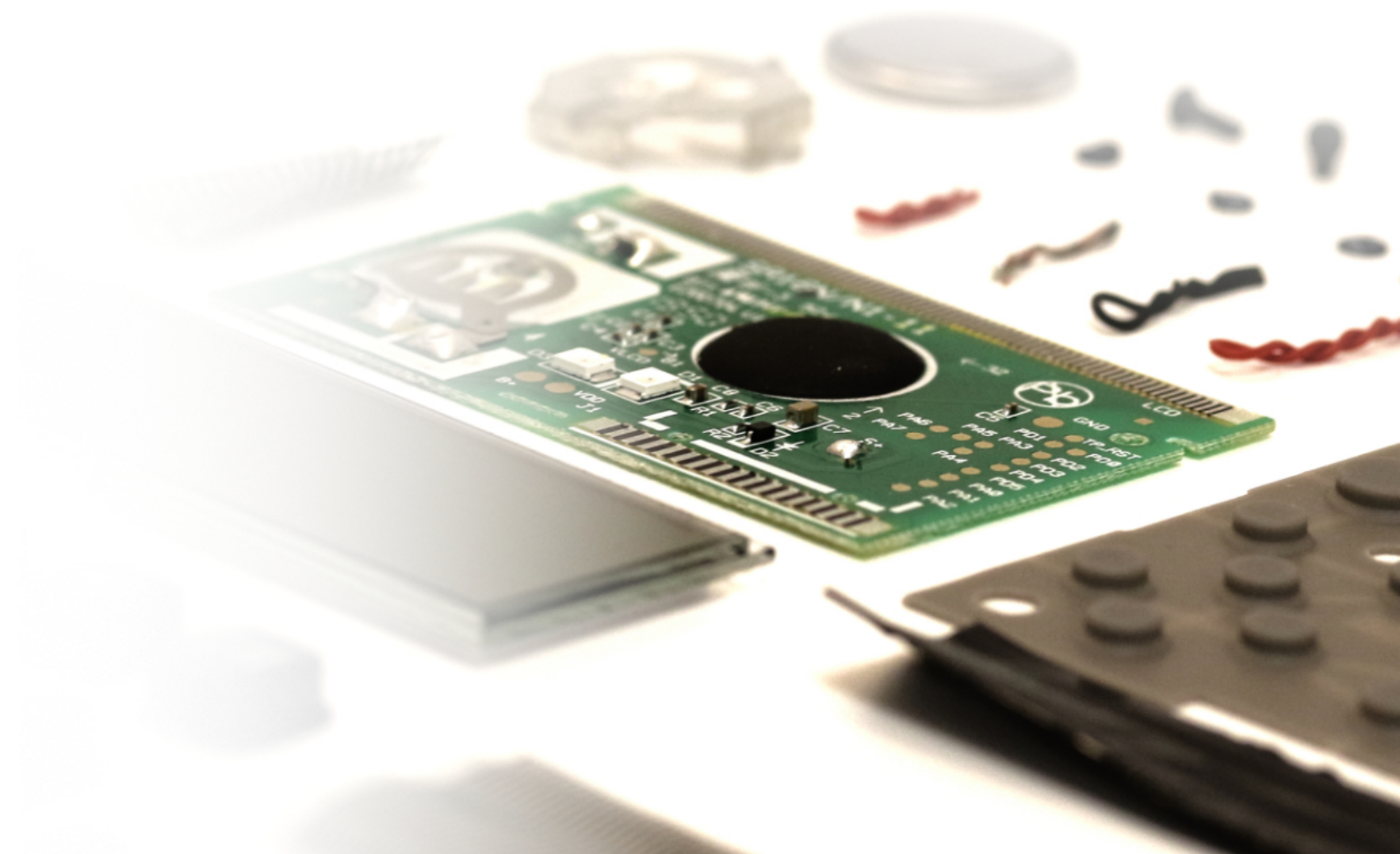




# Mastering US TSCA PFAS Reporting *Processes*

Presented by:  
Bruce Calder  
VP Consulting

March 20, 2024

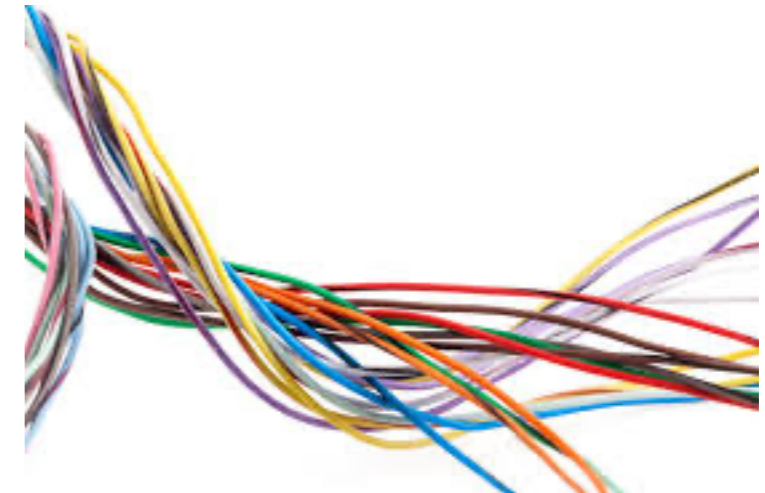


# Overview - Agenda

## US TSCA PFAS Reporting

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- Upcoming deadlines
- Claigan PFAS Submissions
- Note on PFOA / LC-PFCA Restrictions
- US TSCA PFAS reporting
  - Examples PFAS in products
  - Steps to TSCA Reporting
    - Phase 1 - Identifying PFAS in products
    - Phase 2 - Chemical Templates
    - Phase 3 - Merging Sales Data in Templates
- State level reporting
- Quoting and costs
- Q&A



# Claigan Environmental

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- **The global experts on PFAS in Articles**
- **First** in knowledge
- **First** in processes
- **First** in experience

# Claigan Environmental

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- **Claigan just completed submissions to**
  - **EU**
  - **US (EPA)**
  - **Maine**
  - **Minnesota**
  - **Canada**
  - **Australia**
- And based on recommendations by those authorities
  - **UN Stockholm Convention**

# Claigan Environmental UN Submission

- **Submitted to UN last week**

**(e) Any other information on the applications listed in paragraph 2 of decision POPRC-19/2**

This submission is from the PFAS Currently Unavoidable Use project. Similar data has been submitted to the EU, US (FDA, Maine, and Minnesota), Canada, and Australia including testing data.

The PFAS Currently Unavoidable Use project is made up of over 50 companies spanning a wide range of products in the consumer, industrial, professional, and medical industries.

Similar information has been provided to the EU, Canada, Australia, and the US states of Maine and Minnesota.

This submission is based on 2023 / 2024 testing data for >100 products and 1,000s of components. This is new data from large-scale product testing (2023/2024) and was not available in previous consultations.

The presence of PFOA / LC-PFOA in articles (physical products) is unintentional and related to the degradation of very specific fluoropolymers.

% of each material type that contains PFOA / LC-PFOA over 25 ppb

PFA (perfluoroalkane polymer) >75%

ePTFE (expanded PTFE) >90%

Crosslinked PTFE >80%

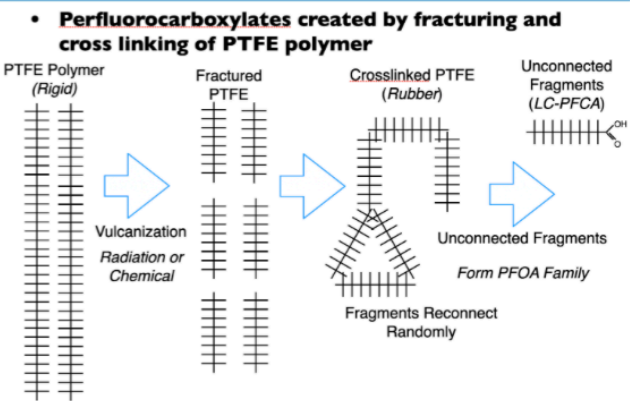
Fluoroacrylates coatings >75%

These materials generally contain PFOA / LC-PFOA due to degradation of a C-O-C bond to a side chain fluoromonomer or from fracturing of the polymer during cross-linking of the polymer into a rubber.

**PFA Polymer**

Uses - widespread uses. Over 100 million products per year sold in the US. Principle uses is in high temperature wiring in dense electronics. Also used in seals, metal coatings, and implantable / invasive medical devices.

**PFOA / LC-PFOA Formation 'Vulcanization' of PTFE**



Cause #2 of unintentional PFOA / LC-PFOA - PFAS polymers (such as PFA or fluoroacrylates) that have a fluoromonomer side chain with a fragile C-O-C (carbon-oxygen-carbon) bond.

1. Formation of perfluorocarboxylates
  1. Fragile C-O-C bonds fracture during initial manufacturing and over time.
  2. Fluoromonomer fragments are 'fluorotelomers', PFOA-like molecules with an extra 2 carbon hydrogens (such as 8:2 FTOH).
  3. The fluorotelomer fragments react with air and water to slowly form perfluorocarboxylates
  4. The lengths of eventual perfluorocarboxylates depend on the lengths of side chain monomers on the original PFA or fluoroacrylate polymer.



# Reminder on PFOA / LC-PFCA Restriction

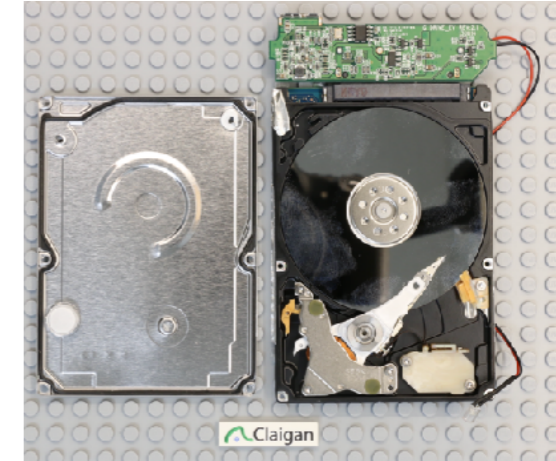
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- **Chances you have PFOA / LC-PFCA**
  - PFA (perfluoroxyalkane polymer) >75%
  - ePTFE (expanded PTFE) >90%
  - Crosslinked PTFE (PTFE rubber) >80%
  - Fluoroacrylates coatings >75%
- **And are therefore banned**
  - Irrespective of what your suppliers are saying

# Reminder on PFOA / LC-PFCA Restriction

- **Examples of affected products**

- Hard drive 100%
- PFA wiring >75%
- PTFE membrane or vent >90%
- Water resistant fabrics >75%
- PTFE Tape >80%



- **PFOA/LC-PFCA presence would be a stop-ship in EU, Canada, and Australia**

- Irrespective of what your suppliers are saying



# US TSCA PFAS Reporting

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- [Companies must report](#) PFAS imported into or manufactured in the US
  - Back to 2011
- Deadline
  - **May 8 2025**
    - If > 120M in sales in US (including parent company)
  - **November 12 2025**
    - If < 120M in sales in US (including parent company)



# Note on PFAS Intentionally Added

---

- Federal level (TSCA reporting)
  - Does **not** distinguish between intentionally added and unintentionally added PFAS
  - However, the streamlined reporting form for articles does not include a byproducts section, and only the intentionally used fluoropolymer or fluororubber CAS number would be reported
- Legally - no distinguishing between intentionally added and unintentionally added PFAS, but in practice only the intentionally added PFAS is reported in the streamlined articles form.

# Typical PFAS Sources



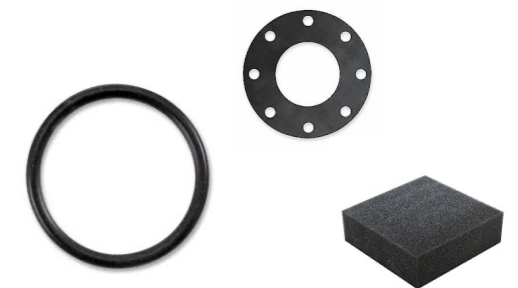
**Anti-Drip**  
*(ABS housings)*



**Label Coating**  
*(Product labels)*



**Dielectric**  
*(Connectors)*



**Release agents**  
*(O-rings, gaskets, foam)*



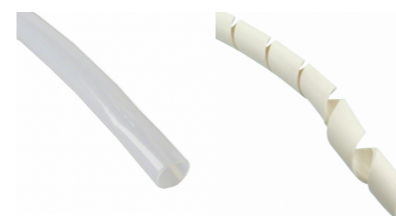
**Anti-reflective / smudge**  
*(Lens or screen coatings)*



**Fluoro seals**  
*(FKM, FFKM, PTFE seals)*



**Water resistant fabric**  
*(Fluoroacrylic coated fabric)*



**PTFE wraps**  
*(Tubes and wraps)*



**Wires**  
*(PTFE and PFA wires)*



**PTFE parts**  
*(Bearings, tubes, and seals)*



**Wire lubrication**  
*(Internal hookup wires)*



**Metal Coating**  
*(Frictionless metal coating)*



**PTFE Tape**  
*(Tape and seals)*

# US TSCA PFAS Reporting Articles

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- “Streamlined” reporting in CDX for article importers
  - Of information that is “reasonably ascertainable”
- Key components
  - Reporting by chemical (ie. PTFE) not product
  - Volume (in number of products sold with PTFE)
  - Use information

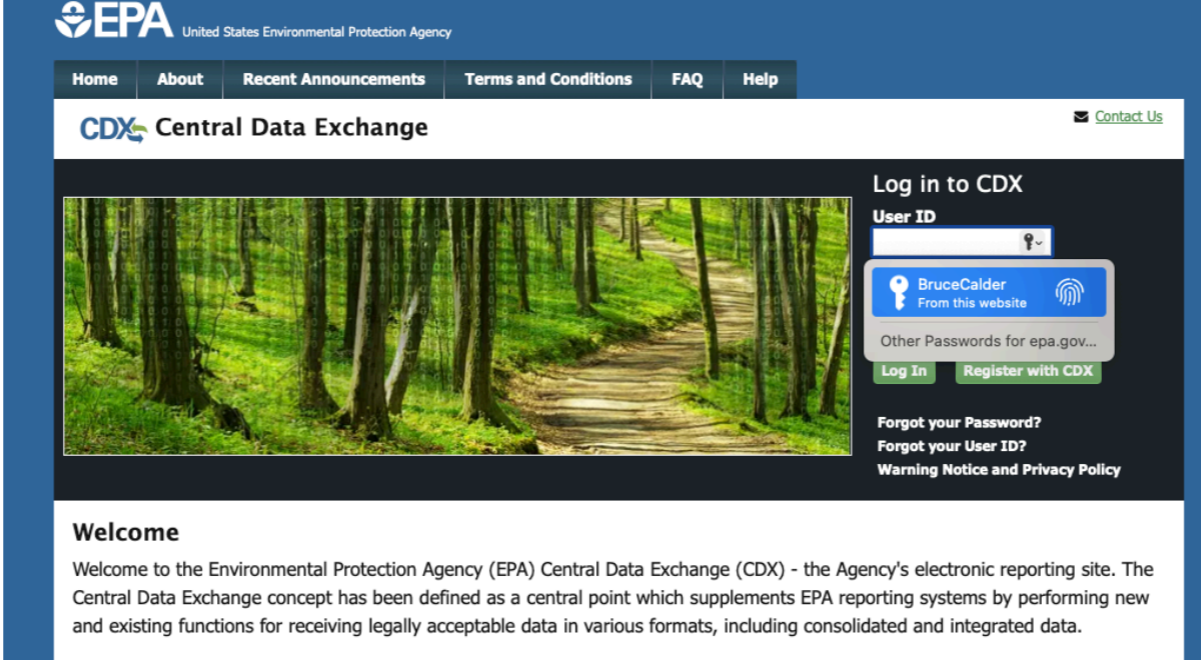
# Reporting Requirements

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- **For each PFAS in articles (example PTFE)**
  - Chemical identity (*Poly(tetrafluoroethylene)*)
    - Generic name (*PTFE*)
    - CAS number
  - Import volume
    - # of units containing PTFE
  - Industrial processing or use (*U*)
  - Sector (*IS42 - Electrical equipment, appliance, and component manufacturing*)
  - Product category (*CC219 - Machinery, mechanical appliances, electrical*)
  - Each functional use (*F034 - Insulators, F999 - Other - Friction resistance*)
    - And % volume of each use
  - Consumer or commercial (*Y/N*), intended for children (*Y/N*)
  - Maximum concentration in product (*0.1% to 1%*)

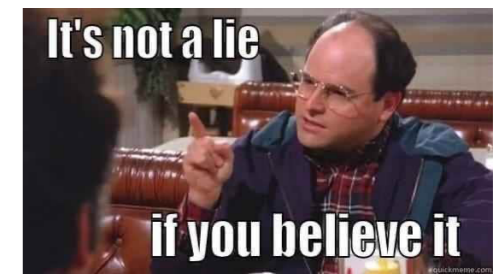
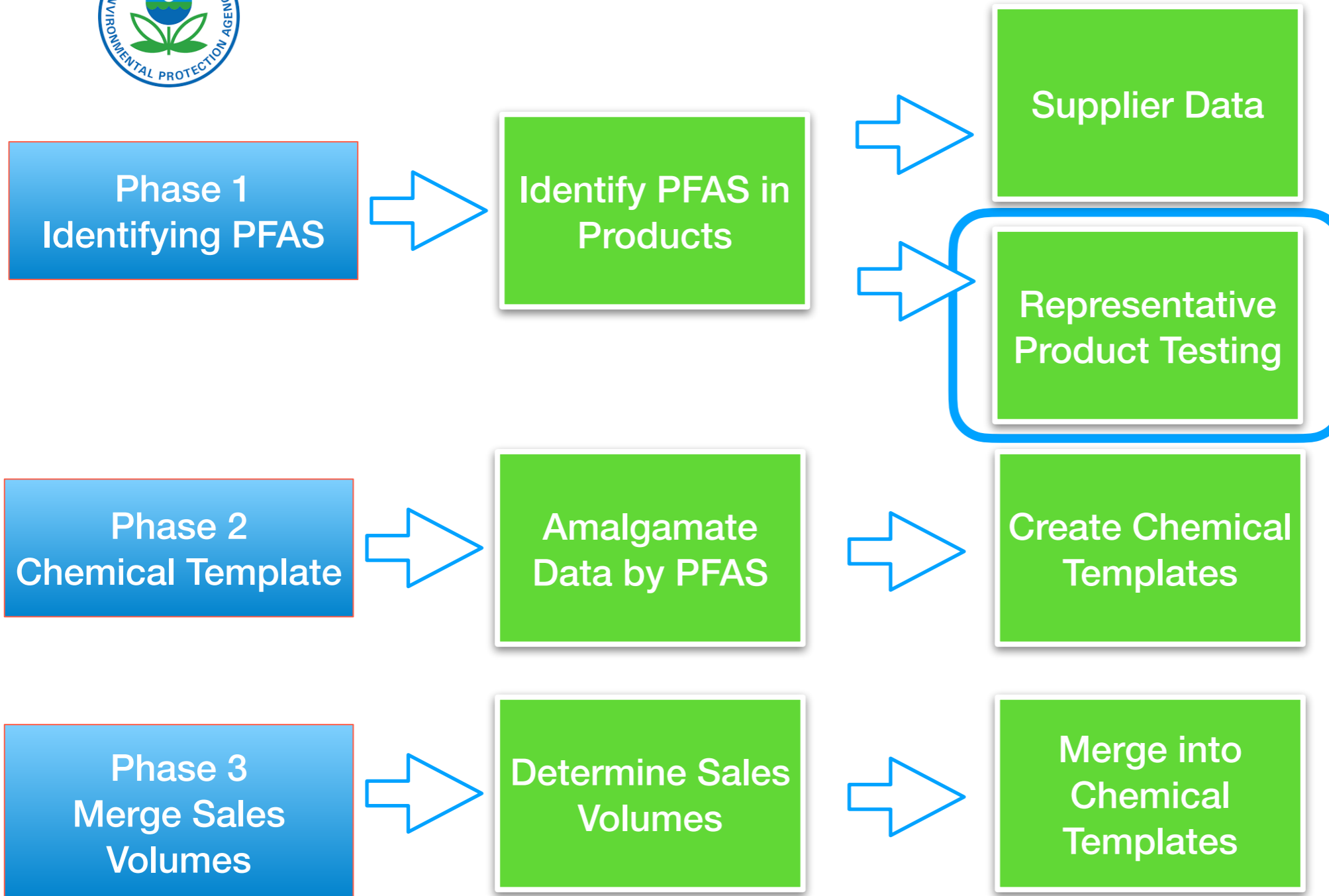
# US TSCA PFAS Reporting

- Where does it need to be reported?
  - CDX
    - Which is built for chemical reporting (not articles)
    - However, articles still have to report
    - Reporting form is not ready yet
    - UserID is an individual person not company



The screenshot shows the EPA Central Data Exchange (CDX) website. At the top, the EPA logo and "United States Environmental Protection Agency" are visible. Below this is a navigation menu with links for Home, About, Recent Announcements, Terms and Conditions, FAQ, and Help. The main header area features the CDX logo and "Central Data Exchange" text, along with a "Contact Us" link. A large image of a forest path is on the left. On the right, there is a "Log in to CDX" section with a "User ID" input field, a "Log In" button, and a "Register with CDX" button. Below the login section, there are links for "Forgot your Password?", "Forgot your User ID?", and "Warning Notice and Privacy Policy". At the bottom, a "Welcome" message reads: "Welcome to the Environmental Protection Agency (EPA) Central Data Exchange (CDX) - the Agency's electronic reporting site. The Central Data Exchange concept has been defined as a central point which supplements EPA reporting systems by performing new and existing functions for receiving legally acceptable data in various formats, including consolidated and integrated data."

# US TSCA PFAS Reporting



Chemical	PTFE	Fluoroelastomer	PFA
Chemical	Poly(tetrafluoroethylene)	Vinylidene fluoride-hexafluoropropene polymer	Perfluoroalkoxy alkane
Generic Name	PTFE	FKM	PFA
Cas number	9002-84-0	9011-17-0	26655-00-5
Concentration in product	<0.1%	0.1% to 1%	0.1% to 1%
Process or Use Operation	U - Use - non-incorporative...	U - Use - non-incorporative...	U - Use - non-incorporative...
Industrial Sector (IS)	IS42 - Electrical equipment...	IS42 - Electrical equipment...	IS42 - Electrical equipm...
Product Category Codes	CC219 - Machinery, mecha...	CC219 - Machinery, mecha...	CC219 - Machinery, me...
Function 1	F034 - Insulators	F006 - Sealant (barrier)	F034 - Insulators
% 1		50%	100%
Function 2	F029 - Flame retardant		
% 2		25%	0
Function 3	F041 - Lubricating Agent		
% 3		20%	0
Function 2	F006 - Sealant (barrier)		
% 4		5%	0

Function 3	F041 - Lubricating Agent	
% 3		20%
Function 2	F006 - Sealant (barrier)	
% 4		5%
Total %		100%
<b>Units Volume</b>	<b># of Units</b>	
	2011	2750
	2012	2975
	2013	3218
	2014	3478
	2015	3756

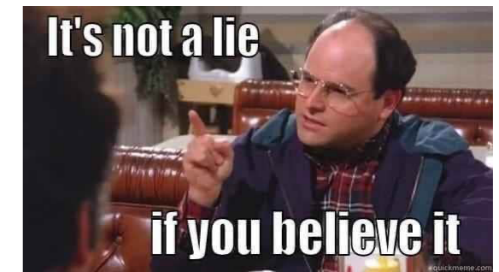
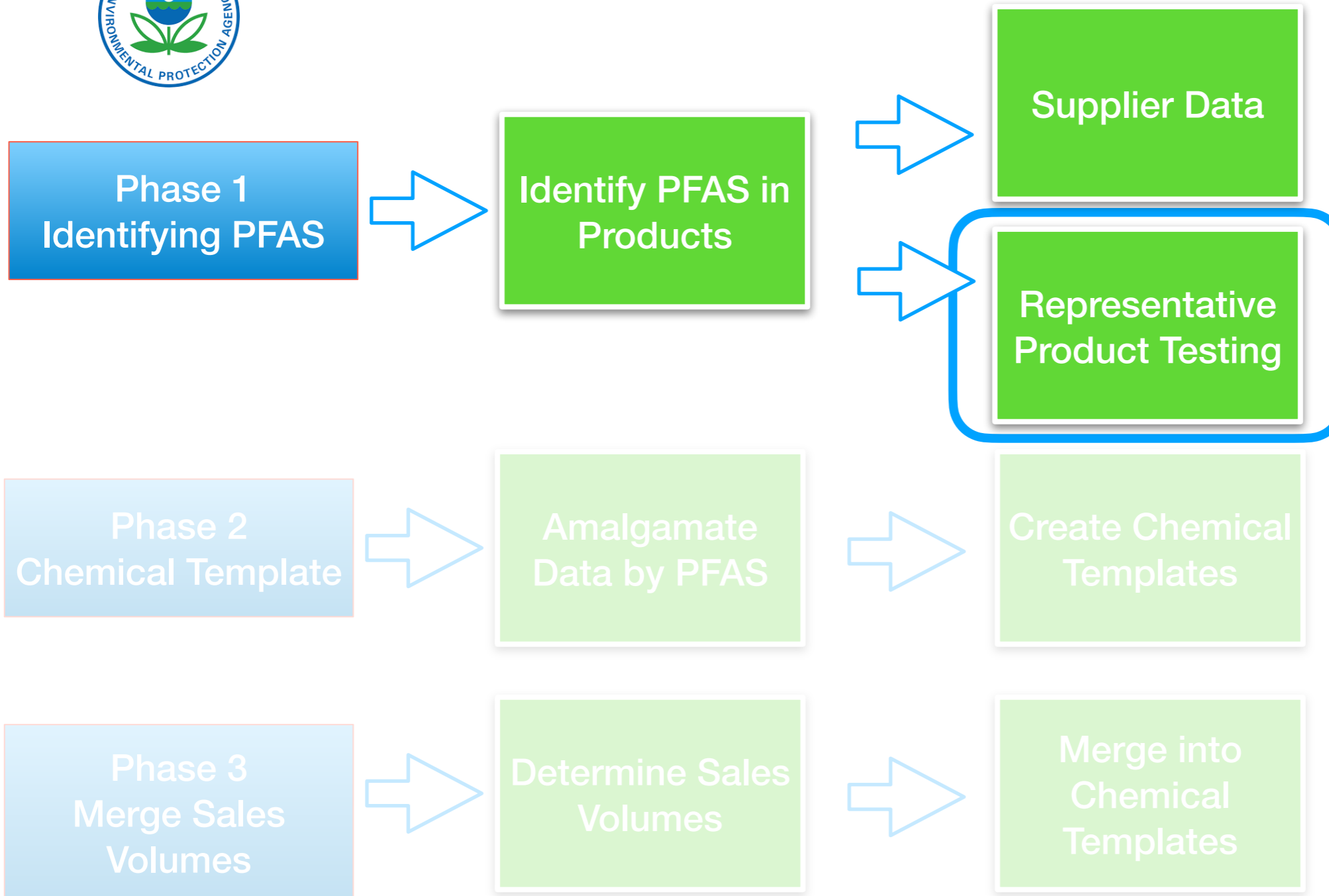
# Key Company Decision for PFAS Reporting

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- **Reporting entity**
  - Parent company, or
  - Operating companies
- **Notes**
  - Operating companies reporting is much easier for diversified companies
    - Separate product sales
    - Would have different representative products (not more work)
    - Do not have to wait for the slowest operating companies
    - Easier to report as a 'site'

# US TSCA PFAS Reporting

## Phase I - Identifying PFAS in Products



Chemical	PTFE	Fluoroelastomer	PFA
Chemical	Poly(tetrafluoroethylene)	Vinylidene fluoride-hexafluoropropene polymer	Perfluoroalkoxy alkane
Generic Name	PTFE	FKM	PFA
Cas number	9002-84-0	9011-17-0	26655-00-5
Concentration in product	<0.1%	0.1% to 1%	0.1% to 1%
Process or Use Operation	U - Use - non-incorporative...	U - Use - non-incorporative ...	U - Use - non-incorpora...
Industrial Sector (IS)	IS42 - Electrical equipment...	IS42 - Electrical equipment...	IS42 - Electrical equipm...
Product Category Codes	CC219 - Machinery, mecha...	CC219 - Machinery, mecha...	CC219 - Machinery, me...
Function 1	F034 - Insulators	F006 - Sealant (barrier)	F034 - Insulators
% 1		50%	100%
Function 2	F029 - Flame retardant		
% 2		25%	0
Function 3	F041 - Lubricating Agent		
% 3		20%	0
Function 2	F006 - Sealant (barrier)		
% 4		5%	0

Function 3	F041 - Lubricating Agent	
% 3		20%
Function 2	F006 - Sealant (barrier)	
% 4		5%
Total %		100%
<b>Units Volume</b>	<b># of Units</b>	
2011		2750
2012		2975
2013		3218
2014		3478
2015		3756

# Representative Product Testing

---

- **Claigan Process**
  - Choose representative product from each product line
  - Test representative product
  - Create chemical template for representative product
- **Why?**
  - Way more accurate than supplier data
  - Lower effort than supplier data
  - Faster with time certainty
  - Data is consistent and easier to merge into chemical templates
  - Easiest to process for federal or state requirements

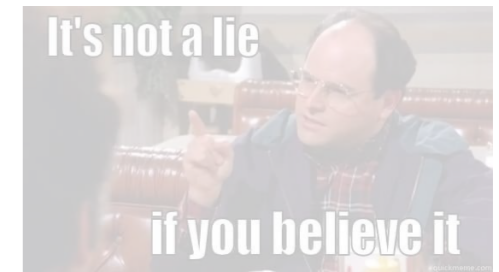
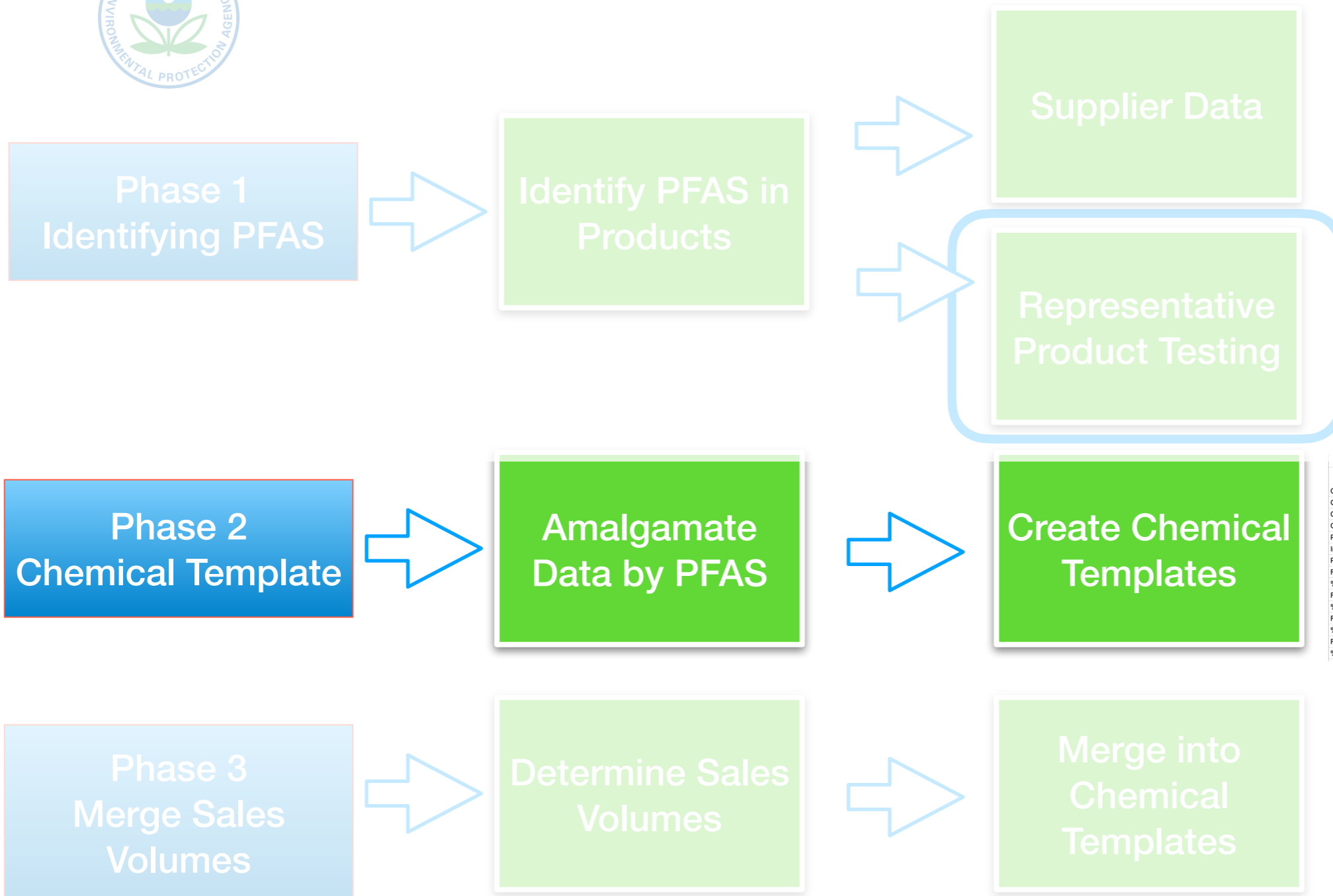
# Representative Product Testing Larger / More Valuable Product

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- **Claigan Process**
  - Combine
    - BOM review
    - Use assumptions for complex COTs parts (ex. Laptop)
    - Testing of representative parts from representative product
- **Why?**
  - Duplicate information is not terribly useful for reporting
  - Some PFAS uses are obvious from BOM review
  - Product so large that full testing would be mostly duplicate testing of the same uses

# US TSCA PFAS Reporting Phase 2 - Chemical Template



Chemical	PTFE	Fluoroelastomer	FFA
Chemical	Poly(tetrafluoroethylene)	Vinylidene fluoride-hexafluoropropene polymer	Perfluoroalkoxy alkane
Generic Name	PTFE	FKM	PFA
Cas number	9002-84-0	9011-17-0	26855-00-5
Concentration in product	<0.1%	0.1% to 1%	0.1% to 1%
Process or Use Operation	U - Use - non-incorporative...	U - Use - non-incorporative ...	U - Use - non-incorpora...
Industrial Sector (IS)	IS42 - Electrical equipment...	IS42 - Electrical equipment...	IS42 - Electrical equipm...
Product Category Codes	CC219 - Machinery, mecha...	CC219 - Machinery, mecha...	CC219 - Machinery, me...
Function 1	F034 - Insulators	F006 - Sealant (barrier)	F034 - Insulators
% 1	50%	100%	100%
Function 2	F029 - Flame retardant		
% 2	25%	0	0
Function 3	F041 - Lubricating Agent		
% 3	20%	0	0
Function 2	F006 - Sealant (barrier)		
% 4	5%	0	0

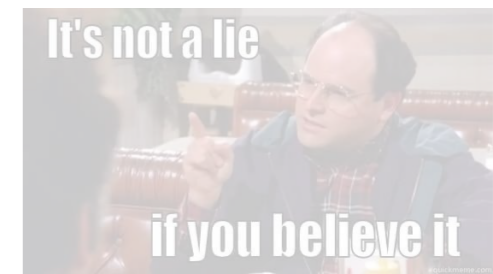
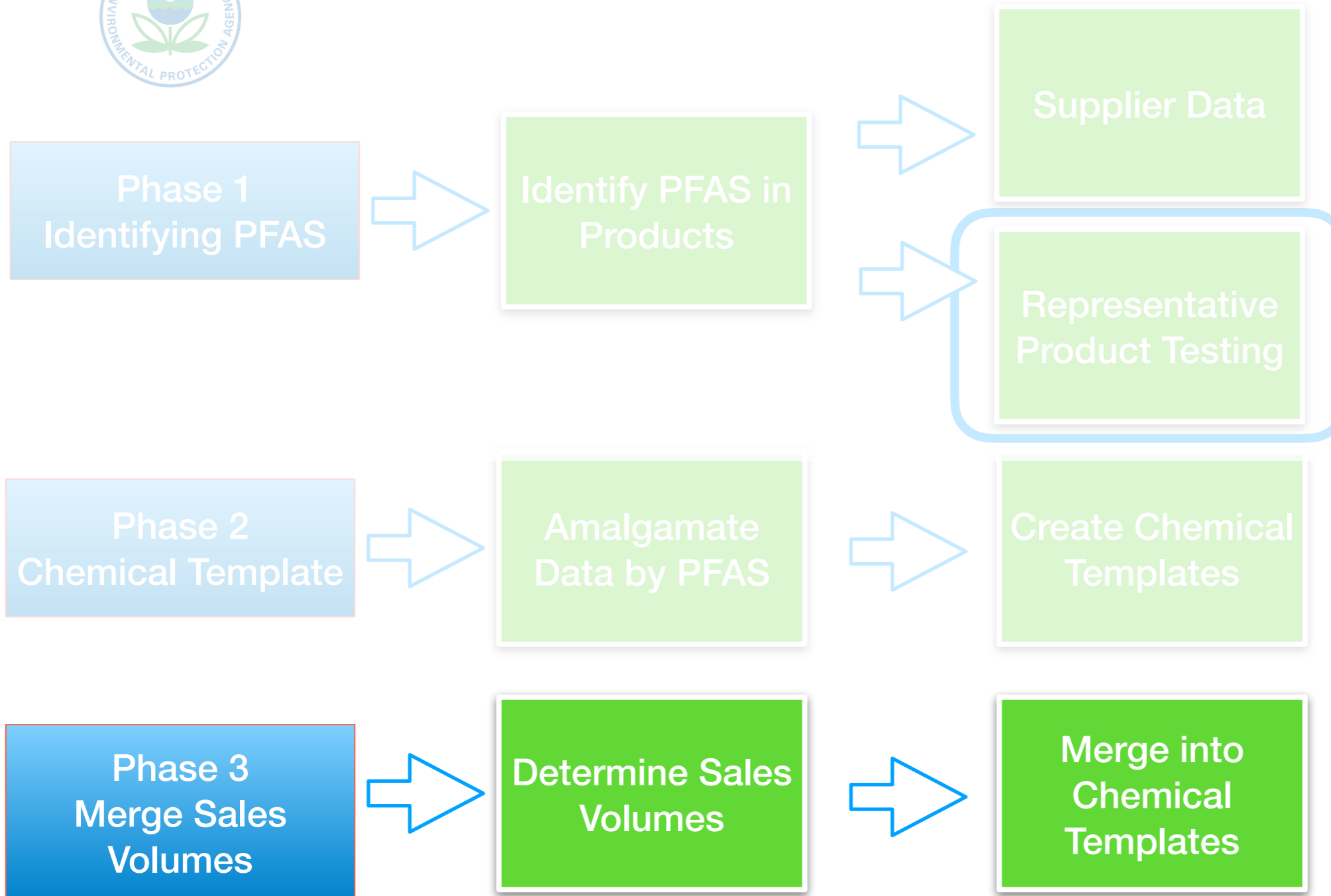
Function 3	F041 - Lubricating Agent	
% 3		20%
Function 2	F006 - Sealant (barrier)	
% 4		5%
Total %		100%
<b>Units Volume</b>	<b># of Units</b>	
2011		2750
2012		2975
2013		3218
2014		3478
2015		3756

# Phase 2 - PFAS Chemical Template

- **Chemical template**
  - US TSCA Reporting is by chemical
    - Not product
  - Claigan creates a reporting template for each reportable PFAS

Chemical	PTFE	Fluoroelastomer	PFA
Chemical	Poly(tetrafluoroethylene)	Vinylidene fluoride-hexafluoropropene polymer	Perfluoroalkoxy alkane
Generic Name	PTFE	FKM	PFA
Cas number	9002-84-0	9011-17-0	26655-00-5
Concentration in product	<0.1% ▼	0.1% to 1% ▼	0.1% to 1% ▼
Process or Use Operation	U - Use - non-incorporative... ▼	U - Use - non-incorporative ... ▼	U - Use - non-incorpora... ▼
Industrial Sector (IS)	IS42 - Electrical equipment... ▼	IS42 - Electrical equipment,... ▼	IS42 - Electrical equipm... ▼
Product Category Codes	CC219 - Machinery, mecha... ▼	CC219 - Machinery, mecha... ▼	CC219 - Machinery, me... ▼
Function 1	F034 - Insulators ▼	F006 - Sealant (barrier) ▼	F034 - Insulators ▼
% 1	50%	100%	100%
Function 2	F029 - Flame retardant ▼	▼	▼
% 2	25%	0	0
Function 3	F041 - Lubricating Agent ▼	▼	▼
% 3	20%	0	0
Function 2	F006 - Sealant (barrier) ▼	▼	▼
% 4	5%	0	0

# US TSCA PFAS Reporting Phase 3 - Merging Sales Volumes



Chemical	PTFE	Fluoroelastomer	PFA
Chemical	Poly(tetrafluoroethylene)	Vinylidene fluoride-hexafluoropropene polymer	Perfluoroalkoxy alkane
Generic Name	PTFE	FKM	PFA
Cas number	9002-84-0	9011-17-0	26855-00-5
Concentration in product	<0.1%	0.1% to 1%	0.1% to 1%
Process or Use Operation	U - Use - non-incorporative...	U - Use - non-incorporative ...	U - Use - non-incorpora...
Industrial Sector (IS)	IS42 - Electrical equipment...	IS42 - Electrical equipment...	IS42 - Electrical equipm...
Product Category Codes	CC219 - Machinery, mecha...	CC219 - Machinery, mecha...	CC219 - Machinery, me...
Function 1	F034 - Insulators	F006 - Sealant (barrier)	F034 - Insulators
% 1		50%	100%
Function 2	F029 - Flame retardant		
% 2		25%	0
Function 3	F041 - Lubricating Agent		
% 3		20%	0
Function 2	F006 - Sealant (barrier)		
% 4		5%	0

Function 3	F041 - Lubricating Agent	
% 3		20%
Function 2	F006 - Sealant (barrier)	
% 4		5%
Total %		100%
<b>Units Volume</b>	<b># of Units</b>	
	2011	2750
	2012	2975
	2013	3218
	2014	3478
	2015	3756

# Phase 3 - Merging Sales Volumes

- **Merging Sales Volumes**
  - Mapping of products lines to chemical templates
  - Adding sales volumes to 2011 by product line
  - Generating final reporting numbers
    - In # of units or kg (lb)

Product Family 1	100%
Product Family 2	100%
Product Family 3	0%
Product Family 4	75%
# of units	
Consumer	Commercial
Intended for Children	No
<b>Chemical</b>	<b>PTFE</b>
Chemical	Poly(tetrafluoroethylene)
Generic Name	PTFE
Cas number	9002-84-0
Concentration in product	<0.1%
Process or Use Operation	U - Use - non-incorporative...
Industrial Sector (IS)	IS42 - Electrical equipment...
Product Category Codes	CC219 - Machinery, mecha...
Function 1	F034 - Insulators
% 1	50%
Function 2	F029 - Flame retardant
% 2	25%
Function 3	F041 - Lubricating Agent
% 3	20%
Function 2	F006 - Sealant (barrier)
% 4	5%
Total %	100%
<b>Units Volume</b>	<b># of Units</b>
2011	2750
2012	2975
2013	3218
2014	3478
2015	3756
2016	4053
2017	4369

# Phase 3 - Merging Sales Volumes

- **Product family**
  - Mapping of products lines to chemical templates
    - % of each products in product line that contain PFAS

Product Family 1	100%
Product Family 2	100%
Product Family 3	0%
Product Family 4	75%
# of units	
Consumer	Commercial
Intended for Children	No
<b>Chemical</b>	<b>PTFE</b>
Chemical	Poly(tetrafluoroethylene)
Generic Name	PTFE
Cas number	9002-84-0

# Phase 3 - Merging Sales Volumes

- **Sales Volumes**
  - Client product sales volumes per product line
    - # of units sold
    - *Can be approximated by \$ of sales / average value of sale*
  
- *If a company wishes to further breakdown by site (if they wish to report for separate sites), the same process is used with volumes for that site*

Year	Product Family 1	Product Family 2	Product Family 3	Product Family 4
2011	1000	1000	500	1000
2012	1200	1100	550	900
2013	1400	1210	605	810
2014	1600	1331	666	729
2015	1800	1464	733	656
2016	2000	1610	806	590
2017	2200	1771	887	531
2018	2400	1948	976	478
2019	2600	2143	1074	430
2020	2800	2357	1181	387
2021	3000	2593	1299	348
2022	3200	2852	1429	313

# Phase 3 - Merging Sales Volumes

- **Final volumes**
  - # of units or kg (lb)
    - Per PFAS
  - For each year
- *Chemical template includes weight to unit conversion for each PFAS*

Units Volume	# of Units
2011	2750
2012	2975
2013	3218
2014	3478
2015	3756
2016	4053
2017	4369
2018	4707
2019	5066
2020	5447
2021	5854
2022	6287
Tonnage volume	kg
2011	1650
2012	1785
2013	1930.5
2014	2086.7
2015	2253.6
2016	2431.5
2017	2621.6
2018	2823.9
2019	3039.3
2020	3268.4
2021	3512.4
2022	3772.1

PFAS weight to unit conversion in chemical template

Weight (kg)	
Function 1	0.6
Function 2	0.0125
Function 3	0.0052
Function 4	0.02
Mass per product (kg)	0.6377

# Phase 3 - Merging Sales Volumes

- **Final Declaration**
  - By chemical
  - Option of
    - Reporting number of units, or
    - Weight of PFAS

Chemical	PTFE
Chemical	Poly(tetrafluoroethylene)
Generic Name	PTFE
Cas number	9002-84-0
Concentration in product	<0.1%
Process or Use Operation	U - Use - non-incorporative...
Industrial Sector (IS)	IS42 - Electrical equipment...
Product Category Codes	CC219 - Machinery, mecha...
Function 1	F034 - Insulators
% 1	50%
Function 2	F029 - Flame retardant
% 2	25%
Function 3	F041 - Lubricating Agent
% 3	20%
Function 2	F006 - Sealant (barrier)
% 4	5%
Total %	100%
<b>Units Volume</b>	<b># of Units</b>
2011	2750
2012	2975
2013	3218
2014	3478
2015	3756
2016	4053
2017	4369
2018	4707
2019	5066
2020	5447
2021	5854
2022	6287
<b>Tonnage volume</b>	<b>kg</b>
2011	1650
2012	1785
2013	1930.5
2014	2086.7
2015	2253.6

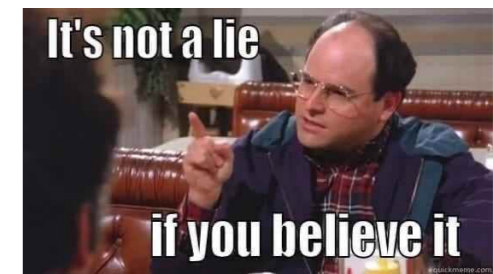
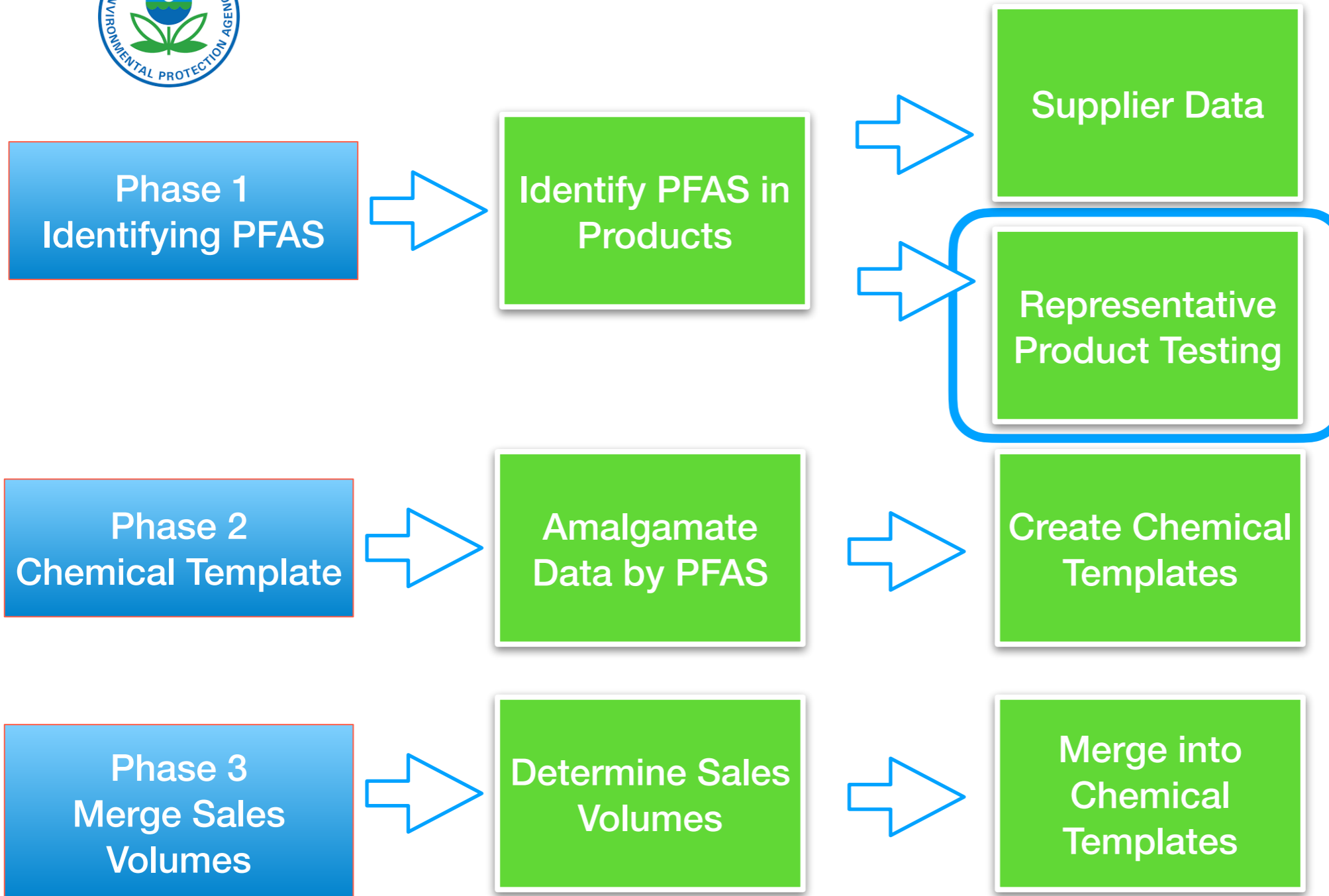
# Note

## US State Level Reporting

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- **Reporting in Maine and Minnesota**
  - Maine - Jan 2025
  - Minnesota - Jan 2026
  - + *Canada - Likely ~2025*
- **Format**
  - Reporting by product family
    - And PFAS chemical and use in product family
  - Some questions left on how concentration is reported
- **Claigan's format is set up to be adjusted into final state level reporting format**

# US TSCA PFAS Reporting

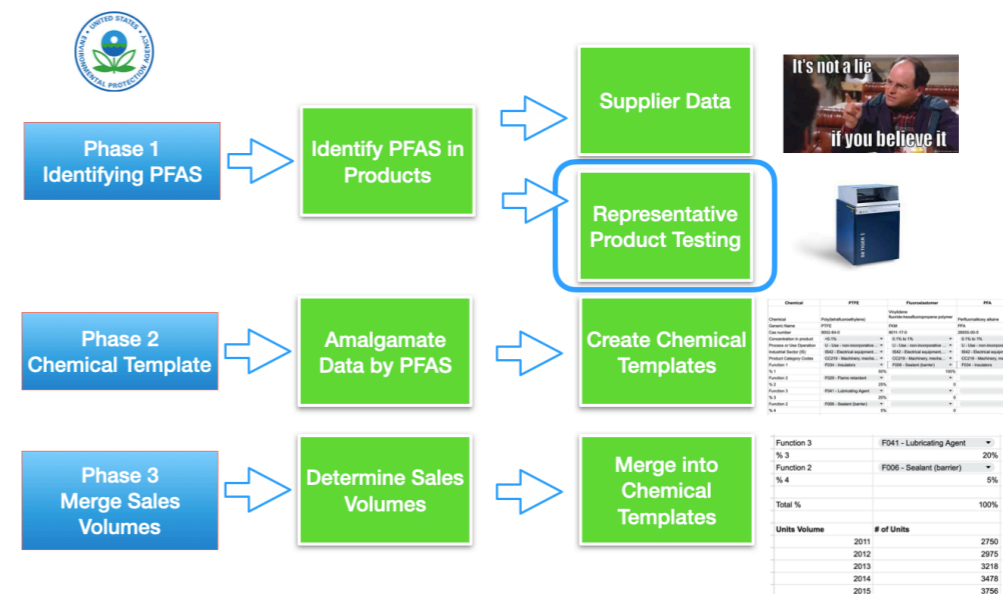


Chemical	PTFE	Fluoroelastomer	PFA
Chemical	Poly(tetrafluoroethylene)	Vinylidene fluoride-hexafluoropropene polymer	Perfluoroalkoxy alkane
Generic Name	PTFE	FKM	PFA
Cas number	9002-84-0	9011-17-0	26655-00-5
Concentration in product	<0.1%	0.1% to 1%	0.1% to 1%
Process or Use Operation	U - Use - non-incorporative...	U - Use - non-incorporative...	U - Use - non-incorporative...
Industrial Sector (IS)	IS42 - Electrical equipment...	IS42 - Electrical equipment...	IS42 - Electrical equipm...
Product Category Codes	CC219 - Machinery, mecha...	CC219 - Machinery, mecha...	CC219 - Machinery, me...
Function 1	F034 - Insulators	F006 - Sealant (barrier)	F034 - Insulators
% 1		50%	100%
Function 2	F029 - Flame retardant		
% 2		25%	0
Function 3	F041 - Lubricating Agent		
% 3		20%	0
Function 2	F006 - Sealant (barrier)		
% 4		5%	0

Function 3	F041 - Lubricating Agent	
% 3		20%
Function 2	F006 - Sealant (barrier)	
% 4		5%
Total %		100%
<b>Units Volume</b>	<b># of Units</b>	
	2011	2750
	2012	2975
	2013	3218
	2014	3478
	2015	3756

# Claigan Quote

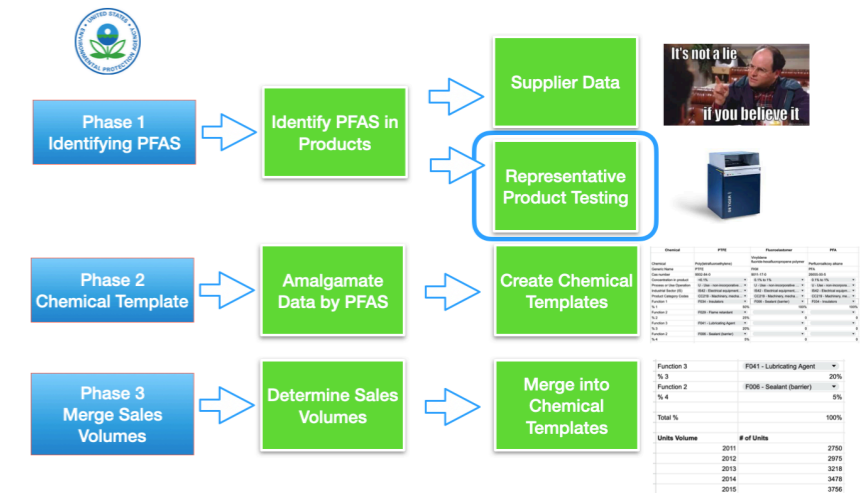
- **Claigan Quote for PFAS Reporting**
  - Quote will be very detailed on
    - Representative product recommendations
    - Costs
    - Timelines



# Next Steps

## US TSCA PFAS Reporting

- Recommendation
- **Ask for a quote**
- Why?
  - It is not a commitment
  - But it is a solution
  - And someone will likely be asking you
    - **How much and how long?**



**Q&A**