# Plastics in Food Service: Promoting Alternatives


Jennifer Griffith, Project Manager

Stephanie Frisch, Project Manager

Northeast Waste Management Officials' Association

89 South Street, Suite 603A
Boston, MA 02111

# What is NEWMOA?

- Northeast Waste Management Officials' Association
- Non-profit, non-partisan interstate association
- Solid waste, hazardous waste, waste site cleanup & pollution prevention programs
- CT, ME, MA, NH, NJ, NY, RI & VT
- Formally recognized by EPA in 1986
- www.newmoa.org

NEWMOA
NORTHEAST WASTE MANAGEMENT OFFICIALS' ASSOCIATION

# Our Project

- USDA grant focused on solid waste issues in rural, low-income areas to protect water resources
- Partners:
  - Northeast Kingdom Waste Management District in Vermont (NEKWMD)
  - VT. Dept of Environmental Conservation (DEC)
  - Androscoggin Valley Council of Governments in Maine (AVCOG)
- Aimed to educate the public about plastic recycling issues and how their actions could impact water resources


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# Agenda

- Where are plastics used & why do we care?
- How plastics get into the environment
- Information about plastics in food service, including ideas to reduce
- Understanding plastic recycling
- Outline of project & resources developed

# “Before” Poll Questions

**Thank you for your participation!**

# Plastics are Widespread and Wasteful

Used in almost every industry

Production is energy and toxic chemical-intensive

Created to be disposed of after minimal usage

# Why is Plastic so Problematic?

| | |
|---|---|
| Plastics are manmade | • Created with fossil fuels & chemical additives<br>• **Accumulating all over the planet & in the bodies of virtually all animals & people** |
| Plastics breakdown into **microplastics** and **nanoplastics** | **Plastics cannot biodegrade in the environment and break into ever smaller pieces** called microplastics and nanoplastics |
| Plastics impact human & environmental health | • Microplastics enter the food chain & water supplies<br>• Human exposure from food, drinking water and air inhalation<br>• Chemical additives can bind to microplastics and carry them into our bodies<br>• Adverse health effects including increased risk of heart attack and stroke |
| Plastics pollute water supplies | Washing textiles and flushing plastics such as wet wipes release microplastics into the discharged water |

# Definitions

Microplastic: all plastic particles less than 5 millimeters in size

Nanoplastic: all plastic particles less than 1 micrometer (0.001 millimeters) in size

# How much plastic is in our bodies?

A study found that the average person consumes 883 tiny pieces of plastic, or about 4 micrograms each day

Another study found that the amount of plastic in our brains increased by 50% between 2016 and 2024 – and that the brains of people with dementia had 3-5 times more plastic that those without dementia

# Plastics in the Environment

There are two major sources of plastics entering the environment:

## Litter

- Blown away during collection and/or transport from residents and businesses
- Intentionally or accidentally left outside

## Microplastics down the drain

- Laundering synthetic fiber clothing such as fleece or those containing polyester, nylon, or spandex
- Flushing of wet wipes or menstrual hygiene products

***Cigarette butt filters*** *are the most common type of plastic waste in the environment closely followed by* ***food packaging, bottles, and grocery bags!***

# Microplastic Impacts

- Small plastics can be mistaken as food by wildlife
- Chemicals can leach from plastic and enter soil and water sources
- Toxic chemicals and microplastics bioaccumulate up the food chain and impact both humans and wildlife

# Plastics in Food Service: Human Exposure

- Direct consumption of food containing microplastics
- Drinking water that is impacted from microplastics
- Breathing in and consuming microplastic fibers shed by plastic-containing textiles

# Where are plastics used in Foodservice?

**Customer Experience**

**Internal Operations**

**Textiles**

# Customer Experience

**Products such as dinnerware, takeout containers and single use accoutrements**

# Plastic Dinnerware & Takeout Packaging

Nearly 95% of food packaging goes to waste after just one use

Concerns with plastic foodware:

- Microplastic can transfer from packaging to food
    - High temperatures and longer durations of time can increase the amount of plastic and chemical additives in food
- Much of it is not recyclable or isn't recycled
- Improper disposal leads to litter & microplastics
- A waste of all the resources that went into making & transporting the disposables

# The Solution

**Switch to Reusables!**

- **Cost effective** – and often saves $$$
  - If a disposable cup cost 5¢ and a ceramic mug costs $2 – once the mug is used 40 times it's paid for – and after that it's a savings
  - *Plastic Free Restaurants* will pay for some or all of the costs of reusables if they are replacing single-use plastic –really!
- **Many side-benefits:**
  - Improved appearance of your facility – disposables create litter
  - Less trash to manage saves $$$ - it frees up staff time to do other things, improves staff moral, and reduces disposal costs
  - Decreased contamination of recycling and compost
  - Upgraded customer experience – increases appreciation and loyalty

# Transition to Reusables

For a successful transition to reusable tableware, it is important to consider:

1. The collection method
2. Staffing
3. Materials
4. Equipment needs/logistics
    i. Operation scale – can the reusables be added to the current dishwashing protocol?
    ii. Space constraints – can an automatic dishwasher be added to the existing space?

# What You Can Do

- **Choose reusable dining/service ware and containers**
- When disposable is the only realistic option:
  - **Use Compostable Fiber Containers** (not PLA plastic) – Look for BPI-certified compostable products
  - **If you must use plastic**, choose products that are recyclable in the local system – made from #1 or #2 plastic (or in some locations #5). **Never #6!!**
- **Encourage patrons** to bring their own reusable containers to manage their leftovers
- **Use sustainably produced** paper or compostable bags instead of plastic bags
- **Consider a reusable takeout container program**

# Beware of PFAS!

## A 2016 study found 57% of disposable dinnerware products tested contained PFAS

Many molded fiber and recycled plastic disposable tableware are treated with chemicals such as Per- and Polyfluoroalkyl Substances (PFAS) to achieve water- and grease-resistant properties

## Avoid purchasing items containing PFAS:

- Look for “NO/Low F” listed products in the Center For Environmental Health Database od Single-Use Food Service Wate Products
- Look for GreenScreen Certified products
- Look for BPI-certified compostable products

# Dine-in Case Study: Reusable Dinnerware

- A restaurant with 88% on-site dining originally used all disposables: containers, utensils, and individual salt, pepper and sugar packets
- Switched to ceramic plates, stainless steel utensils and glass containers with metal lids
- 2-month average pay-back period for reusable dinnerware

# Takeout Case Study: Deposit/Return

## EcoWare & Reuse Pass at the University of Vermont

- All on-campus dining facilities use reusable takeout containers (EcoWare)
  - EcoWare is the only way to take food from dining halls
- Free to all students, staff, and faculty
- Steps for use:
  1. Checkout and fill container
  2. Return container in 3 days
     - If not returned within 5 days, subject to $5 charge
- EcoWare containers are leak-resistant, BPA-free, dishwasher/freezer safe
  - Made from plant-based (PLA) plastic containing 20-30% recyclable materials and can be used up to 300 times

# Takeout Case Study: Restaurant Collaboration

- Multiple Massachusetts restaurants in greater Boston area partnered with third-party company to manage reusable takeout containers
- Customers use third-party app to access reusable takeout containers
  - When ordered through the app, restaurant is alerted to use a reusable container
- Service is free to use but payment information is collected and charged if containers are not returned
- The more restaurants that join the program, the more cost effective it is for businesses

**Three restaurants in costal NH partnered in 2024 to implement a similar system**

# Case Study: The Ten Towns Toolkit, NH


The NH Network Plastic Working Group produced informational guides to support schools in switching to reusable trays and utensils

- Overall costs and amount of waste generated both decrease when schools switch to reusable stainless-steel utensils and trays
- Encourage fundraisers and grants to support the cost of purchasing reusables and a commercial dishwasher

# Single Use Serviceware

- Examples of single-use serviceware: utensils, straws, stirrers, beverage lids, condiment packets, and individually wrapped food servings such as chips or butter pats
- Most single use serviceware have no recycling market due to their small irregular shape, inconsistent plastic material and flimsy nature
- The United States uses nearly one trillion disposable food service products each year

# Ask About Single-Use Items

- Only providing what the customer wants saves the provider $$$ and minimizes waste and pollution
- Access to single-use serviceware should be limited dine-in businesses and only provided when asked for - or is made available at a self-service counter
    - In 2022, the State of Washington implemented a law that requires food service providers to verbally ask which single-use items customers want or provide a self-service counter instead of automatically including items in orders

# Ideas for Bulk and Reusable Serviceware Stations

- Metal Utensils
- Large condiment dispensers or reusable containers at each table
  - Ketchup, mustard, sugar, salt, pepper, soy sauce, syrup, spices
  - Provide stainless steel or unlined paper sauce cups
- Coffee creamer and milk pitchers
- Paper napkin dispensers
- Reusable food trays and baskets

# What You Can Do

- Swap all single-use dine-in serviceware to larger reusable and bulk alternatives
- **Do NOT automatically** provide serviceware with takeout and delivery orders
    - Institute a system that allows customers to request the serviceware they require for the meal

# Internal Operations

## Products including as food purchase, storage & handling

# Food Purchasing & Handling

*While food handling items such as gloves are often made of single-use plastics for sanitation, there are opportunities for plastic reduction when purchasing and storing food*

**Supplier Food Packaging**

**Prepared Food Storage**

**Wasted Food Evaluation**

# Food Packaging from Suppliers

Start by scrutinizing the food packaging from your supplier(s):

- What comes in plastic packaging?
- Can you purchase items in bulk to reduce packaging?
- Does your supplier have reusable crates that can be returned after deliveries?
- For foods that must be packaged in plastic, can it be plastic that is recyclable in the local system or is there an option for compostable containers?
- If plastic packaging is unavoidable with the current supplier, is there a different supplier that could achieve a smaller plastic footprint?

# Food Packaging During/After Preparation

Next, consider how food is stored during and after preparations:

- What containers are food stored in?
  - How are they sealed? Is plastic wrap used?
  - Can food be stored in **glass or stainless-steel** containers with silicone lids?
- If able to compost, can single-use plastic gloves be replaced with BPI-certified compostable gloves?

# Evaluation of Wasted Food

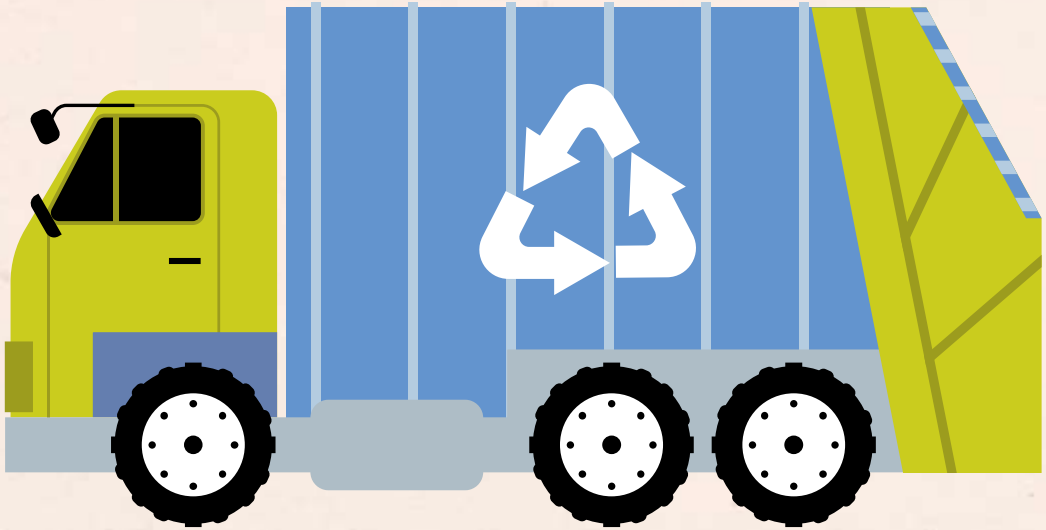
Lastly, consider if there is often wasted food - preventing the overproduction of food can directly translate to:

- Fewer food handling and packaging plastics used such as single-use gloves, plastic wrap and containers
- Saves $$$ from lower food purchase and waste management costs
- Saves $$$ by using less water, gas and staffing resources

# What You Can Do

- **Review food packaging from suppliers** and
  - Purchase items in bult to reduce packaging (if it won't lead to wasted food)
  - Use containers that can be taken back by the supplier
  - Choose food containers that are recyclable or compostable in the local system
- **Choose compostable food service gloves that are BPI-certified**
- **Use non-plastic reusable containers** instead of disposable plastic storage options
- **Use containers with silicone lids** in place of plastic wrap

# Understanding Plastics Recycling



# A recycling symbol ≠ recyclable!

A lot of plastic has no feasible market and should not go in recycling bins

# Recycling in Food Service

- Recycle as many of your own plastics as possible
  - Ensure your recycling is **rinsed** and **correctly sorted**
- Only provide customers with packaging & takeout containers that are recyclable in the local system

# Foodservice Plastic Types that are Generally Recyclable

| Plastic Type | Used to Make |
| --- | --- |
| Type 1 – Polyethylene Terephthalate (PET or PETE) | • Disposable water bottles<br>• Food packaging such as peanut butter, oil and dressing containers<br>• Some takeout food containers |
| Type 2 – High Density Polyethylene (HDPE) | • Food packaging such as milk containers<br>• Some cleaning product containers |
| Type 5 – Polypropylene (PP) | • Some takeout food containers<br>• Food packaging such as yogurt cuts<br>• Cloudy plastic containers such as baby bottles |



# Recyclability of Other Types of Plastics

## Type 4 – Low Density Polyethylene (LDPE)


Examples include thin-film plastic store/take out bags, thin-filmed food packaging such as bread bags, cling film, trash bags and six-pack rings

Never put in regular recycling collection bins – cause many issues at recycling facilities:

- See if your recycler can take them if collected separately
- You **CAN** recycle yourself at collection bins at grocery & big box stores

## Never Recyclable

- Type 3 – Polyvinyl Chloride (PVC)
- Type 6 – Polystyrene (PS)
- Type 7 – Mixed (Other)

# Purchasing Considerations

## Beware of #6 Clamshells

#6 plastic is becoming more common and is not recyclable

## Avoid Black Plastic

Black is difficult for sorting technology to detect and becomes trash

## Only purchase recyclable plastic

Clear, white or non-black colored plastic items made from #1, #2 or #5 plastic

# Textiles

**Products such as uniforms, tablecloths, napkins, carpets & upholstered furniture**

# Textiles in Food Service Establishments

- Many fabrics contain plastic, including synthetic fibers such as polyester, nylon, rayon, acrylic and spandex
- Washing synthetic-containing fabrics can discharge microplastics and other chemicals into water resources
- **The best way to avoid releasing microplastics and PFAS into the environment is to opt for untreated, natural fabrics**

# When are PFAS in Textiles?

- PFAS: Per- and Polyfluoroalkyl Substances
    - Frequently called “forever chemicals” because they do not breakdown and build up over time in the environment, animals and people
    - Associated with numerous negative health effects
    - PFAS are often considered proprietary ingredients are not disclosed by manufacturers
- Fabric is treated with PFAS to achieve water- and stain-resistant properties
- PFAS-treated fabrics and carpets release PFAS into the water when they are washed

# What You Can Do

- **Don’t buy** uniforms, tablecloths, napkins, carpets or other textiles that are made from synthetic fibers including polyester, nylon, rayon, acrylic, and spandex
    - Choose untreated, natural fabrics such as cotton, hemp, wool or linen
    - Avoid fabric labels with water-, stain- or oil-resistant as these likely are treated with toxic chemicals
- **Choose wood furniture** with cushions made from natural fabric, not upholstered furniture
- **Consider replacing** all plastic-containing textiles with natural, untreated options
- **Consider wood or tile** flooring instead of carpet
- **Opt for natural fiber** rugs and carpet and avoid those with water or stain-resistant treatment
    - Wool contains natural water- and stain resistant properties but can be more expensive than carpets made from plastic fibers
- **Try to spot treat** carpets and upholstered furniture with plain soap and water or other all natural stain removal remedies

# Project Publications

# Plastics in Food Service Guide

PLASTICS IN FOOD SERVICE:
PROMOTING ALTERNATIVES

Plastics are energy and chemical-intensive to produce and most are created to be disposed of after minimal usage. **A lot of plastic waste ends up accumulating in our environment.**

Plastics are used in many categories of food service products, including but not limited to:

- **Customer Experience** such as dinnerware, takeout containers and single use condiments
- **Internal Operations** such as food purchase, storage & handling
- **Textiles** such as uniforms, tablecloths, napkins, carpets & upholstered furniture

Each of these is discussed further in this guide.

**How Much Plastic is in Our Bodies?**

The main exposure routes for humans include food, drinking water, and air inhalation. A study* published in 2021, found that the average person consumes around 883 tiny pieces of plastic, or about 4 micrograms each day. Some is excreted, but some is accumulating. The science isn't clear yet.

A study* published in 2025 indicates that the amount of plastic in the human brain has increased by 50 percent between 2016 and 2024, and that the brains of people who had dementia had three to five times more microplastics than those without dementia.

**Definitions**

Throughout this document, the term microplastics refers to all plastic particles less than 5 millimeters in size. Technically, particles less than1 micrometer (0.001 millimeter) are called nanoplastics.

Understanding where plastics are utilized in food service and how to minimize the purchase of single use plastics can save money and reduce waste generation, the use of harmful chemicals, and the amount of plastic entering the environment and water supplies.

**WHY ARE PLASTICS HARMFUL?**

Plastics, unlike natural materials, cannot biodegrade when they enter the environment. Instead, **they break down into ever smaller particles called microplastics and then get even smaller, known as nanoplastics**. In addition to being in the environment, including water bodies and the air, many microplastic particles become small enough to enter the food chain and cause harm to human health. Plastics contain chemical additives that enhance the functionality for different purposes and can add to toxicity. In the environment, these small plastics can bind to toxic chemicals such as heavy metals and organic pollutants and carry them into our bodies, causing adverse health effects. **Plastic has been found in almost every part of the human body** and scientists have determined negative health effects including increased risk of heart attack and stroke*.

Human exposure to plastics from food service can be from:

- Direct consumption of food impacted by microplastics
- Drinking water containing microplastics
- Breathing in and consuming microplastic fibers shed by plastic-containing textiles

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https://www.newmoa.org/plastics-in-consumer-products-factsheets/

# Factsheets

3 topics and 5 factsheets to provide recycling guidance to targeted communities


https://www.newmoa.org/plastics-in-consumer-products-factsheets/

# “After” Poll Questions

Thank you for your participation!

# Thank you!

Any questions?

Jennifer Griffith
Project Manager
jgriffith@newmoa.org

Stephanie Frisch
Project Manager
sfrisch@newmoa.org