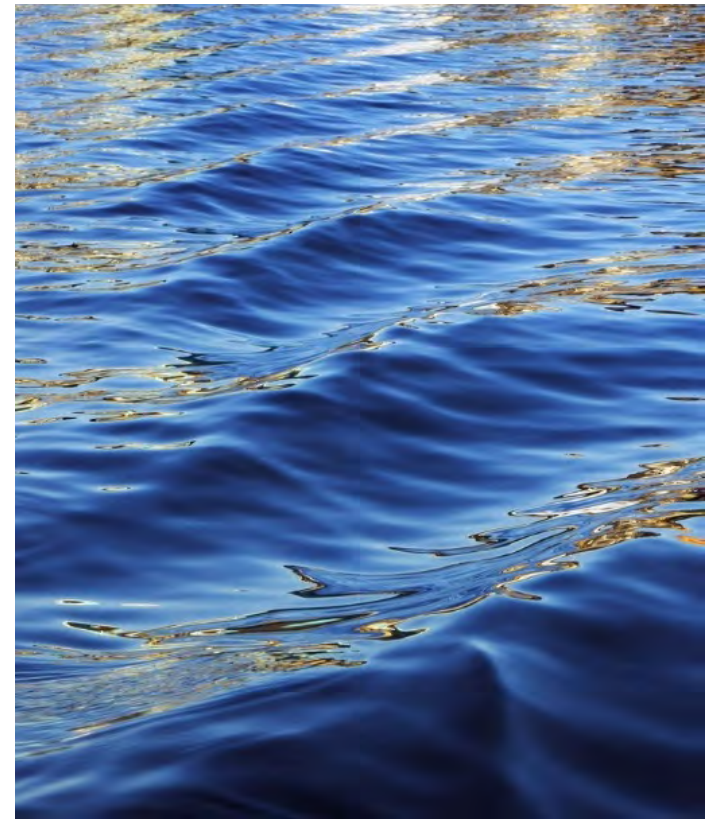




“Choose Reusable”

Brought to you by Sustainable Plymouth



What is the “Choose Reusable” campaign?

“Choose Reusable” is an initiative of Sustainable Plymouth. It was created to inform local eateries of the impact of waste and marine debris from single use products.

- We aim to educate on the cost and environmental impact of single use products
- We share information on switching to sustainable options, such as accepting reusable containers, composting, and choosing PFAS-free compostable food ware when disposable is required
- Sustainable Plymouth is here to help restaurants move forward in a more economically and environmentally sustainable way
- Our goal is to reduce waste and help restaurants save money by talking to restaurant management about changes, such as asking before handing out a straw, receipt, plastic cutlery, bag, etc., e.g., “Would you like a straw?”



The pamphlet we share with restaurants:



Photo by: James Watt

500 million plastic straws are thrown away daily in the USA

Plastic litter from takeout orders — including cups, plates, cutlery, and straws — is a prime source of the estimated 269,000 tons of plastic pollution swept into waterways and oceans, where they partially degrade, harming marine life and affecting human health;

More than 100 million pieces of plastic utensils are used by Americans every day. They can take up to 1,000 years to decompose, leaking harmful substances into the earth while they are breaking down;

Source: Plastic Pollution Coalition

74% of plastics tested contained toxins

According to a study by JEST

In Massachusetts black plastic and Styrofoam cannot be recycled

Source: <https://recyclesmartma.org/>

What can you do right now?

- Only give out straws and disposable flatware when necessary
- Offer discounts or promotions to encourage customers to bring their own food ware
- Post signage stating that you accept reusable containers
- Switch to reusable for in-house eating
- Switch to PFAS-free certified compostable food ware when disposable is required
- Donate your left over food and compost your food waste
- Switch to energy efficient fixtures

Become part of a database of Sustainable Restaurants and be listed on Sustainable Plymouth's website and others.



Photo by: Andrew Sutton

It is estimated that by 2050 there will be more plastic by weight than fish in the ocean

In the US 91% of plastic is NOT recycled

When a casual dining restaurant switches from disposable to reusable products, the average annual savings is \$5,175.

Source: Clean Water Action "Rethink Disposable"

According to Whale and Dolphin Conservation 56% of observed marine mammals have been witnessed attempting to eat plastic.

450 years

A single use plastic bottle that makes its way into the ocean can take 450 years to break down. Source: Whale and Dolphin Conservation

Notwhalefood.com

The problem: Plastic is not disposable.

500 million plastic straws are thrown away daily in the USA

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More than 100 million pieces of plastic utensils are used by Americans every day. They can take up to 1,000 years to decompose, leaking harmful substances into the earth while they are breaking down.

Source: Plastic Pollution Coalition



Photo by James Watt

Impact on marine health

Microplastics

Microplastic have been defined by the international scientific community as synthetic polymer particles <5 mm in diameter. Ubiquitous in the global marine environment, they are created either by the weathering and fragmentation of plastic litter or are released directly as preproduction pellets and powders, polymer particles in personal care products (PCPs) and medicines, etc.

Microplastics contain a cocktail of chemical compounds, such as plastic additives, which may leach out to the surrounding environment or when ingested. In addition, contaminants from other sources tend to adsorb to microplastics. Studies have shown that plastic debris meeting other pollutants in the oceans absorbs harmful chemicals from the seawater they float in, acting like pollution sponges. It was shown that plastic pellets suck up these dangerous persistent organic pollutants (POPs) and toxins with a concentration factor that's almost 1 million times greater compared to the overall concentration of the chemicals in seawater. In other words, the more hydrophobic a chemical, the greater its affinity for microplastics, thus making plastic far more deadly in the ocean than it would be on land.

There are also primary microplastics which have been created for use in personal-care products and other applications. Scientists call these particles "mermaid tears" and they have been found across all the world's seas and beaches. They are not absorbed into nature, but float around and ultimately enter the food chain through ingestion by marine plankton, fish and filter feeders like the big whales (baleen whales).

Source: Whale and Dolphin Conservation

<https://us.whales.org/our-4-goals/create-healthy-seas/pollution/plastic-pollution-in-the-oceans/>

According to Whale and Dolphin Conservation 56% of observed marine mammals have been witnessed attempting to eat plastic.

A single use plastic bottle that makes its way into the ocean can take **450 years** to break down.

Source: Whale and Dolphin Conservation

Notwhalefood.com



It is estimated that by 2050 the ocean will contain more plastic by weight than fish.

The plastic that finds its way into the oceans inevitably will pose a risk of ingestion by sea birds, fish, marine mammals, etc. It's not uncommon to see articles of sea life found dead with significant amounts of plastic in their stomach.

Source: Forbes "Plastic in the ocean"



Multiple studies have shown that endocrine disrupting chemicals found in plastic may be disrupting the marine food chain.

Plastic affects human health too.

Philipp Schwabl, the physician-scientist who conducted the human stool experiment, says he hopes his findings will hasten research into the effects of microplastics on human health.

“Based on the research, it was highly likely that microplastics would be present in humans,” he says. “But nobody ever investigated if microplastics also reach the human gut. Now this discussion can be taken up in humans.”

Source: National Geographic __October 22, 2018

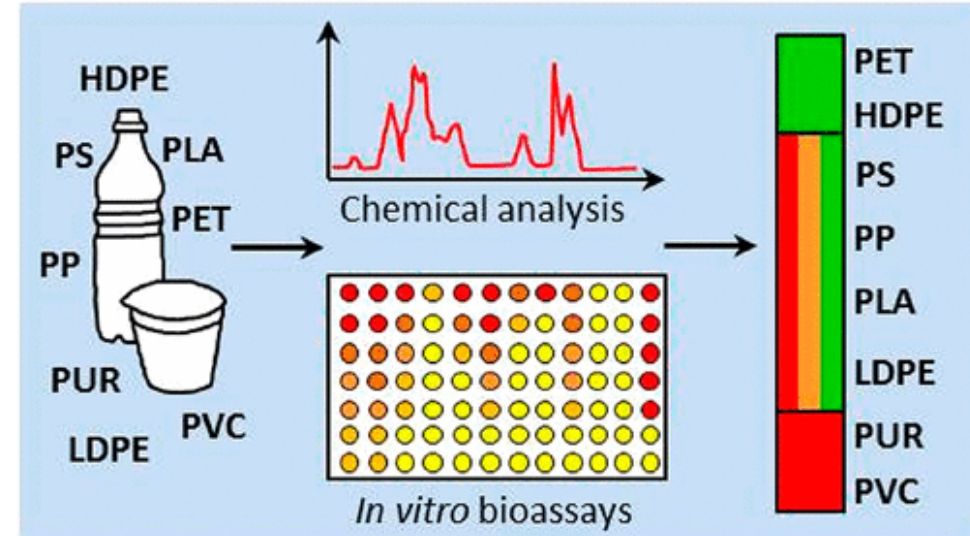
According to Laura Borth with the Silent Spring Institute, people should avoid plastics with the recycling number 3 (PVC), 6 (polystyrene) and 7 whenever possible.

She explains in an email dated 6/20/19 “Among other plastics, Group 7 includes polycarbonate, which is a hard, often clear plastic that is sometimes labeled “PC.” PVC and polycarbonate can contain endocrine-disrupting compounds such as phthalates, BPA, or less tested substitutes. Phthalates have been associated with cancer, impaired fertility, and male birth defects. BPA is an estrogenic chemical that has been linked with adverse effects on brain development as well as mammary and prostate gland development. Polystyrene is made from styrene, which is a suspected carcinogen”

74% of plastics tested contained toxins

According to an article published by Consumer Reports 10/2/19 regarding a study published in the Journal of Environmental Science and Technology

- The researchers behind the study analyzed 34 everyday plastic products made of eight types of plastic to see how common toxicity might be. Seventy-four percent of the products they tested were toxic in some way.
- The team was hoping to be able “to tell people which plastic types to use and which not [to use],” says Martin Wagner, Ph.D., an associate professor in the department of biology at the Norwegian University of Science and Technology, and senior author of the new study. “But it was more complicated than that.” Instead of pointing to a few problematic types of plastic that should be avoided, the testing instead revealed that issues of toxicity were widespread—and could be found in nearly any type of plastic.
- The results help illustrate just how little we know about the wide variety of chemicals in commonly used plastics, says Wagner.
- <https://www.consumerreports.org/toxic-chemicals-substances/most-plastic-products-contain-potentially-toxic-chemicals/>



<https://pubs.acs.org/doi/abs/10.1021/acs.est.9b02293>

Plastic and single use products are contributing to greenhouse gases.

- The biggest environmental impact of disposables happens before you buy the product. The majority of a product's impact—energy, resources, carbon emissions—come from sourcing the materials, manufacturing and transportation.
- Because reusable cups, cutlery and dishware are used thousands of times in a typical restaurant setting, even when factoring in dishwashing, they use far less energy, water and resources over their lifetime than would be needed to make, transport and dispose of thousands of their disposable counterparts.
- Reusable dishware, even if only offered to customers for on-site use, is the best environmental choice.

Source: www.portlandoregon.gov/sustainabilityatwork

91% of plastic is not being recycled



- According to National Geographic only 9% of the plastic in the US is being recycled.
- Often, plastic that is recyclable may only be recycled a limited number of times.
- Many colored plastics are not being recycled due to sorting difficulty and color contamination (The lid is often recyclable.)
- Plastic cutlery is not being recycled.
- Straws are not being recycled.
- Plastic food wrappers are not recyclable in typical recycle streams.

Biodegradable products may contain PFAS

Look for PFAS-free ASTM D6868/D6400 Certified Compostable if disposable is a must.

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)

These widespread, manmade chemicals have leached into our soil, air, and water. More research is needed to understand if and how they cause health problems.

PFAS are a large, complex, and ever-expanding group of manufactured compounds that are widely used to make everyday products more resistant to stains, grease, and water. For example, they are used to keep food from sticking to cookware, make clothes and carpets resistant to stains, and create firefighting foam that is more effective. PFAS are also used in a variety of other industries, including aerospace, automotive, construction, electronics, and military. Because they take so long to break down in the environment, they remain in air, soil, and water, including sources of drinking water, for a long time.



How people are exposed

Though more research is needed to fully understand all sources of exposure, people are most likely exposed to these chemicals by consuming PFAS-contaminated water or food, using products made with PFAS, or breathing air containing PFAS.

One report by the Centers for Disease Control and Prevention National Health and Nutrition Examination Survey (NHANES) found PFAS in the blood of 97 percent of Americans¹. A more recent NHANES report suggested a reduction in blood levels of PFOS and PFOA since their removal from consumer products in the early 2000s. However, the number of new PFAS chemicals appear to be growing and exposure is difficult to assess accurately.

What they are

PFAS molecules are made up of a chain of carbon and fluorine atoms linked together. Because the carbon-fluorine bond is one of the strongest ever created, these chemicals do not degrade in the environment. In fact, PFAS products remain in the environment for so long that scientists are unable to estimate an environmental half-life, or the amount of time it takes for 50 percent of the chemical to disappear.

Why PFAS are receiving so much attention

- Widespread occurrence. Studies are finding PFAS in participants' blood and urine, and people want to know if they may cause health problems.
- Numerous exposures. PFAS are used in hundreds of products for a variety of applications, all over the world, causing multiple opportunities for exposure.
- Growing numbers. More than 4,700 known PFAS chemicals exist, and the numbers are increasing as industry invents new chemicals.²
- Persistent. PFAS remain in the environment for an unknown length of time and take many years to leave the body.
- Bioaccumulation. Some PFAS chemicals may accumulate in the body over time, due to more PFAS being absorbed than eliminated.

The scientific understanding of PFAS stems almost entirely from research on a select few compounds. Perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) have been manufactured the longest, are the most widespread in the environment, and are the most well-studied. PFOS and PFOA, which are called long-chain PFAS, are no longer manufactured in the United States. However, U.S. chemical manufacturers have replaced these phased-out chemicals with alternative short-chain PFAS, such as GenX.

What we have learned so far

When looking for possible human health effects of chemical compounds that have become intermingled with our natural environment, it is important to understand that they are very hard to study, especially when there are thousands of individual PFAS chemicals. Still, the research conducted to date reveals possible links between human exposures to PFAS and adverse health outcomes. These include potential effects on metabolism,³ pregnancy,⁴ children's cognition and neurobehavioral development,⁵ and the immune system.⁶

Much of the research has been supported or led by the National Institute of Environmental Health Sciences (NIEHS) and the National Toxicology Program (NTP), an interagency testing program headquartered at NIEHS. For example, in 2016, NTP concluded that PFOA and PFOS were a hazard to immune system function in humans, based on evidence from prior studies.⁷



Cape Fear River



While knowledge about the potential health effects of PFAS has steadily grown in recent years, many questions remain unanswered. Therefore, NIEHS and NTP continue to fund or conduct research to better understand the effects of PFAS exposure.

What we are doing

NTP is leading multi-faceted toxicology studies to evaluate and identify the adverse effects of PFAS chemicals, such as:

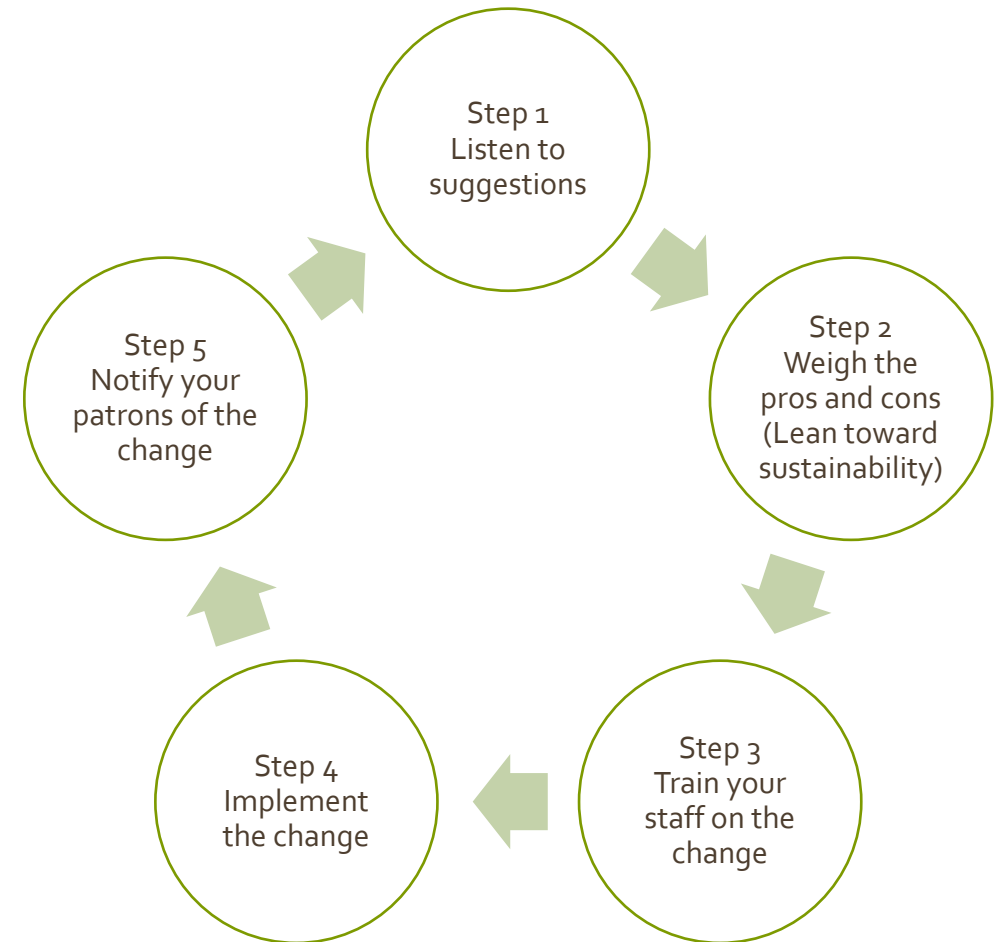
- A systematic literature review of six PFAS chemicals — PFNA, PFHxS, PFHxA, PFDA, PFBA, PFBS — to determine whether they weaken the body's response to vaccinations.
- Animal studies, including a two-year study on PFOA and 28-day studies on seven PFAS chemicals — PFNA, PFHxS, PFHxA, PFDA, PFBA, PFBS, PFOA.

In addition to the NTP effort, NIEHS awards many grants to organizations across the U.S. to conduct their own PFAS studies, including:

- Time-sensitive studies including PFAS exposures in residents near Colorado Springs whose water was contaminated with the PFAS known as perfluorohexane sulfonate (PFHxS), and contamination of the Cape Fear River in North Carolina by GenX.
- Long-term epidemiological studies of health effects of PFAS exposures, some beginning before birth, including one study on more than 300 children in the Faroe Islands.⁸

How do we go about making changes?

- Ask for suggestions on sustainable options and ideas
- Young people have innovative ideas
- Older people have experience
- Be open minded
- Always lean toward sustainability
- Advertise that you are environmentally friendly



Asking before handing out cutlery, straws, bags and receipts saves your restaurant money and helps the environment.

Consumers can bring their own:

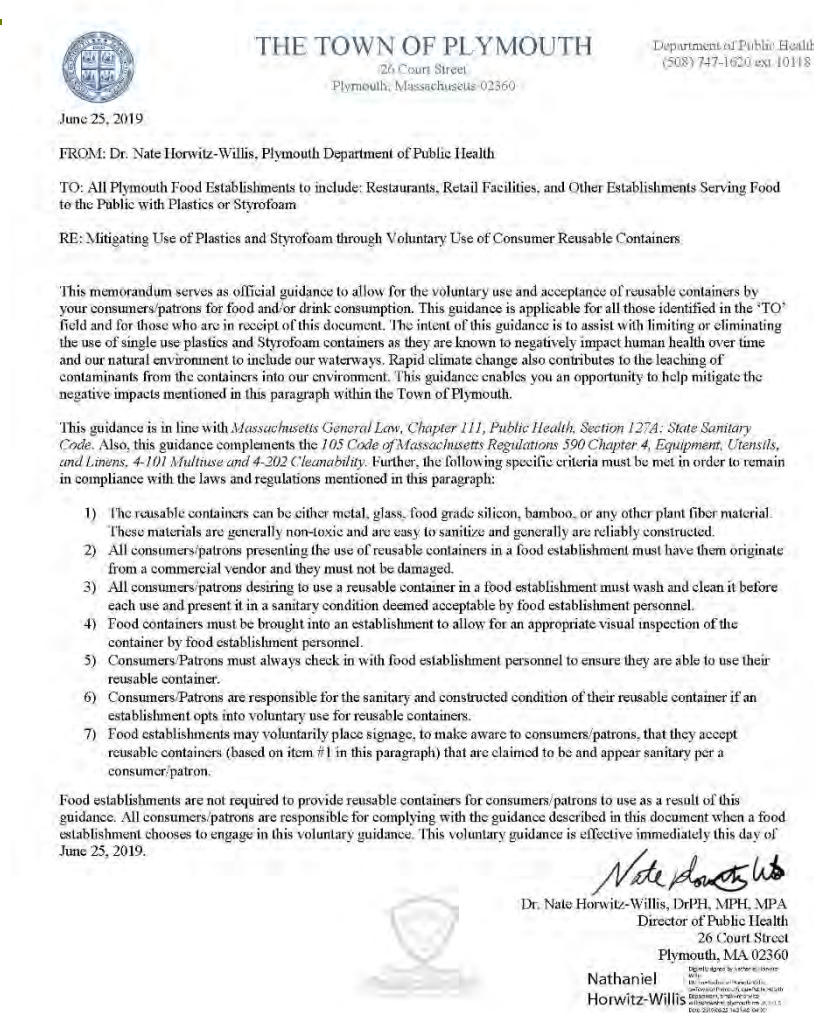
- **CUTLERY**
- **STRAW**
- **WATER BOTTLE**
- **COFFEE MUG**
- **BAG**
- **CONTAINER**



- The former Director of Public Health in Plymouth issued guidance clarifying that restaurants may accept clean, reusable containers for takeout (including coffee mugs).
- Many customers carry straw/ cutlery pouches and/or water bottles with them.
- If you ask if they would like a _____ (straw, cutlery, etc.), the answer may be no.
- The customer may be going straight home to eat and might throw away the plastic flat ware immediately.
- Even receipts cost money and contain BPA – a harmful chemical.

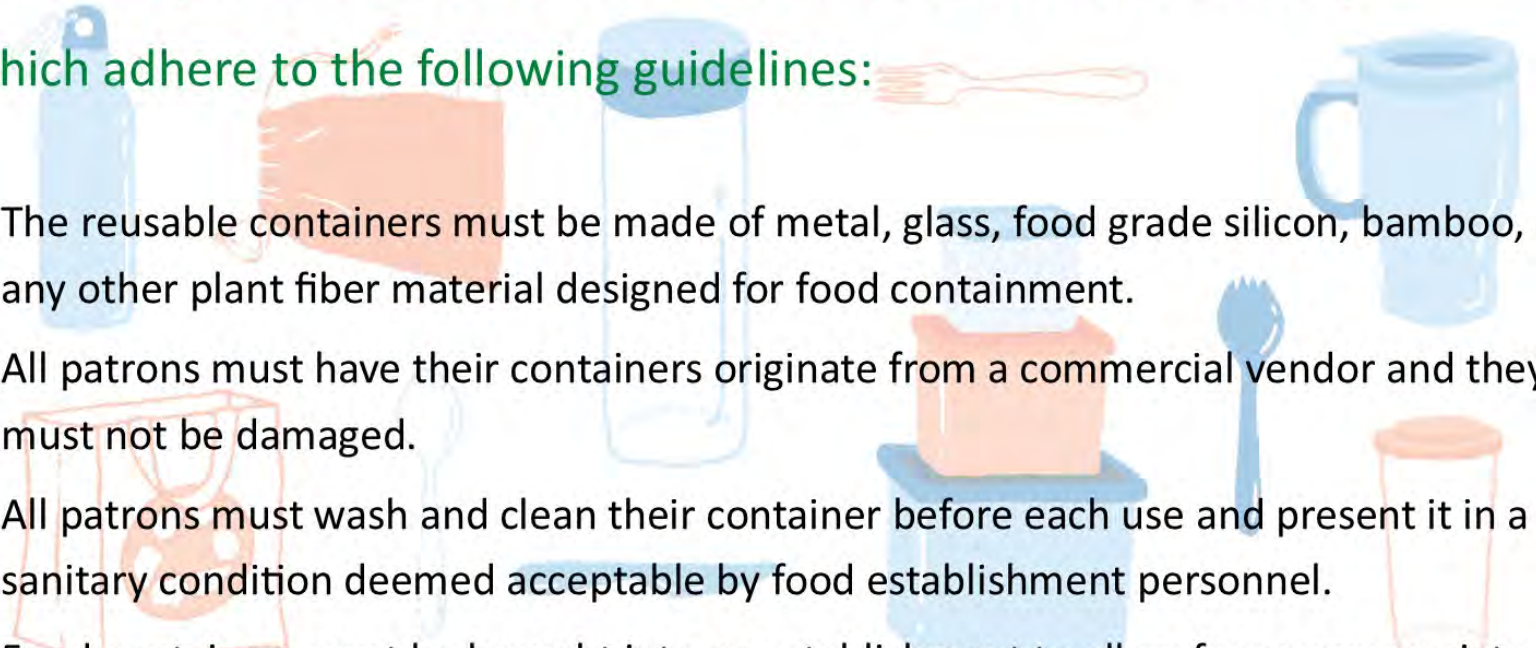
Allow customers to bring their own container

Per guidance issued by the Plymouth Dept. of Public Health on 6/25/19, consumers may bring their own container.



To reduce waste, this establishment accepts CLEAN, UNDAMAGED reusable containers,

which adhere to the following guidelines:

- 
1. The reusable containers must be made of metal, glass, food grade silicon, bamboo, or any other plant fiber material designed for food containment.
 2. All patrons must have their containers originate from a commercial vendor and they must not be damaged.
 3. All patrons must wash and clean their container before each use and present it in a sanitary condition deemed acceptable by food establishment personnel.
 4. Food containers must be brought into an establishment to allow for an appropriate visual inspection of the container by food establishment personnel.
 5. Patrons are responsible for the sanitary and constructed condition of their reusable container.

The Economic payoff of switching to reusable.

MassGreen.Org

WORKING TOGETHER FOR JUST AND SUSTAINABLE
COMMUNITIES

The Economic Payoff

Clean Water Action's ReThink Disposable project has performed a series of analyses looking at the financial savings made when food service facilities switch from disposable products to reusable ones.

Here are case studies they prepared for four different facilities:

[o A fast casual restaurant. Annual savings: \\$5,175](#)

[o A cafe / food shop. Annual savings: \\$3,768](#)

[o A food truck. Annual savings: \\$2,028](#)

[o A high school. Annual savings: \\$6,459](#)

The ReThink Disposable program offers resources and expertise for municipalities, businesses and individuals to go green.

[For more information, click here!](#)

Start a “Bring Your Own” promotion

- The EPA “Reducing Wasted Food & Packaging” guide suggests running a promotional discount if patrons bring their own container.
- If you run a promotion for a short time it may help customers get into the habit.
- Try asking “Did you bring your own container today”.
- Coffee can be made in a stainless steel pitcher and transferred into the consumer’s mug if you have a drive-through.

Example: “Bring Your Own” Cost Analysis

ASSUMPTIONS

- \$0.15 Cost of disposable packaging (cup, lid, and sleeve)
- \$0.10 Discount for “bring your own” cup
- 12 hours Daily operating hours

RESULTS

No. of “bring your own” per hour	Daily cost savings	Annual cost savings
3	\$1.80	\$657
10	\$6.00	\$2,190

No. of “bring your own” per hour	Annual greenhouse gas reduction (lb. CO ₂ equivalent)*	Annual solid waste reduction (lb.)*
3	339	378
10	1130	1260

*Based on 16 oz. cup with insulating sleeve

“Rethink Disposable” is a program offered by Clean Water Action. They offer assistance in making the switch to reusable.





Thank you for making an effort and working toward sustainability.

Please send suggestions to sustainableplymouth@gmail.com

Thank you!

