Reusable (non-plastic) Foodware: Better for Our Health and the Planet

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UPSTREAM
There's a better way than throw-away

Plastic rapidly replacing all other forms of packaging and polluting the environment and our bodies

- 42% of non-fiber plastic produced globally since 1950 = packaging.
- These plastics contain 7% additives (by mass); ¾ of additives are plasticizers (phthalates and bisphenols), fillers, and flame retardants.
- 2/3 of plastic ends up in the environment (as landfill and litter)

Geyer, R., J.R. Jambeck, and K.L. Law, Production, use, and fate of all plastics ever made (2017) Science Advances, 3(7)

Micro -plastics are in the:

- Air we breathe, food we eat, water we drink- both tap and bottled but in higher levels in bottled water due to degradation of plastic

Cox K.D., Covernton G.A., Davies H.L., Dower J.F., Juanes F., Dudas S.E. (2019) Human Consumption of Microplastics, *Environ. Sci. Technol.* 2019, 53, 12, 7068-7074

Plastic production ramping up- so without immediate action the problem will get worse:

Exxon-Mobil, Shell, Chevron, BP, Dow-Dupont, Sinopec spending $164 billion building 264 new plastics manufacturing facilities in US by 2023

https://www.ciel.org/wp-content/uploads/2017/09/Fueling-Plastics-How-Fracked-Gas-Cheap-Oil-and-Unburnable-Coal-are-Driving-the-Plastics-Boom.pdf

In response companies, communities, and policy makers are banning PLASTIC and requiring recyclable and compostable food packaging- these can be "regrettable substitutes"

Contrary to popular opinion, these are not always the best environmental solutions.

RECYCLING / ENVIRONMENTAL OUTCOMES:

- For example, a review of 460 studies found recyclable food packaging only better for the environment 56% of the time - https://www.oregon.gov/deq/FilterDocs/recyclable.pdf
- Another problem is the reality that something can being technically recyclable – but food packaging, once it's used, is generally too dirty for recycling. That's why China stopped taking our dirty plastic and paper- it's not clean enough for recycling.

COMPOSTABLE FOOD PACKAGING/ ENVIRONMENTAL IMPACTS

- Compostable sounds good but the truth is that only food waste and yard trimmings should go in compost.
- **Most commercial composting operations don't accept bio-plastics and many are no longer accepting any compostable packaging – plastic, paper or otherwise.** All the composters in Oregon recently stated they would no longer accept any food packaging of any type. It contaminates and dilutes their compost and makes it less valuable on the market.
- The environmental impacts of compostable foodware outweigh the benefits. Growing crops used for food packaging, like corn, contaminates soil and waterways with fertilizers and pesticides, and cause overloads of nutrients, creating "dead zones"in waterways
- Along with cutting trees to make paper, compostable packaging also has significant climate impacts. https://www.oregon.gov/deq/FilterDocs/packagingFS.pdf

Compostable and recycled can be bad for our health

Some paper and fiberware / compostable foodware contains ”forever chemicals”

- These per-and polyfluoroalkyl substances (PFAS)- - used to create grease and moisture proof barriers- migrate out of packaging into compost and contaminate edible crops
  - Choi Y.L., Lazcano R.K., Yousefi P., Trim H., Lee L.S., (2019) Perfluoroalkyl Acid Characterization in U.S. Municipal Organic Solid Waste Composts: *Environ. Sci. Technol. Lett.* 2019, 6, 6, 372-377.
  - Blaine A.C., Rich CD., Hundal L.S., Laus C., Mills M.A., Harris K.M., Higgins C.P.,(2013) Uptake of Perfluoroalkyls Acids into Edible Crops via Land Applied Biosolid: Field and Greenhouse Gas Studies, *Environ. Sci. Technol.* 47, 24, 14062-14069
- The most studied PFAS chemicals are linked to kidney and testicular cancer, liver malfunction, thyroid disease, delayed puberty, early menopause, reduced immune response in children, elevated cholesterol, and other reproductive harm
  - Vieira, V.M.; Hoffman, K.; Shin, H.M.; Weinberg, J.M.; Webster, T.F.; Fletcher, T. Perfluorooctanoic acid exposure and cancer outcomes in a contaminated community: A geographic analysis. Environ. Health Perspect., 2013, 121, 318-323
  - Gallo, V.; Leonardi, G.; Genser, B.; Lopez-Espinosa, M.; Frisbee, S.J.; Karlsson, L.; Ducatman, A.M.; Fletcher, T. Serum perfluorooctanoate (PFOA) and perfluorooctane sulfonate (PFOS) concentrations and liver function biomarkers in a population with elevated PFOA exposure. Environ. Health Perspect., 2012, 120, 655-660.
  - Lopez-Espinosa, M.; Mondal, D.; Armstrong, B.; Bloom, M.S.; Fletcher, T. Thyroid function and perfluoroalkyl acids in children living near a chemical plant. Environ. Health Perspect. 2012, 120, 1036- 1041.
  - Lopez-Espinosa, M.; Fletcher, T.; Armstrong, B.; Genser, B.; Dhatariya, K.; Mondal, D.; Ducatman, A.; Leonardi, G. Association of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) with age of puberty among children living near a chemical plant. Environ. Sci.Technol. 2011, 45, 8160-8166

Recycled Content in Food Packaging Can Increase Chemical Exposure*- Words of caution for the Circular Economy

Recycling packaging waste into new food packaging increases the variety and levels of chemicals that can migrate from packaging into foods- most concern with plastic and paper

Contaminants Paper and Paperboard:

More than 250 health-threatening substances were found in recycled paperboard used for food packaging- originating from:

- ❑ MINERAL OILS- print inks, adhesives, waxes
- ❑ BISPHENOLS- receipts, inks and glue
- ❑ PHTHALATES from inks, lacquers, adhesives
- ❑ Other chemicals including PFAS, antimicrobials, and photo-initiators

Recycled Plastic

- High level concern re: brominated flame retardants that have been found in black plastic containing recycled electronic waste
- Phthalates that come from additives in all kinds of plastic

* Geueke B., Groh K., Muncke J. (2018) Food Packaging and the Circular Economy: Overview of chemical safety aspect for commonly used materials, *Journal of Cleaner Production,* 193: 491-505.

The truth is. we can't recycle or compost our way out of the plastic pollution problem

The REAL solution to plastic and other food packaging is to go reusable.

For one thing, reusable is better for the planet.

- Life cycle studies show that ceramic, glass, stainless steel, even plastics that are reusable have lower environmental impacts than the disposables they replace after somewhere between 2 and 200 uses.
- And they save businesses money net after considering dishwashing and product purchasing.

But reusable is also better for people

Today's published Scientific Consensus helps us understand that with unsafe chemical additives in food packaging, plastic doesn't just harm sea turtles, *it's personal*. It's about whether choosing food and beverages wrapped in plastic and other disposable materials is safe for you and your family.

The migration of chemicals discussed in the Consensus Statement are not known to migrate from ceramic, glass, and stainless steel food packaging.

A REAL SOLUTION

We can solve some significant environmental and the human health risks by transitioning from food packaging used for a few minutes and thrown away to products we can use thousands of times. Reusable and refillable is better for people and the planet.

The GOOD NEWS is that REUSE is happening and it's way more fun

- All over the world, innovative new ways to provide food and beverage to consumers without disposable food packaging are launching.

  - ❑ Coffee chains, like Blue Bottle in the U.S. and Boston Tea Party in London have announced that they will no longer give out disposable cups.

  - ❑ New companies, like Vessel, and Dispatch Goods are coming on line to make it possible to consume take-out food and beverages in safe, non-plastic reusables that can be borrowed and returned.

- These solutions are exciting and fun. People who use them feel good knowing that enjoying their coffee or fish taco doesn't threaten their health, cut down more trees, or require more fracking.

- UPSTREAM is leading the charge on policy change that makes it so you when you sit down at a fast food or fast casual restaurant they serve you with real plates, cups, and utensils. And some of our cities are adopting the charge on disposable cups- like a bag charge- that gets people to do the reusable instead. Our policy model is spreading in cities in California (like Berkeley, Santa Cruz, Fairfax, San Anselmo, Watsonville and Humbolt), but also in places like Vancouve,r which just passed a 25 cent cup charge.

- And next month the City of San Francisco will be voting on a policy that would not only require real plates, utensils and cups for dining on-site, it will also add a charge not just for cups but also for take-out food containers.