



Safer Packaging

Avoiding Chemicals that Migrate



GET INVOLVED ON CAMPUS WITH **UMassAmherst**

protect our breasts

FROM EXPOSURE TO EVERYDAY TOXINS

START A CONVERSATION WITH A CHAPTER ON YOUR CAMPUS



SYRACUSE UNIVERSITY
Bates College
Trinity College
BAY PATH UNIVERSITY
AMHERST COLLEGE
LOYOLA UNIVERSITY MARYLAND
COLLEGE OF THE Holy Cross
BUA
LYNNFIELD HIGH SCHOOL



DITCH THE CHEMICALS

AVOID PLASTICS #3, 6, & 7

CHOOSE GLASS

#SAFERSUMMER



THANK YOU

TO OUR CHAPTERS FOR TABELING

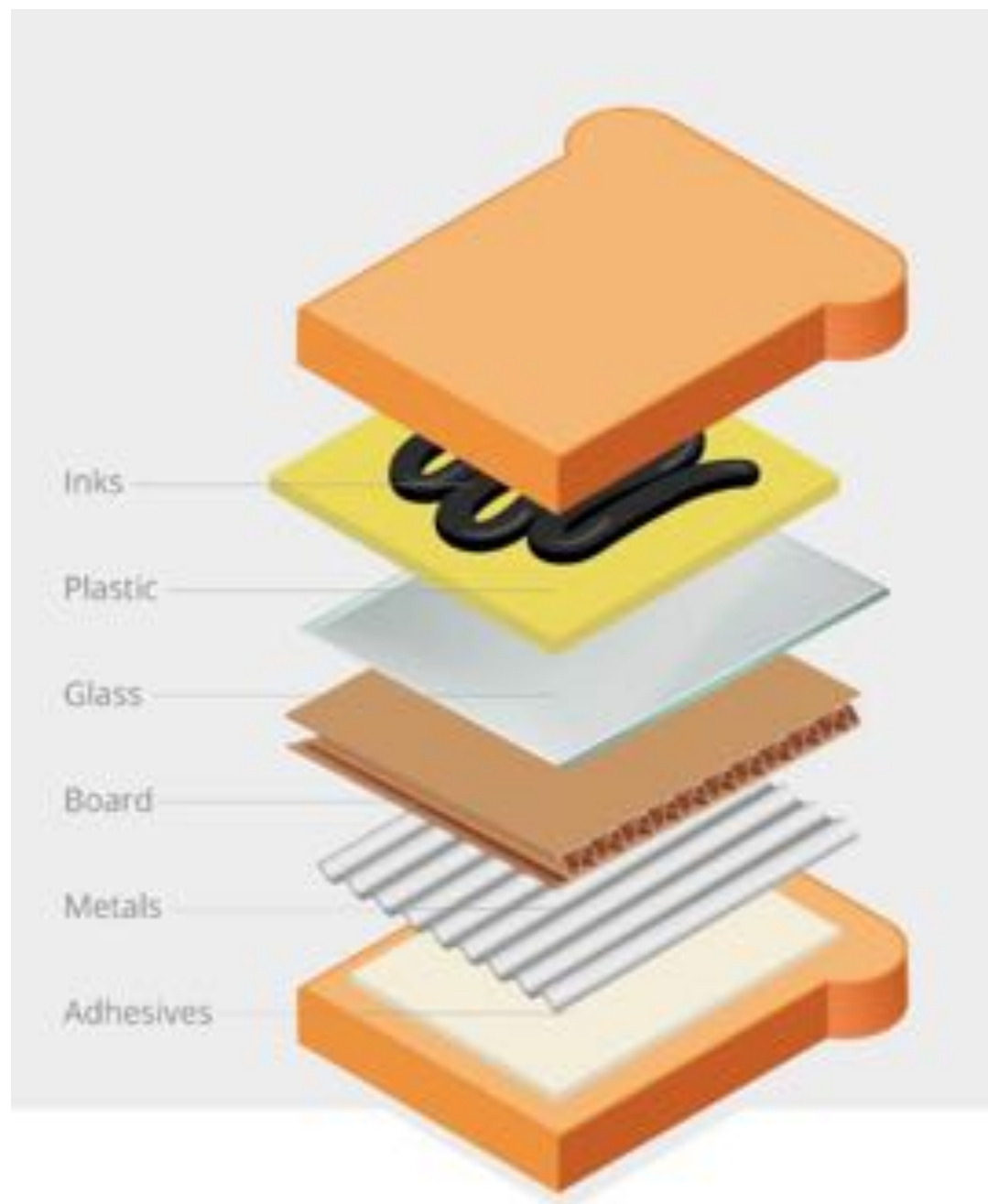
Numi ORGANIC TEA

Collecting people, plants and pure tea



WHAT BECOMES PART OF THE FOOD?

Some chemicals transfer from food packaging into the food. This process is called chemical migration. Packaging material, type of food, temperature, and storage time are factors affecting the migration of chemicals.



CONCERNS AND KNOWLEDGE GAPS

Consumers are constantly exposed to mixtures of chemicals migrating from food packaging. Some chemicals commonly found in food packaging have been associated with certain diseases. The toxicity of many chemicals used in food packaging is not completely understood or even not known at all.

Doubts raised about key BPA substitute

11 February 2016 Rebecca Trager



Questions are being asked about the safety of a common substitute for the controversial compound bisphenol A (BPA). BPA is used to make certain plastics and a number of countries have banned its use in food contact items such as baby bottles as it is a known endocrine disruptor. Accumulating research suggests that bisphenol S (BPS) – a preferred substitute for BPA – has a very similar toxicological profile to BPA, and may be no less harmful.



- **Food Contact Materials** (substances) *other than glass and ceramics are not inert.*
- Can coatings
- Laminates in cartons or glass bottle closures
- Adhesives
- Paper and board
- Plastics
- Printing Inks
- Over 6,000 FCM substances on lists
- Migration
- Substitutes
- Recycling
- Mixtures



Food contact article:
yogurt cup



Food contact materials:

- Plastic(s)
- Metal
- Glass
- Paper
- Cardboard
- Coating
- Adhesives
- Printing inks
- ...and many more

Food contact substances:

- Monomers
- Polymers
- Oligomers
- Additives
- Pigments
- Solvents
- Impurities
- Reaction by-products
- Degradation products
- ...and many more

Chemicals include:

- Phthalates
- Bisphenols
- Perchlorate
- N-methyl pyrrolidone
- Benzophenone
- Styrene
- Tetramethyl bisphenol F
- Fluorinated chemicals (PFAS)
- BHA/BHT
- Toluene
- And many more....

Food Packaging Product Stewardship Considerations:

The following points apply:

- legal requirements must first be followed for food contact materials, then the below best practices can be considered

- The below best practices in many cases go beyond regulations, if there is a conflict, regulations must be followed.

Packaging applications which have a higher risk due to use (e.g. ovenable/microwavable, etc.) or sensitive target consumer (e.g. infant/toddler food, etc.) should have additional safety assessments and possibly more stringent requirements to be considered when developing.

Packaging per/Component	Substance(s) / Topic(s)	Description	Protect Our Breasts Vetting Process	Should not use intentionally before suitable alternative exist	Minimum Use	Additional Information/ references
Any packaging component	- phthalates (see review) (non-exhaustive list given below)	Phthalates should not be used as plasticizers and additives in packaging materials including inks, adhesives, plastics, etc., where suitable alternatives exist.	Phthalates MUST NOT be used.	X		Prop65, SVHC, Consumer interest
	D-(2-ethylhexyl)phthalate (1174-11-1)	Dihexyl phthalate (101-16-6)				
	Dioctylphthalate (26751-40-0)	Dioctyl phthalate (64-41-7)				
	Dodecylphthalate (64-74-2)	Dodecyl phthalate (64-66-2)				
	Dodecylphthalate (26853-12-0)	Dodecyl phthalate (64-66-2)				
	Dioctylphthalate (27154-26-3)	Dioctyl phthalate (66115-49-1)				
	Dioctyl phthalate (64-66-2)	Dioctyl phthalate (14401-25-4)				
	Diethyl phthalate (64-66-2)	Diethyl phthalate (144-80-8)				
	Benzyl butyl phthalate (35-68-7)	Diethyl phthalate (131-11-3)				
	Dih-n-octyl phthalate (117-64-8)	n-Octyl n-octyl phthalate (119-67-0)				
Dih-n-nonyl phthalate (64-75-0)	Dih-n-pentyl phthalate (131-19-0)					
Any Packaging components	- Heavy Metals: Cadmium, Chromium VI, Lead, Mercury	- Must not be intentionally used in packaging materials, including inks and pigments/colorants.	Heavy Metals MUST NOT be used.			Follow CONE/TPCH regulations
Any Packaging Component	- SVHC (Substances of Very High Concern) (list available from ECHA website)	- Applicable to products for sale in Europe, must comply with regulation - see below "REACH" comment and links	SVHCs MUST NOT be used.			Follow regulation where applicable
Any Packaging Component	- California Proposition 65	- Applicable to products for sale in California, must comply with regulation - e.g. well below communication limits (MADL, NDRL) or absence.	Prop 65 chemicals MUST NOT be used.			Follow regulation where applicable
Can coatings and Plastic Resins (e.g. polycarbonate) containing Bisphenol A	Bisphenol A (BPA, 80-05-7)	- Bisphenol A based materials should not be used where suitable alternatives exist.	All Bisphenols MUST NOT be used unless pre-approved i.e. tetramethyl BPF looks promising	X		Prop65, SVHC, Consumer interest
	Perfluoro and polyfluoro compounds					



Key Chemicals of Concern in Food Packaging and Food Handling Equipment

EDF has identified chemicals in food packaging and food handling equipment where the potential health impacts from their migration into food raises serious concerns. These chemicals in virgin materials may also contaminate the recycling stream and undermine their recyclability. By ensuring future food packaging is free of these chemicals, companies can improve consumer trust while minimizing the impact of future regulations on their bottom line. In the tables below, we list key chemicals of concern in food packaging. Taking action today helps to protect consumer health now and in the future.

Intentionally added ingredients

Chemical or class	CASRN	Health concerns	Authoritative citations	Role in virgin packaging
Ortho-phthalates*	Various	Endocrine disruption, developmental toxicity, reproductive toxicity	California Prop 65, EU REACH Annex VI, Annex XVII, and SVHC, EU Priority ED, CSFC	Primarily used in plastic but many other uses such as inks. High concern in virgin plastic and paper.
PFAS (per- and poly-fluorinated alkyl substances)*	Various	Developmental toxicity, Persistence and bioaccumulation	Varies	Grease-proofing agent in paper. High concern in virgin paper.

Perchlorate	14737-73-0	Endocrine disruption, developmental toxicity	EU REACH Annex VI, EPA, Drinking water	Anti-static agent used in plastic for dry food packaging and handling equipment. High concern in virgin plastic. Moderate concern in virgin paper.
Benzophenone	119-61-8	Carcinogenicity	California Prop 65, EU Priority ED, IARC 2B, FDA	Plasticizer in rubber articles intended for repeat use. High concern in virgin plastic and paper.

Residual processing aids

Chemical or class	CASRN	Health concerns	Authoritative citations	Role in virgin packaging
Bisphenol A (BPA) and related compounds	Various	Endocrine disruption, developmental and reproductive toxicity	Varies	Used to make epoxy lining in metal cans, polycarbonate plastic, and ink.
Toluene*	108-88-2	Reproductive and developmental toxicity	California Prop 65, EU REACH Annex VI	Solvent often used in printing inks. High concern in virgin plastic and paper.
Ethyl glycol (2-ethoxy ethanol)*	115-80-5	Reproductive toxicity	California Prop 65, EU REACH Annex VI, Annex XVII, and SVHC	Solvent often used in printing inks. Moderate concern in virgin plastic and paper.
Methyl glycol (2-methoxyethanol)*	109-96-4	Reproductive toxicity	California Prop 65, EU REACH Annex VI, Annex XVII, and SVHC	Solvent often used in printing inks. Moderate concern in virgin plastic and paper.
N-Methyl-2-pyrrolidone (NMP)	872-00-4	Reproductive and developmental toxicity	California Prop 65, EU REACH Annex VI and XVII and SVHC	Solvent often used in printing inks. Moderate concern in virgin plastic and paper.



Food Packaging Forum

In general, any food contact material should not release chemicals into the food at quantities that can harm human health (see EU 1935/2004, Article 3 and US 21CFR174). In order to assess the health impacts related to food packaging it is therefore essential to (1) understand the chemical composition of the packaging material and (2) the levels at which these compounds can partition into foodstuffs, a process that is known as migration.

Please click on the primary packaging material of your interest for further information.

- Ceramics
- Glass
- Metal
- Paper and Board
- Plastics
- Printing Inks
- Wax
- Wood



Dossier – Can coatings

December 2016

 **Facet**

1 Introduction

Introduction of can coatings and their production for metal cans and their application in food packaging. The document provides an overview of the different types of can coatings and their properties. It also discusses the regulatory requirements for can coatings and the role of the Food Packaging Forum in this area.

2 Can production








2.1 Can body

The can body is the main part of the can and is made of metal. It is produced by rolling sheets of metal into a cylindrical shape and then joining the edges together. The can body is then coated with a protective layer to prevent corrosion and to provide a smooth surface for printing.

2.2 Can coating

Can coatings are applied to the inner surface of the can body to provide a protective barrier between the metal and the food. They are made of various materials, including epoxy, polyester, and polyurethane. The coating must be able to withstand the high temperatures and pressures of the canning process and must also be safe for consumption.



 Adverse outcome pathways	 Eucizer	 Emonizing	 Eubiotics
 Bisphenol A	 Bisphenol S	 Can coatings	 Chemical Risk Assessment
 Chronic Disease	 Developmental exposures	 Endocrine disruptors	 Ergonomics
 EU Parliament Report on PCBs	 facet exposure tool	 Food Packaging Materials	 Melamine
 Migration	 Migration modeling	 Mineral oil hydrocarbons	 Mixture Toxicity
 Nanomaterials	 Non-intentionally added substances (NIAS)	 Per- and polyfluoroalkyl substances (PFAS)	 Phthalates

SAFER AND SUSTAINABLE?

Considering Chemical Exposures as We Move to More Sustainable Options

- Recycled paperboard products may contain:
 - Phthalates and benzophenones from printing inks
 - Bisphenols from thermal receipt paper
- Recycled paperboard products are more likely to leach phthalates and other chemicals than products made from virgin fibers
- Molded fiber products contain fluorine which can end up in our food and compost



Way forward

Know the starting materials



Understand the manufacturing processes



Analyze the final food packaging



Communicate in the supply chain





Safer Packaging Initiative

- **Task Force**
- **Voluntary Program**

Key concepts to address:

- Organic consumers demand transparency about what they are eating, and many are taking a critical eye to the packaging their food comes in. This is likely not going away.
- Policy plays an important role in protecting human health, but it can be slow moving & limited in scope. Private sector solutions are needed to ensure that the organic label continues to meet consumer demand.
- Major organic brands that are leaders in the organic sector can continue the charge as a driving force behind a cleaner packaging movement.
- Packaging manufacturers and suppliers will play a key role in helping brands act on cleaner packaging.
- Leading brands, retailers and packaging companies must work together and commit to measurable progress.
- By ensuring future organic food packaging is free of toxic chemicals, organic companies can improve consumer trust while minimizing the impact of future regulations on their bottom line.

RESOURCES

- Substance list provided by Food Safety Alliance for Packaging (FSAP) https://www.iopp.org/files/Food%20Packaging%20Product%20Stewardship%20Considerations%20FSAP-IoPP%20v1_0.pdf
- Environmental Defense Fund (EDF) List of Toxic Chemicals <http://bolgs.edf.org/health/2019/03/25/toxic-chemicals-food-packaging-list/>
- Food Packaging Forum (FPF) fact sheets <https://www.foodpackagingforum.org/food-packaging-health>
- Safer Made Packaging Report https://b0304edd-d3cf-434f-9f73-596dc8450080.filesusr.com/ugd/dcb253_151dcf652c6f47aca2d4a571cbd79b30.pdf

THANK YOU

Katherine DiMatteo

Protect Our Breasts Advisory Board

protectourbreasts.org



Our mission is to share the conversation about chemicals in everyday products found on the grocery shelves that contribute to breast cancer; empowering women to make safer choices to protect their breasts during the most vulnerable periods of their lives