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Managing PFAS in Flexible Packaging

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Feb 1, 2023

pet food institute
Promoting long and healthy lives since 1958.

Agenda

- Introduction
- What is PFAS? – A recap
- Flexible packaging – why and where
- State by State regulatory overview
- Testing and recommendations
- Questions

Takigawa Corporation

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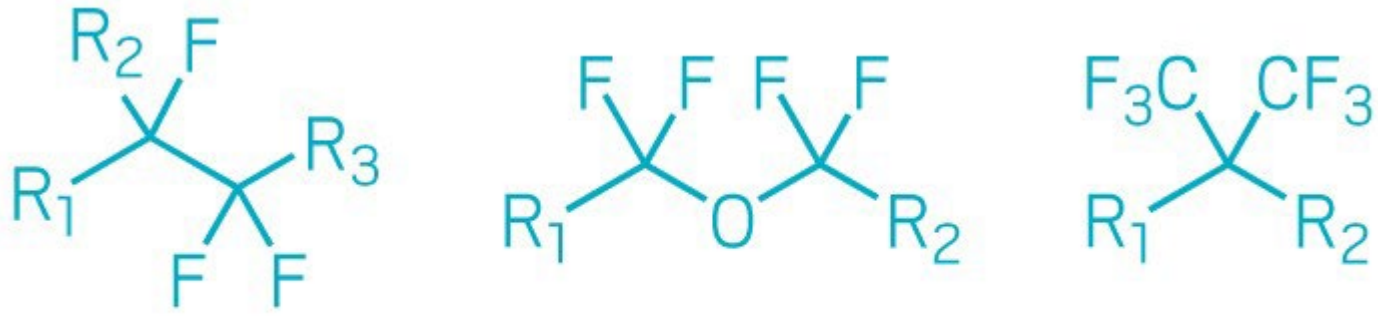
TAKIGAWA
CORPORATION AMERICA
Growing together

- 1907 - Company started
- Over 55 years of bag making experience
- Internationally diversified manufacturing in Japan, Vietnam and USA
- Vertically integrated operations with a focus on side gusset bag production
- Long history working with pet brands across North America, Europe and Asia
- Devoted to offering the highest quality flexible packaging

Peace of mind…

PFAS

- **Per- and Polyfluoroalkyl Substances (PFAS)**
- Chemicals with at least two adjacent carbon atoms, where one carbon is fully fluorinated and the other is at least partially fluorinated



R_1, R_2, R_3 = nonhydrogen atoms

Dangerous Chemicals

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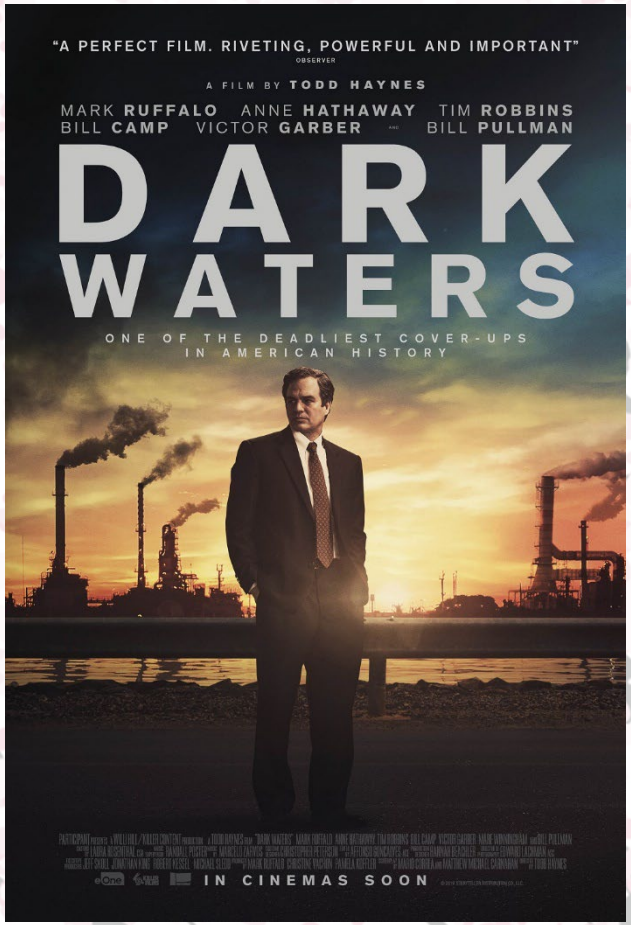
- Perfluorooctanoic Acid (PFOA)

- Perfluorooctanesulfonic acid (PFOS)



PFAS in Paper Packaging

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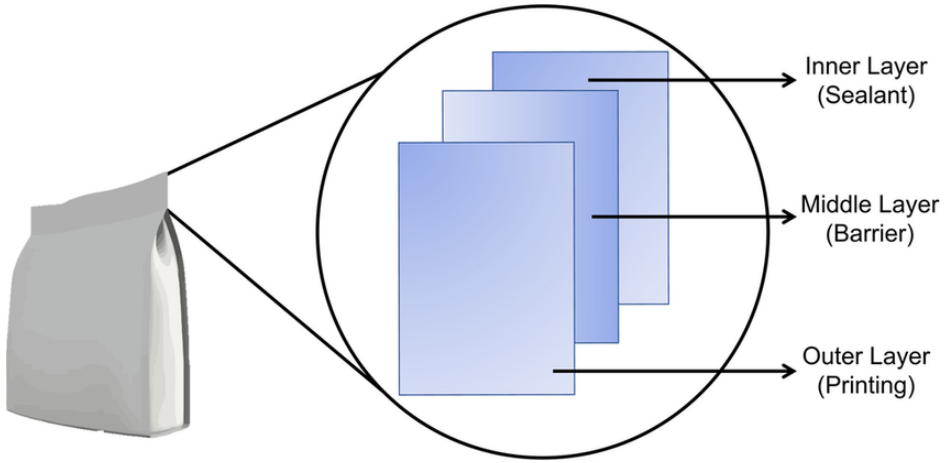
PFAS used in **paper packaging** to add grease, fat and water resistance

Flexible Packaging in Pet Food

- Along side paper and polywoven packaging, plastic packaging is the most common packaging format for pet food
- Packaging of choice for:
  - Best print quality
  - Optimal strength and durability
  - Ease of consumer ease
  - Infestation resistance
- Typically multilayer laminates:
  - PET/LDPE
  - PET/ALPET/LDPE
  - PET/Nylon/ALPET/LDPE
  - PE/PE

Multiple Components



Indirect Product Contact

Polyester (PET)
Nylon (BOPA)
Ink
Adhesive
Solvent
LDPE

Direct Product Contact

Low Density Polyethylene (LDPE)
Linear Low Density Polyethylene (LLDPE)
Closures (typically LDPE)

PPA in LLDPE Films

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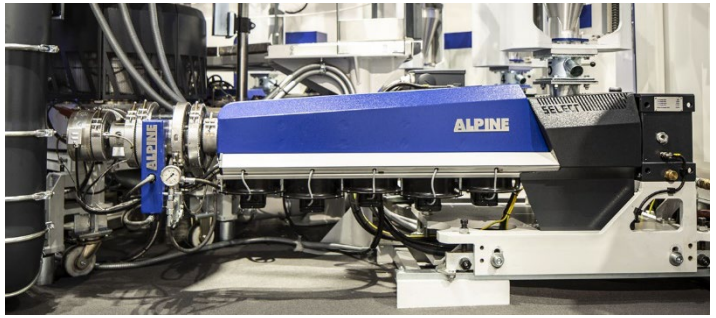
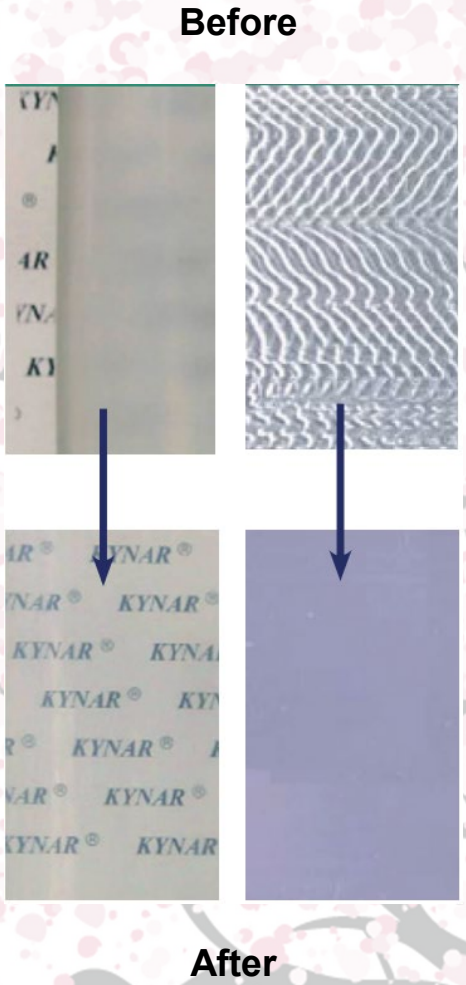
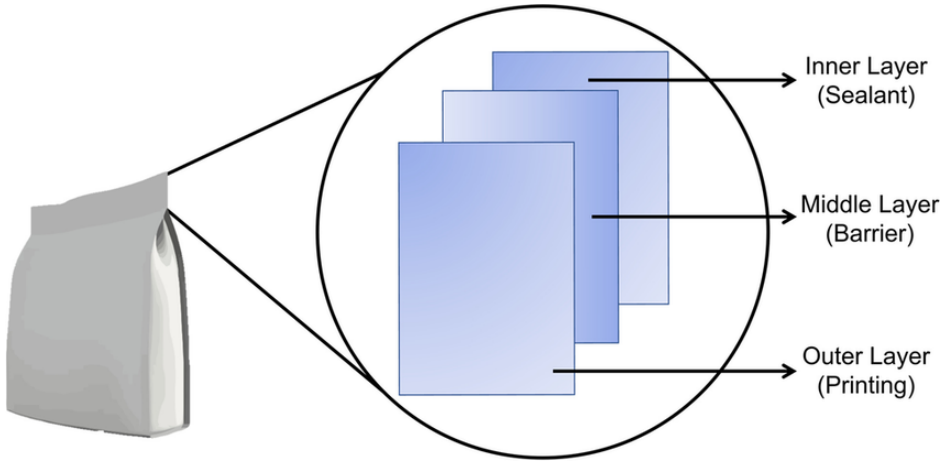


- Polymer Processing Aids (PPA) added to resin, *and* during extrusion process
- Several benefits:
  - Eliminates melt fracture
  - Improves smoothness and surface aspect
  - Reduces die build-up
  - Provides consistency of production
- More common in North American operations
- FDA approved since 2002



Managing PFAS



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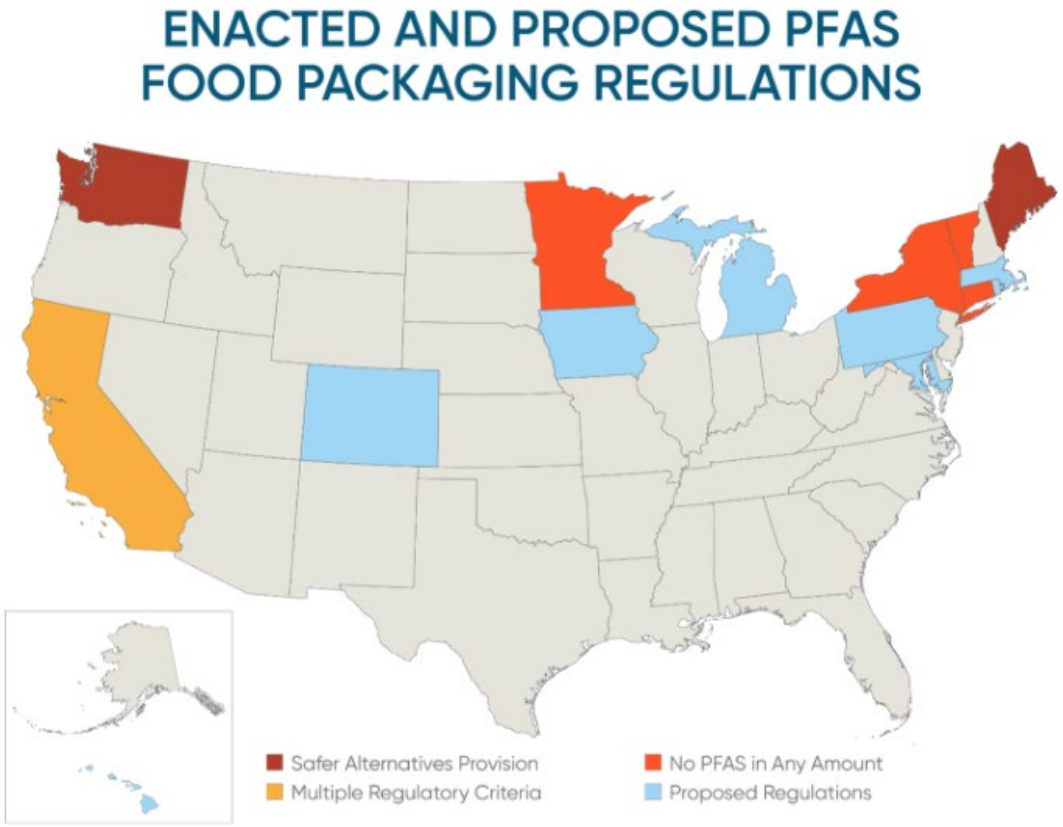
Understanding PFAS State Regulations



- As of Dec. 2021- 17 states had either enacted or proposed limitations using PFAS substances in food packaging
- By Dec. 2022- 11 states have adopted some form of law that bans or restricts the use of PFAS in food packaging applications
- What does the FDA say about PFAS?
  - 2016 PFCs removed from use
  - July 2020 voluntary phase-out of short-chain PFAS
  - Studies currently ongoing
- Washington jumps in front of PFAS during 2022 but how does this impact food packaging?

Washington State Title 70A

- 1st report was completed Feb 2021
- 2nd report was completed May 2022
- "Food package" means a package or packaging component that is intended for direct food contact and is comprised, in substantial part, of paper, paperboard, or other materials originally derived from plant fibers.
- The prohibition on the use of PFAS chemicals in food packaging:
  - (a) Becomes effective January 1, 2022, if the report required under subsection (3) of this section finds that safer alternatives are available for specific food packaging applications;
  - (b) Does not take effect January 1, 2022, if the report required under subsection (3) of this section does not find that safer alternatives are available for specific food packaging applications.
- The prohibition for specific food packaging applications takes effect two years after a report submission
- Safe alternatives have been provided for food boats, pizza boxes, plates and wraps/liners but no safe alternative has been provided for plastic at this time (Feb 2023)

Maine MRSA Title 32 and Title 38

- Title 32 Chapter 26-A Reduction of toxics in packaging: 3-B. Prohibition of sale of food package containing PFAS
  - Prohibits a manufacturer, supplier or distributor from offering sale of a food package to which PFAS have been intentionally introduced in any amount greater than an incidental presence.
  - The department may not by rule prohibit the sale of a food package to which PFAS have been intentionally introduced in any amount greater than an incidental presence under this subsection unless the department has determined that a safer alternative to the use of PFAS in a specific application of PFAS to a food package is available.
- Adopted Washington States standard for safe alternatives and provides no update for plastics currently
- Enforcement will be delayed until safe alternatives are provided. If alternatives are provided, enforcement will begin 2 years after alternatives are established

- Title 38 Chapter 16 Sale of Consumer Products Affecting the Environment: Section 1614 2. Notification
  - Beginning January 1, 2023, a manufacturer of a product for sale in the State that contains intentionally added PFAS shall submit to the department a written notification that includes:
  - (1) A brief description of the product;
  - (2) The purpose for which PFAS are used in the product, including in any product components;
  - (3) The amount of each of the PFAS, identified by its chemical abstracts service registry number, in the product, reported as an exact quantity determined using commercially available analytical methods or as falling within a range approved for reporting purposes by the department;
  - (4) The name and address of the manufacturer, and the name, address and phone number of a contact person for the manufacturer; and
  - (5) Any additional information established by the department by rule as necessary to implement the requirements of this section.

New York and California

- NY-CRR Title 2 Ch. 43-B, Article 37: Hazardous Packaging Act
  - NY defines “Food Packaging” as a package or packaging component that is intended for direct food contact and is comprised, in substantial part, of paper, paperboard, or other materials originally derived from plant fibers
  - Food packaging under this law does not include glass, metal, plastic and other materials that are not originally derived from plant fibers
  - This act is effective as of December 31, 2022

- Cal. Health and Safety Code, Div. 104, Part 3, Ch. 15: Plant-based food packaging, cookware and hazardous Chemicals
  - This bill would prohibit, beginning January 1, 2023, any person from distributing, selling, or offering for sale in the state any food packaging that contains regulated perfluoroalkyl and polyfluoroalkyl substances or PFAS, as defined
  - The bill would require a manufacturer to use the least toxic alternative when replacing regulated perfluoroalkyl and polyfluoroalkyl substances or PFAS in food packaging to comply with this requirement
  - The bill would define “food packaging,” in part, to mean a nondurable package, packaging component, or food service ware that is comprised, in substantial part, of paper, paperboard, or other materials originally derived from plant fibers
  - The presence of PFAS in a product or product component at or above 100 ppm, as measured in total organic fluorine

Vermont V.S.A. Title 18

- Food Packaging
  - "Food package" or "food packaging" means a package or packaging component that is intended for direct food contact
  - A manufacturer, supplier, or distributor shall not manufacture, sell, offer for sale, distribute for sale, or distribute for use in this State a food package to which PFAS have been intentionally added and are present in any amount
  - "Intentionally added" means the addition of a chemical in a product that serves an intended function in the product component
  - Effective July 1, 2023

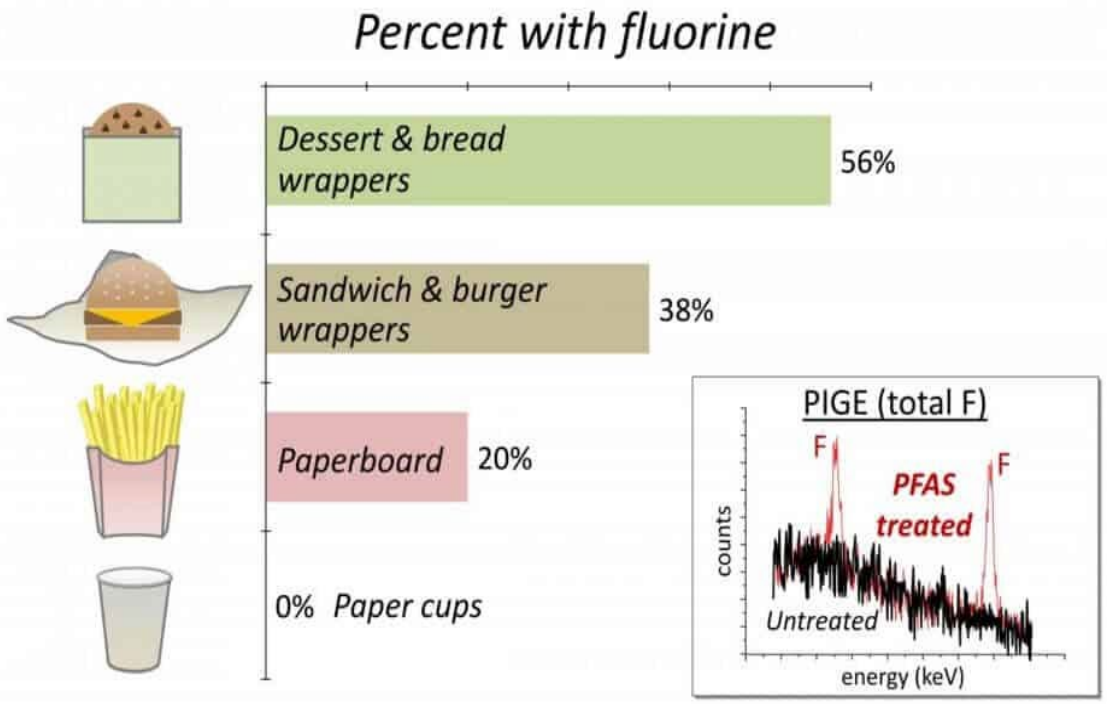
What to know about the remaining states

State	Compliance Date
California Cal. Health and Safety Code, Div. 104, Part 3, Ch 15 Link	Effective January 1, 2023
Colorado Col. Rev. Stat. § 25-15-601, et seq. Link	Effective January 1, 2024
Connecticut Conn. Gen. Statutes, Title 22A, §§ 22a-255i Link	Effective December 31, 2023
Hawaii Hawaii Rev. Stat. § 321 Link	Effective December 31, 2024
Maine MRSA, Title 32, Chapter 26-A, § 1733 Link MRSA, Title 38, Chapter 16, § 1614 Link	The Chapter 26-A ban on PFAS in food packaging is delayed while Maine's Department of Environmental Protection (DEP) seeks input on safer alternatives. The Chapter 16 notification requirement becomes effective January 1, 2023.
Maryland Md. Code Ann., Env. §9-1901, et seq. Link	Effective January 1, 2024
Minnesota MN Statutes 2021, Sect. 325F.075 Link	Effective January 1, 2024
New York NY-CRR, Title 2, Art. 35, Ch. 43-B, Sections 37-0203, 37-0209 Link	Effective December 31, 2022
Rhode Island RH Gen. Law § 23-18.13-1, et seq. Link	Effective January 1, 2024
Vermont V.S.A. Title 18, Ch. 33A Link	Effective July 1, 2023
Washington RCW 70A.222.070 Link	Becomes effective two years after safer alternative is identified and report is submitted to the legislature. The first report was submitted in February 2021, and a second report was submitted May 2022.

- 17 states had either enacted or proposed limitations regarding using PFAS as of Dec 2021
- PFAS restrictions will continue to evolve as part of the Biden administration's PFAS plan
- FDA involvement could increase moving forward but current federal prohibitions are limited

PFAS Testing

- PFAS restrictions have resulted in many industry leaders scrambling to identify labs and test methods to appropriately evaluate the presence of PFAS within packaging materials
  - Current test methods require an evaluation of Total Organic Fluorin
  - Results range from >50ppm to >100ppm depending on laboratory used
    - Many labs using >100ppm based on California regulations
  - Results above desired ppm results in confirmation of specific PFAS chemical (ranging up to 75 chemicals viewed as high threat) unless otherwise specified
- The following cost-effective screening methods that identified total fluorine at levels indicating intentional PFAS use:
  - Combustion and ion chromatography: This destructive technology involves combustion under oxygen or argon atmosphere; all gases are collected in water, with ions separated on an ion exchange column and measured by conductivity detection.
  - **PFAS by LC/MS-MS –** the determination of individual , target PFAS i performed by solvent extraction and then analyzed by LC/MS-MS with reference to CEN/TS 15968
  - Combustion IC method with LC/MS-MS confirmation – SMART approach to combine CIC with LC/MS-MS



Labs offering PFAS Total Fluorine Testing

- The following labs are currently marketing total fluorine testing services:

- Graham Peaslee at the University of Notre Dame tested retail products using the PIGE spectroscopy method for a number of NGOs. Given the performance and low cost, companies may want to consider this laboratory for product screening
- Galbraith Laboratories
- SGS
- Eurofins | Modern Testing Services (mts-global.com) offers Total Organic Fluorine testing >50ppm using Combustion & Ion Chromatography method
- PFAS Testing and Analysis Laboratory- Pace Analytical (pacelabs.com)

Summary

1) Evaluate presence of PFAS in *all* packaging material components

2) Work with suppliers to establish realistic standards and ensure quality control

3) Be mindful of state by state timelines and requirements

4) Testing for organic fluorine is available but not recommended as an ongoing test

Thank you!

Stay In Touch

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