Midwest Environmental Compliance Conference

Overland Park, Kansas

September 25, 2024

American Coatings Association℠

Regulatory Challenges to the use of Fluoropolymers in the Coatings Industry

American Coatings ASSOCIATION℠

ACA in Brief

- Founded in 1888
- Industry Trade Association with Four Targeted Affiliates
- Representing more than 90% of U.S. coatings production
- Membership – Coatings Manufacturers, Raw Material Suppliers, Chemical Distributors, Adhesive and Sealant Manufacturers, S&T Professionals
- Headquarters – Washington D.C.
- 85 staff professionals

ACA Areas of Focus

- Advocacy and Compliance with Focus on Health, Safety and Environmental Issues at International, Federal, State, and Municipal Levels
- Sustainability and Stewardship
- Science and Technology
- Business Intelligence/Market Data and Analysis
- Communications/Industry Promotion

World Coatings Council

- Established in 1992, the council ensures that industry coordinates the development of industry policy on international issues
- Granted NGO status in 2005 from the United Nations Economic and Social Council
- Sixteen association members representing all areas of globe
- All members pay annual dues based on the size of their organizations.
- ACA serves as Secretariat and provides staffing

World Coatings Council℠

Active World Coatings Council

American Coatings Association℠

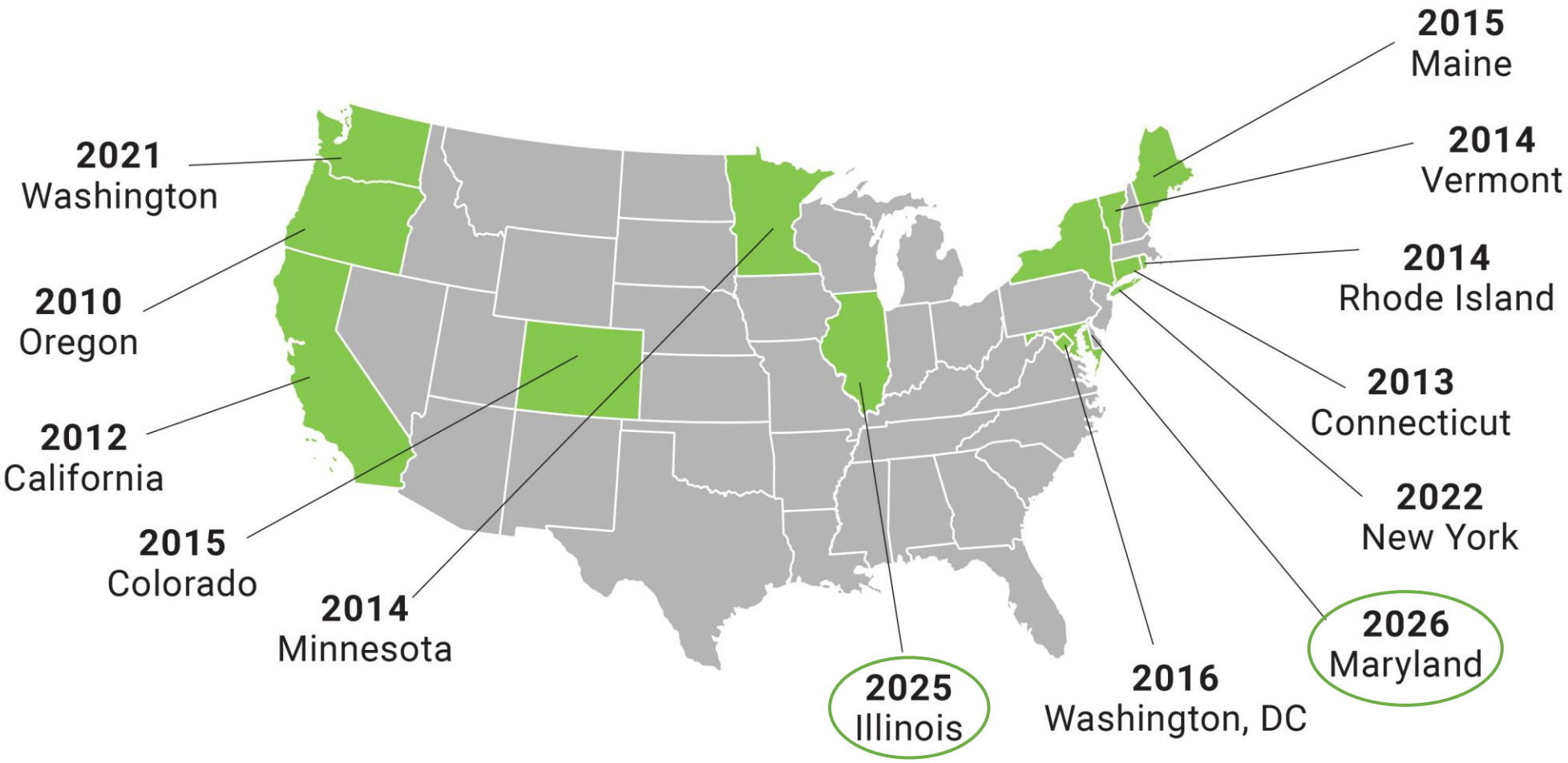
PaintCare™
RECYCLING MADE EASY

PaintCare

- Formed in 2009, Subsidiary of ACA; nonprofit [501(c)3]
- Producer responsibility organization (PRO) – implement requirements of paint stewardship laws for architectural paint manufacturers

PaintCare™
RECYCLING MADE

PaintCare Programs



PaintCare®
RECYCLING MADE EASY

PaintCare 2009–2024

70+ MILLION GALLONS
COLLECTED TO DATE

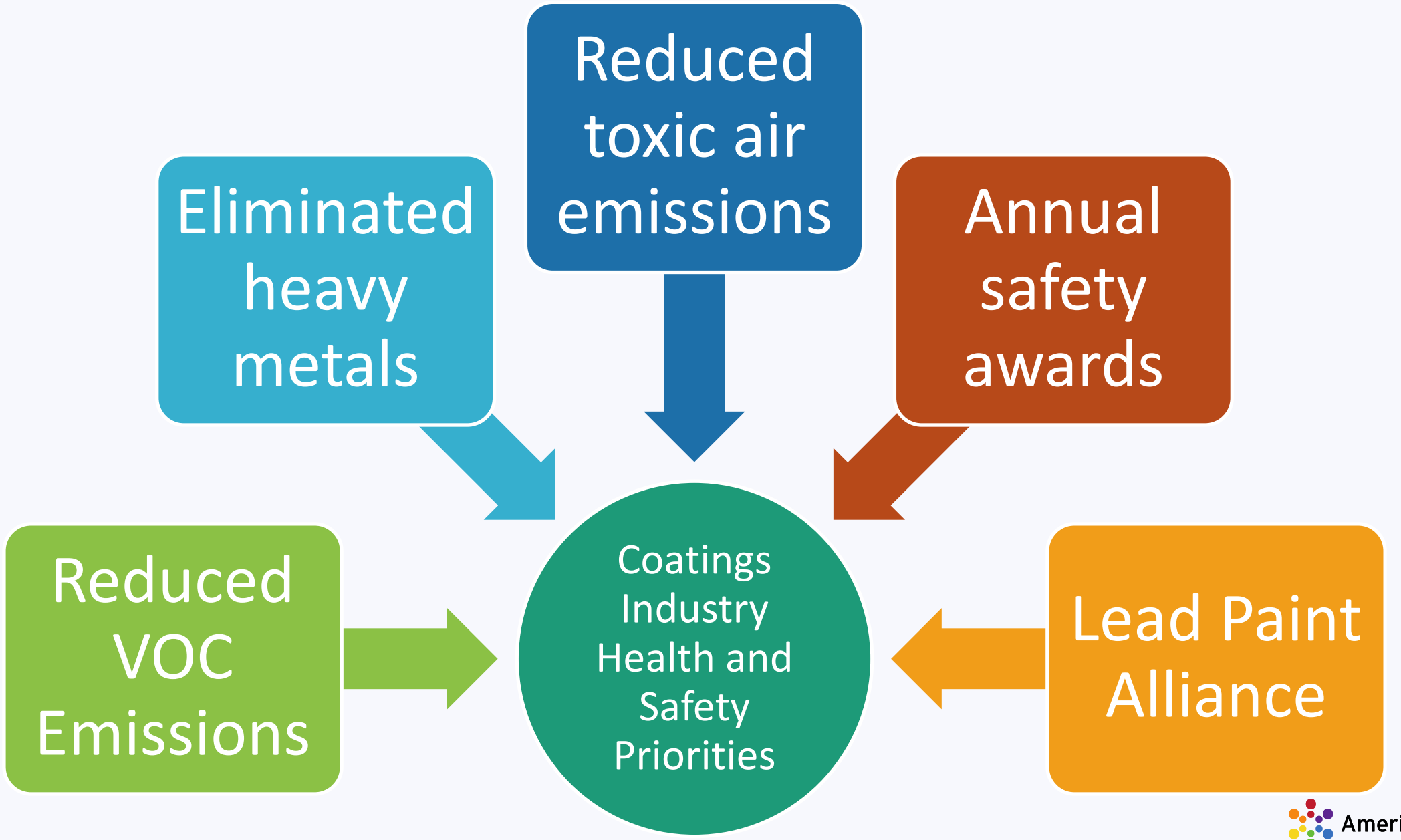
85% latex 15% oil-based

76%
Of total latex paint collected was recycled back into paint

2,424
YEAR-ROUND DROP-OFF SITES

356
EVENTS HOSTED

10,213
Large Volume Pickups



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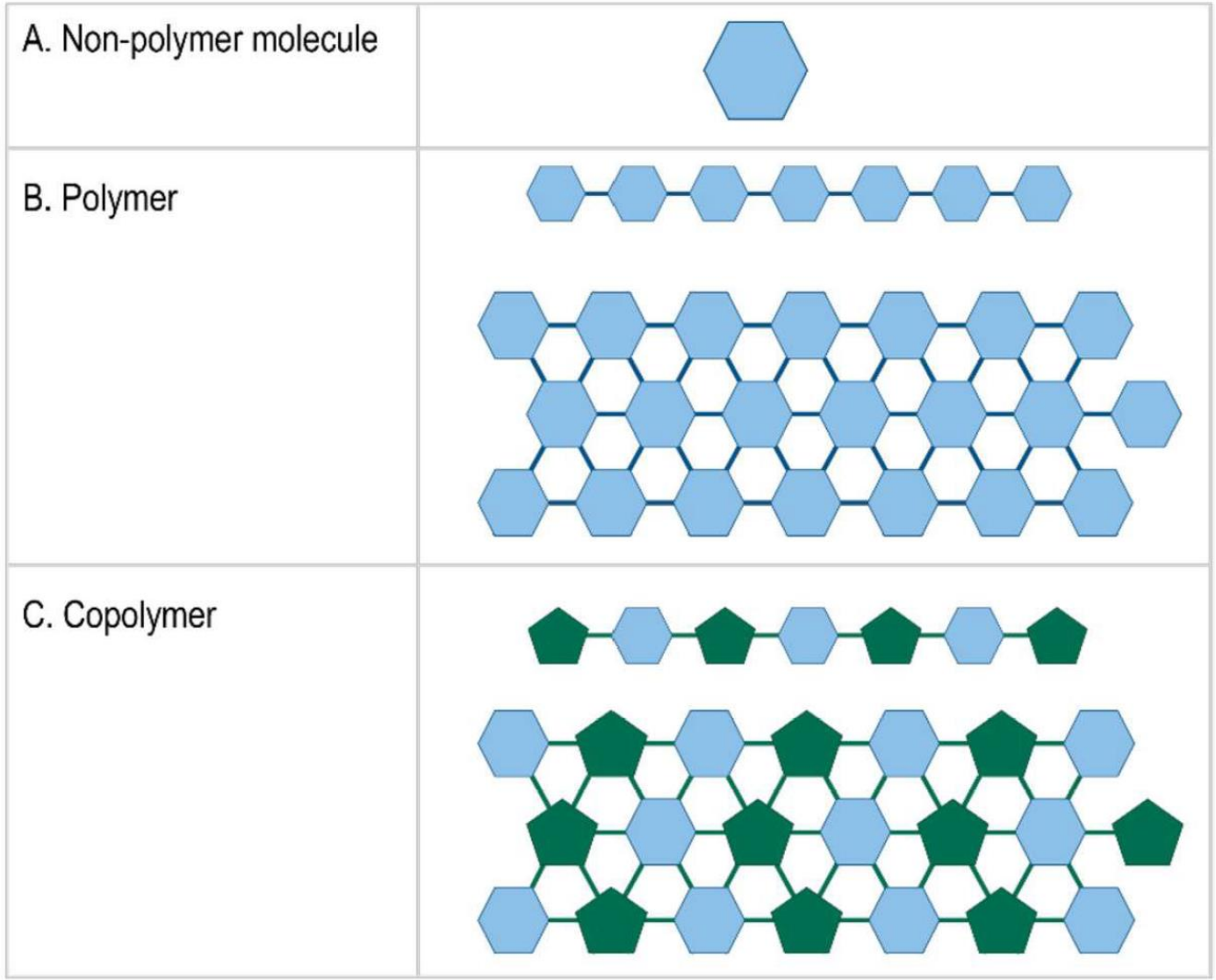
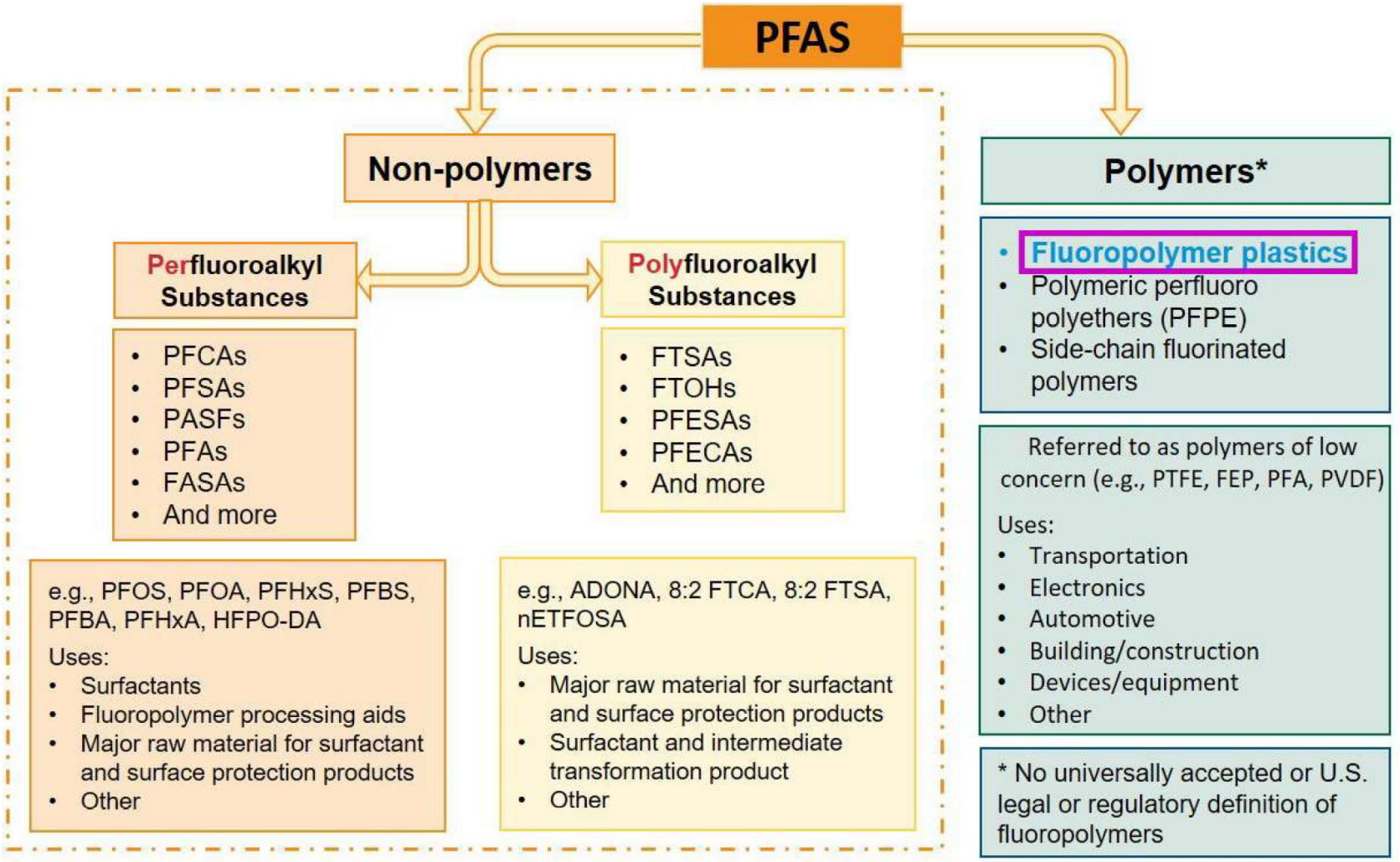


Figure 1-1. Non-polymer, Polymer, and Copolymer Molecules



Source: ITRC, 2022, "PFAS — Per- and Polyfluoroalkyl Substances," Report No. PFAS-1, Interstate Technology and Regulatory Council, Washington, D.C.

Figure 2-1. Per- and Polyfluoroalkyl Substances Family Tree and Classification

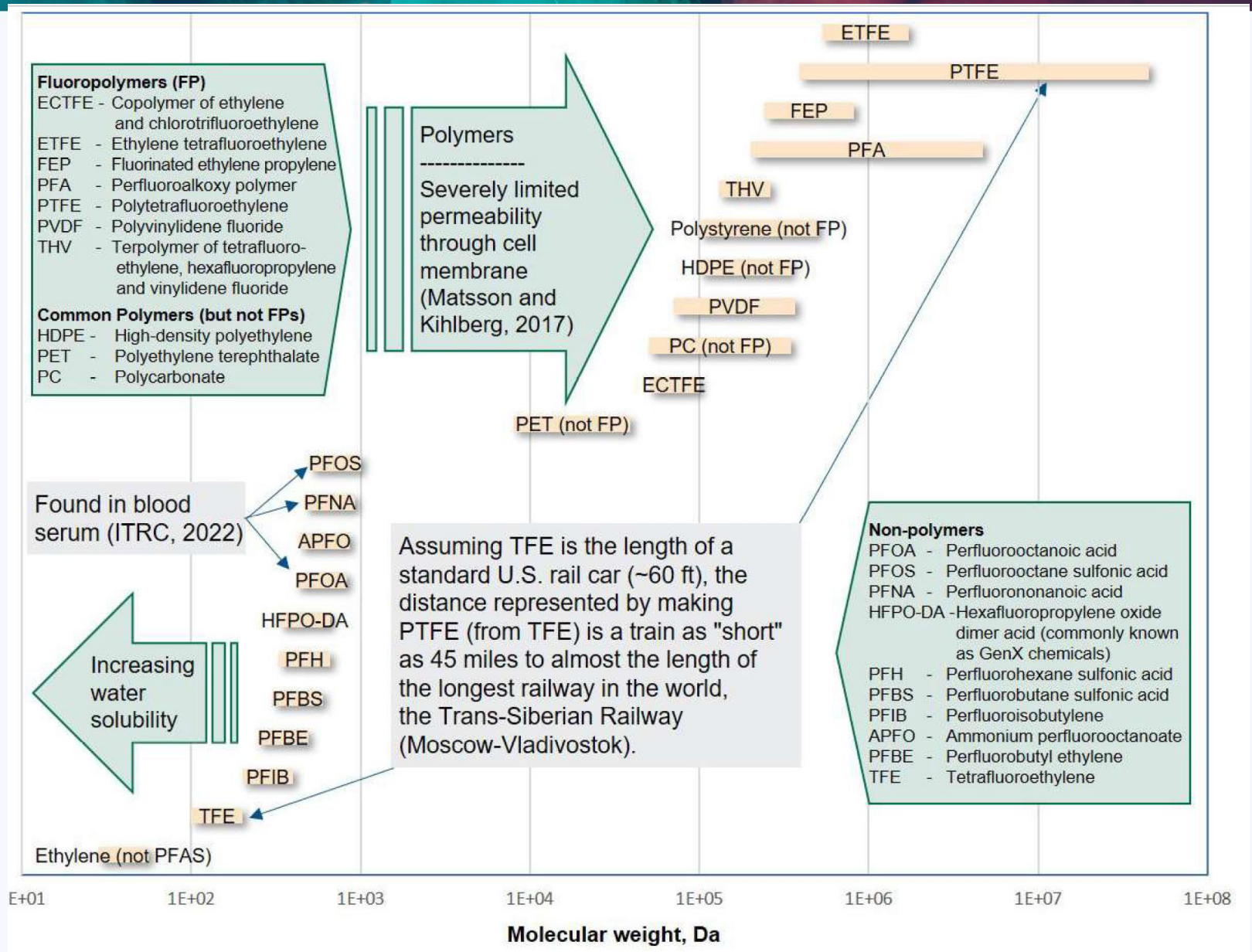


Figure 2-5. Properties of Polymeric and Non-Polymeric Per- and Polyfluoroalkyl Substances (PFAS) as a Function of Molecular Weight

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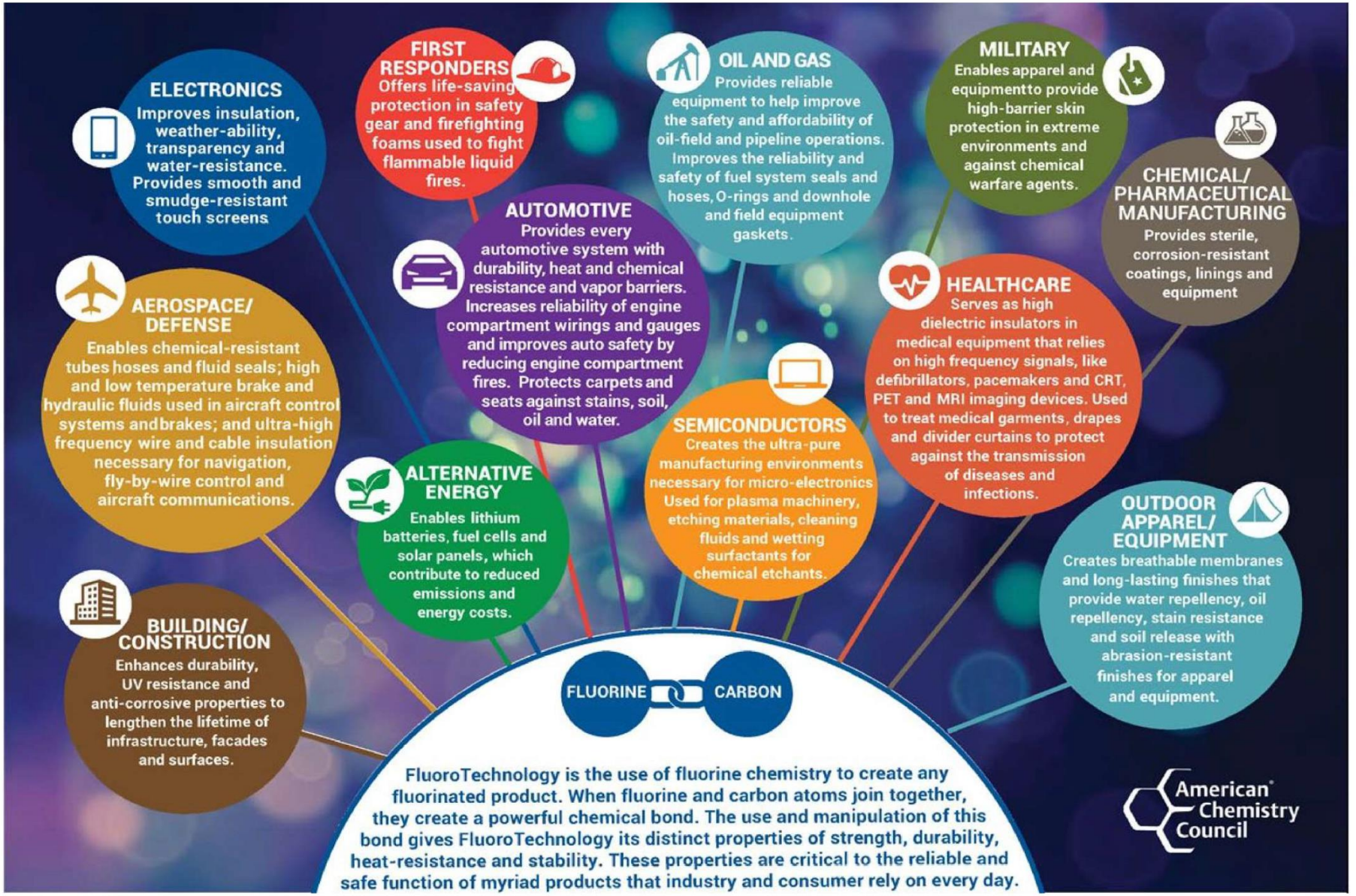
Table 2-1. Per- and Polyfluoroalkyl Substances (PFAS) Assigned to Eight Structure Categories

Series	Structure Category	Total number of substances	Percentage (%)	Comments
100	Perfluoroalkyl carbonyl compounds	514	10.9	Non-polymer
200	Perfluoroalkane sulfonyl compounds	629	13.3	Non-polymer
300	Perfluoroalkyl phosphate compounds	23	0.5	Non-polymer
400	Fluorotelomer-related compounds	1872	39.6	Non-polymer and polymer
500	Per- and polyfluoroalkyl ether-based compounds	365	7.7	Non-polymer and polymer
600	Other PFAA precursors and related compounds—perfluoroalkyl ones	314	6.6	Non-polymer
700	Other PFAA precursors or related compounds—semifluorinated	746	15.8	Non-polymer
800	Fluoropolymers	267	5.6	Polymer
Total		**4,730**	**100.0**	

Source: OECD, 2018, "Toward a new comprehensive global database of per- polyfluoroalkyl substances (PFASs): Summary report on updating the OECD 2007 list of per- and polyfluoroalkyl substances (PFASs)," OECD Series on Risk Management, No. 39, Organisation for Economic Co-operation and Development, Paris, France.

PFAA = perfluoroalkyl acid.



Source: Sullivan, H., 2021, "Dyeing, Printing & Finishing: PFAS – A Textile Perspective," *Textile World.*

Figure 2-6. Fluoropolymer and Fluorotechnology End Uses by Industry

Fluoropolymer Alternatives?

No industrial scaled materials are currently available that could replace fluoropolymers.

While some potential alternatives might meet one or a few of the desired performance characteristics, none meet all desired performance characteristics.

Superior performance characteristics of fluoropolymers:

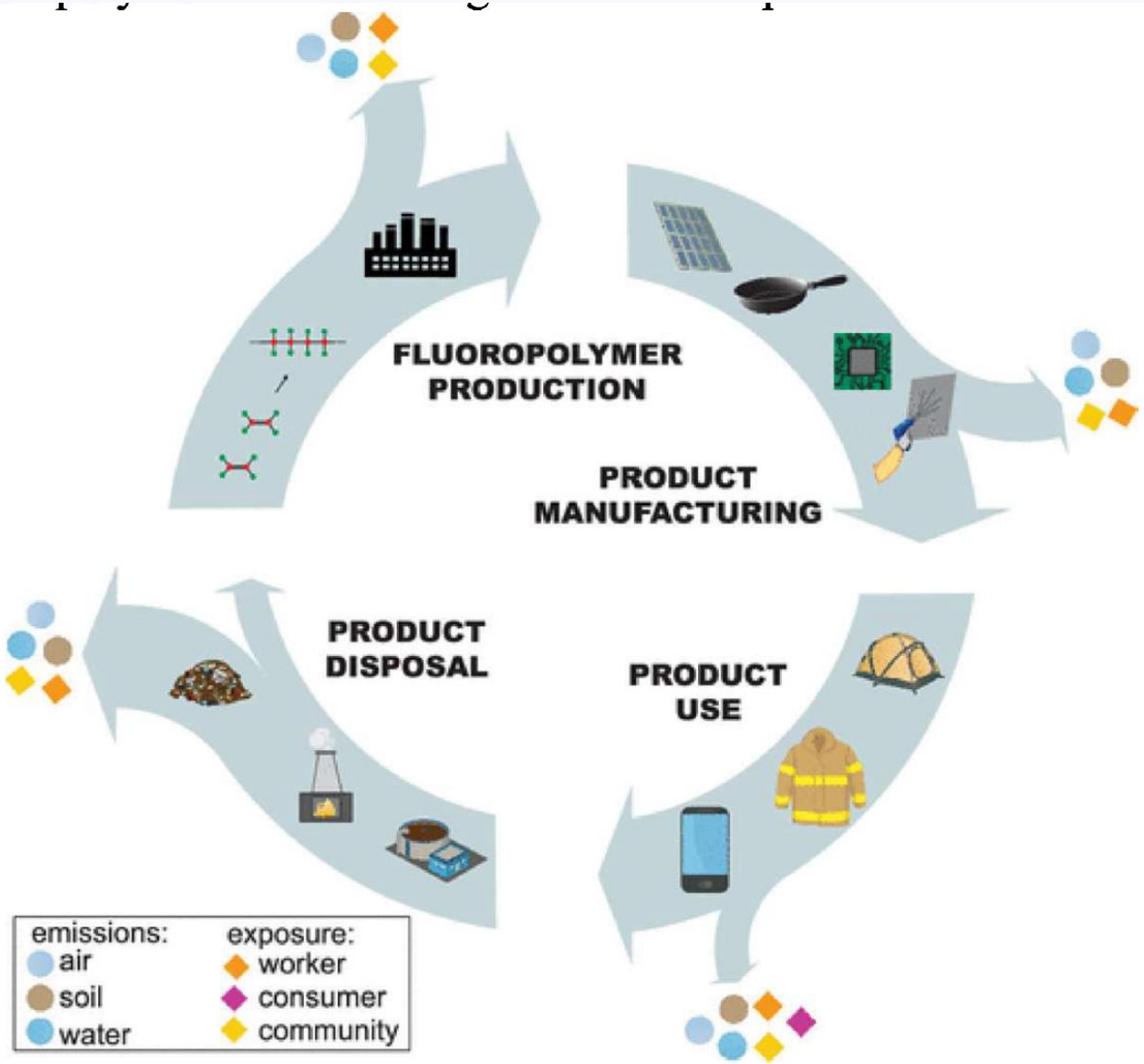
- Maintains performance at high temperatures, exceeding 260 degrees Celsius.
- Resistance to UV radiation.
- Low weight.
- Considerable strength and durability.

TABLE 2 Fluoropolymer properties and functionality

See Supporting Information: Chapter 2 for property descriptions	Durable				Inert—Stable				
	Mechanical strength	Wear resistance	Flexibility	Low coefficient of friction	Resistance to chemicals	Weatherability	Cryogenic properties (lower than −50 °C)	High operating temperature range	High limiting oxygen index
Fluoroplastics									
PVDF Homopolymer	•	•		•	•	•		•	•
PVDF Copolymer	•	•		•	•	•		•	•
ECTFE Copolymer	•	•		•	•	•	•	•	•
ECTFE Terpolymer		•		•	•	•		•	•
PCTFE	•	•		•	•	•	•	•	•
FEVE	•	•	•	•	•	•		•	•
EFEP	•	•		•	•	•	•	•	•

Fluoropolymer Alternatives?

The use of alternative technologies in favor of fluoropolymers could result in several economic implications, including production and performance efficiency losses, increased capital and maintenance costs, and regression of current technologies. Alternative technologies used in favor of fluoropolymers could also pose indirect economic implications, including potential higher safety risks, increases in emissions, and impacts to technical advancement. (Department of Energy, *Assessment of Fluoropolymer Production and Use With Analysis of Alternative Replacement Materials,* January, 2024, Section 5.2.2.)



Source: Lohmann et al., 2020, "Are Fluoropolymers Really of Low Concern for Human and Environmental Health and Separate from Other PFAS?," *Environmental Science and Technology*, 54(20).

Table 4. July 2024 Comparison of UCMR 5 Average Results and the MCLs for Regulated PFAS

Regulated PFAS	MCL (µg/L)[1]	Total number of locations with a full set of results[2]	Number of locations with an average greater than MCL	% of locations with an average greater than MCL	Total number of PWSs with location(s) with a full set of results	Number of PWSs with average(s) greater than MCL	% of PWSs with average(s) greater than MCL
PFOS	0.0040	8,887	524	5.9%	3,459	316	9.1%
PFOA	0.0040	8,888	445	5.0%	3,460	246	7.1%
HFPO-DA (GenX chemicals)	0.01	8,893	1	0.0%	3,462	1	0.0%
PFHxS	0.01	8,888	38	0.4%	3,460	29	0.8%
PFNA	0.01	8.892	3	0.0%	3,462	3	0.1%
Hazard Index (HFPO-DA, PFHxS, PFNA, PFBS)	1 (unitless)	8,880	41	0.5%	3,455	33	1.0%
Total number of unique PWSs with one or more averages greater than MCL = 393 of 3,463 (11%)							

FIGURE 1 OECD polymer of low concern (PLC) criteria add (C) 2021 W.L.Gore & Associates

PFAS Federal and State Restrictions

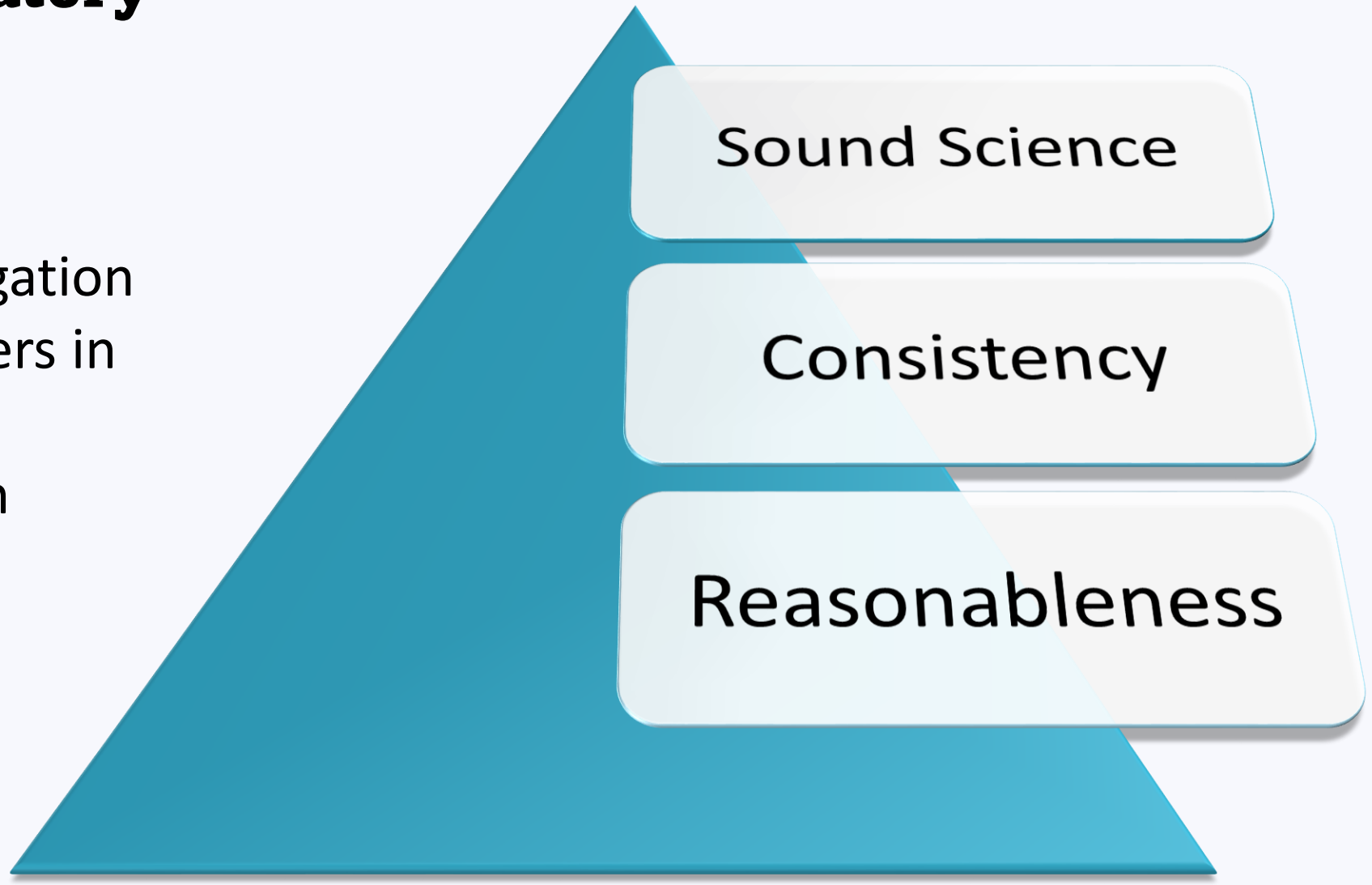
I. **Federal Level:**
- TSCA reporting of manufacture and import of PFAS due May 2025, 10-year look back period.
- National Drinking Water Standards for PFOA, PFOS and 4 others are lowest globally.
- Designation of PFOA and PFOS as “hazardous” for site clean-up and remediation (CERCLA).
- Proposal to list wastes with PFOA, PFOS and possibly other PFAS as “hazardous.”

II. **State Level:**
- Bans for all products with “intentionally added PFAS” in Maine and Minnesota, effective Jan 2032.
- State definitions include single C-F molecules.
- Earlier bans on specialty products: textiles, cookware, juvenile products, leather treatments, etc.
- Product reporting requirements and transparency in Maine and Minnesota.

III. **Key Challenges:**
- Definition of PFAS/fluoropolymers
- Scope of reportable information, confidentiality of information.
- Public of reported information
- Identification of PFAS in trace amounts.
- Exemptions for “currently unavoidable use”: exemption criteria, duration of exemption, etc.
- Reporting fees.

ACA's Regulatory Goals

The evidence supports segregation of fluoropolymers in a regulatory framework with reasonable guardrails.



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