

How Easy is it to be Reasonable Plastic Consumers?

Activity created by Barb Munn (2021)

Materials

1 set of Plastic Products cards per group

1 set of card category labels per group (Easy to Avoid // Hard to Avoid)

Examples of things that are used to avoid plastic products

Pre-Assess knowledge about plastic:

INDIVIDUALLY: • write down 2 or 3 reasons why plastics are useful – “Plastic Positives”
• write down 2 or 3 reasons why plastics are a problem – “Plastic Negatives”

SHARE: Share your thinking with your elbow partner

COMPILE LIST ON BOARD – Possibilities (can add to the list as the activity proceeds):

Plastic Positives:

- convenient
- inexpensive (raised the standard of living for many)
- lasts a long time / resists corrosion
- durable and resilient
- light weight
- strong (high strength to weight ratio)
- can be flexible or rigid (soft or hard)
- easily molded into any shape
- can be transparent or opaque
- waterproof
- shock resistant (hard to break)
- an insulator (does not conduct heat or electricity)
- seals well (keeps food fresh, resulting in longer shelf life)

Plastic Negatives:

- most is not recycled (only 8.7% of the plastic discarded in 2018 was recycled)
- lasts a long time - does not biodegrade (decompose into natural soil), it only breaks down into smaller and smaller pieces
- builds up in landfills
- when incinerated releases toxic chemicals and generates GHG
- accumulates in the oceans (garbage patches in all the oceans)
- breaks down into microplastics (contaminates food, water, air; accumulates in our bodies)
- “upcycled” plastic cannot be recycled again (will eventually end up in the landfill or incinerated)

Plastic Products Card Sort

Purpose: The purpose of this activity is to encourage thoughtful consideration of plastics in our lives and what we can or cannot do about the plastic problem as individual consumers.

Card Sort Question: How easy is it to resolve the problem of plastic consumption by avoiding the use of plastic products? The answer should NOT rely on recycling → can the plastic produce be replaced, or is there a way to do something else instead?

Header Cards: Easy to Avoid / Hard to Avoid

Student Procedure

- Form small groups
- Each card shows a product made of plastic. The goal is to focus on the **plastic** in each picture (not whatever may be inside the plastic – for example – the plastic milk jug, not the milk itself).
- There are two categories for this card sort: **Easy to Avoid** // **Hard to Avoid**; lay out your category labels somewhere that is accessible to everyone in your group.
- Discuss each card and come to a common agreement about which category to place the card in BEFORE moving on to the next card; make sure everyone has a chance to voice their thinking before final categorization.
- As you lay the cards out, make sure that all the cards remain visible (not piled on top of each other).
- Be prepared to justify your choices!

Teacher

Circulate and listen to student ideas as they proceed with the card sort, take mental or physical notes to use in whole class discussion.

You may opt to allow students to circulate the room to see how other groups sorted their cards before launching into a discussion.

Facilitate a whole class discussion.

Possible Replacements or Substitutions – for easy to avoid

- plastic bag → cloth bag Bags gets wrapped around the machinery bringing the operations to a standstill (cling wrap has the same problem)
- plastic shampoo/conditioner bottles → shampoo bars/conditioner bars (or refillery options)
- yoghurt containers → make your own yoghurt (#5 plastic)
- plastic utensils → byo utensils, ask for NO utensils when ordering takeout (most are #6 plastics)
- bread bag → make your own bread (easiest if you have a mixer with a dough hook). Bags gets wrapped around the machinery bringing the operations to a standstill (cling wrap has the same problem)
- Styrofoam take out containers → cook at home, when at restaurants, byo take out containers; made of mostly air, so not worth recycling, because once the air is removed, there is not much plastic left.
- water bottles → drink tap water, use aluminum water bottles
- produce clamshells → farmer's market, or buy only when packaged without plastic – talk this up with your grocer; although made from the same stuff as plastic bottles, they are harder to recycle (something about the way that they are molded affects the structure of the plastic)
- dental floss and its plastic container: silk floss, glass or metal containers
- milk jug – purchase in glass jars where available; buy directly from a farm. This type of bottle (#2 HDPE) is more likely to be recycled (upcycled to make plastic lumber, pipe, floor tiles, buckets, rates, flower pots, garden edging, recycling bins)
- ziplock bags – wash and reuse what you have, ultimately replace with silicone bags or glass/metal containers; save glass jars and they can be used for storage too. Ziplocks are #4 plastics, so are not easily recycled
- mechanical pencils – use a regular no.2 pencil! Plastic pens can be replaced by fountain pens

- legos – wood blocks (not quite the same, but still can build with them)
- *laundry basket* (an optional card, but could still bring up in discussion) – once your basket wears out, replace it with a wicker basket instead
- *cling wrap* (an optional card, but could still bring up in discussion) – bees wax cloth, plate covered by a bowl, glass/metal containers. Plastic wrap is not recycled because it is hard to deal with at the recovery center (MRF – Material Recovery Facility) - it gets wrapped around the machinery and brings the operations to a standstill (plastic bags have the same problem)
- *plastic cups* (an optional card, but could still bring up in discussion) – just say no! use glass cups, or aluminum bottles

Hard to avoid

- medical tubing (IV tubes): devices made from plastic have made medical practices more affordable for the general public. Single-use plastic devices (eg: syringes) helped to eliminate the spread of infectious diseases by eliminating reuse. Also, antimicrobials can be incorporated into plastic materials to create surfaces that reduce the presence of bacteria by 99.99%. All kinds of devices are made with plastic (implants for the hard of hearing, hip replacements, prosthetics for amputees, stents for clogged arteries, IV bags/tubing, PPE – gloves, masks, etc.)
- car parts (makes cars lighter so that less energy is needed to make them move)
- electrical wiring – the first fully synthetic plastic (Bakelite) was invented in 1907 because of the need for an insulator and sealant against moisture for the wiring that became necessary when electricity was invented and promoted to the masses (they originally used shellac, which is a natural insulator). According to Wikipedia, shellac is a resin secreted by a bug (the female shellac bug) on the trees in forests in India and Thailand (the bug sucks the sap from the trees and then excretes “sticklac” in the form of tunnel-like tubes that that the bug travels through on the tree branches). Shellac also was used for early records.
- bike helmet: light weight, hard, shock-resistant, and strong
- *rain slicker* (an optional card, but could still bring up in discussion) – lightweight and waterproof - the mackintosh raincoat (introduced in the early 1800’s) is made of rubberized cotton; hard to duplicate the waterproof nature of plastic
- *skateboard wheels* (an optional card, but could still bring up in discussion)
- *kayak and oars* (an optional card, but could still bring up in discussion) – could use wood (or bark?) – but this would make the kayak much heavier and also more expensive

Substitute Examples for “Show and Tell”:

- | | |
|--|--|
| • Bar shampoo and conditioner | • Aluminum water bottle |
| • Bamboo toothbrush | • Metal straws |
| • The last swab | • Bamboo utensils, cloth napkin |
| • Metal (or glass) floss dispenser; silk floss | • Bag with your own reusable take out containers |
| • Produce bags | • Silicone bags |
| • Cloth ‘grocery bag’ | • Beeswax foodwrap |
| • Chico bag | • Wood blocks |

Points that May Arise in Whole Class Discussion

- it is not reasonable to avoid every plastic product
- single use plastic products are much of the problem (we are accustomed to a “throwaway” lifestyle)
- many single-use plastic products can be avoided – to bring out this concept, you can ask them look at the cards and identify those that are generally used once and thrown away (“single-use” plastic)

Plastic utensils	milk jugs	ziplock bag	shampoo bottles	bread bag	water bottle
Clamshells	takeout boxes	IV tubing	dental floss	yoghurt container	plastic bags
- some products are easier to avoid than others, and involve changing behaviors and putting up with less convenience (must weigh convenience against the negative impacts of plastic)
- The most easily recycled plastic are #1 and #2 plastics (upcycled, so has drawbacks) - To bring out this concept, you can ask them to sort all the single use plastic into those that are **likely to be recycled** and those that are **unlikely to be recycled**.
 - **LIKELY:** milk jug, water bottle
 - **UNLIKELY:** plastic utensils, ziplock bag, shampoo bottles, bread bag, clamshells, takeout boxes, IV tubing, dental floss, yoghurt container, plastic bags
- It is not economically feasible to recycle the other plastic types (#3-#7)
- lately more and more single-use plastic has come into use (plastic production is expected to double by 2050). As the transportation and energy sectors move more toward renewable energy (electric cars/ solar, wind power), the fossil fuel industry seeks alternatives to keep their business going (plastic is made from petroleum)
- the individual can only do so much, laws and regulations are necessary
 - Right now much of the responsibility for plastic has fallen on the consumers (emphasis on recycling)
 - there is beginning to be a push to put the responsibility for plastic’s “end of life” on the producers (called Extended Producer Responsibility, or EPR)
 - Canada, the UK, and the EU have adopted comprehensive single-use plastic bans (not just the plastic bag, but also straws, stirrers, cotton buds, plastic utensils, takeout containers, microbeads in soaps toothpaste and cleaning products, some plastic bottles)

Some Resources:

Plastics Alternatives flyer: <https://tinyurl.com/PlasticAction>

Science History Institute: <https://www.sciencehistory.org/the-history-and-future-of-plastics>

Science News for Students: <https://www.sciencenewsforstudents.org/article/our-plastic-world>

2021 Consumer Reports article about plastic: <https://www.consumerreports.org/environment-sustainability/the-big-problem-with-plastic/>

Consumer Reports 3.5 minute video: <https://www.mysfuu.org/plasticcrisis#EatLessPlastic>

Medical Device Advances Made Possible with Plastics:

https://www.madisongroup.com/publications/Medical_Device_Advances_Made_Possible_with_Plastics.pdf

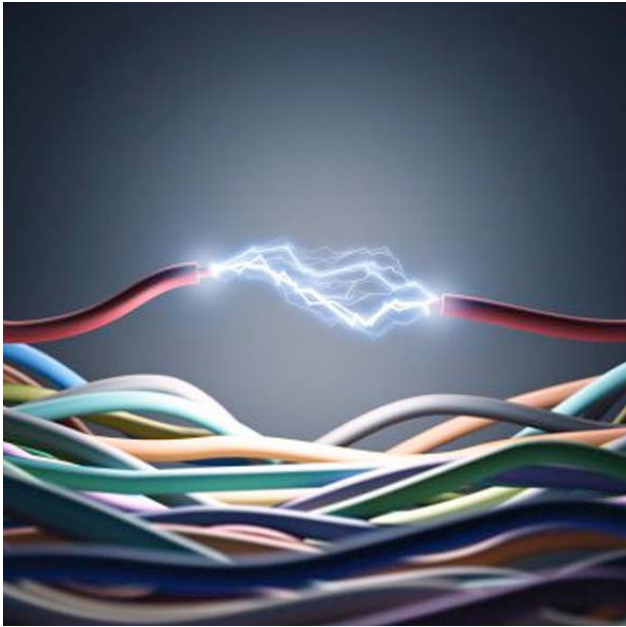
Plastics and Environmental Health: The Road Ahead (2013):

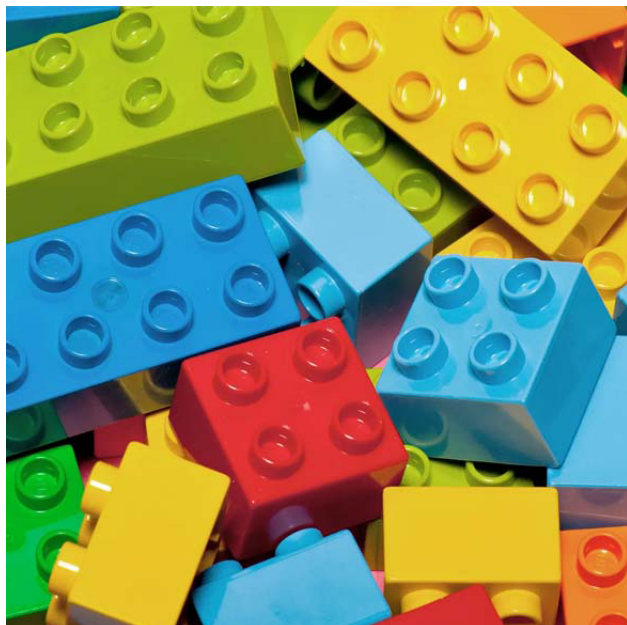
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3791860/>

Plastics Recycling: <https://apps.npr.org/plastics-recycling/>

7 Everyday Items Bound for Landfills: <https://www.qualitylogoproducts.com/blog/7-everyday-items-bound-for-landfills/>

Ziplock Bag recycling: <https://techiescientist.com/can-you-recycle-ziploc-bags/>









Optional cards

Easy to Avoid

Hard to Avoid

Simple Ideas to Reduce Plastic Waste (brought to you by Placer People of Faith Together's Plastics Action Group)

The Problem	Take Stock
<p>Although our modern lifestyle would not be possible without plastic, its excessive use is adversely affecting the environment and human health.</p> <ul style="list-style-type: none"> • Its durability allows it to persist in the environment, turning into microplastics • Chemicals used in processing plastic can leach out during use • Less than 10% of all the plastics ever made has actually been recycled. • Single-use plastics, in particular, make mountains of trash, release toxic gases when burned, and foul our streams and oceans. <p>For more see:</p> <ul style="list-style-type: none"> • Frontline: Plastic Wars (PBS video - released Mar 2020) • The Story of Plastic (The Story of Stuff Project video-- released Mar 2020) • Plastic: A Toxic Love Story by Susan Freinkel (published in 2011) 	<p>Single-use plastic is a particular problem. Consider the plastic that you use once and then throw away – how much of it is necessary?</p> <p>You can get a feel for how much plastic you use by doing this exercise:</p> <p>For a period of one week (or as long as you can stand it), try saving all of the plastic that you would normally throw out.</p> <p>These are the single-use plastics that are filling our landfills.</p> <p>Consult with your family &/or co-workers – identify plastic item(s) with a sustainable substitute (or choose to do without).</p>
<p style="text-align: center;">Start with Simple Actions</p> <ul style="list-style-type: none"> • Say no to single use plastics; replace with sustainable alternatives • Eliminate use of products with plastic containers when possible <ul style="list-style-type: none"> - search for products in glass containers - make your own yoghurt, salad dressings, bread, cleaning products, etc. • Shop at your local farmer's market to avoid pre-packaged produce • Buy in bulk – avoid single-use packages of snacks, nuts, chips, etc. • Bring your own containers for restaurant take-out • request plastic-free packaging or give your business to companies that use plastic-free packaging, and then thank companies for using plastic-free packaging 	<p style="text-align: center;">Promote Policy Change</p> <p>Individuals cannot do it all! Apply political pressure to enact laws to get producers to take responsibility for the end of life of their products. Here are some bills worth supporting:</p> <p>California:</p> <p>Single Use Packaging and Products (AB 1080/SB 54)</p> <p>Circular Economy and Plastic Pollution (AB 842)</p> <p>Federal:</p> <p>Break Free from Plastic Pollution (HR 2238/ SB 984)</p>
Resources	
<p>Find a local farmer's market: National Farmer's Market Directory</p> <p>Local stores that refill soap supplies:</p> <p>Gaia Soap Supply - 104 Argall Way, Nevada City</p> <p>Rutherford Reserve & Refillery - 853 Lincoln Way, Auburn</p> <p>Village General Store & Refillery - 500 Vernon St, Roseville</p> <p>Refill Madness - 1828 29th St, Sacramento</p> <p>On-line sources of plastic-free alternatives to household products:</p> <ul style="list-style-type: none"> • Package Free • Blueand • Ethique • Seventh Generation Plastic Free Homecare • TrueEarth • Dropps 	<p>TerraCycle "Recycles Everything"</p> <ul style="list-style-type: none"> • Some programs are sponsored by corporations (free to you), others are fee-based. • Invest in a TerraCycle Zero Waste Box. Although you pay an up-front fee for the box, at least you know that TerraCycle will actually recycle or repurpose it. <p>Books:</p> <ul style="list-style-type: none"> • Plastic Free: How I Kicked the Plastic Habit and How You Can Too - Beth Terry (2015) • Zero Waste: Simple Life Hacks to Drastically Reduce Your Trash - Shia Su (2018)

Go here for pdf with live links: <https://tinyurl.com/PlasticAction>