cups are littered every day.<sup>2</sup>

4. **Ask for drinks without straws. Buy reusable straws if you really must use one!**

In just the U.S. alone, one estimate suggests 500 million straws are used every single day. One study published earlier this year estimated as many as 8.3 billion plastic straws pollute the world's beaches.<sup>3</sup>

5. **Always use reusable shopping bags.**  
Keep them in your car or purse.





# Small Changes

6. Stop using single use baggies. If you do use them, wash them out and reuse where possible. Use silicone bags that can be washed in the dishwasher

The amount of floating plastics in the world's oceans is increasing dramatically. The Pacific Trash Vortex is a 'gyre' or vortex of marine litter in the North Pacific Ocean. The vortex is characterized by exceptionally high concentrations of suspended plastics, such as plastic bags, bottles, containers and other debris, that have been trapped by currents. It is now estimated to be twice the size of Texas. Its impact on marine ecosystems is catastrophic due to its toxic nature and threat to marine life.<sup>4</sup>

7. Carry a small set of utensils so that you are not using plastic ones.

It's hard to say exactly how many forks, spoons, and knives Americans throw away, but in 2015 we placed nearly 2 billion delivery orders. If at least half those meals involved single-use utensils, that would mean we're tossing out billions of utensils each year.

# Change your Shopping Habits

It is nearly impossible to avoid single-use plastic when shopping for food and other necessities. Only 10-12% of plastic waste is recycled in Canada. The rest is burned, landfilled or ends up in the environment at home and abroad.

8. Buy in bulk using your own containers
9. Ask that your local grocery store allow you to use your own containers. This may be a longer term project!
10. Buy meat, cheese, deli at the counter – ask that it not be wrapped with a Styrofoam container and plastic or bring your own containers. Buy bread products in paper rather than plastic bags whenever possible.
11. Patronize and advertise stores that will do this and avoid stores that will not!
12. Share bulk purchases with a friend

Buying in bulk helps us to save on packaging waste. Individual products sold in supermarkets are predominantly packaged in plastic. Much of the plastic packaging on these individually packaged products is unnecessary and contributes to a more expensive price.<sup>6</sup>

13. Try not to buy single serving of anything (yogurt, applesauce, crackers and cheese).
14. If you must use single serving coffee pods, recycle them! Better yet, buy a reusable one.

The simple answer is that due to the intensive manufacturing process and the waste left after use, most coffee pods are not environmentally-friendly. The longer answer is that the extent of impact depends on the brand and your individual coffee habits.<sup>7</sup>

## 15. Avoid frozen convenience food

Single-serving frozen entrées may be fast and convenient but they also require more packaging, which is bad news for the environment. While a packaged meal can be consumed in minutes and the wrappings tossed in the trash, the coated paperboard or plastic trays can remain in landfills for decades or even centuries.”<sup>8</sup>

# Restaurants and Takeout

## 16. Do not use single use condiment packages.

The truth is, single-serving plastic condiment packets like these are produced in the trillions each year worldwide. With no way to recycle the packets, and no incentive for anyone to collect them (as they have no monetary value once used), every packet produced will end up as landfill or as litter in the world's landscapes, oceans, and waterways.<sup>9</sup>

## 17. When ordering takeout, ask if you can bring your own containers. Also take your own containers for leftovers when you eat out (it is a growing trend...or could be!)

## 18. If you order pizza, ask that they don't include the plastic box holder in the middle.

Takeout is a great way to skip cooking and the dishes. But it often comes with a side of guilt about all the waste — much of it Styrofoam or black plastic that are non-recyclable in most cities across Canada.<sup>10</sup>

## 19. Use glass jars as storage or for lunch whenever practical.

Glass jars are almost the symbol of the zero waste movement, and for good reason. Glass jars are super useful, readily available and extremely versatile. If you've been slinging your empty jam jars in the recycling, think again! No glass jar deserves to be single-use. This is the zero waste life, after all!<sup>12</sup>

## 20. Get an ice cream cone instead of a cup.

Perhaps the biggest issue with disposable cups is the disconnect between their alleged recyclability and the rate at which they are actually recycled. Cups are technically recyclable, something that some companies actively promote on their packaging. However, due to the complicated way in which they are produced, the vast majority of coffee cups do not end up being recycled.<sup>2</sup>

# Parties and Entertaining

## 21. Give gifts of experiences rather than presents.

Take someone out for dinner. Go with them for a tour of the new library. Go for a walk. Have afternoon tea, teach them to make your favourite treat...the list is endless. The gift of your time is precious.

## 22. Wrap using gift bags or towels.

Use tea towels, bath towels and pillow cases, plain craft paper, or no wrapping at all.

## 23. Download music rather than buying DVD's and CD's.

To manufacture a pound of plastic (30 CDs per pound), it requires 300 cubic feet of natural gas, 2 cups of crude oil and 24 gallons of water. It is estimated that it will take over 1 million years for a CD to completely decompose in a landfill. More than 5.5 million boxes of software go to landfills and incinerators, plus people throw away millions of music CDs each year!

**24. Use twinkle lights or a simple paper banner to decorate. You do not need disposable decorations to make it special!**

**25. Do not use paper plates or plastic cutlery. Convenient but...**

Yes our time is precious, and disposable is convenient. If you need to use disposable, look for compostable!

**26. Switch cling wrap for something more sustainable (beeswax wrap or glass jars).**

There is no more satisfying product to quit using than plastic wrap. It's horribly wasteful and a pain to use. And yet, somehow, it still finds a place in almost every kitchen. Consider instead using beeswax wrap, which is quite literally natural cloth embedded with beeswax.<sup>13</sup>

**27. Rethink the loot bag at birthday parties.**

Rather than stocking up on prizes from the dollar store, award kids for their game wins with eco-friendly prizes such as crayons, drawing pads, small bags of specialty popcorn, or sidewalk chalk (these ideas also double as great goodie bag items!).<sup>14</sup>

# Personal Care

28. Purchase items second hand.

29. Donate clothing items you are done with.

Trading clothes, buying second hand, paring down your wardrobe, buying only good pieces will all help reduce waste.

30. Find out what your clothes are made of – Polyester and nylon are all plastics. Maybe get wool or rayon which is made from wood pulp!?

31. Fleece is plastic that puts microplastic fibres into the environment when washed.

32. Use a washing machine ball that captures these fibres when washing.

Our research found that microfibers are prevalent in both aquatic and terrestrial habitats, from the bottom of the Indian Ocean to farmland in the United States. Our experimental results found that when synthetic jackets are washed, on average 1,174 milligrams of microfibers are released from the washing machine. These microfibers then travel to local wastewater treatment plant, where up to 40% of them can enter into rivers, lakes, and oceans (depending on local wastewater treatment conditions). <sup>16</sup>

**33. Use bar soap and shampoo.**

**34. If you need shampoo or soap in liquid form, try to buy one kind that the whole family will use.**

Currently, about nine million tons of plastic get thrown into the ocean annually, which breaks down to one garbage truck full of plastic being dumped into the sea every minute. Shampoo bars cut out the need for plastic bottles, and most come wrapped in recycled paper or in paper boxes. They're also convenient for travelling—just pop them in a metal tin available for that purpose.<sup>18</sup>

**35. Use laundry sheets instead of laundry detergent in big bottles.**

Laundry detergent in big bottles uses water and plastic, and are generally shipped from China. Buy laundry sheets!

**36. Use a handkerchief instead of a Kleenex.**

# Just for Fun

## 37. Sorry crafters, glitter may be bad.

While the jury is still out, glitter is micro plastic. Its contribution is probably small relative to water bottles, but if you don't need it why use it?<sup>15</sup>

## 38. Use matches instead of lighters. Better yet, use a firesteel!

Otherwise known as a firestarter or magnesium stick, this low tech device is tough, long lasting and cost effective. A firesteel is comprised of two components: the firesteel rod and the striker. It works by creating friction when scraping the striker across the rod. With a similar motion to lighting a match, scrape the striker across the magnesium rod to create a spark. The only energy it uses is the kinetic energy created by the motion of your hand!<sup>11</sup>

## 39. Wine with corks are better than screw tops

Cork is eco friendly as cork is one of the most sustainable materials in the world, and the dominance of screw tops on wine bottles is actually threatening ancient Mediterranean cork oak forests. Screw tops and plastic stoppers also contribute to widespread environmental destruction.<sup>17</sup>

## 40. Try to purchase hardware items with less packaging – this may be the biggest challenge of all!

# Engaging More Fully!

- » Search out waste free stores and refilling stations
- » Join a community clean up
- » Share tools and household appliances
- » Join YYC free on Facebook
- » Sign petitions that support banning single use plastic

## and Finally...

- » Engage others around you.
- » Encourage both children and adults to choose one thing to try.
- » Small habits make a big difference.





# Good News

## Microbeads

Microbeads are plastic spheres less than 5 mm in size that were used in many products, including toiletries such as bath and body products, skin cleansers and toothpaste. Because of potential environmental concerns, the Government of Canada prioritized the review and regulation of microbeads.

As of July 1, 2018, the manufacture and import of all toiletries that contain plastic microbeads, are prohibited. The sale of toiletries that contain plastic microbeads is also prohibited, unless the toiletries are also natural health products or non-prescription drugs, in which case the prohibition will begin July 1, 2019.

- » Health Canada Information on Microbeads - [goo.gl/NFzie9](https://goo.gl/NFzie9)
- » FDA Information on Microbeads - [goo.gl/EZ2B9T](https://goo.gl/EZ2B9T)

## Bans

There are a lot of places in Canada that are moving forward with bans on single use plastic! This gives the movement momentum

- » Huffington Post Article on Single Use Plastics in Canada - [goo.gl/P25mdg](https://goo.gl/P25mdg)



# Good News

## Resources

- » National Geographic - [nationalgeographic.com/environment/planetorplastic](https://nationalgeographic.com/environment/planetorplastic)
- » Costal Care - [plastic-pollution.org](https://plastic-pollution.org)
- » Greenpeace Petition - [goo.gl/SoHPBN](https://goo.gl/SoHPBN)
- » Plastic Free Calgary - [plasticfreeyyc.com](https://plasticfreeyyc.com)

## Good Waste Free Sources

- » Washing machine balls that trap plastics from fleece etc.  
- [coraball.com](https://coraball.com)
- » Guide to waste free stores in Alberta  
- [theecohub.ca/zero-waste-shopping-guide-alberta](https://theecohub.ca/zero-waste-shopping-guide-alberta)
- » Package free options in Calgary - [canarygoods.ca](https://canarygoods.ca)
- » Dizolve Exo-Strip Laundry Sheets - [goo.gl/gFJrhQ](https://goo.gl/gFJrhQ)

# References

1. [waterdocs.ca/water-talk/2018/4/7/facts-about-bottled-water](http://waterdocs.ca/water-talk/2018/4/7/facts-about-bottled-water)
2. [independent.co.uk/environment/disposable-coffee-cups-how-big-problem-environment-landfill-recycling-incinerate-export-rubbish-a8142381.html](http://independent.co.uk/environment/disposable-coffee-cups-how-big-problem-environment-landfill-recycling-incinerate-export-rubbish-a8142381.html)
3. [nationalgeographic.com/environment/2018/07/news-plastic-drinking-straw-history-ban/](http://nationalgeographic.com/environment/2018/07/news-plastic-drinking-straw-history-ban/)
4. [ntepa.nt.gov.au/waste-pollution/plastic-bag-ban/environmental-impacts](http://ntepa.nt.gov.au/waste-pollution/plastic-bag-ban/environmental-impacts)
5. [motherjones.com/environment/2017/07/are-alternate-utensils-for-take-out-an-environment-friendly-option/](http://motherjones.com/environment/2017/07/are-alternate-utensils-for-take-out-an-environment-friendly-option/)
6. [greenfootmama.com/2018/05/23/bulk-buying-eco-friendly/](http://greenfootmama.com/2018/05/23/bulk-buying-eco-friendly/)
7. [thefoodrush.com/articles/coffee-pods-bad-for-the-environment/](http://thefoodrush.com/articles/coffee-pods-bad-for-the-environment/)
8. [berkeleywellness.com/healthy-community/environmental-health/article/frozen-food-and-environment](http://berkeleywellness.com/healthy-community/environmental-health/article/frozen-food-and-environment)
9. [challenges.openideo.com/challenge/food-waste/research/single-serving-condiment-packets-produce-too-much-waste](http://challenges.openideo.com/challenge/food-waste/research/single-serving-condiment-packets-produce-too-much-waste)

10. [cbc.ca/news/technology/zero-waste-takeout-1.4867042](https://www.cbc.ca/news/technology/zero-waste-takeout-1.4867042)
11. [1millionwomen.com.au/blog/lighters-or-matches-which-better-planet/](https://1millionwomen.com.au/blog/lighters-or-matches-which-better-planet/)
12. [treadingmyownpath.com/2019/01/17/zero-waste-jars/](https://treadingmyownpath.com/2019/01/17/zero-waste-jars/)
13. [puregreenmag.com/pure-green-blog/zero-waste-in-the-kitchen](https://puregreenmag.com/pure-green-blog/zero-waste-in-the-kitchen)
14. [yummymummyclub.ca/blogs/gwen-leron-50-shades-of-green/20140710/10-easy-ways-to-throw-an-eco-friendly-birthday-party](https://yummymummyclub.ca/blogs/gwen-leron-50-shades-of-green/20140710/10-easy-ways-to-throw-an-eco-friendly-birthday-party)
15. [news.nationalgeographic.com/2017/11/glitter-plastics-ocean-pollution-environment-spd/](https://news.nationalgeographic.com/2017/11/glitter-plastics-ocean-pollution-environment-spd/)
16. [brenmicroplastics.weebly.com/project-findings.html](https://brenmicroplastics.weebly.com/project-findings.html)
17. [moralfibres.co.uk/cork-stopper-or-screw-top/](https://moralfibres.co.uk/cork-stopper-or-screw-top/)
18. [nationalgeographic.co.uk/environment/2018/08/5-reasons-ditch-your-shampoo-bottle-shampoo-bar](https://nationalgeographic.co.uk/environment/2018/08/5-reasons-ditch-your-shampoo-bottle-shampoo-bar)

Notes

Day

Practice

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