



DEPARTMENT OF
ECOLOGY
State of Washington

PFAS in Food Packaging

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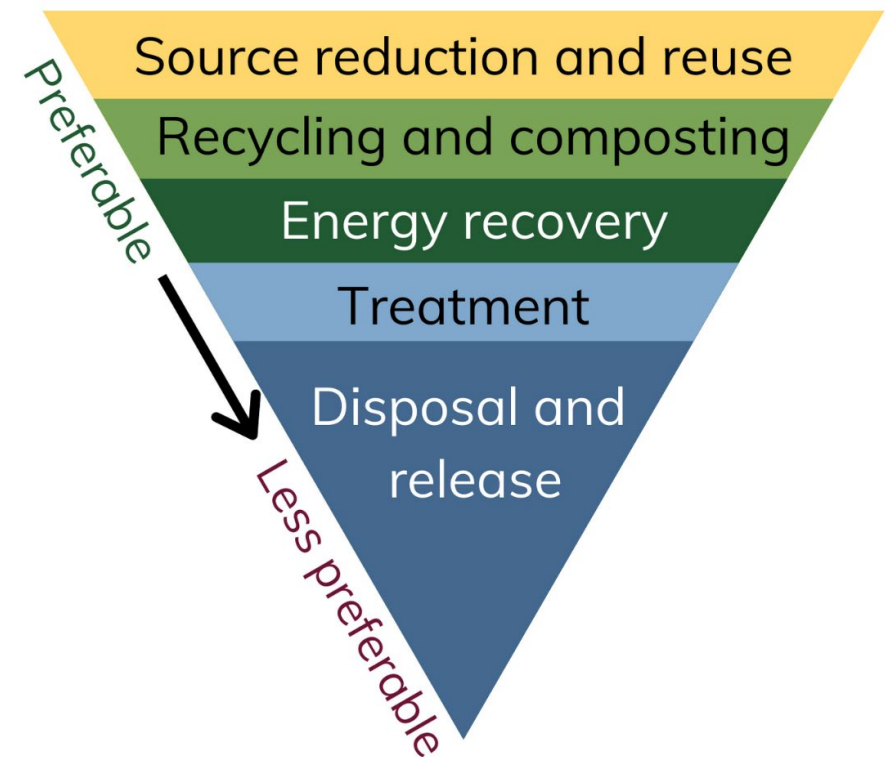
Washington State ESHB 2658 (RCW 70A.222.070)

- Prohibits sale or distribution in Washington State of food packaging to which PFAS have been intentionally added in any amount
- BEFORE restriction can take effect, Ecology must conduct an alternatives assessment to identify alternatives that:
 - Are safer
 - Perform as well as PFAS
 - Are readily available and cost comparable
- Prohibition takes effect two years after we submit findings of safer alternatives

Alternatives assessments

- The alternatives assessment framework focuses on reducing risk by avoiding exposure to hazardous chemicals.
- Prioritizes safer alternatives that are commercially available and technically and economically feasible.

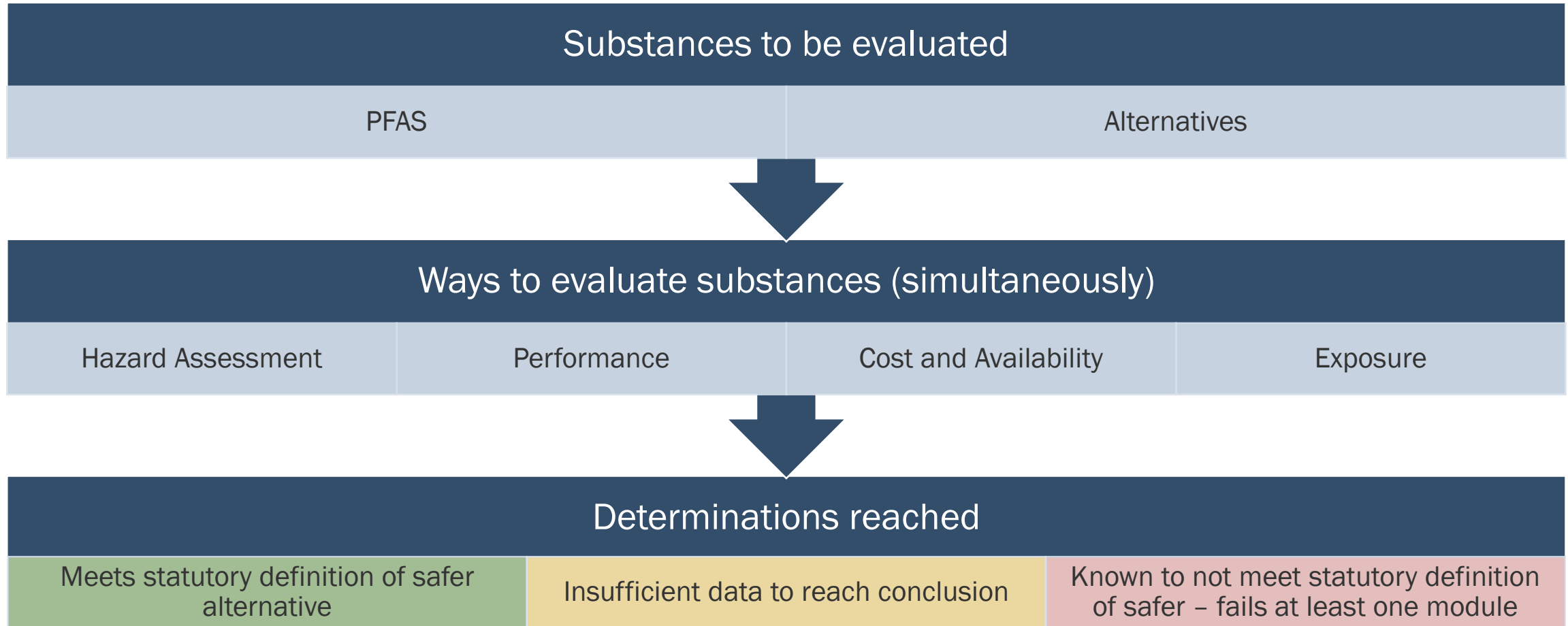
Waste Management Hierarchy



$$\downarrow \text{Hazard} \quad \times \quad \text{Exposure} \quad = \quad \downarrow \text{Risk}$$

IC2 Alternatives Assessment Guide 1.1

Evaluation Process



Types of Food Packaging Evaluated

Alternative Reviewed	Determination
Wraps and liners	
Bags and sleeves	
Plates	
Bowls	
Trays	
Food boats	
Pizza boxes	
French fry cartons	
Clamshells	
Interlocking folded containers	

Alternative Substances Reviewed

Substance	Alternative Type
Uncoated paper	Non-chemical alternative
Petroleum-based waxes	Coating
Bio-based waxes	Coating
Kaolin clay	Coating
PVOH – polyvinyl alcohol	Coating
Siloxanes	Coating
PLA – polylactic acid	Coating or base material
PE – polyethylene	Coating
PET– polyethylene terephthalate	Coating
EVOH – ethylene vinyl alcohol	Coating

Evaluating alternatives – Hazard & Exposure

Assessment Module	Products or substances evaluated?	Question asked
Hazard	Substance	Are there alternative substances that are less hazardous than PFAS?
Exposure	Substance	Do any alternative substances have a lower exposure potential than PFAS?

- To meet our criteria:
 1. Alternative substance is less hazardous than PFAS (using GreenScreen chemical hazard assessments)
 2. Alternative substance has a similar or lower exposure potential than PFAS
-OR- is a substance of low concern

Evaluating alternatives – Hazard & Exposure

Assessment Module	Products or substances evaluated?	Question asked
Hazard	Substance	Are there alternative substances that are less hazardous than PFAS?

TABLE 1. **Example GreenScreen Hazard Summary Table for a Chemical**

Group I Human					Group II and II* Human								Ecotex		Fate		Physical		
C	M	R	D	E	AT	ST		N		SnS*	SnR*	IrS	IrE	AA	CA	P	B	Rx	F
						SINGLE	REPEATED*	SINGLE	REPEATED*										
DG	L	L	M	M	DG	L	L	M	M	L	L	L	L	L	L	vH	M	L	L

Glossary of GreenScreen® Hazard Endpoint Abbreviations

AA Acute Aquatic Toxicity	D Developmental Toxicity	M Mutagenicity and Genotoxicity	SnS Sensitization (Skin)
AT Acute Mammalian Toxicity	E Endocrine Activity	N Neurotoxicity	SnR Respiratory Sensitization
B Bioaccumulation	F Flammability	P Persistence	ST Systemic/Organ Toxicity
C Carcinogenicity	IrE Eye Irritation	R Reproductive Toxicity	
CA Chronic Aquatic Toxicity	IrS Skin Irritation	Rx Reactivity	* Repeated exposure

Evaluating alternatives – Performance, Cost & Availability

Assessment Module	Products or substances evaluated?	Question asked
Performance	Product	Are alternative products oil/grease resistant or leak resistant? Do they perform as well as products that use PFAS?
Cost and Availability	Product	Are alternative products readily available in sufficient quantity and are they cost comparable?

- To meet our criteria:
 1. Offered for sale from multiple sources
 2. Has technical/promotional information or that verifies it provides oil/grease resistance and leak resistance (when needed)
 3. Price of alternative product is comparable (when available)

Findings – Food Packaging Applications

Application Reviewed	Determination
Wraps and liners	Wax-coated alternatives safer
Bags and sleeves	Insufficient information available
Plates	Clay-coated and reusable alternatives safer
Bowls	Insufficient information available
Trays	Insufficient information available
Food boats	Clay-coated and reusable alternatives safer
Pizza boxes	Uncoated alternatives safer
French fry cartons	Insufficient information available
Clamshells	Insufficient information available
Interlocking folded containers	Insufficient information available

Next steps – second assessment and sale prohibition



- Ecology submitted report in February 2021. Effective date of prohibition is February 2023.
- Prohibition applies only to:
 - Wraps and liners
 - Plates
 - Food boats
 - Pizza boxes
- Started second alternatives assessment in 2021:
 - Address areas of insufficient information
 - Review new alternatives



Questions?

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Project website: bit.ly/pfas-food-aa

Scope: PFAS in food packaging

- Defined in statute as a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom.
- Provide oil, grease, and water resistance to packaging.
- PFAS common in fiber-based food packaging:
 - Side-chain fluorinated polymers.
 - Chemical manufacturers have begun voluntarily phasing out several of these side-chain fluorinated polymers.
 - Perfluoropolyethers.
 - Residual PFAS.

