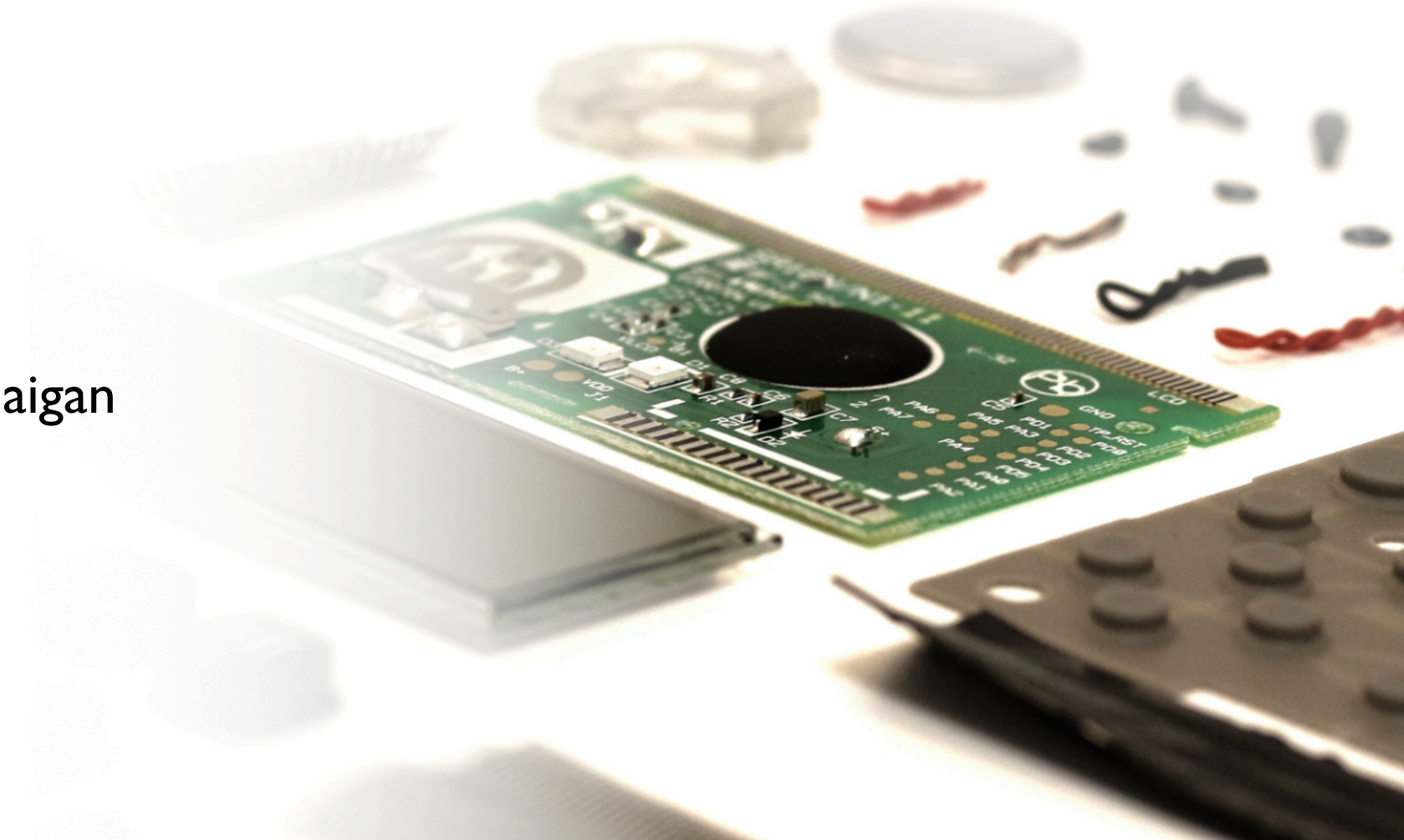
Claigan
Less Journey. More Results.

Claigan Webinar
January 2023 REACH SVHC Update

Presented by:
Bruce Calder
VP Consulting Services at Claigan

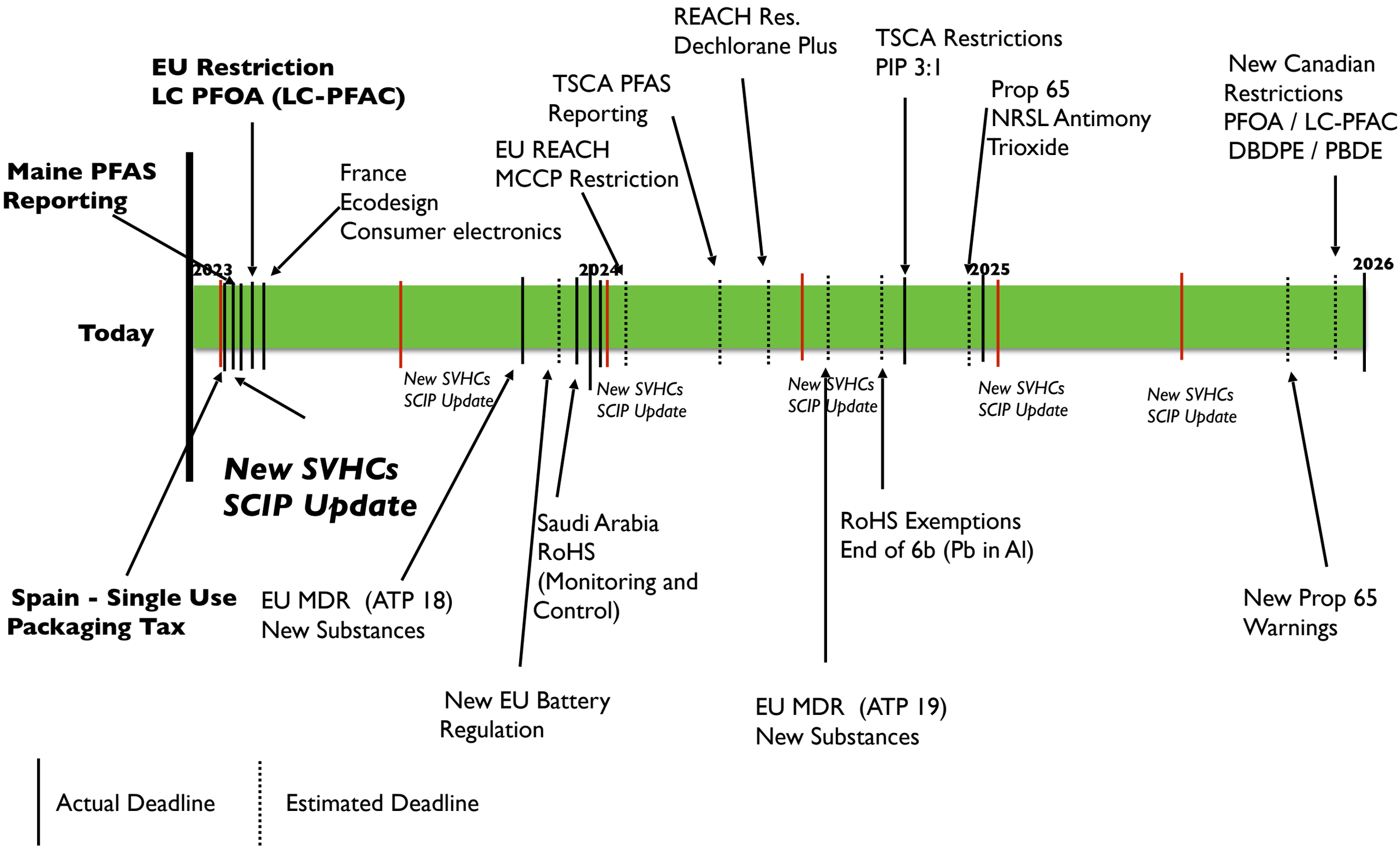
February 1 2023



Overview - Agenda

- New REACH SVHCs
  - Jan 17 2023 SVHCs
  - Risk of presence in articles
- SCIP
  - Process
  - Updating files
- Single use plastic regulation
  - Spain
- Uses of PFAS
  - EU PFAS Restriction Timeline
  - Uses in articles
- Q&A

Restricted Materials
Constant Deadlines



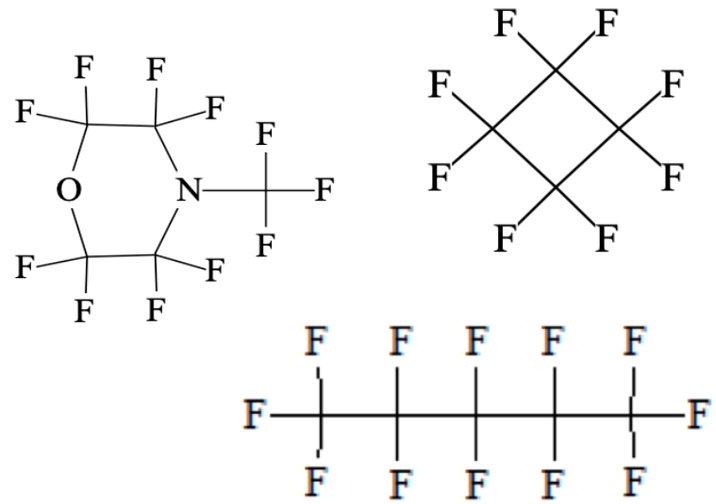
Jan 2023 SVHC

- All Nine (9) substances are approved to be SVHC
  - Publication occurred on Jan 17 2023
- REACH SVHC Update
  - reaction mass of 2,2,3,3,5,5,6,6-octafluoro-4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl)morpholine and 2,2,3,3,5,5,6,6-octafluoro-4-(heptafluoropropyl)morpholine
  - Perfluoroheptanoic acid and its salts
  - Isobutyl 4-hydroxybenzoate (isobutylparaben)
  - Barium diboron tetraoxide
  - 4,4'-sulphonyldiphenol
  - **Bis(2-ethylhexyl) tetrabromophthalate (TBPH)**
  - **1,1'-[ethane-1,2-diylbisoxy]bis[2,4,6-tribromobenzene] (BTBPE)**
  - **2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol (TBBPA)**
  - **Melamine**
- Claigan written risk assessment expected by end of Jan 2023

REACH SVHC
Reaction Mass of Morpholine

Low Risk

- **Details**
  - reaction mass of 2,2,3,3,5,5,6,6-octafluoro-4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl)morpholine and 2,2,3,3,5,5,6,6-octafluoro-4-(heptafluoropropyl)morpholine
    - EC# 473-390-7



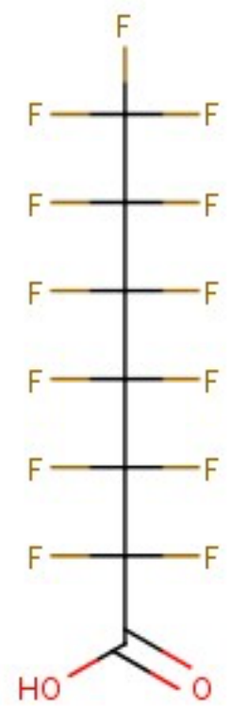
- **Uses**
  - PFAS thermal cooling product for electronics

REACH SVHC
Perfluoroheptanoic acid and its salts

- **Details**
  - Perfluoroheptanoic acid and its salts
    - EC# 206-798-9

Low Risk

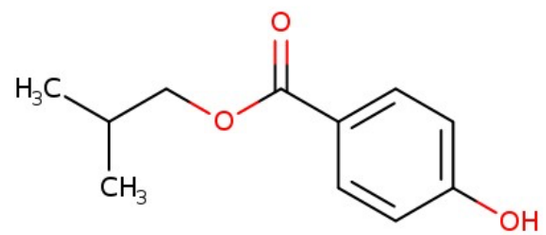
- **Uses**
  - Rare surfactant (short chain part of PFOA family)
    - Processing aid or unintentional contaminant
    - << 1,000 ppm
  - Short chain
    - (Not currently regulated as opposed to PFOA)



REACH SVHC
Isobutyl 4-hydroxybenzoate (isobutylparaben)

Low Risk (Articles)

- **Details**
  - Isobutyl 4-hydroxybenzoate (isobutylparaben)
  - EC# 224-208-8



- **Uses**
  - Personal care products (common use)
    - Likely over 1,000 ppm in personal care products
    - Moisturizer, glitter, hand/body lotion, sunscreen, eye liner
  - Low risk in physical products (articles)

REACH SVHC
Barium diboron tetraoxide

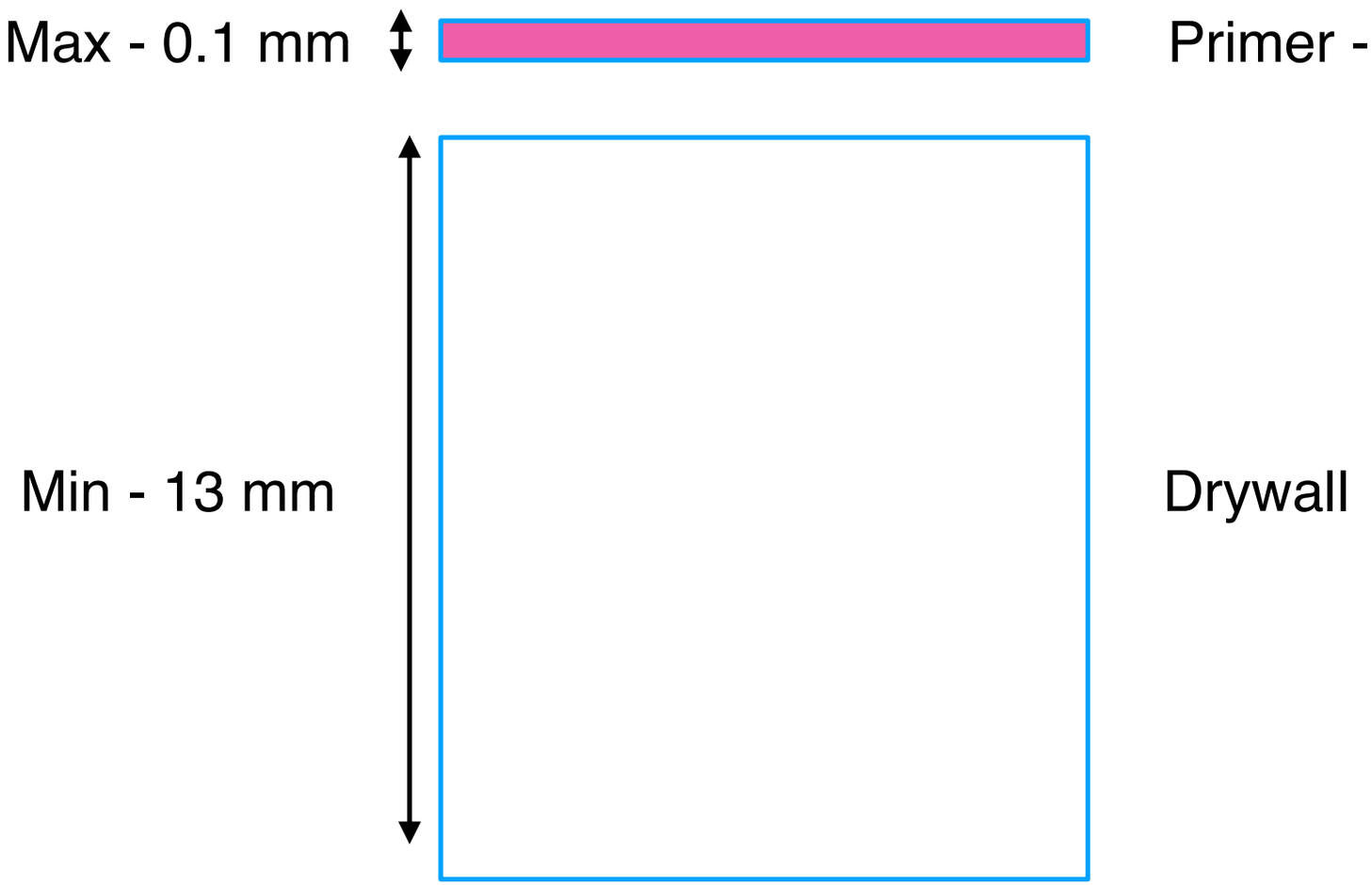
Low Risk
(In most situations)

- **Details**
  - Barium diboron tetraoxide
  - EC# 237-222-4

- **Uses**
  - Coatings / epoxy
    - Barium diboron tetraoxide up to 100,000 ppm of coating
      - Acrylic primer
      - May be lower concentration (dissolved into boron oxide and barium ion)
    - Chemicals in coatings and epoxies are measured over the weight of the entire coated component
      - Low risk of being over 1,000 ppm in final article
    - And primarily structure coating
      - Walls, HVAC systems

REACH SVHC
Barium diboron tetraoxide

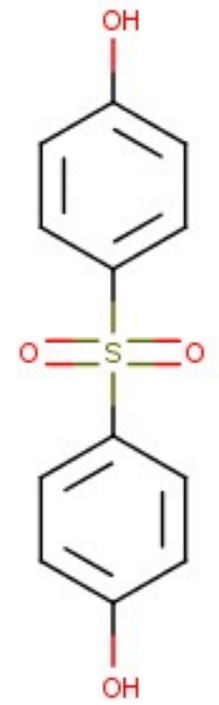
- **Concentration**
  - Maximum concentration ~770 ppm
  - Assumes maximum concentration and no dissociation into salts



REACH SVHC
4,4'-sulphonyldiphenol (Bispenol-S)

Low Risk

- **Details**
  - 4,4'-sulphonyldiphenol (Bispenol-S)
    - EC# 201-250-5



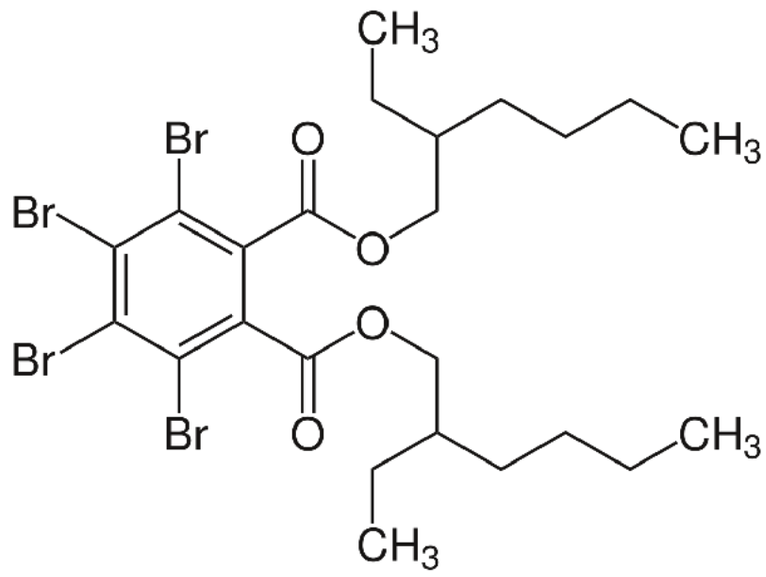
- **Uses**
  - Residual in thermal paper

- **Occurrences**
  - <100 ppm in thermal paper
  - May be in issue in future BPA family restriction

REACH SVHC
Brominated DEHP (TBPH)

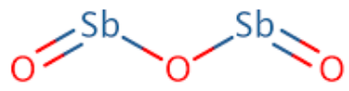
- **Details**
  - Bis(2-ethylhexyl) tetrabromophthalate (TBPH)
    - EC# 247-426-5

High Risk



- **Uses**
  - Combination of plasticizer and flame retardant
    - PVC
    - Nitrile rubber

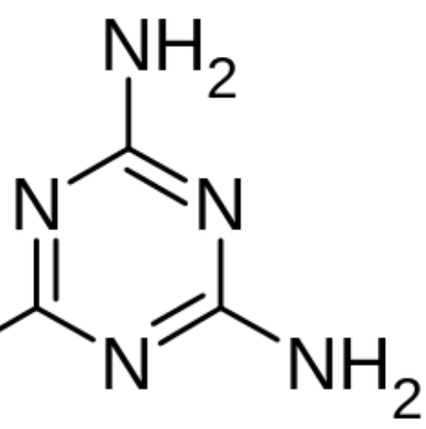
- **Occurrences**
  - Based on Claigan test data,
    - **Relatively common in brominated, Sb, flexible**
    - Examples
      - Cables, power cord, wiring



REACH SVHC
Melamine

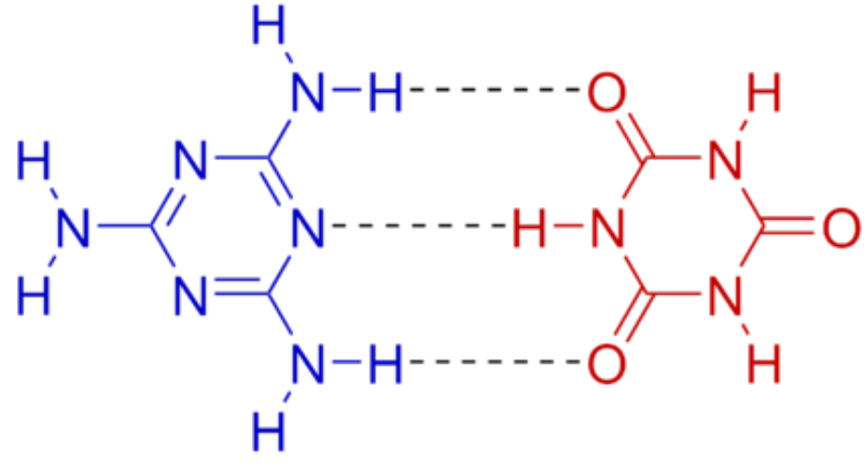
- **Details**
  - Melamine
    - EC# 203-615-4

High Risk



Melamine

- **Uses**
  - Melamine resin
    - Cookware and similar
    - Trace residual
  - Melamine Cyanurate
    - Flame retardant
      - PBT electronic components
      - Nylon electronic components
    - Likely melamine > 1,000 ppm



Melamine - Cyanurate

Melamine in Electronics

- Common declaration by a component supplier

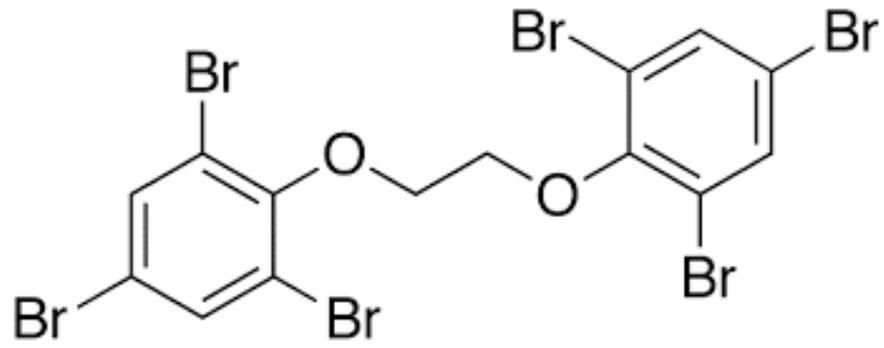
PBT	26062-94-2
Phosphinic acid, diethyl-, aluminum salt (9CI)	225789-38-8
Melamin-polyphosphate	218768-84-4
Melamine cyanurate	37640-57-6
GF	65997-17-3
-	-

REACH SVHC
BTBPE (FireMaster 680)

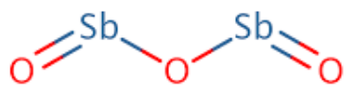
- **Details**
  - 1,2-Bis(2,4,6-tribromophenoxy)ethane (BTBPE)
    - EC# 253-692-3

High Risk
But likely phased out

- **Uses**
  - Additive brominated flame retardant
    - /w antimony trioxide
    - Same uses as octaBDE



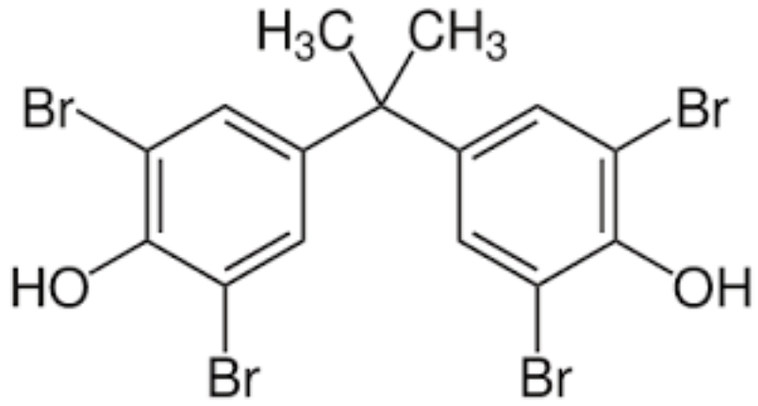
- Mostly phased out
  - Likely only to be found < 1,000 ppm in recycled plastic



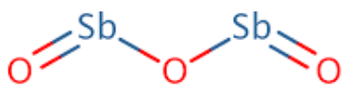
REACH SVHC
Additive TBBPA

- **Details**
  - 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol (TBBPA)
    - EC# 201-236-9
    - **Soon to be a RoHS substance**

High Risk
But likely phased out



- **Uses**
  - Additive (regulated)
    - /w antimony trioxide
    - Brominated flame retardant in ABS
    - Rare in modern products



  - Where found in testing
    - <1,000 ppm in recycled plastic (fairly common)

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  - **Melamine**

- Should impact all previous SCIP declaration
- Previous Claigan work should enable the update

SCIP Database
Substance of **C**oncern **I**n **P**roducts

- **Deadline**
  - January 5 2021
  - Product placed on the market after Jan 5 2021 cannot be sold unless registered in SCIP database
    - *If they contain 0.1% of an SVHC in any component*

- **Accessible to public and national authorities**
  - September 2021

Substance of Concern Database - Product Declaration

IUCLID 6

Complex Product

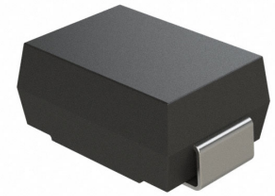
Component /w SVHC

metal - lead (and alloys of) - lead alloy

24 instances

Pb

0.1% to 100%



Do not take apart
Do not mix with municipal waste

Component /w SVHC

Metal - brass

30 instances

Pb

1 to 10%

Avoid prolonged direct contact with skin during use
Wash hands after contact
Keep out of reach of children
Do not mix with municipal waste

Component /w SVHC

Rubber and elastomers - silicone rubber

15 instances

D6

0.1 to 0.3%

Do not mix with municipal waste
Do not flush or pour down drain

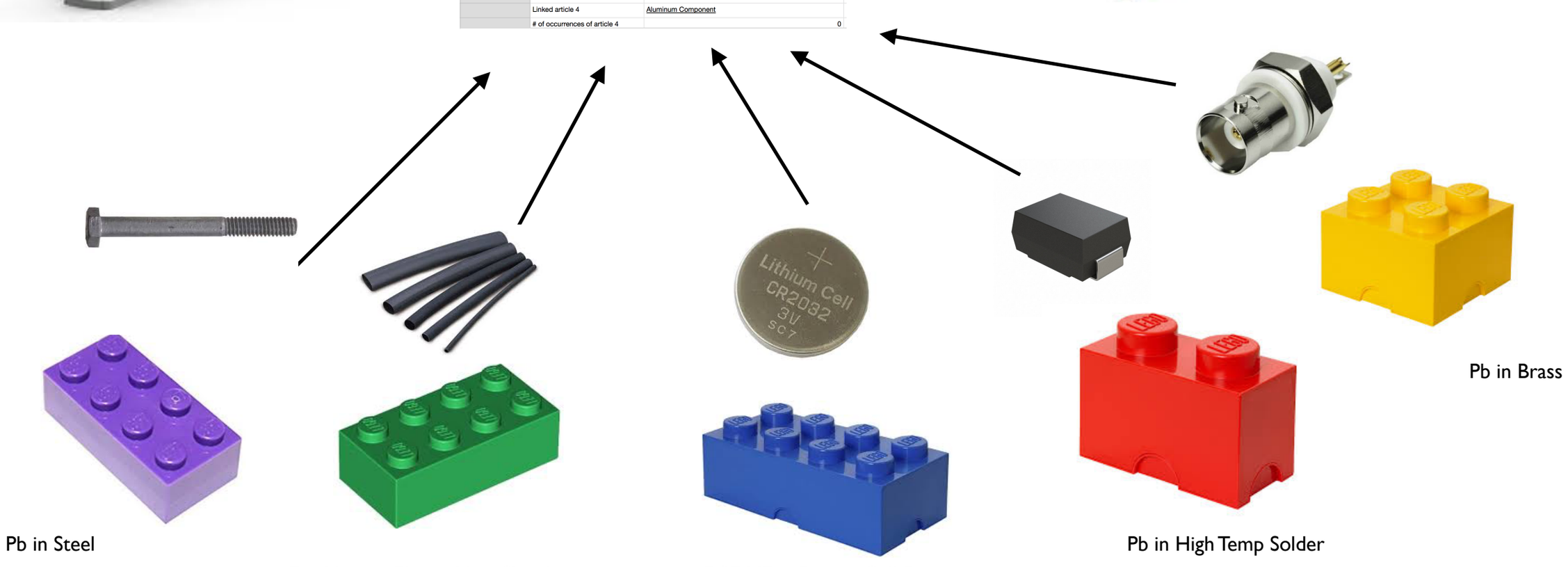
Other declarables

+ Pb (Al)
+ EGDME (Battery)
+ Decl+ (Heat shrink)
+ Pb (Steel)
+ Cd (Relays)
+ Moca (PU)
+ PbO (Pots)
+ TNPP (Film)
+ UV-328 (LCD)

SCIP - Templates - Building Blocks

Product Template

A	B	C
Identifiers	Article Name	Stainless Steel Coffee Maker, 12-Cup
Primary Article Identifier Type	GPC (Universal Product Code)	665679012749
Company	IUCLID ID	
Product IUCLID #	Product IUCLID ID	
	Article Category	851671 - Electro-thermic coffee or tea makers, domestic
	Production in European Union	No
Safe Use Instruction	Safe use instruction (s)	See component safe use instructions
optional	Characteristic	Declaration contained here is to the best of ACME's ability. Individual units may have more or less of each REACH SVHC components then shown here.
optional	Model(s)	
optional	image (filename)	
Linked article	Linked article 1	Brass Component
	# of occurrences of article 1	0
	Linked article 2	Closed cell foam
	# of occurrences of article 2	2
	Linked article 3	Silicone Component
	# of occurrences of article 3	5
	Linked article 4	Aluminum Component
	# of occurrences of article 4	0



Pb in Steel

Dechlorane Plus in Heat Shrink

EGDME in Button Cell Batteries

Pb in High Temp Solder

Pb in Brass

Component Templates

Claigan Practical Version (SCIP Process)

Start

Phase 1
Establishing the Basics

Web Demonstration

Product Templates

Component Templates

IUCLID File

We show you how to do it

Main Project

Phase 2
Building SCIP for all products

Internal work

Supported by Claigan

And / or

Claigan creates SCIP file

Claigan completes the work

We complete the IUCLID files for all of your products

Registration

Phase 3
Registration

Registration into IUCLID

Drag / Drop

+

SCIP Number Tracking

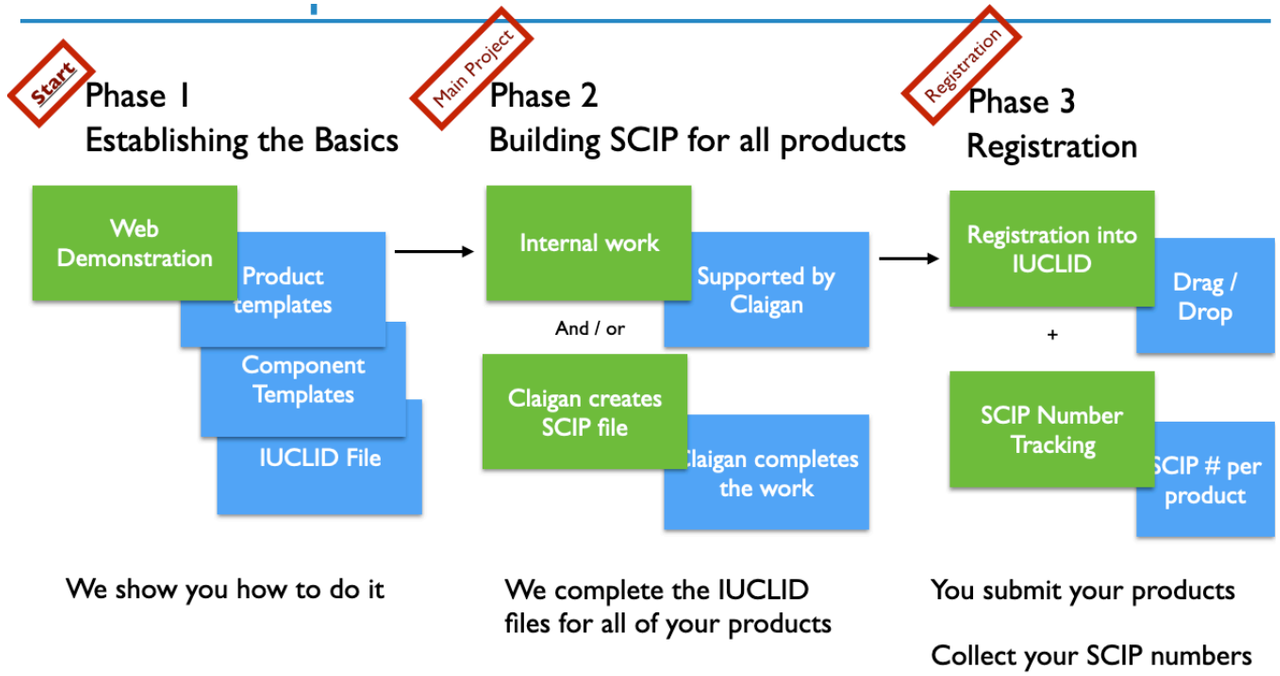
SCIP # per product

You submit your products

Collect your SCIP numbers

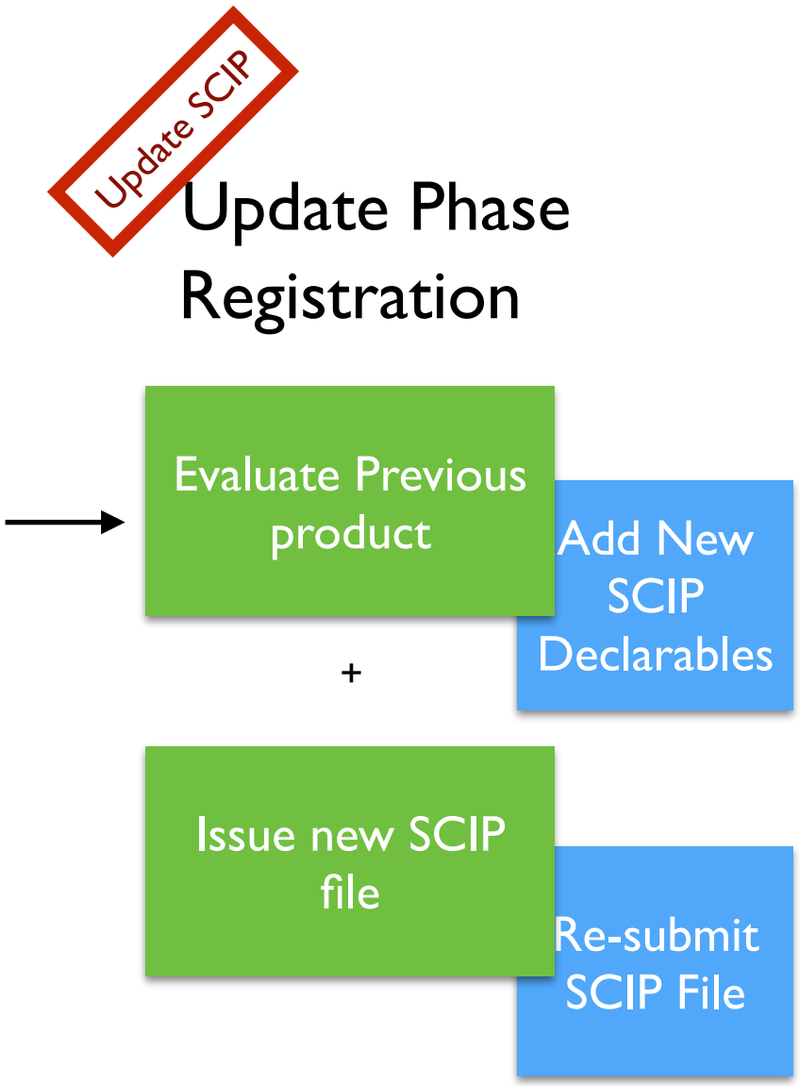
Claigan Practical Version
SCIP Update Process

Claigan



Includes previous declarations from

- Testing,
- Engineering evaluation, or
- Supplier data gathering



We review your product and update SCIP declarable

We provide a new SCIP file to submit

Single Use Plastic Packaging Regulation

- Globally
  - Many jurisdictions are quickly implementing single use non-recycled plastic packaging regulations
    - EU has a tax rate for all member states
      - EU taxes member states 0.8 Euros per kg
    - Implementing countries (so far)
      - Spain, UK (non-EU), and Italy

- Common details
  - Tax on remaining single use plastics
    - With related reporting requirements

- Single use plastics
  - Plastic packaging
  - Other single use plastic items (varies by jurisdiction)
    - Examples
      - Plastic cups, party plates

Spain
Single Use Plastic Packaging Regulation

- **In effect January 2023**
- Includes
  - €0.45 per kg for non-recycled plastic packaging
  - Primary, secondary, and tertiary packaging

- Examples packaging in scope
  - Film used to contain, protect, handle or deliver goods or products
  - Blister packs, boxes, cases and similar products containing a single product or an assortment of products
  - Vacuum packaging bags
  - Packaging tape and film, including film used for a group of sale units or collective packaging
  - Protective bubble film that wraps several sale units
  - Pallet protective film

Spain - Exemptions
Single Use Plastic Packaging Regulation

- **Exemptions from Spanish tax**
  - Medical device packaging
  - Pharmaceutical packaging
  - Farming packaging
  - Importer under 5kg of total packaging per month
  - Paints, adhesives, and coatings on packaging
  - Recycled plastic

- **Claigan version**
  - See next page

Spain - Exemptions
Single Use Plastic Packaging Regulation

- **Example Claigan Report**
  - Created in parallel to regular testing / compliance
  - Example is typical desk chair used at Claigan

Single Use Packaging

Prepared for:	Claigan
Product Name:	Serta Chair
Date of Report:	January 23, 2023

Summary

Plastic Totals	Weight (g)
#1 PET	0
#2 HDPE	38.13
#3 PVC	28.19
#4 LDPE	272.87
#5 PP	52.25
#6 PS	0
Other	22.06

Details

Single Use Packaging	Weight (g)	Plastic Type
Box Tape	18.18	#5 PP
Foam Cover	4.9	#4 LDPE
Clear Tape	3.01	#5 PP
Foam Sleeve	26.2	#4 LDPE
Blue Bubble Wrap	30.4	#2 HDPE
Elastic	0.26	Other
Inner Tape	0.65	#5 PP
Clear Bubble Wrap	84.5	#4 LDPE
Clear Tape	1.03	#5 PP

PFAS Compliance Process

Products

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4 to 6 weeks

Reporting

Product	Air Samplers	Carrying Bags
Description	Professional air sampler for industrial gases	Carrying bags for air samplers
Purpose	PTFE tape is a polytetrafluoroethylene (PTFE) film tape commonly used in plumbing for sealing pipe threads. The tape is sold cut to specific widths and wound on a spool, making it easy to wind around pipe threads. Thread seal tape lubricates allowing for a deeper seating of the threads, and it helps prevent the threads from seizing when being unscrewed. The tape also works as a deformable filler and thread lubricant, helping to seal the joint without hardening or making it more difficult to tighten	Durable water repellent, or DWR, is a coating added to fabrics at the factory to make them water-resistant
PFAS	polytetrafluoroethylene (PTFE)	Fluorochemical Acrylate Copolymer
PFAS CAS#	9002-84-0	Undisclosed
Weight (g)	2.2 g	0.2 g

Restriction

Restrictions results
& Due Diligence

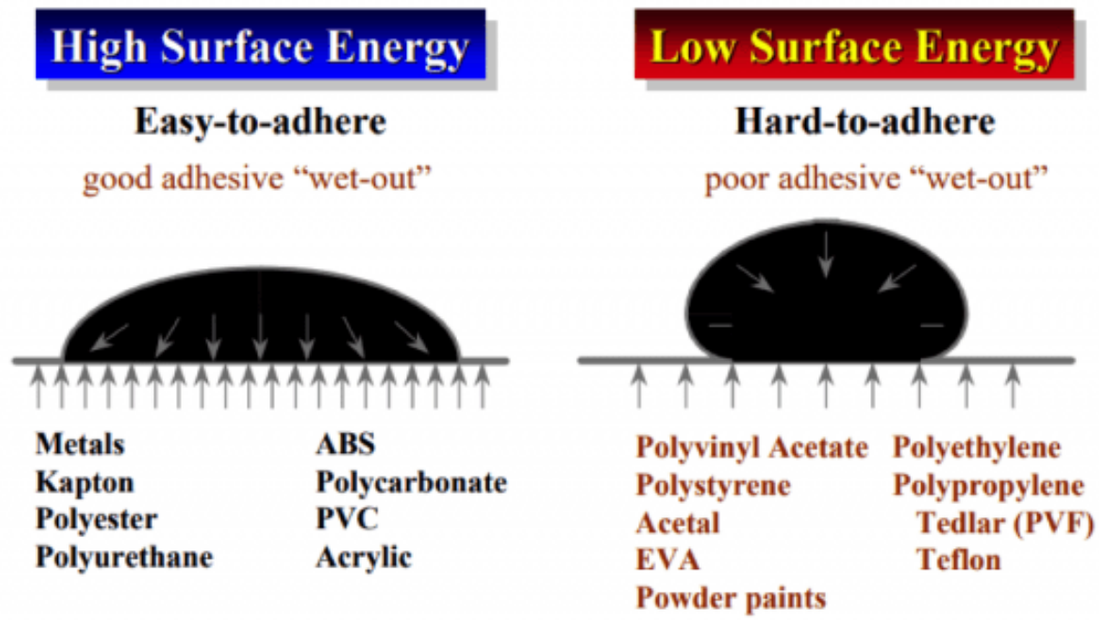
Why are Fluoropolymers so Useful

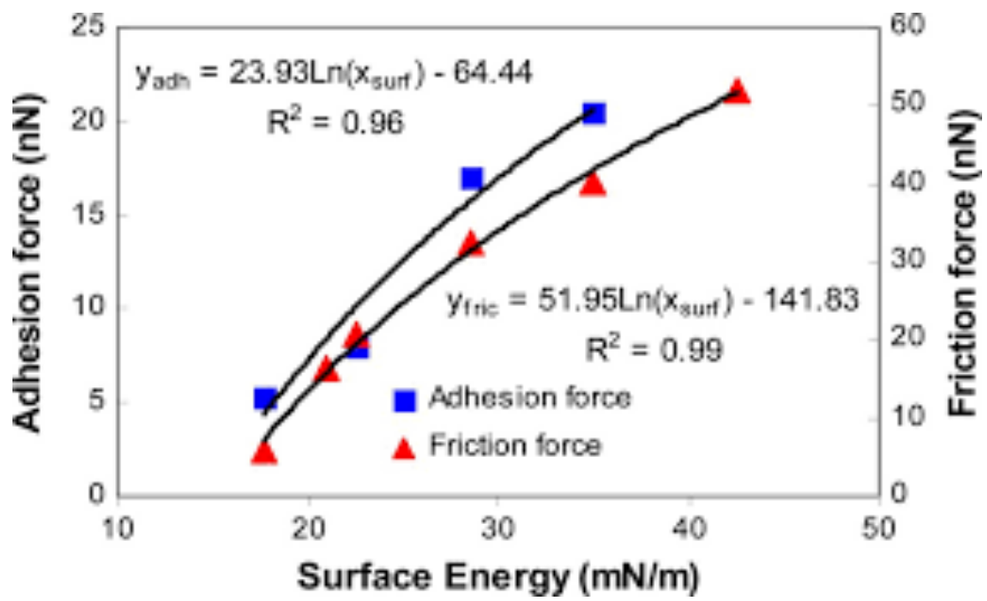
- Very low surface energy
  - Water repellent (hydrophobic)
  - Low friction

Solid Surface	Critical Surface Tension (mN/m)
Polytetrafluoroethylene (PTFE)	18.5
Silicone	24
Poly (vinylidene fluoride)	25
Polyethylene (PE)	31
Polypropylene (PP)	31
Polystyrene	33
Poly (vinly chloride)	39
Nylon-6,6	43
Poly (ethylene terephthalate) (PET;Polyester)	43
Aluminum	~500
Glass	~1000
Iron Oxide	~1350

Surface energies of common substances

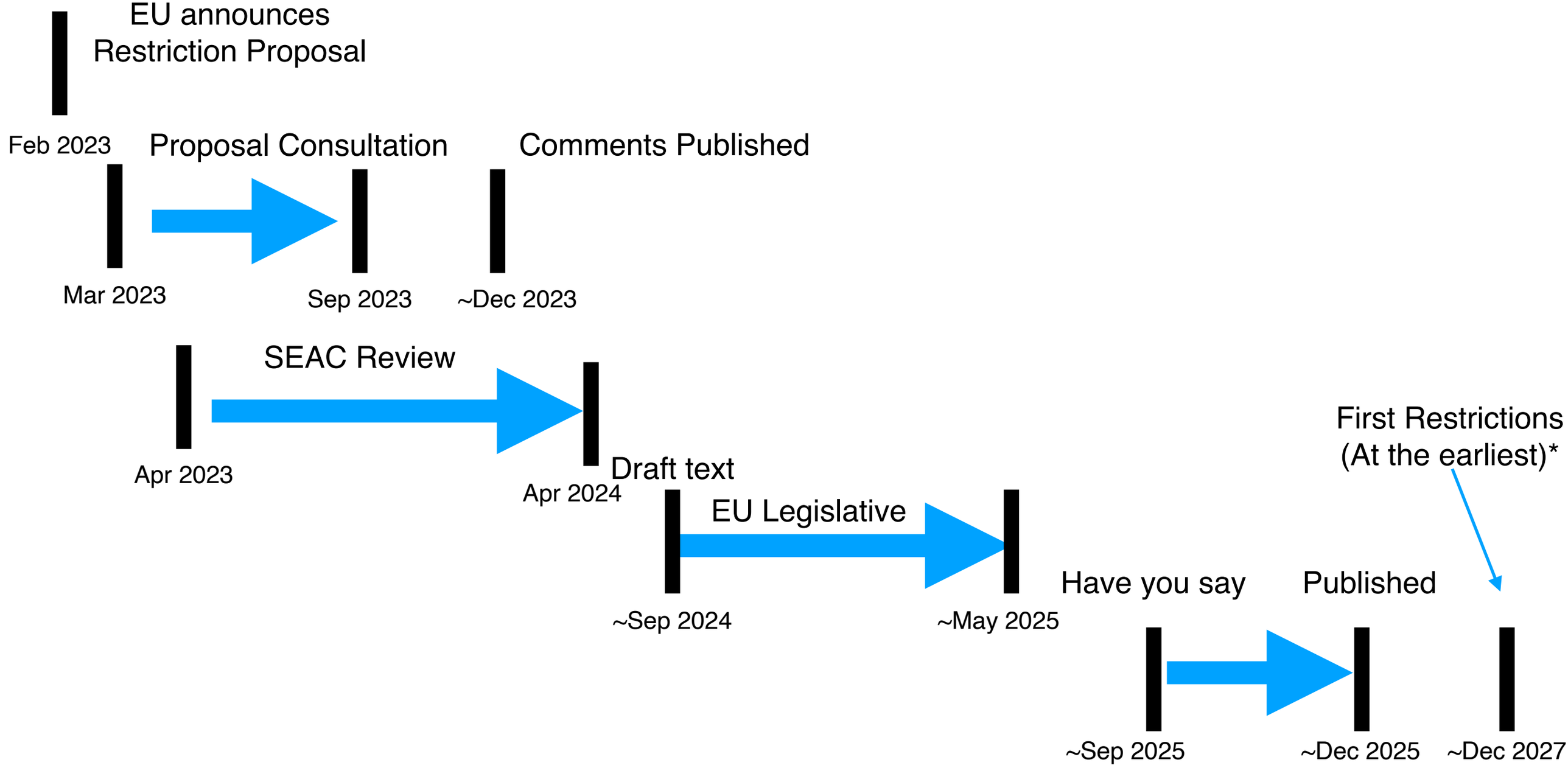
Ref: Adhesion and Adhesives: Science and Technology;
Anthony J. Kinloch, New York: Chapman and Hall (1987)





Timeline for EU PFAS Ban

- EU is promoting that proposed ban will be broad
  - Proposed version to be presented February 7 2023



*Note - industries such as medical devices, if in scope - any restrictions ~2030

PFAS Nomenclatures

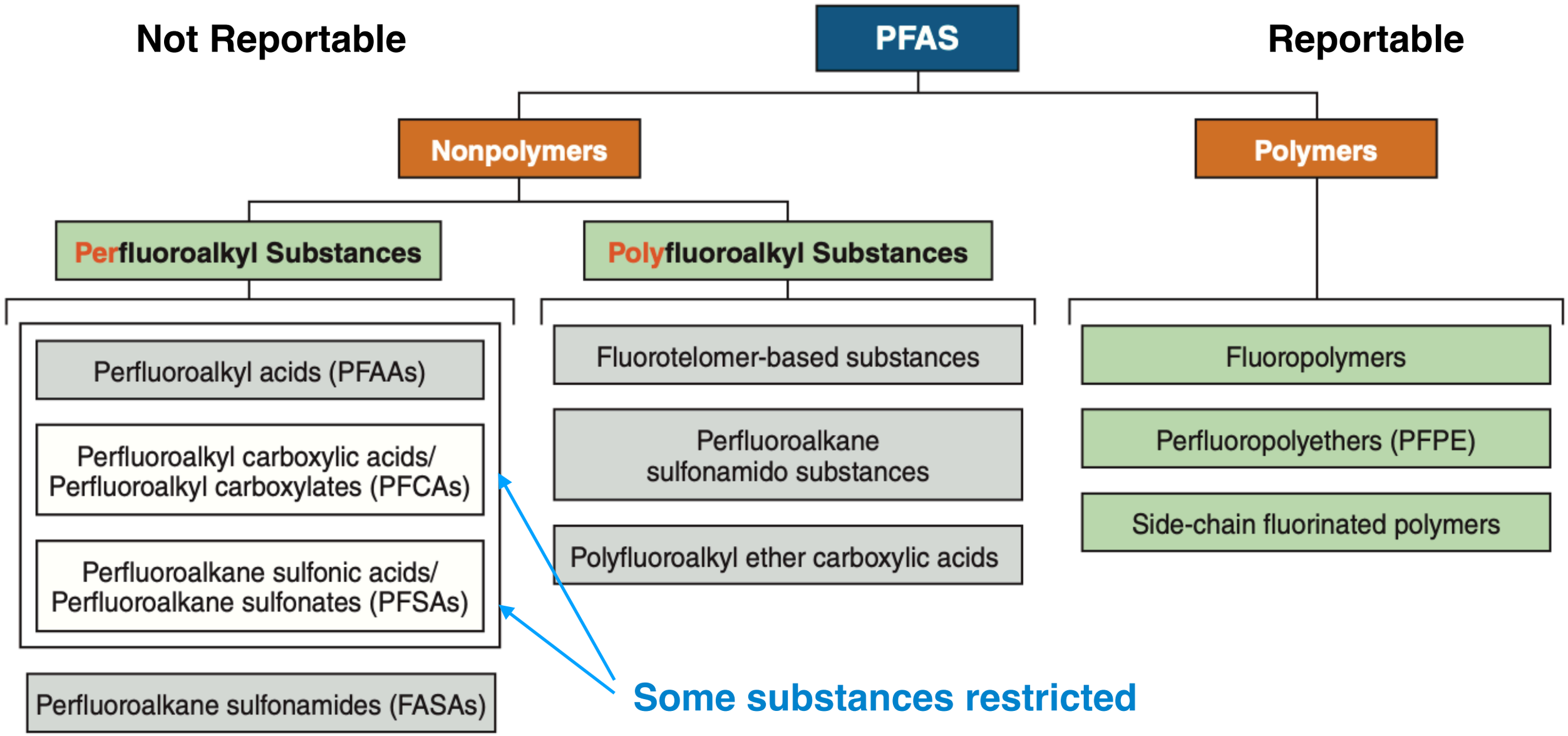


Figure 2-1. Summary of PFAS families

Overall Main Uses of PFAS

Quality issue expected

Likely main source in drinking water

PFAS Use	Description
Heat Transfer and Refrigeration Fluids	Fluids to transfer heat in large scale electronics
Fire Suppression Fluids	Aqueous fire fighting foams
Solvent Cleaning and Degreasing	Degreasing of machined or electroplated parts
Fluoropolymer Powder	Powder for curing into solid fluoropolymers
Fluoroelastomer	Fluorinated vulcanized rubber
PTFE Grease	PTFE powder suspended in mineral or silicone oil
Liquid and Stain Repellant	Side chain polymers for water and stain repellency
Cosmetics	‘Silky’ makeup additives in high spf makeups
Chemical Resistant Plastic	Fluorinated polyethylene containers
Halogenated Flame Retardant	Fluorinated flame retardant (primarily in polycarbonate or Li batteries)

Main Uses in Physical Products Part I

- PFAS as a solid polymer
  - Powder cured / fused into
    - Solid part (ex. PTFE part)
    - Solid coating (ex. Teflon pan)
  - *PFOA may be present as a residual from powder manufacturing*

Cured at ~400C

Solid part

Or

Coated metal

Main Uses in Physical Products Part 1b

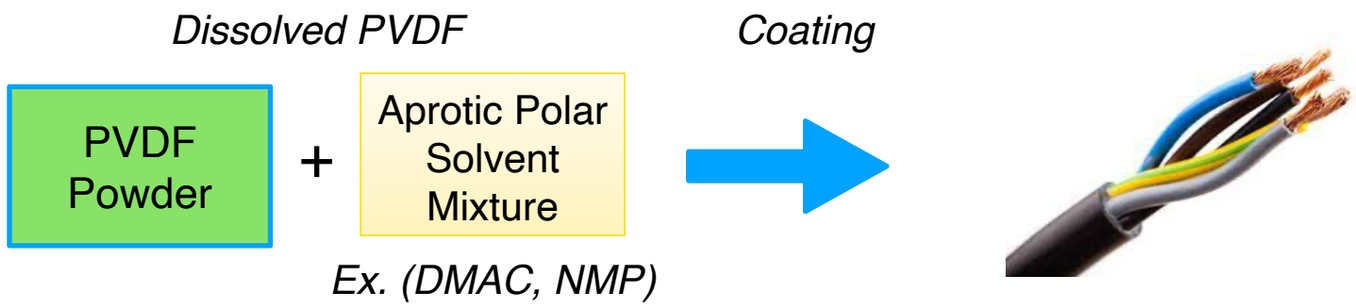
- PTFE Tape
  - Formed into a solid PTFE cylinder
  - Then 'skived' into a film or tape
  - *PFOA may be present as a residual from powder manufacturing*

Peeling of film from solid PTFE

Tape

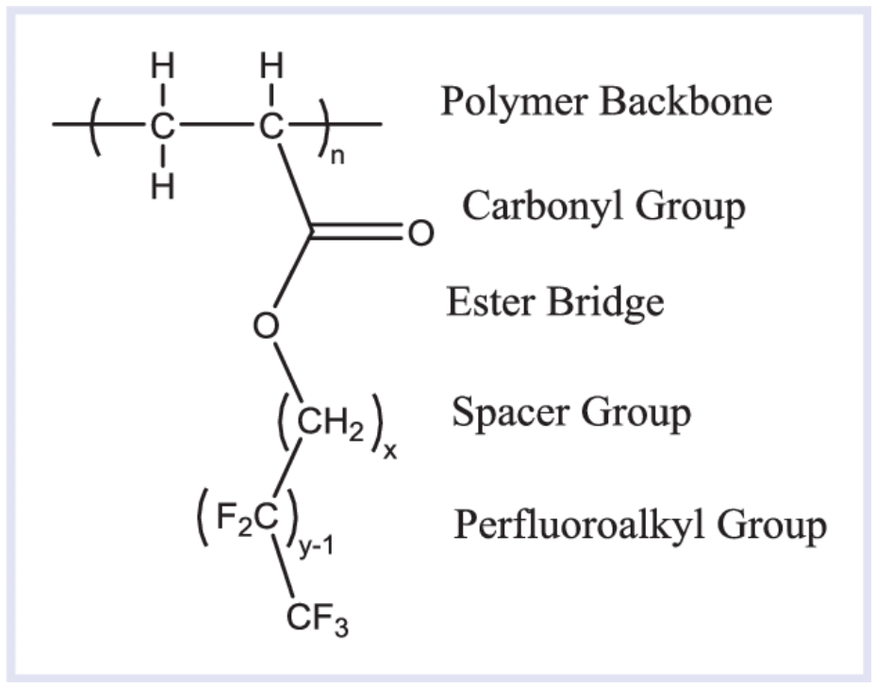
Main Uses in Physical Products Part 1c

- PVDF Coatings
  - PVDF powder dissolved into aprotic polar solvent mixture
  - Coating on plastic (such as wire, cable, or the internal paper strain relief)
    - Then dried to remove solvent
  - *PFOA may be present as a manufacturing residual of powder*



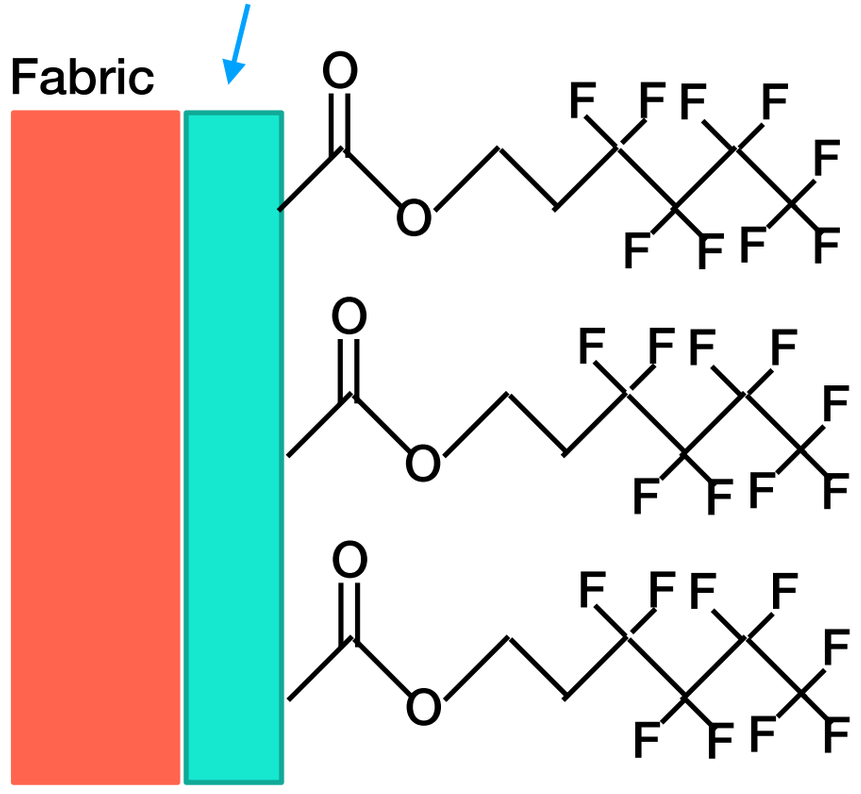
Main Uses in Physical Products Part 2

- PFAS as a 'side chain polymer'
  - Acrylic or other polymer
    - With chains of PFAS extending from polymer
    - *PFOA may be present as an impurity from PFAS side chain*
  - Example - water repellant coatings



Side chain PFAS

Acrylic polymer



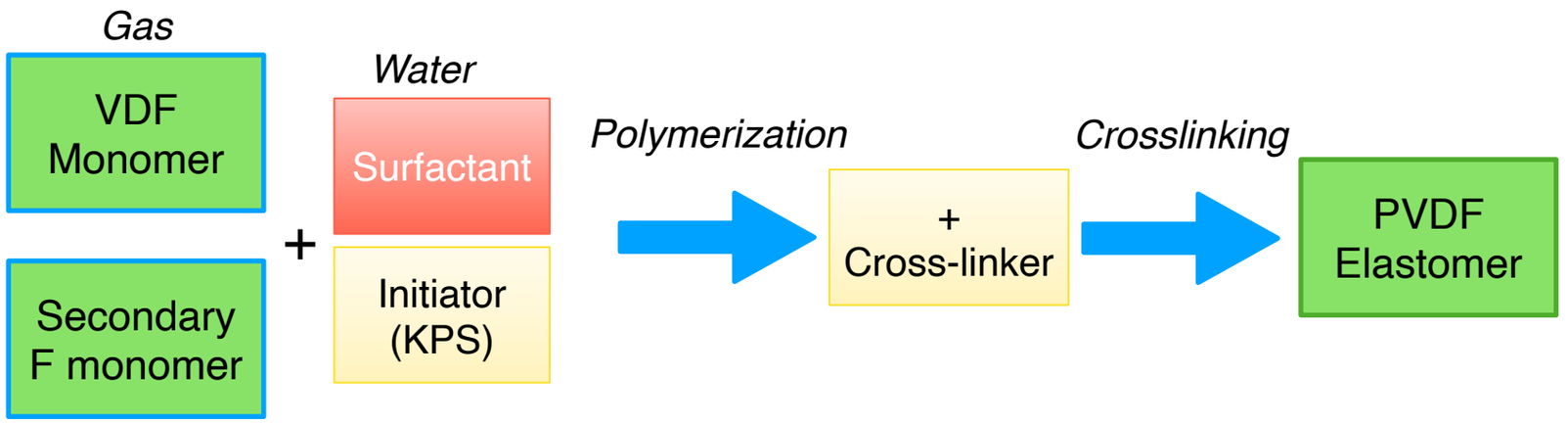
Side Chain PFAS

Main Uses in Physical Products Part 3

- PTFE Grease
  - PTFE powder suspended in mineral oil or silicone oil
  - *PFOA may be present from powder manufacturing*

Main Uses in Physical Products Part 4

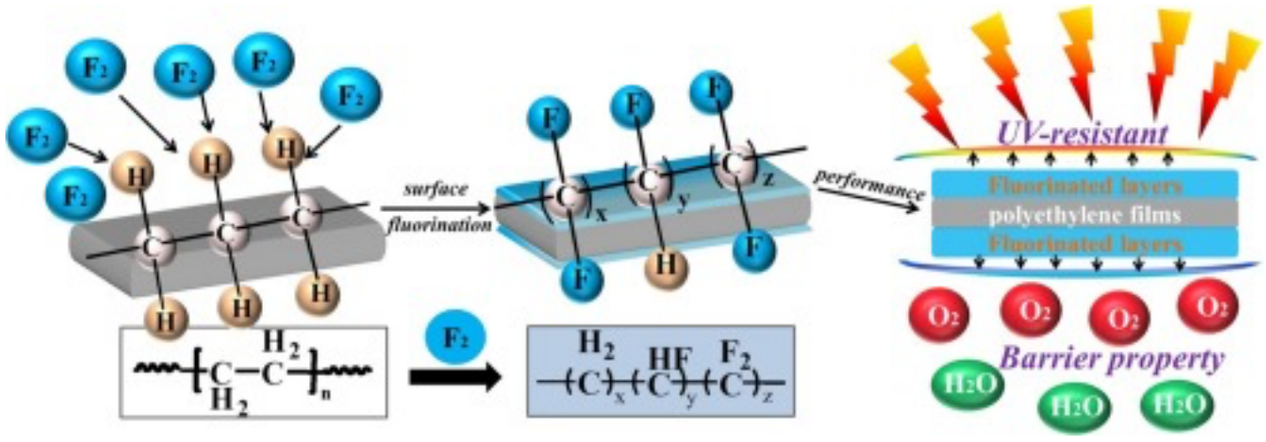
- Fluoroelastomer
  - FKM emulsion polymerized with another fluoro monomer
    - With a surfactant such as PFOS and a cross linker (peroxide or BPA-AF)



Main Uses in Physical Products Part 5

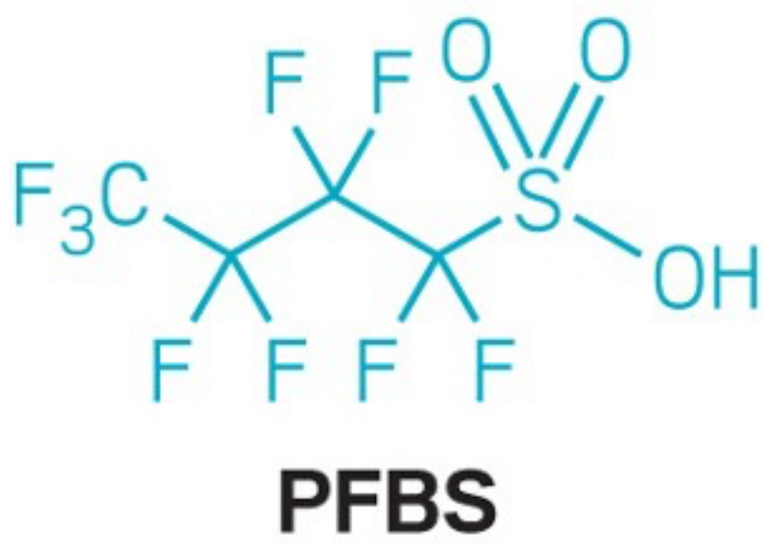
- PFAS formed by fluorinated and oxygenating polymers
  - Example - fluorinated polyethylene
    - Bombarding polyethylene with fluorine and oxygen gases
    - Creates chemically resistance polyethylene container
    - *PFOA can be unintentionally created*

Bombarding polyethylene with F_2 and O_2



Main Uses in Physical Products Part 6

- Fluorinated Flame Retardant
  - PFBS in polycarbonate



PFBS

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Potassium Nonafluorobutanesulfonate	29420-49-3	95 - 100 Trade Secret *
Potassium Hydrofluorobutanesulfonate	None	1 - 5

PFAS Reporting - Repeated

- **Standard data to be reported**
  - *By product or product family*
  - Description of the product including
    - Brief description
    - Tariff code
    - Intended use
  - Purpose of PFAS used
  - PFAS substances
    - Weight
    - By CAS#
  - Contact information
    - Name and address of company
    - Name and contact information of contact person

PFAS Compliance Process

Products

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4 to 6 weeks

Reporting

Product	Air Samplers	Carrying Bags
Description	Professional air sampler for industrial gases	Carrying bags for air samplers
Purpose	PTFE tape is a polytetrafluoroethylene (PTFE) film tape commonly used in plumbing for sealing pipe threads. The tape is sold cut to specific widths and wound on a spool, making it easy to wind around pipe threads. Thread seal tape lubricates allowing for a deeper seating of the threads, and it helps prevent the threads from seizing when being unscrewed. The tape also works as a deformable filler and thread lubricant, helping to seal the joint without hardening or making it more difficult to tighten	Durable water repellent, or DWR, is a coating added to fabrics at the factory to make them water-resistant
PFAS	polytetrafluoroethylene (PTFE)	Fluorochemical Acrylate Copolymer
PFAS CAS#	9002-84-0	Undisclosed
Weight (g)	2.2 g	0.2 g

Restriction

Restrictions results
& Due Diligence

Claigan Practical Version (SCIP Process)

Start

Phase 1
Establishing the Basics

Web Demonstration

Product templates

Component Templates

IUCLID File

We show you how to do it

Main Project

Phase 2
Building SCIP for all products

Internal work

Supported by Claigan

And / or

Claigan creates SCIP file

Claigan completes the work

We complete the IUCLID files for all of your products

Registration

Phase 3
Registration

Registration into IUCLID

Drag / Drop

+

SCIP Number Tracking

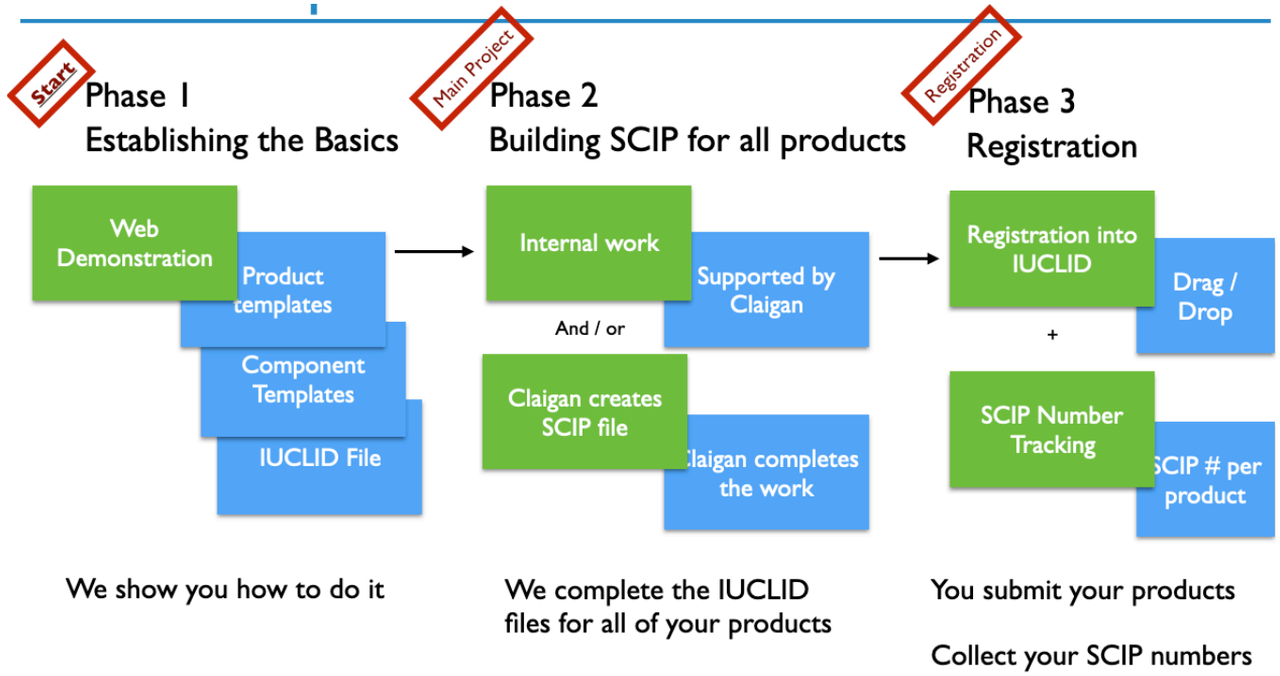
SCIP # per product

You submit your products

Collect your SCIP numbers

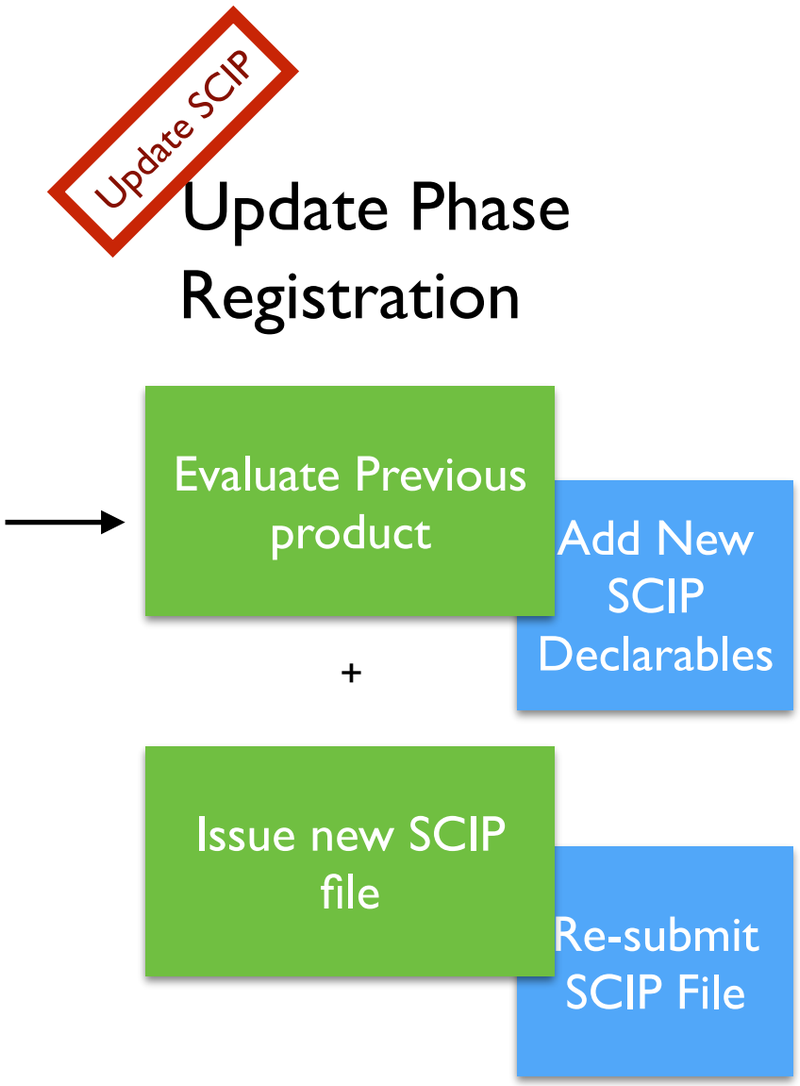
Claigan Practical Version
SCIP Update Process

Claigan



Includes previous declarations from

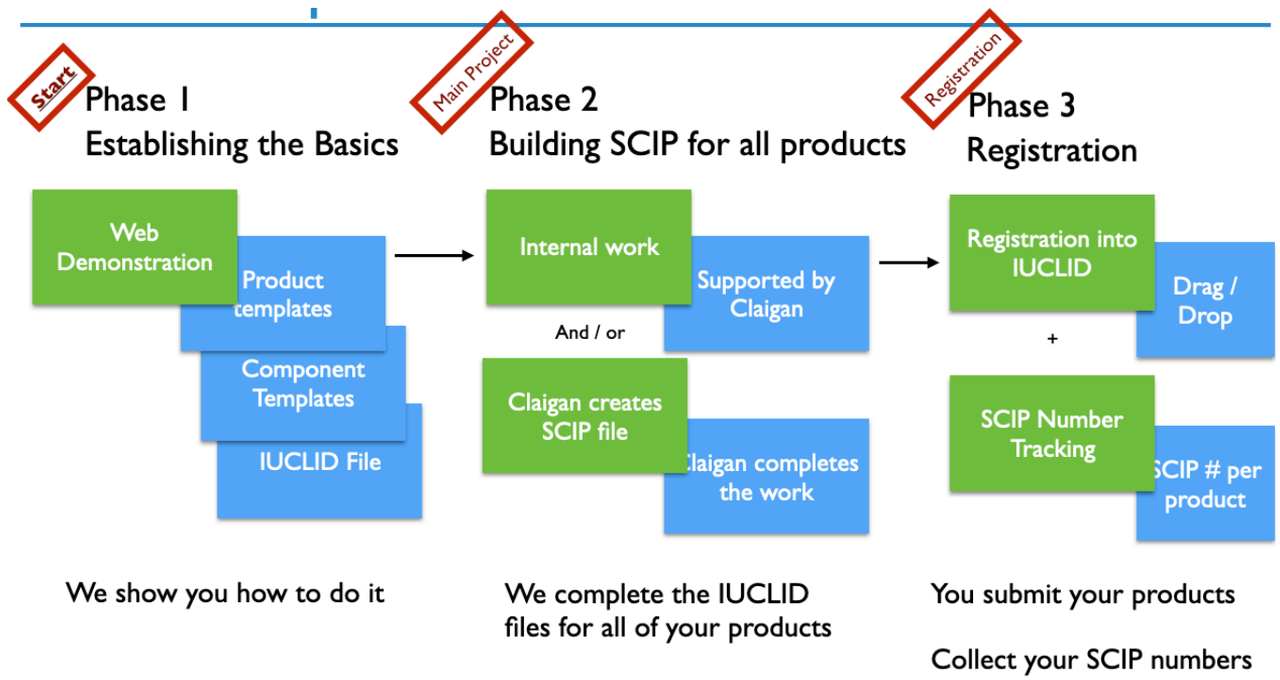
- Testing,
- Engineering evaluation, or
- Supplier data gathering



We review your product and update SCIP declarable

We provide a new SCIP file to submit

Claigan Practical Version
SCIP Update Process



Includes previous declarations from

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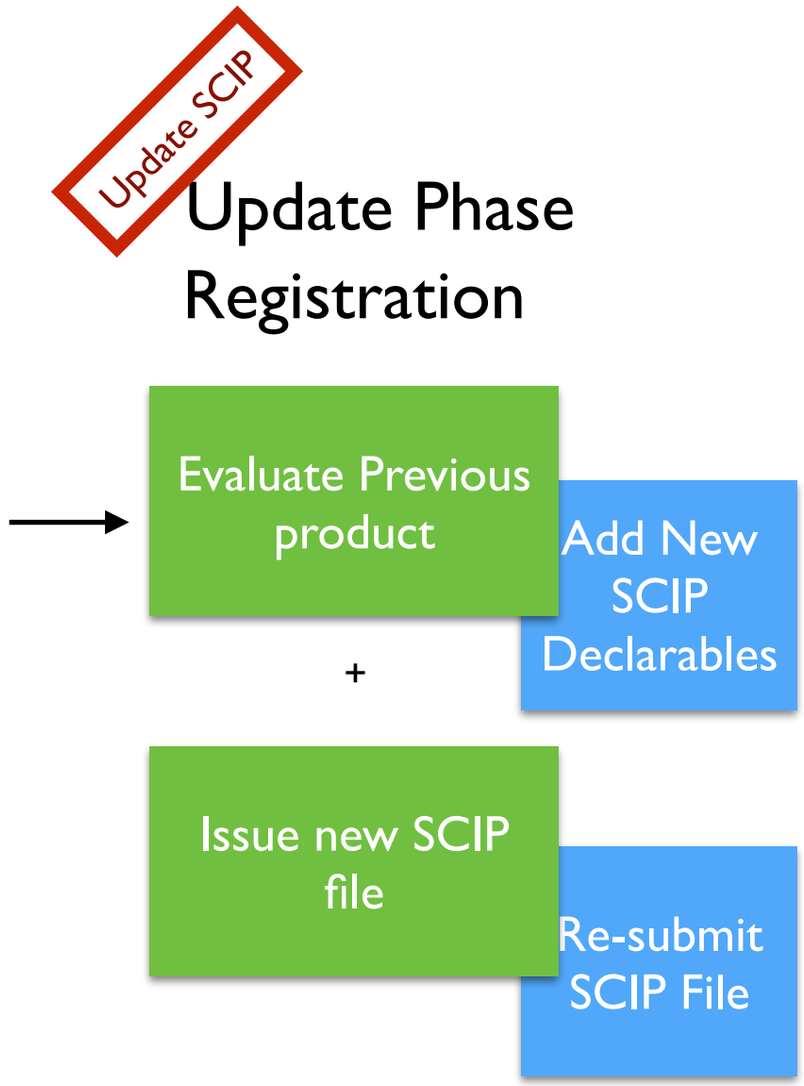
Q&A



We review your product and update SCIP declarable

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