

Anticancer
LIFESTYLE PROGRAM

Reducing Exposure to Harmful Chemicals in Food Packaging

Sept 26, 2023

Deborah de Moulpied
Green Living Expert
Anticancer Lifestyle Program





Before we get started

- **Use the Q&A function** to ask questions at anytime. We'll answer them at the end.
- **You will receive an email with the webinar recording** once it's over. Note that webinars are also archived on our website, under "Events".
- Closed captioning is available in English.

Who We Are

The Anticancer Lifestyle Program (ACLP) offers free, doctor-recommended, expert-led resources to help you reduce your risk of cancer, cancer recurrence, and chronic illness.

Get started at anticancerlifestyle.org



Anticancer

LIFESTYLE PROGRAM[®]



Change



Mindset



Diet



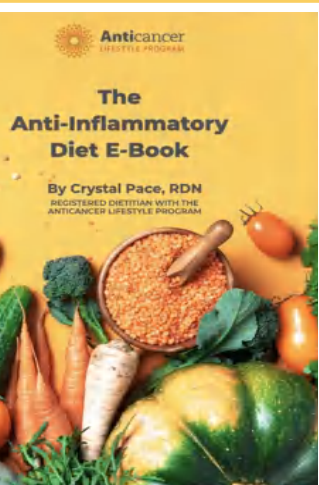
Fitness



Environment

Check out our **free** resources!

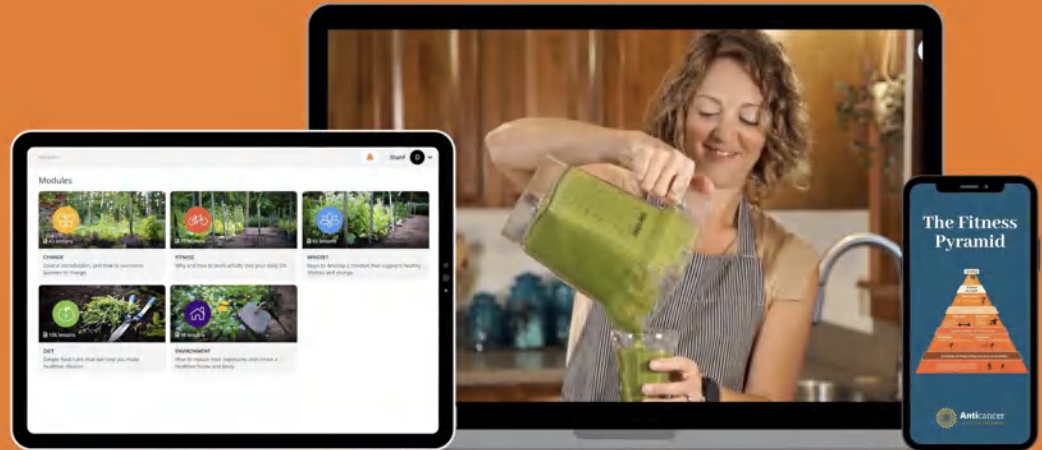
Check out our eBooks



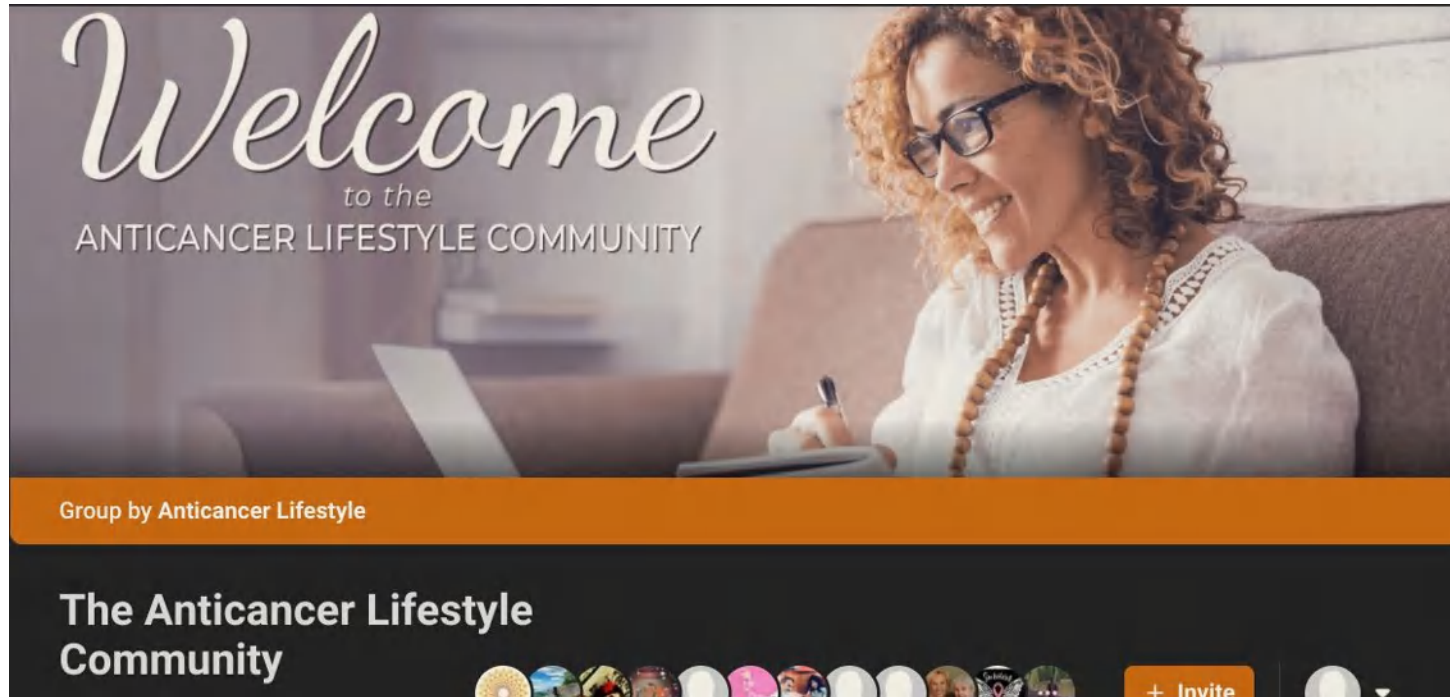
Take Our Online Course

Our FREE 10-hour course is divided into five self-paced modules. It's accessible on all devices, so you can learn anytime, anywhere.

And our dedicated mobile app makes the course just one click away

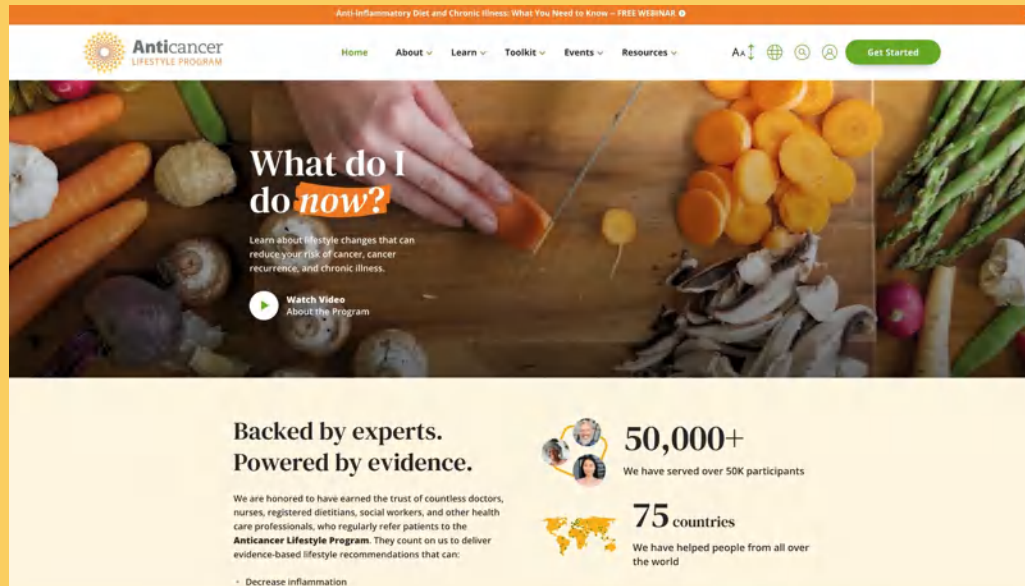


Join our Facebook community!



We appreciate your donations

Your TAX-DEDUCTIBLE donation, no matter what the amount, allows us to share our program with even more cancer survivors and those interested in cancer prevention.



Anti-inflammatory Diet and Chronic Illness: What You Need to Know - FREE WEBINAR

Anticancer LIFESTYLE PROGRAM

Home About Learn Toolkit Events Resources AA ↕ 🌐 🕒 🗣️ Get Started

What do I do **now?**

Learn about lifestyle changes that can reduce your risk of cancer, cancer recurrence, and chronic illness.

Watch Video About the Program

Backed by experts.
Powered by evidence.

We are honored to have earned the trust of countless doctors, nurses, registered dietitians, social workers, and other health care professionals, who regularly refer patients to the **Anticancer Lifestyle Program**. They count on us to deliver evidence-based lifestyle recommendations that can:

- Decrease inflammation

50,000+
We have served over 50K participants

75 countries
We have helped people from all over the world

www.anticancerlifestyle.org/donate

Today's Presenters



Deb deMoulied
ACLP Green Living Expert



Erika Crespo
ACLP



Nicole Jones
ACLP

Presenter:

DEBORAH DE MOULPIED

ACLP Green Living Expert

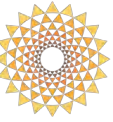
Hosts:

ERIKA CRESPO

Social Media Director, Anticancer Lifestyle Program

NICOLE JONES

Marketing Director, Anticancer Lifestyle Program



About Deborah



Deborah de Moulpied, a green living expert, created the Environment pillar of the Anticancer Lifestyle Program.

Deborah was the founder of an environmental green goods store in New Hampshire. In order to choose the cleanest possible products for her store, she spent years researching and vetting companies and products so that her customers could be confident that the brands she carried were the safest ones available.

Deborah is active in the environmental community and is a frequent guest lecturer for cancer support groups and organizations promoting a less toxic lifestyle.

What Are the Basic Types of FCMs?

- 34% Paper Board
- 27% Rigid Plastic
- 11% Glass
- 10% Flexible Plastic
- 9% Other Metals
- 6% Beverage Cans
- 3% Other - including biobased, biodegradable and compostable materials

Over 1/3 of FCMs are plastic. In addition, metal cans and some papers are lined with plastic.





60% of the *world's* plastic is used for food packaging.















Why should we be concerned?

- **Over 12,000 chemicals are intentionally used to create food packaging.** Not all of them have been thoroughly studied for long term health consequences.
- **Over 30,000 chemicals in food packaging have been found and identified as non-intentionally added substances (NIAS).** Common NIAS are impurities, mixtures of chemicals that may prove toxic, or the breakdown of chemicals from stress, heat, use, UV light, etc. **Most NIAS are from plastic.**
- **Microplastics (MPs)** – MPs are very small bits of plastic measuring under 5mm (.20 inch) that have degraded from larger sources of plastic. MPs can get so small as to be invisible. **MPs have been found in ALL foods packaged in plastic.**

Basic Types of Plastic Used for Food Packaging



Plastic Resin Identification Codes

 PETE	 HDPE	 PVC	 LDPE	 PP	 PS	 OTHER
Polyethylene Terephthalate	High-Density Polyethylene	Polyvinyl Chloride	Low-Density Polyethylene	Polypropylene	Polystyrene	Other
<p>Common products: soda & water bottles; cups, jars, trays, clamshells</p> <p>Recycled products: clothing, carpet, clamshells, soda & water bottles</p> 	<p>Common products: milk jugs, detergent & shampoo bottles, flower pots, grocery bags</p> <p>Recycled products: detergent bottles, flower pots, crates, pipe, decking</p> 	<p>Common products: cleaning supply jugs, pool liners, twine, sheeting, automotive product bottles, sheeting</p> <p>Recycled products: pipe, wall siding, binders, carpet backing, flooring</p> 	<p>Common products: bread bags, paper towels & tissue overwrap, squeeze bottles, trash bags, six-pack rings</p> <p>Recycled products: trash bags, plastic lumber, furniture, shipping envelopes, compost bins</p> 	<p>Common products: yogurt tubs, cups, juice bottles, straws, hangers, sand & shipping bags</p> <p>Recycled products: paint cans, speed bumps, auto parts, food containers, hangers, plant pots, razor handles</p> 	<p>Common products: to-go containers & flatware, hot cups, razors, CD cases, shipping cushion, cartons, trays</p> <p>Recycled products: picture frames, crown molding, rulers, flower pots, hangers, toys, tape dispensers</p> 	<p>Common types & products: polycarbonate, nylon, ABS, acrylic, PLA; bottles, safety glasses, CDs, headlight lenses</p> <p>Recycled products: electronic housings, auto parts,</p> 



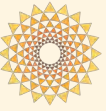
Other Materials or Additives Linked to Chemicals of Concern

Study

Antimicrobials	Natural or synthetic chemicals to extend shelf life; can migrate into foods
Mineral Oils	Found in inks, adhesives, plasticizers, contamination from other sources
UV protectors	Chemicals added to act like sunscreen
Melamine	A type of hard plastic; releases formaldehyde and MPs; never microwave
Inks, Color Developers	On all types of packaging; leaches chemicals into foods
Labels	Adhesives of labels source of chemicals; thermal labels release BPS through plastic wrap. Phthalates on stickers
Antistatic	Perchlorate (rocket fuel) used on the inside of dry foods packaging and plastic bags
Straws	Lined with PFASs (even paper ones)
Silicone	Additives release compounds responsible for cell and hormonal changes
Nano Particles	Titanium dioxide, Silver nanoparticles, Zinc oxide, Inorganic Nanoceramic, Polymeric, etc. to reduce food pathogens and oxygen absorption

Chemicals of Concern in the 3 Major Types of Food Packaging

FoodPrint



METAL

- Aluminum
- Manganese
- Sodium chromate
- Potassium dichromate
- Bisphenol B
- Bisphenol A
- Bisphenol S
- Diphenolic acid
- Bisphenol F
- 6:2 Fluorotelomer alcohol
- 8:2 Fluorotelomer alcohol
- 2-Chlorobuta-1,3 diene

PAPER

- Perfluorooctanoic acid, ammonium salt
- 2,3-Epoxypropyl-trimethylammonium chloride
- Pentachlorophenol
- 2,3,4,5-Tetrachlorophenol anthraquinone
- Boric acid
- 4-Nonylphenol
- Ethyleneimine
- Methylxirane
- Perfluorobutane sulfonic acid (PFBS)
- Perfluoropentane sulfonic acid (PFPeS)
- Perfluorohexane sulfonic acid (PFHxS)
- Perfluorooctane sulfonic acid (PFOS) (3)
- Perfluorobutanoic acid (PFBA)
- Perfluoropentanoic acid (PFPeA)
- Perfluorohexanoic acid (PFHxA)
- Perfluoroheptanoic acid (PFHpA)
- Perfluorooctanoic acid (PFOA) (5)
- Perfluorononanoic acid (PFNA)

PLASTIC

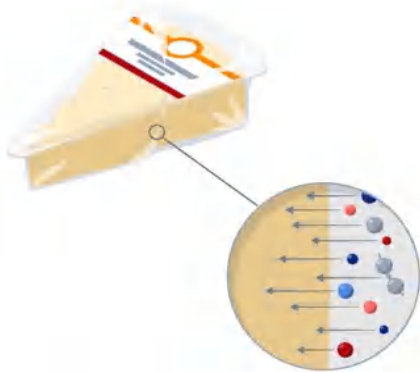
- Vinyl chloride
- Sodium perchlorate
- Tributyltin oxide (TBTO)
- Tributyltin acetate
- Dibutyltin (dilaurate)
- Dibutyltin dichloride
- Antimony trioxide
- Silver (nanoparticles)
- 4-Methyl-m-phenylenediamine
- Diphenyl-p-phenylenediamine
- Acrylamide
- Styrene
- 4,4'-Methylenedianiline (MDA)
- Buta-1,3-diene
- Vinyl acetate
- Melamine
- Bisphenol A diglycidyl ether
- Chloroethylene
- Isoprene
- Chlorinated paraffins (CPs)
- 1,2-Dichloroethane
- Dichloromethane
- Styrene oxide
- 2,3-Epoxypropyl phenyl ether
- 4-tert-Butylpyrochatechol
- 4-tert-Butylphenol
- p-Cresol
- Triphenyl Phosphate
- Tris (2-Chloroethyl)-phosphate (TCEP)
- Dicyclohexyl phthalate
- Diphenyl phthalate
- Diethyl phthalate (DEP)
- Diisobutyl phthalate
- Dibutyl phthalate (DBP)
- Dihexyl phthalate
- Benzyl butyl phthalate
- Bis(2-ethylhexyl) phthalate
- Diocetyl phthalate
- 2-Octyl-(4-dimethylamino)benzoic acid
- Di(2-ethylhexyl)adipate
- 4,4'-Methylenebis[2-chloroaniline]
- Phenyl salicylate
- Benzophenone
- Benzophenone-3;
- Oxybenzone
- 4,4'-Dihydroxy-benzophenone
- 1,3-Dihydroxybenzene
- 2,3-epoxypropyl methacrylate
- UV-327

So, What's the Big Deal?

Humans are exposed to harmful chemicals due to the migration of chemicals from the FCMs into the foods we eat.

Migration can increase with higher temperatures, longer contact time, smaller portions and whether the food is acidic or fatty.

chemical
migration



Zero Waste Europe | 6 Dec 2022

WHAT INFLUENCES MIGRATION OF CHEMICALS INTO FOOD?



...at high
temperature



...when using
small portion
sizes



...after long
contact times



...of fat-soluble
chemicals into
fatty foods



Basic science about human exposure to chemicals in FCMs

- Exposure routes: ingestion, inhalation, skin contact
- Risk to health = Exposure x Hazard
- “The dose makes the poison” vs. Endocrine Disrupting Chemicals (EDCs)
- Low exposure does not equal safe levels



OK, but are these exposures
actually harmful?



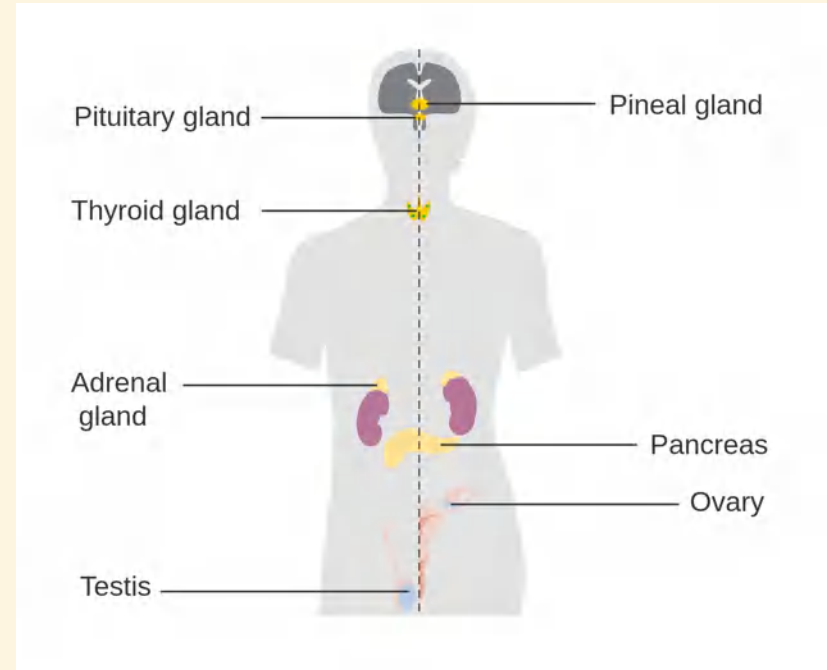
One study found over 10,000 chemicals used in plastics.
Of those, 2,400 chemicals are of concern.

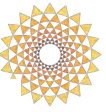
Many of these chemicals are known as EDCs, or endocrine disrupting chemicals.

EDCs:

- disrupt the body's hormone system
- interfere with reproductive (sex) hormones, affecting puberty, growth, fertility, and more
- increase risk of cancer

Some common EDCs are Phthalates, BPA, BPS, Heavy Metals, Pesticides, PFASs, Flame retardants.

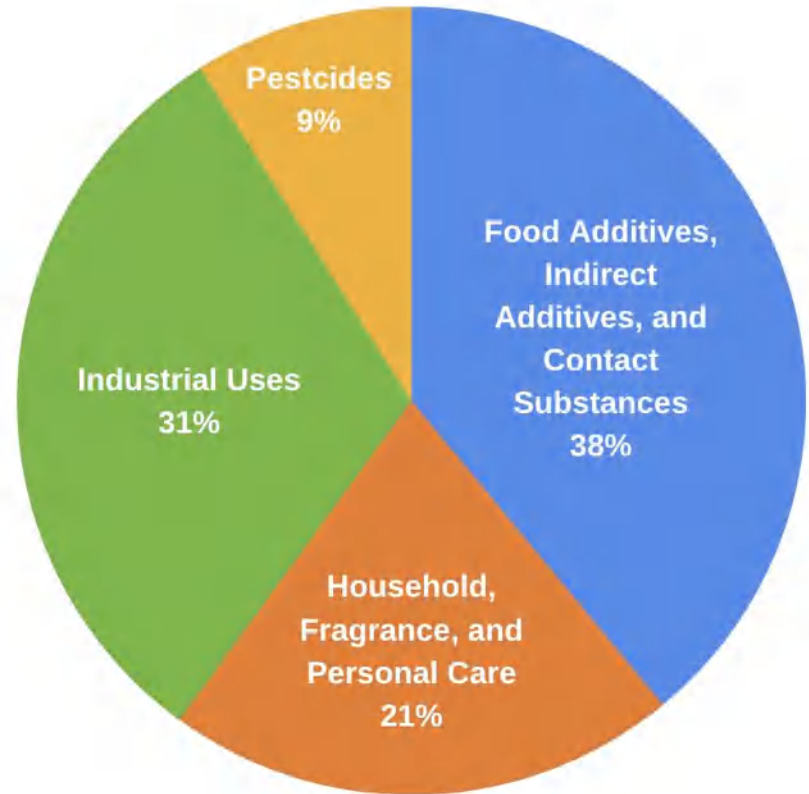




EDC Exposure is Highest from Foods

Exposure to Endocrine Disrupting Chemicals (EDCs) comes from several main sources – pesticides, industrial uses, household items such as personal care products, and the foods we eat.

Notice that the largest exposure route of these EDCs comes from our foods.





The Dark Duo:

BPA & Phthalates in Food Packaging

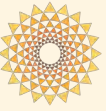
BPA:

- A major endocrine disruptor.
- Predominantly in canned beverages.
- BPA-free? Watch out for its equally harmful "cousins": BPS & BPF!
- All beverage cans contain bisphenols (BPA, BPS, BPF, etc.)

Phthalates:

- Predominantly in PVC plastic #3 (cling-wraps, lids). On labels.
- Linked to breast cancer, fertility issues, asthma, obesity.
- Also present in fruit labels and fast-food packaging.





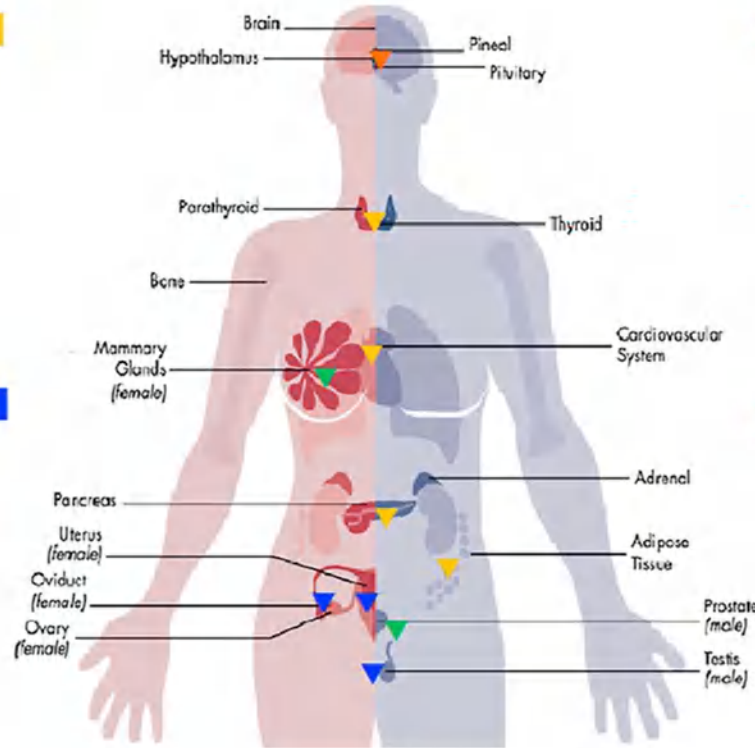
Studies show strong evidence of endocrine disruption associated with exposures from bisphenols and phthalates

Metabolic alterations

- Overweight and obesity
- Fat tissue dysfunction
- Increase of body fat mass
- Hyperglycemia
- Insulin resistance
- Type 2 diabetes mellitus
- Thyroid dysregulation
- Hypertension
- Coronary heart disease

Reproductive disorders

- Hormonal alterations
- Precocious puberty
- Fetal growth restriction
- Preterm births and abortions
- Decreased fertility
- Ovarian and uterine hypertrophy
- Premature ovarian failure
- Reduced semen quality



Neurological disorders

- Psychomotor and mental development alterations
- Reduced cognitive ability
- Depression and anxiety
- Internalizing and externalizing behavior alterations
- Reduction of sexually dimorphic behavior

Hormone-dependent tumors

- Uterine leiomyoma
- Advanced endometriosis
- Malignant endometrial hyperplasia
- Endometrial, breast and prostate cancer



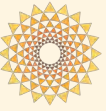
SOME PLASTIC PRODUCTS ARE MORE TOXIC THAN OTHERS



- PET
- HDPE
- PP
- LDPE
- PS
- PLA
- PVC



[Study](#)



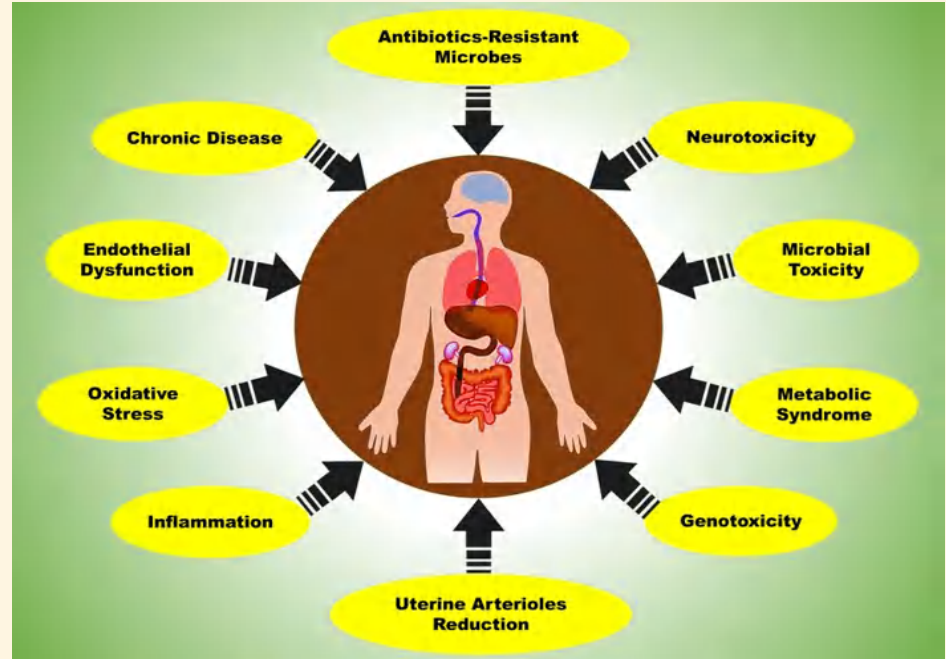
Microplastics (MPs) and adverse human health impacts

Microplastics (MPs) are, by themselves, of great concern due to the potential for exposure to hundreds of various chemicals.

However, an additional concern is what can “stick” to MPs.

Heavy metals and pathogens (organisms that carry diseases) “go along for the ride” and may cause many health problems.

MPs have been found in every organ, the blood, the placenta, the fetus, the testes, and semen.



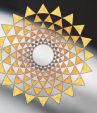
[Study](#)



Are silicone products better to use than plastics?

Silicone products include molds, baking mats, and storage bags. Concerns include:

- **32% of silicone products showed moderate cytotoxicity.**
- **A high 84% of the products had noticeable hormonal activity.**
- **Out of 31 silicone kitchenwares, 26 organic compounds and 21 metals were detected.**
- **38 compounds (or their combinations) including metals, plasticizers, methylsiloxanes, and lubricants were significantly associated with cytotoxicity or hormonal activity ([Study](#))**



What About Metal?

Most metal FCMs are made from:

- Stainless Steel
- Plated Tin
- Aluminum

In the form of:

- cans, caps, lids, bottles, trays, bags, wraps, foils

Most cans, caps, lids and bottles are **lined** with a *type of plastic* to prevent corrosion and leakage:



What About Paper?

The paper-making process introduces hundreds of concerning chemicals.

PFASs - The "Forever" Chemicals:

- Used to "greaseproof" paper, preventing its breakdown.
- Linked to serious health risks, including cancer.
- Found in 36 out of 38 paper straw brands. ([Study](#))
- Metal straws are the best option.

Paper Cups Concern:

- Lined with polyethylene.
- Risks include chemical migration into food and microplastic contamination. ([Study](#))





What About Glass?

- **Type I Borosilicate Glass** - besides silica, contains boric oxide, sodium oxide, and aluminum oxide - can withstand high heat shock - canning jars/storage
- **Type II Treated Soda Lime Glass** – treated with sulfur to neutralize the alkaline oxides - used by pharmaceuticals and science
- **Type III Soda Lime Glass** - is made up of silica and various oxides, including sodium, calcium, aluminum, magnesium, and potassium. ***This is the most common type used in food packaging.***



The main shapes are bottles, jars and pots.

****Do not use crystal glasses or decanters due to potential migration of lead.***

Advances in Safer Food Packaging

Harnessing Plant-Based Solutions:

- Bamboo, rice husks, pressed palm leaves, and more.

Innovative Cellulose Films and Plant Resins:

- Wraps derived from cellulose and plant resins.
- Uniting convenience with compostable, safe options.

Edible Packaging Possibilities:

- Reducing waste, promoting health, and sustainability. Examples in development: Hard cookie coffee cups, sweet gelatin packaging, fruit-like casings, and candy wrappers made of potato fibers or rice paper.



If you need a cling wrap or a storage bag...choose one made from starch!



If you want *truly* compostable, look for these logos:





In Summary: The Good and The Bad of FCMs

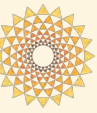
Material	Pros	Cons
Plastic	Lightweight, Flexible, Inexpensive	Hard to recycle, Chemical migration, MPs
Paper	Often recyclable, Lightweight	Less durable, Adhesive migration, Often contains PFASs/plastics
Biobased	Renewable origin (plants/animal feedstock)	Not recyclable, Lined with PLA/PFASs
Multilayer	Lightweight	Not recyclable, MPs, Chemical leaching
Metal	Durable, Recyclable, Heat resistant	Heavier, Lined, MPs (excluding aluminum products)
Glass	Great barrier, Reusable, Recyclable	Breakable, Heavy, Possible lead content
Silicone	Less toxic than plastic	Not recyclable, Leaching from additives
Compostable	Organic origin, Compostable in <i>high-heat</i> facilities	Protective linings (PLA/PFASs), Not always recyclable



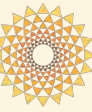
What YOU can do to avoid exposure to harmful chemicals in food contact materials



Making Safer Choices: Grocery & Beverages



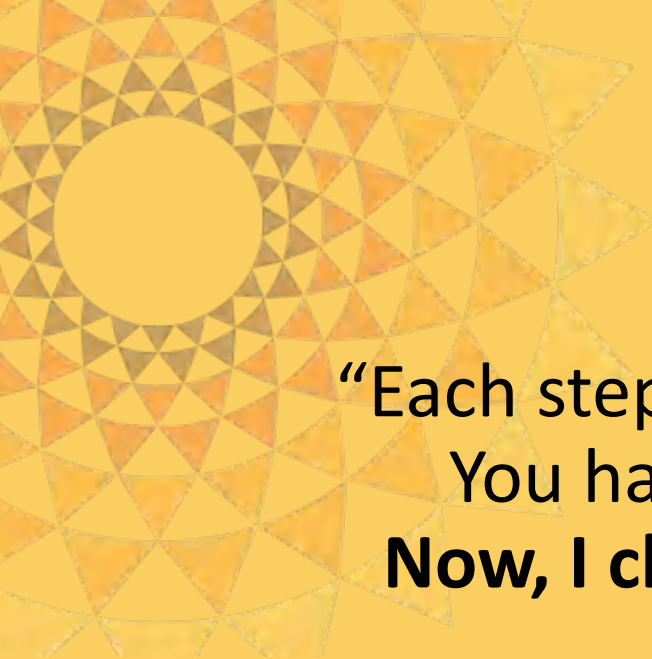
- ✓ Opt for fresh produce, bulk purchases, and support local Farmers' Markets & CSAs.
- ✓ Prioritize glass packaging, especially for beverages.
- ✓ Choose dried foods over canned options.
- ✓ Request butcher paper for meats and fish.
- ✗ Avoid cling-wrapped cheese and meats or rewrap at home.
- ✓ Make soups from scratch; opt for boxed if buying.
- ✓ Choose larger packages to reduce exposure.
- ✓ Freezer wrap using silicone parchment.



Making Safer Choices: Kitchen & Consumption

- ❑ Microwave caution: always avoid plastic.
- ❑ Limit takeout; transfer to safer containers swiftly.
- ❑ Bring your own stainless steel-lined thermos for hot beverages on-the-go.
- ❑ Test ceramics for lead if concerned.
- ❑ Watch out for misleading marketing terms.
- ❑ Swap plastic/paper straws with stainless steel options.
- ❑ Store food in glass, ceramic, or stainless steel at home.
- ❑ **General Rule: Minimize plastics and canned products.**





“Each step you take reveals a new horizon.
You have taken the first step today.
Now, I challenge you to take another.”

- Dan Poynter

Continue your learning



Continue your learning



Free Webinar
Tuesday, October 17
4pm PT / 7pm ET

7-Day Diet Kickstart

IT'S FREE AND ONLY **15** MINUTES A DAY!

Rejuvenate your health in one week with help from **Crystal Pace, RD, MS.**



DAY 1
Anti-Inflammatory Foods

DAY 2
Mindful Eating

DAY 3
Healthy Food Shopping

DAY 4
Ultra-Processed Foods

DAY 5
Fiber and Gut Health

DAY 6
Nontoxic Cookware & Food Storage

DAY 7
Recipes and Next Steps

Begin your
7-day Kickstart today!
Sign up now!



Food Contact Materials Guide

Food Contact Materials: Hazards and Alternatives

Key:

FCMs = Food Contact Materials
MPs = Microplastics
PFAS = per- and poly-fluoroalkyl substances (so-called "forever chemicals")
NIAS = Non-intentionally added substances
EDCs = Endocrine (hormone) Disrupting Chemicals
BPA = Bisphenol A, an EDC (BPS is a close cousin)
PET, PP, PE = Polyethylene terephthalate, Polypropylene and Polyethylene
LDPE = Low-Density Polyethylene
CHC = Chemicals of High Concern

Does it contain MPs or PFAS?

Y = Yes

N = No

? = We don't know

P = Probably

FCMs	MPs	PFAS	What's the Concern?	Replacement, Alternative, Best Practice
Metal	P	N	Cans lined with plastic, aluminum may leach, often BPA substitute	Choose glass, bulk items; use fresh, frozen, or dried. use Amy's/Eden brands; avoid aluminum; use bee's wrap
Paper	?	P	Lined with PFASs/plastic; additives, adhesives, NIAS; MPs	Avoid takeout containers; use metal/glass containers; remove pizza ASAP from box
Glass	N	N	Potential contamination from recycled sources; colorants; lead	Avoid leaded crystal; test for lead; beware of recycled content
Plastic #1 PET	Y	?	Leaches antimony, phthalates, EDCs, potential PFASs, NIAS; MPs	Avoid single-use bottles; use stainless steel or glass reusable bottles; buy in glass
Plastic #2 HDPE	Y	?	Leaches EDCs; potential PFASs; NIAS; MPs	Buy in glass for acidic/fatty foods
				Avoid, especially liquid foods; avoid

Thank you!

Please take our short survey about this event:



On the survey page, you'll find links to:

- **Download free resources** like our Online Course, eBooks, and webinars
- **Join our private Facebook community** to connect with other Anticancer Lifestyle Program members and find support with peers.
- **Follow us on Twitter, Facebook, and Instagram** to get all the latest information, tips, and inspiration from the Anticancer Lifestyle Program.

For more information, visit us at **anticancerlifestyle.org** and contact us at **info@anticancerlifestyle.org**



Time for questions!