

BREAKOUT SESSIONS: REGULATORY RECOMMENDATIONS

PRE-1000 Tool

Andromeda Scoppio, Regulatory Affairs Advisor
Plastics Recyclers Europe (PRE)



Funded by
the European Union

Andromeda Scoppio

PRIMUS project
www.primus-project.eu

*Regulatory Affairs Advisor
Plastics Recyclers Europe
(PRE)*



Andromeda Scoppio holds a PhD in Materials Science and is a **Regulatory Affairs Advisor** at Plastics Recyclers Europe (PRE) in Brussels.

With expertise in chemicals legislation, project management, and materials science, she focuses on **regulatory policies related to chemicals and plastic waste, with specific focus on electronics.**

Moreover, on behalf of PRE, Andromeda works on technical projects aimed at enhancing plastic waste circularity.

REGULATORY RECOMMENDATIONS

PRE-1000 Tool

OBJECTIVE

The objective of this session is to highlight **key findings from the PRIMUS project on monitoring substances of concern in recycled plastics**. It will include an in-depth exploration of the **PRE 1000 tool**, a PRE monitoring system for substances, along with results from its **implementation** within PRIMUS. Lastly, the session will gather **feedback on ensuring the sustainability and continuity** of these results beyond the project's completion.

AGENDA

1. PRIMUS Project, WP1 & Related Tasks
2. What is the PRE 1000 Method?
3. PRE 1000 x PRIMUS
4. What's Next?



PRIMUS
FINAL
EVENT

PRIMUS PROJECT, WPI & RELATED TASKS



HORIZON EUROPE GA No. 101057067



Funded by
the European Union

PRIMUS AT A GLANCE



PRIMUS will increase the sustainable use and production of quality, safe and circular plastic recyclates in added value products, focusing on traceability to increase transparency in the plastics value chain.

WP1

Objective 1

Map the current **legal framework** surrounding the **waste to product** interface to compile an EU broad **definition of recyclate**.

Objective 2

Validate, standardize and promote the **PRE 1000** among recyclers to ensure recyclate **compliance to product legislation**

Objective 3

Assess and create **guidance for food contact material status** by means of substance risk assessment with the concrete case of **recycled HIPS from the refrigerator stream**



WHAT IS THE PRE- 1000 METHOD?



PRE 1000 IN A NUTSHELL

The PRE 1000 is a voluntary industry standard and online tool developed to guide plastics recyclers in efficiently monitoring substances of concerns in their products, according to the chemicals legislation(s)

PRE - 1000

POLICY BRIEF

OVERVIEW

Plastics Recyclers Europe (PRE), the trade association representing European recyclers, developed the PRE-1000 voluntary industry standard to enable recyclers to verify compliance of recyclates with the applicable chemicals legislation in a cost-effective manner. This method is meant to be integrated into the quality control procedure already present at recyclers' facilities. Recyclers are companies that purchase waste and place a product on the market, thus they need to ensure that this product is compliant with product regulation and fulfils the end of waste criteria of the Waste Framework Directive. The existing legislative and regulatory framework sets the following requirements on substances: a recycler that places a substance or mixture on the market as a product must inform its customer if there is a 'substance of very high concern' (SVHC) present within the material above its regulatory cutoff value (often >0.1%).



SUBSTANCES INCLUDED IN THE PRE-1000 METHOD

Relevant legislation

REACH SHVCs

SVHCs are not strictly prohibited, but if a substance is present above the 0.1% threshold, the supplier is obliged to communicate this information to the customer.

Restriction REACH

The REACH restriction procedure is designed to deal with a particular EU-wide risk arising from the use of a substance.



POP Substances

Substances included first in the Stockholm Convention. The EU then incorporates these substances into its POPs regulation and establishes two limits:

- Unintentional Trace Contaminant (UTC) with which this product must comply
- Low POP content limit (LPCL), waste containing more than this level must be destroyed

RoHS Substances

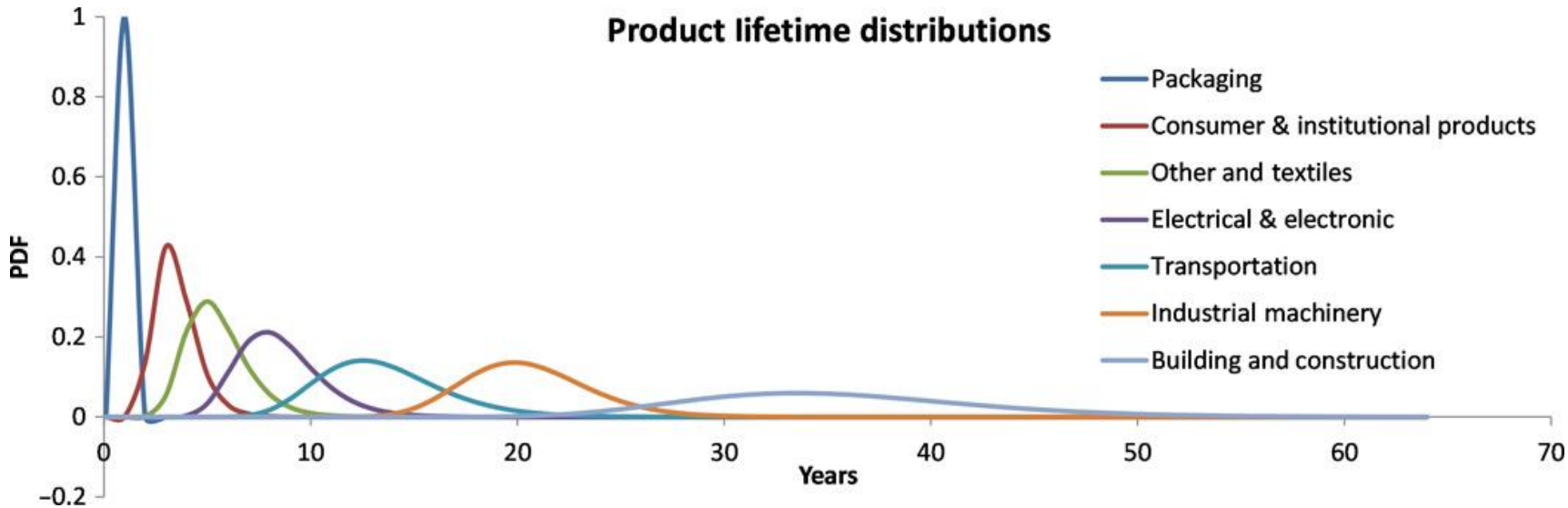
Restriction of Hazardous Substances (RoHS) restricts the use of certain substances in electrical and electronic equipment (EEE).

In principle, the obligation falls on the manufacturer of the final article.

However, obligations can be transferred upstream through specifications.

THE KEY PROBLEM

Product lifetime



Product lifetime distributions for the eight industrial use sectors plotted as log-normal probability distribution functions

Geyer, Jambeck and Law (2017) - [Production, use, and fate of all plastics ever made](#)

KEY FACTS

- THE COMPLIANCE WITH THE CHEMICAL LEGISLATION IS DIFFICULT TO REACH DUE TO THE **LONG PRODUCT LIFETIME IN SPECIFIC SECTORS.**
- THE BANNED SUBSTANCE WILL CONTINUE TO FIND THEIR WAY IN THE **INPUT MATERIAL OF THE RECYCLER** EVEN IF THEY ARE NOT USED ANYMORE.
- OUR JOB IS TO FIND THE BEST ENVIRONMENTALLY SOUND MANAGEMENT OF THIS PLASTIC WASTE STREAMS.

PRODUCT COMPLIANCE

How to navigate the many requirements?

THE SOLUTION:

A TIME & COST-EFFECTIVE MONITORING
TOOL



The PRE 1000 method was developed to address different issues at several levels

THE CHALLENGES

Covering Customer Requests about substances

Compliance with Legal Obligations on Substances in products

Meeting the End-of-Waste Criteria d

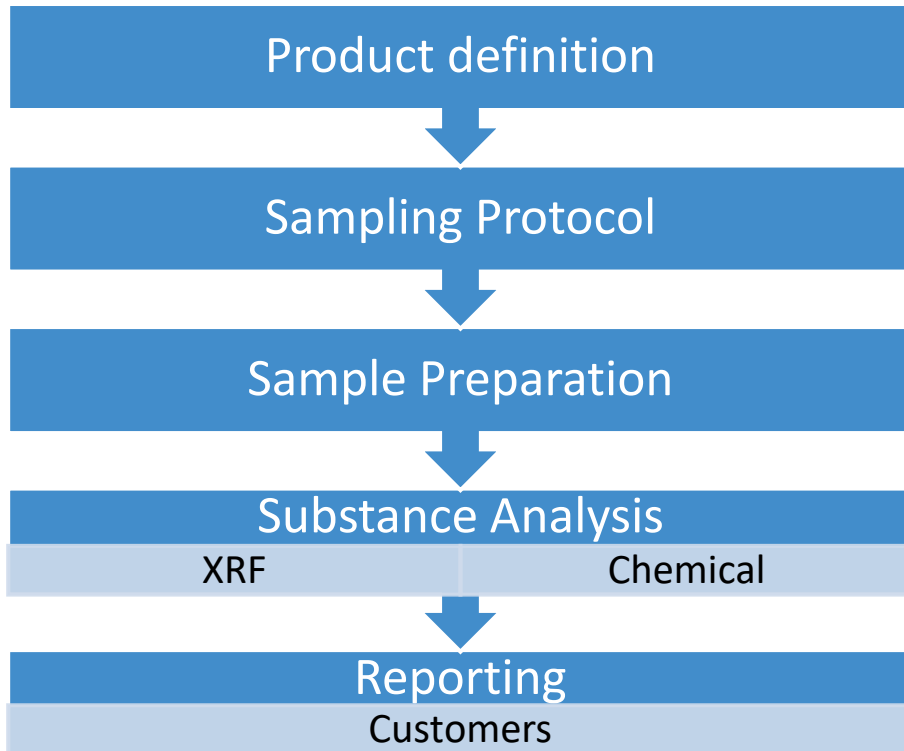
Tackling Practical Issues in Quality Control

What to test?

How often?

...and more

THE STANDARD



PRE 1000-2 Specification for Substances of Concern
 Analysis of Recyclate Product originating from plastics
 from household collection, post-production,
 agriculture, and commerce
 Version v1.0 May 2020

Table of Contents

1. Introduction.....	2
2. Scope	2
3. Terms and definitions.....	2
4. Overview of standard.....	2
5. Product Definition	2
6. Sampling protocol.....	4
6.1 Protocol for extruded product streams.....	4
6.1.1 Population(s)	4
6.2 Number of Samples and size of the sample.....	4
6.3 Protocol for non-extruded product streams.....	4
6.3.1 Population(s)	4
6.3.2 Number of Samples	4
6.3.3 Size of the samples	4
6.3.4 Principle of sampling	5
7. Sample Preparation.....	6
7.1 Mixed Sample Preparation.....	6
7.2 Mixed sample reduction.....	6
7.3 Packaging and sending of reduced samples.....	7
7.4 Plaques production.....	7
8. Analysis.....	7
8.1 XRF Screening.....	8
8.2 Chemical Analysis.....	9
8.2.1 Triple quad LCMS-screening.....	9
8.2.2 Thermal extraction GCMS	9
9. Reporting.....	10
9.1 Customer Declaration.....	10
9.2 Reporting to PRE.....	10
Annex I: Customer Declaration Template	11
Substances of Concern Declaration.....	12

- Recyclers need to define their products as a combination of **input stream** and **output (polymer)** streams. e.g. Fridge PS, ELV Shred PP
- For each product (batch), **sampling** should be performed that is representative of the batch according to defined methodology
- Key is the **homogenization** of strongly heterogeneous material such as plastics flakes by **extrusion** into **plaques**
- Analysis** should be done for those substances that can be present in the waste stream.


THE TOOL

Defining regulated substances

- PRE 1000 currently includes as **Substances of Concern (SoC)**: REACH SHVCs, Substances covered under relevant REACH restrictions*, POP Substances, RoHS Substances
- The standard comes with a Excel Tool in which each SoC is listed along with information on **threshold values** in regulation and information on **whether** the substance **can be present** in plastics waste
- For the information on whether the substance can be present in plastics waste, each substance was **evaluated** by PRE based on:
 - Phys-chem properties
 - Technical function
 - Additivation rates
 - Evidence of historic use
 - Polymer Specificity

* Restrictions not applicable to plastics are excluded (e.g. content limit for lead in jewelry is irrelevant)

WHAT'S LEFT AFTER THE EVALUATION?



Some substances will be not excluded based on their properties only.

For instance, BFRs found in WEEE/ELV will not be excluded from the literature/research criteria only

THE REMAINING SUBSTANCES MUST BE EXCLUDED EITHER BY XRF SCREENING AND/OR CHEMICAL ANALYSIS.

This approach narrows down the number of substances to be tested, so fewer chemical analyses to be performed, hence both time and cost savings

PRE 1000 TOOL: OVERALL APPROACH TO SUBSTANCE DETECTION

Can SoC be in recyclates?

DATABASE (300+ SoC)

SUBSTANCE EVALUATION

- Phys-Chem Properties
- Technical function
- Additivation rates
- Evidence of historic use
- Polymer Specificity
- Proof of Absence

Step 1

SoC CANNOT BE EXCLUDED BASED ON THEIR PROPERTIES ONLY?

XRF SCREENING

Checks if concentration of certain elements is low enough to exclude the possibility that SoC present above the regulatory limit value

Step 2

SoC CANNOT BE EXCLUDED BASED ON PROPERTIES+XRF?

CHEMICAL ANALYSIS

GC-MS
LC-MS

Step 3



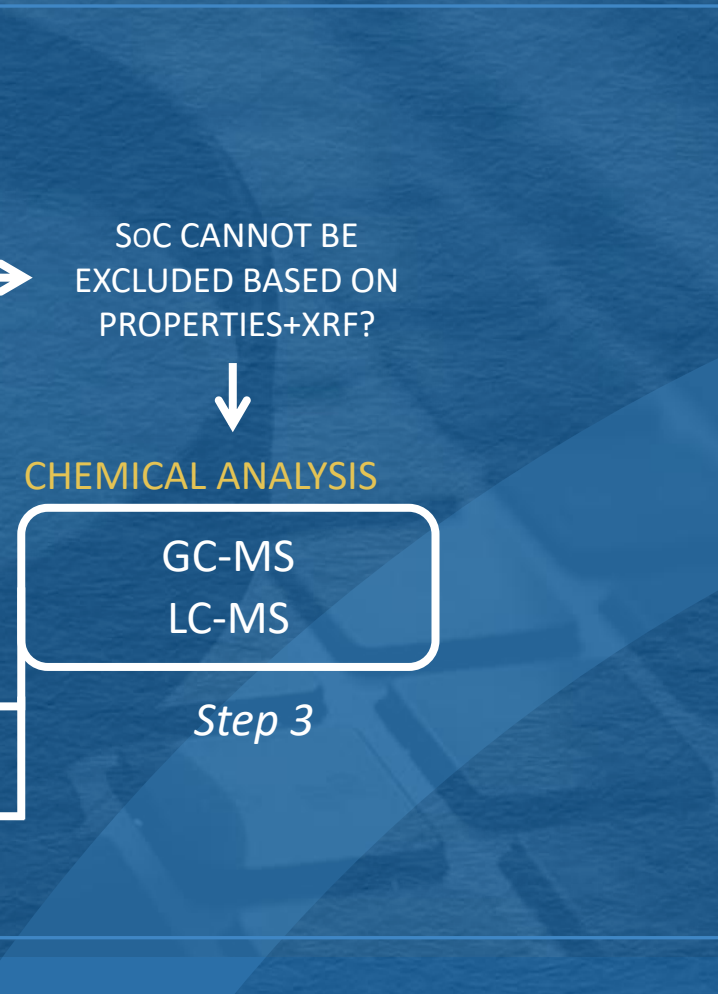
MATERIAL COMPLIANT

SoC CAN BE EXCLUDED?



MATERIAL 'NOT COMPLIANT' (OR SUBJECT TO ADDITIONAL REQUIREMENTS)

SoC CANNOT BE EXCLUDED?



KEY MESSAGES

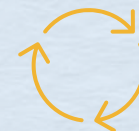
PRE 1000 enables recyclers to assess substances of concern in a cost effective and reliable manner. The method was designed for a long-term monitoring.



Monitoring and tracking for SoCs is essential to build trust in the recyclate market and access higher quality markets.



Increased credibility throughout the value chain by enabling a proactive approach to the plastic recycling industry.



PRE-1000 X PRIMUS KEY FINDINGS



PRE-1000 X PRIMUS

Documents generated as outcome of the validation and use of PRE-1000 via the PRIMUS project

PRE - 1000 POLICY BRIEF

OVERVIEW

Plastics Recyclers Europe (PRE), the trade association representing European recyclers, developed the PRE-1000 voluntary industry standard to enable recyclers to verify compliance of recyclates with the applicable chemicals legislation in a cost-effective manner. This method is meant to be integrated into the quality control procedure already present at recyclers' facilities. Recyclers are companies that purchase waste and place a product on the market, thus they need to ensure that this product is compliant with product regulation and fulfils the end of waste criteria of the Waste Framework Directive. The existing legislative and regulatory framework sets the following requirements on substances: a recycler that places a substance or mixture on the market as a product must inform its customer if there is a 'substance of very high concern' (SVHC) present within the material above its regulatory cutoff value (often >0.1%).



Guidance report on recyclate-related standardisation: PRE 1000 and food contact materials

Task 1.2

PRE 1000: One EU standard to determine the quality and general product safety of recyclate

Task 1.3

Beyond general product safety towards Food Contact Material Status

 Funded by the European Union's Horizon Europe Programme under Grant Agreement No. 101057067



HORIZON EUROPE GA No. 101057067

VALIDATION OF PRE-1000 WITHIN PRIMUS

Sampling Strategy

- The PRE-1000 standard also includes **specific sampling protocols** and **sample preparation methods**.
- To ensure the results provided by the PRE-1000 tool were accurate, work has been undertaken in the PRIMUS project to **validate the approach**.



Sampling strategy

→ The aim was to **test and validate different sampling scenarios** and compare the analysis results to find the most robust method.

It is important to focus on each part of the methodology to eliminate the human error as much as possible and ensure repeatability.



VALIDATION OF PRE-1000 WITHIN PRIMUS

Sampling Study

Sampling Study

Two studies:

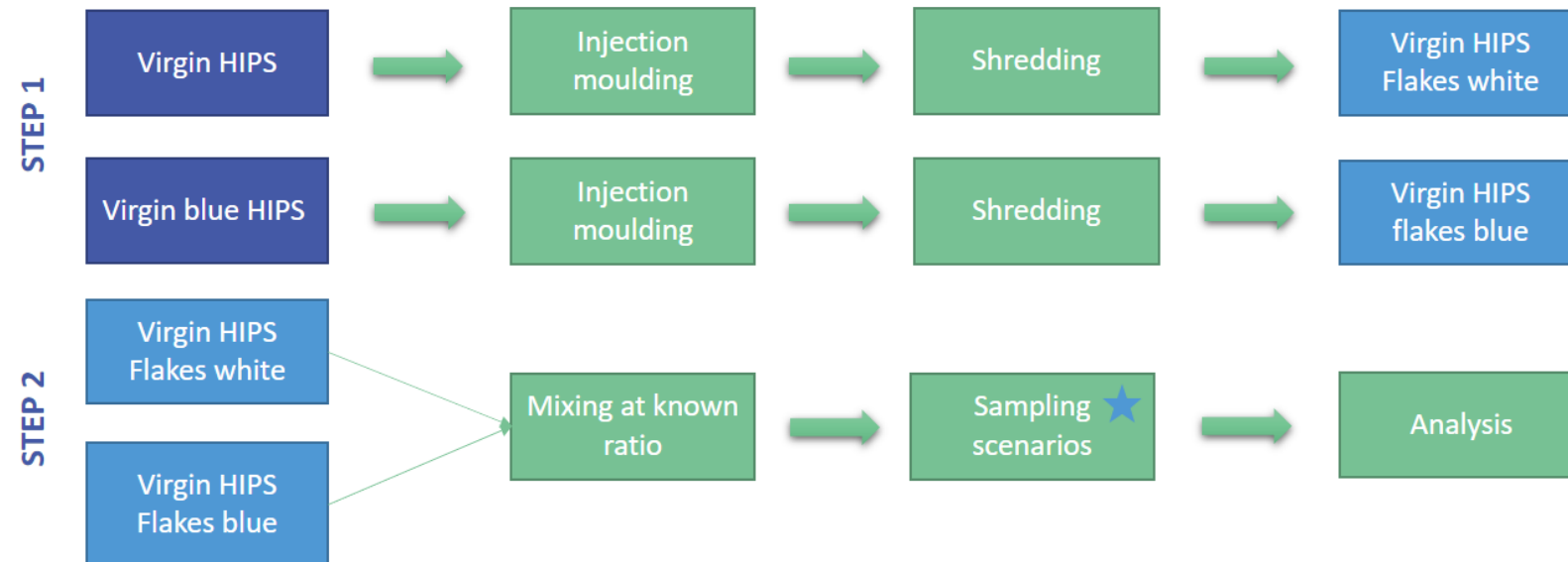
- **Visual study**

To determine which sampling strategy gives the most homogeneous output by visualization only.

- **Analytics study**

The different output from the different sampling strategies are analytically tested to identify whether the concentration of the output matches the one of the input.

Schematic representation of the experimental plan of the sampling study.



★ **Scenario for defining the best sampling strategy**

- Flakes → injection moulding → dog bones → analysis
- Flakes → extrusion → granulates → injection moulding → dog bones → analysis
- Flakes → cryogenic grinding → analysis
- Flakes → cryogenic grinding → extrusion → granulates → injection moulding → dog bones → analysis

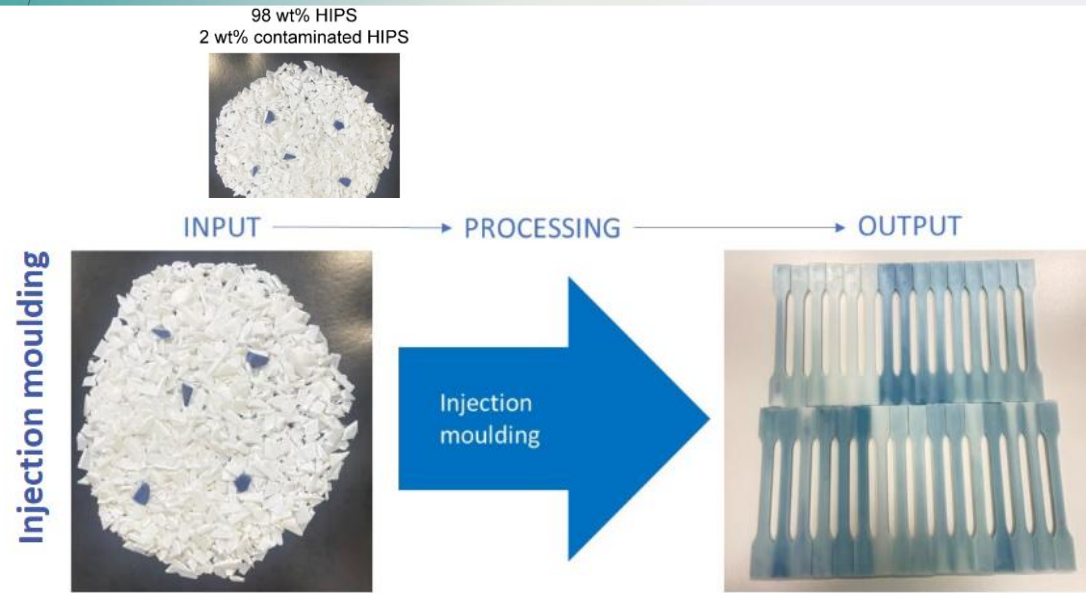


VALIDATION OF PRE-1000 WITHIN PRIMUS

Results

Visual Study

1



2



(e.g., visual inspection, DIP-MS, XRF)

Key takeaways

- Performing only an injection moulding step was not sufficient to obtain a representative sample.
- For instance, if the blue flake would contain a contaminant, it will not be spread evenly on the samples and therefore might lead to wrong interpretation.
- **The study has shown that the most promising sampling preparation in term of representativeness and cost-efficiency is a compounding step followed by an injection moulding step**

Four evaluated sampling scenarios and a visual comparison between the resulting tensile test specimens.

VALIDATION OF PRE-1000 WITHIN PRIMUS

Cross-check of Analytical Results & PRE 1000 ones

Moreover, **validation** of the PRE-1000 tool have been carried out according to the following method:

1. Selection of the samples
2. Analytical results on the samples
3. XRF results on the samples
4. Comparison of the data

Samples measured:

- ✓ S0007 ABS Container Park Plastics
- ✓ S0016 PS Mixed E&E Shred Temperature Exchange Equipment CRT Displays
- ✓ S0022 PS Mixed E&E/ELV Shred
- ✓ E0002 HDPE/LDPE Detergent bottles
- ✓ E0004 HDPE/LDPE Household Packaging
- ✓ T0009 PET Bottles
- ✓ P0035 PP/PO Household/Automotive/Commercial
- ✓ C0001 PVC Window frames
- ✓ C0006 PVC Pipes/Other construction profiles
- ✓ E0013 HDPE Household Packaging and caps and closures and milk bottles
- ✓ L0009 LDPE Household
- ✓ L0013 LDPE/LLDPE Commercial
- ✓ P0003 PP Small bins and crates
- ✓ P0011 PP Production



VALIDATION OF PRE-1000 WITHIN PRIMUS

Results



Sample Name	HBCDD			TBPPA		
	Analysis	PRE 1000	Validation	Analysis	PRE 1000	Validation
S0007 ABS	Weak	Not excl.		Very Weak	Not excl.	
S0016 PS		Not excl.		Very Weak	Not excl.	
S0022 PS		Not excl.		Weak	Not excl.	
T0009 PET		Excluded			Excluded	
P0035 PP/PO		Excluded			Excluded	
C0001 PVC		Excluded			Excluded	
C0006 PVC		Excluded			Excluded	



All samples for which a signal was recorded via the analytical tests (i.e., detecting a SoC) have not been excluded in the PRE 1000 tool, leading to the correct conclusion. As the PRE 1000 has implemented some intervals of confidence to ensure that the substances with a concentration near the threshold would not be excluded, two samples, despite not having any signal via analytical test, have not been excluded.



PRIMUS

WWW.PRIMUS-PROJECT.EU

**THE STUDY CONFIRMED
THE RELIABILITY OF THE
PRE 1000 TOOL AND
ESTABLISHED AN
OPTIMAL SAMPLING
METHOD AND
STANDARD FOR
ANALYSING RECYCLED
PLASTICS**



**Funded by the
European Union**

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.

HORIZON EUROPE GA No. 101057067

WHAT'S NEXT?



HOW TO ENSURE CONTINUED SUCCESS OF THE RESULTS FROM THE PRIMUS PROJECT IN MONITORING SOCS IN RECYCLED PLASTICS?

- **Establish a "Post-PRIMUS" Plan:** Develop a plan to ensure that the monitoring of substances in recycle plastics continues after the project's conclusion.
- **Integrate PRE 1000 Tool into Industry Standards:** Work as an industry association with regulatory bodies to incorporate the PRE 1000 tool and its methodologies into official guidelines.
- **Develop a Continuous Improvement Framework:** Use the results from the PRIMUS project as a basis for a continuous improvement framework, incorporating lessons learned and emerging challenges.
- **Keep Monitoring the Effectiveness of the PRE 1000 Tool:** Regularly assess the tool's performance to make necessary adjustments to improve its effectiveness.



ANY QUESTIONS?



BREAKOUT SESSIONS: REGULATORY RECOMMENDATIONS

POPs Regulation

Ana Rita Neiva, Plastics Engineer
Coolrec

Andromeda Scoppio, Regulatory Affairs Advisor
Plastics Recyclers Europe (PRE)



Funded by
the European Union

Andromeda Scoppio

PRIMUS project
www.primus-project.eu

*Regulatory Affairs Advisor
Plastics Recyclers Europe
(PRE)*



Andromeda Scoppio holds a PhD in Materials Science and is a Regulatory Affairs Advisor at Plastics Recyclers Europe (PRE) in Brussels. With expertise in chemicals legislation, project management, and materials science, she focuses on regulatory policies related to chemicals and plastic waste, with specific focus on electronics. Moreover, on behalf of PRE, Andromeda works on technical projects aimed at enhancing plastic waste circularity.

Ana Rita Neiva

PRIMUS project
www.primus-project.eu

*Plastics Engineer
Coolrec*



Ana holds a master's degree in Polymer Engineering and specializes in tailoring polymeric materials. During her academic research, she developed more sustainable products for food packaging and recycled plastics in automotive applications. With a career developed in the recycling sector, she currently works as a Plastics Engineer at Coolrec Plastics carrying out several innovation projects.

REGULATORY RECOMMENDATIONS

POPs Regulation

OBJE CTIVE

The objective of this session is to provide a comprehensive **overview of the Persistent Organic Pollutants (POPs) Regulation**, its implications for recycled plastics, and the **challenges** posed by low concentration limits on the **WEEE** (Waste Electrical and Electronic Equipment) recycling industry

This session essentially aims to foster a shared understanding of the **evolving regulatory landscape** and explore practical approaches to ensure both environmental safety and a sustainable recycling sector.



PRIMUS
FINAL
EVENT

POPS REGULATION



HORIZON EUROPE GA No. 101057067



Funded by
the European Union

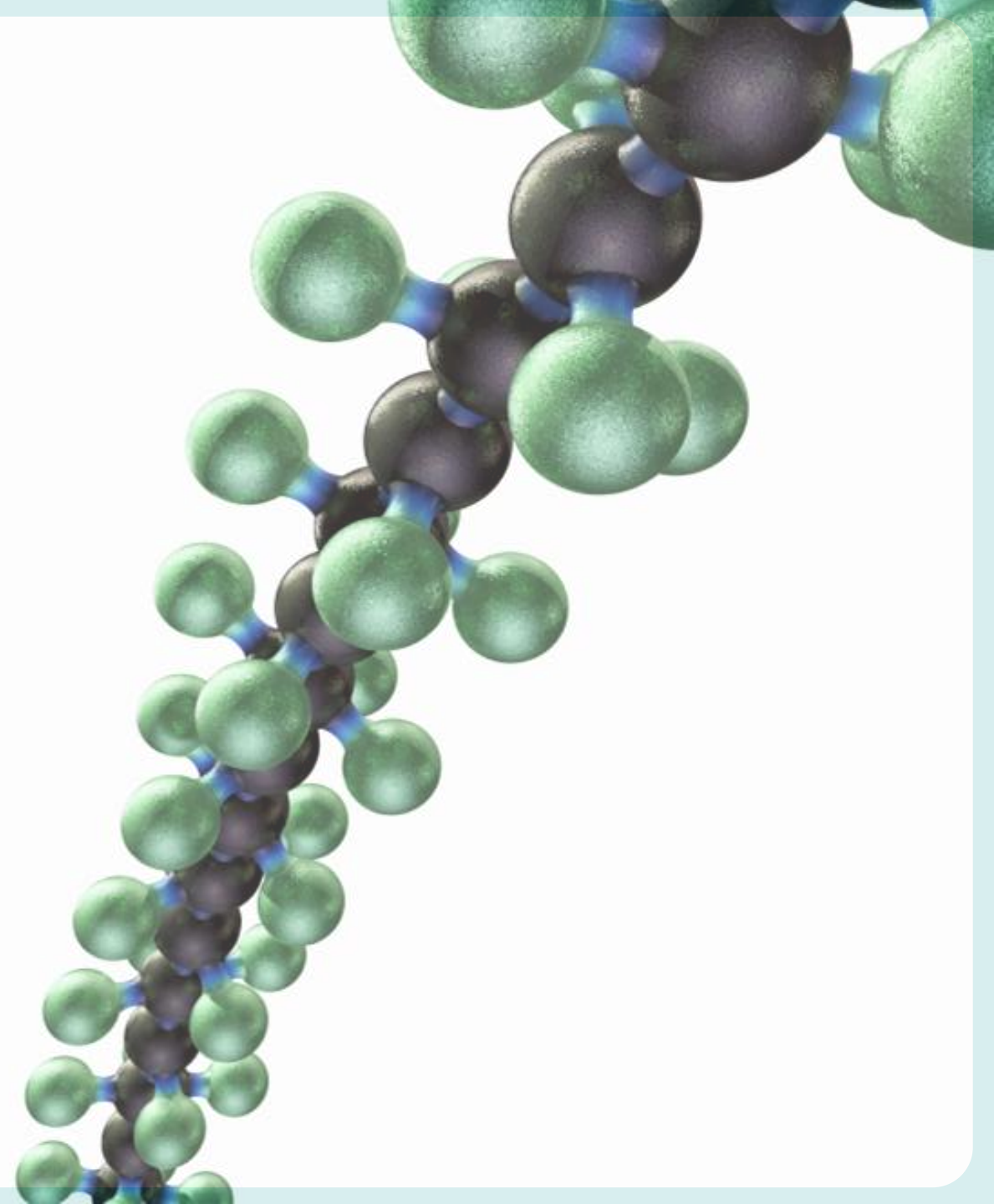
BACKGROUND

What is a POP?

*Persistent organic pollutants (POPs) are organic substances that persist in the environment, accumulate in living organisms and pose a risk to our health and the environment.**

They have different chemistry and can be found in a variety of materials.

*ECHA website: ['Understanding POPs'](#)



BACKGROUND

How are POPs regulated in the EU?

POPs are regulated worldwide by the Stockholm Convention and the Aarhus Protocol. These international treaties are implemented in the European Union by the POPs Regulation

The POPs Regulation aims to protect human health and the environment with specific control measures.



BACKGROUND

What is covered by the POPs Regulation?

Production, placing on the market and use of POPs

Environmentally sound disposal of waste consisting of, or contaminated by POPs (the so called 'POPs waste')

Safe management of POPs



BACKGROUND

Limit values in POPs Regulation

The POPs Regulation is the EU's implementation of the Stockholm Convention on Persistent Organic Pollutants

Annex I Limits (aka UTC Limits)

- Unintentional Trace Contaminant (UTC) values are limits in **products** (i.e., recyclate).

Annex IV Limits (aka LPCL)

- Low POP Content Limits are limits for **wastes**. Exceedance makes the waste a POP Waste and triggers **destruction** obligation.



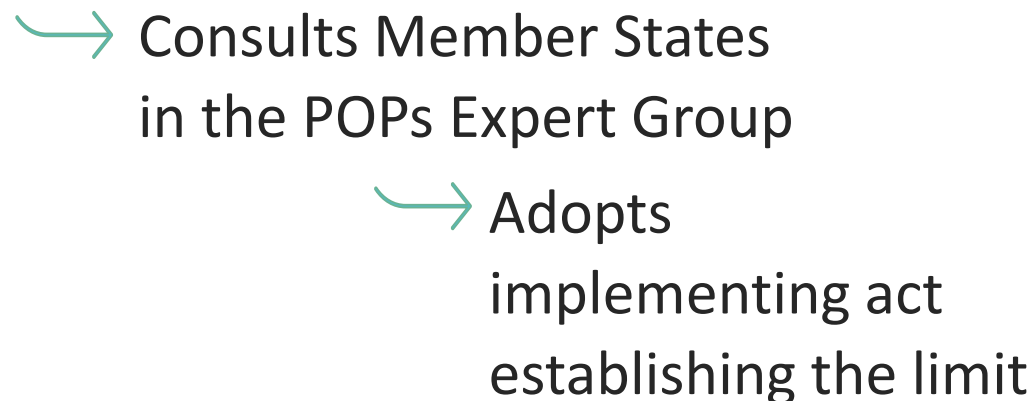
BACKGROUND

Limit values in POPs Regulation

How are these limits set?

Annex I Limits (aka UTC Limits)

- Procedure for setting them:
European Commission (DG ENV)
prepares legislative proposal



Annex IV Limits (aka LPCL)

- Procedure for setting them:
Ordinary Legislative Procedure



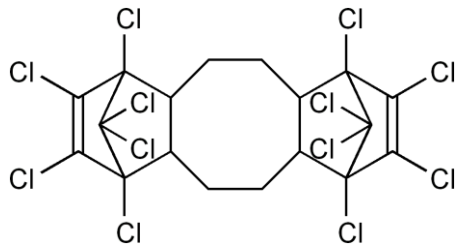
SUBSTANCES IN FOCUS

Some examples of future/recent listings: Dechlorane plus (DP), UV-328 and PBDEs

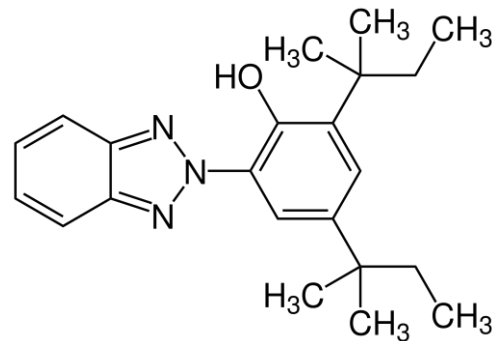
DP: polychlorinated flame retardant that can be present in EEE&ELV plastics

UV-328: phenolic benzotriazole compound used as a light stabilizer for plastics (mainly for automotive)

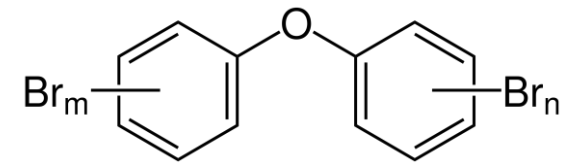
PBDEs: Polybrominated Diphenyl Ethers are a class of aromatic brominated flame retardants



DP



UV-328

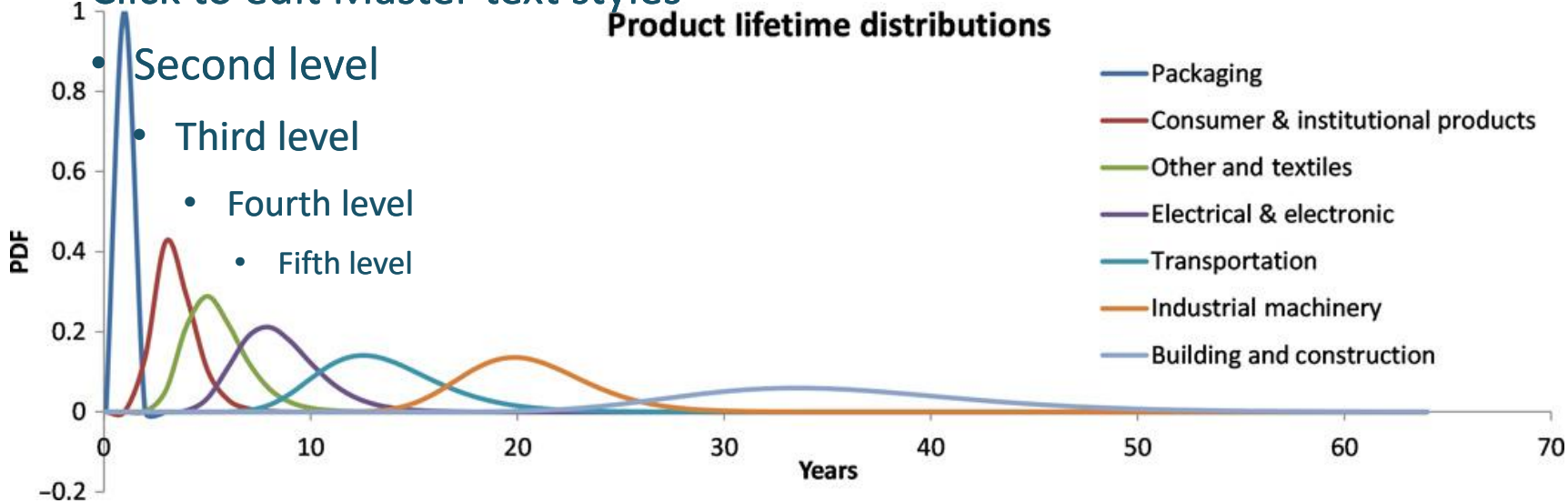


PBDEs

WHY PHASED OUT SUBSTANCES CAN BE FOUND IN RECYCLATES (AS TRACE CONTAMINANTS)?

THE KEY PROBLEM

Click to edit Master text styles



Product lifetime distributions for the eight industrial use sectors plotted as log-normal probability distribution functions

PRIMUS
FINAL
EVENT

PRIMUS APPROACH



HORIZON EUROPE GA No. 101057067

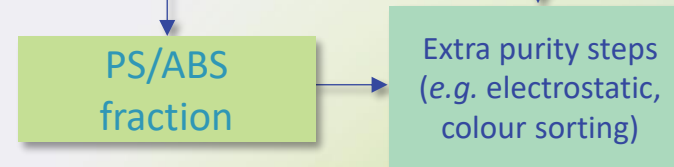
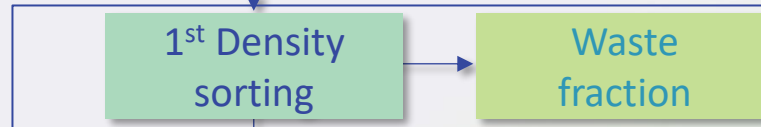


Funded by
the European Union

WHAT HAPPENS IN A RECYCLING PLANT?



From the total WEEE plastic, 3.5% contain BFRs, from which only **0.2% are restricted** [2]



Material should comply with Annex I of the POP applicable to products, if not, it cannot be placed in the market, and it will be considered waste.

Material that complies with Annex IV of the POP applicable to waste, must be disposed of or recovered in such a way that POP substances are destroyed or irreversibly transformed.

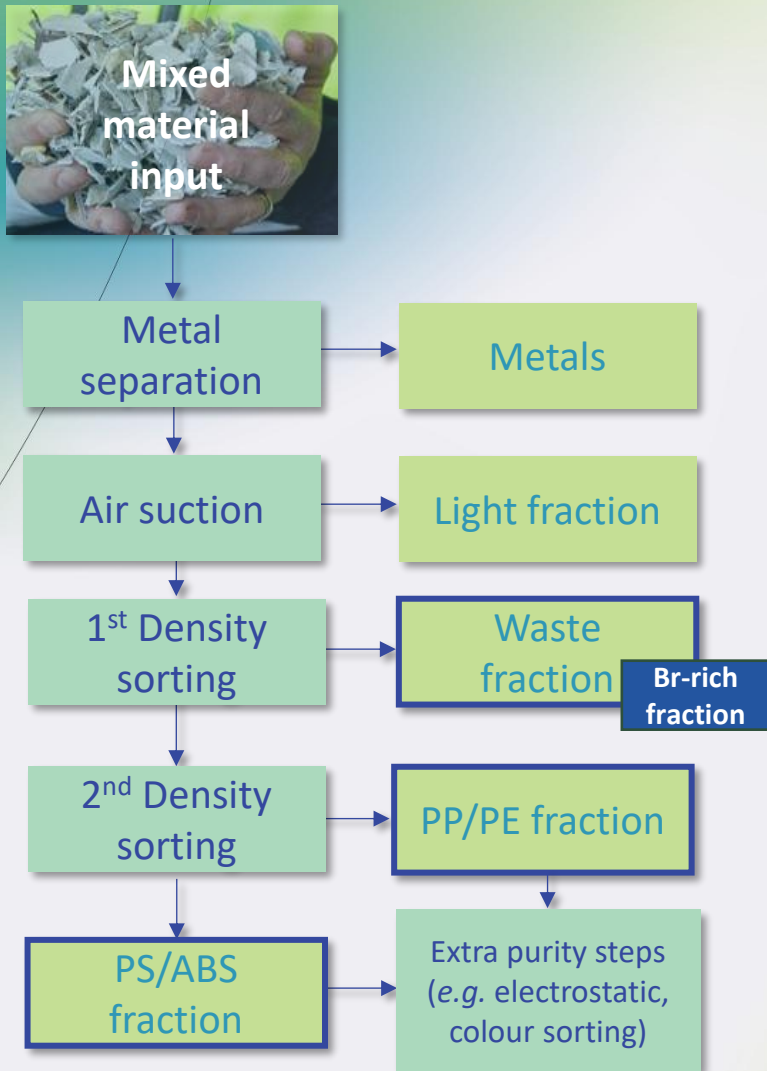
Appr. half of the input is sorted out. Most of the BFRs (>95%) will be sorted [2]

Contains <5% of BFRs

² Haarman, A., Fedato, S., Holt, A., (2023) Brominated Flame Retardants and the Circular Economy of WEEE Plastics



CHALLENGES OF A CIRCULAR ECONOMY AND PRIMUS APPROACH



A few challenges on the road...

- ❑ Constant increase of POP substances can lead to **low recycling rates** or non-compliance of current targeted materials;
- ❑ The long product lifetime leads to a **lack of information on mixed composition**;
- ❑ **Absence of guidelines for sample collection and sampling preparation** prior to chemical analysis leads to variations and non-uniformity of results;
- ❑ **Low frequency** of the analysis, leads to low representativeness and confidence about the materials.



CHALLENGES OF A CIRCULAR ECONOMY AND PRIMUS APPROACH

PRIMUS APPROACH - Debromination of POP substances

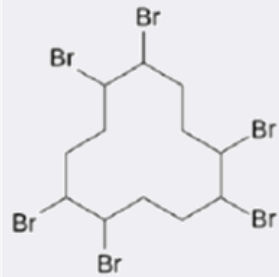
Low recycling rates 

Lack of information on mixed composition

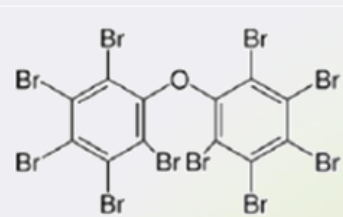
Absence of guidelines for sampling and sample preparation

During the course of the project were developed different approaches for HIPS and ABS for the debromination of POP substances - **HBCD** and **decaBDE**:

- Supercritical CO₂ (scCO₂)
- Solvent-based extraction
- Catalytic debromination



HBCD



decaBDE

RESULTS

All three developed techniques resulted in debromination rate higher than 50%.

A two-step extraction process resulted in an increase of the debromination efficiency up to 95%.

CHALLENGES OF A CIRCULAR ECONOMY AND PRIMUS APPROACH

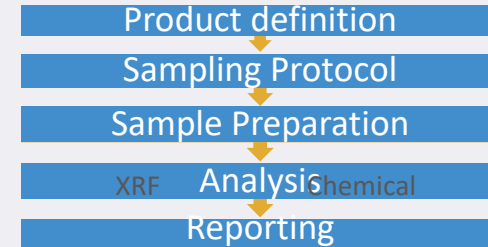
PRIMUS APPROACH - PRE 1000 tool for the monitoring of POP substances

Low recycling rates

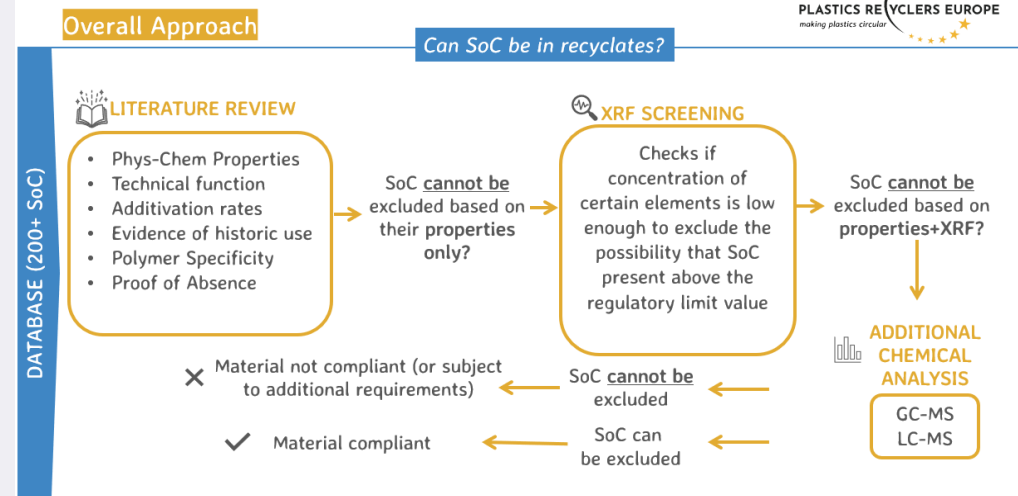
Lack of information on mixed composition

Absence of guidelines for sampling and sample preparation

Tool and methodology: Created by PRE to enhance a cost-effective harmonization across the industry on the presence of Substances of Concern (SoC), providing recyclers legal certainty about compliance with product Legislation (REACH, POP and RoHS).



The Standard & PRE-1000 Tool



Key messages

- 1) With the increase of regulated substances and the constant pressure to sell a material with high SoC control, the method proves that it is possible for recyclers to use something **practical and reliable at acceptable cost.**
- 2) Allows to increase the frequency of analysis and the **confidence in the recyclates** providing the access to higher quality markets.



CHALLENGES OF A CIRCULAR ECONOMY AND PRIMUS APPROACH

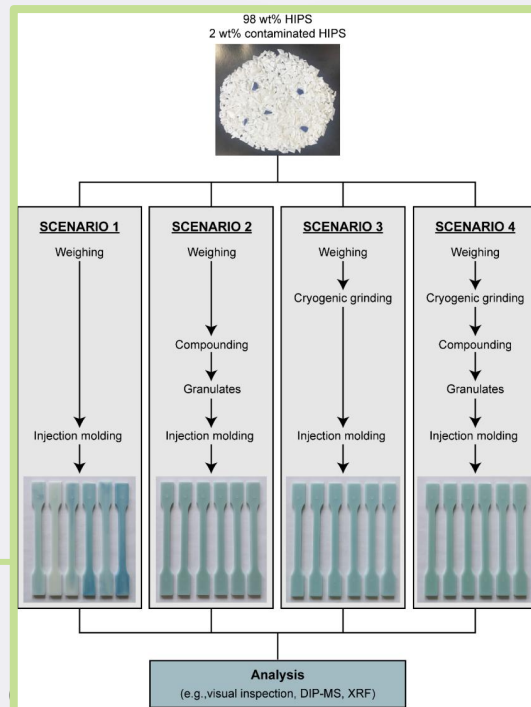
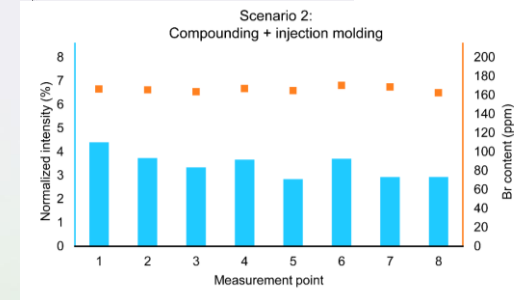
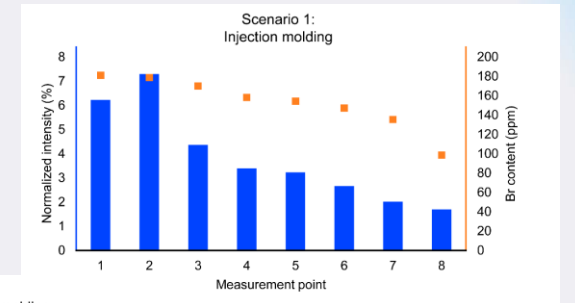
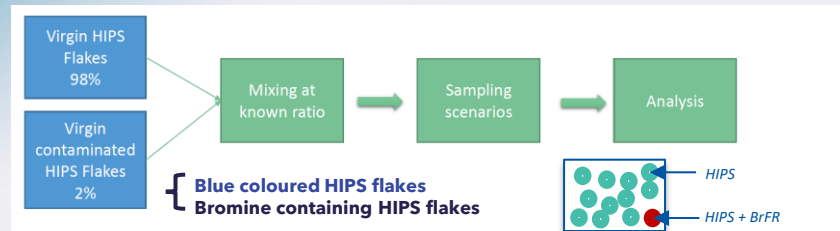
PRIMUS APPROACH - Sampling and sample preparation

Low recycling rates

Lack of information on mixed composition

Absence of guidelines for sampling and sample preparation

Model waste sample preparation - vHIPS + BFRs (TBBPA)



Key messages

- 1) **Sample preparation** is essential for **representative results**.
- 2) To ensure homogeneous samples in a reliable and cost-effective way, two steps may be applied: **1st extrusion; 2nd injection moulding**.
- 3) The **analytical methods** should be considered when **enforcing new thresholds** by Legislation.



HORIZON EUROPE

RECOMMENDATIONS

- ❑ When reducing regulatory limits, the available technologies, the physical and chemical properties of each substance and the limitations of the detection methods should be taken in consideration.
 - Not all POPs substances are the same (different chemistries: UV 328, DP, PBDEs...)

- ❑ Standardize methodologies like PRE-1000 for monitoring of SoCs, that support recyclers with practical and reliable methods, that are also at an acceptable cost.
 - The method was designed for a long-term monitoring, and it evolves with the regulatory changes

- ❑ Standardize protocols for sampling and sample preparation to enhance accuracy and reliability, creating harmonization within the industry to avoid variation and inconsistency of results.





PRIMUS

WWW.PRIMUS-PROJECT.EU



**Funded by the
European Union**

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.

THANK YOU

Any Questions?

Andromeda Scoppio

Andromeda.Scoppio@plasticsrecyclers.eu

Ana Rita Neiva

Ana.Rita.Neiva@coolrec.com

HORIZON EUROPE GA No. 101057067

FOOD CONTACT REGULATION FOR RECYCLED PLASTICS

Mathilde Taveau

Plastics Recyclers Europe



Mathilde Taveau

PRIMUS project
www.primus-project.eu

*Regulatory Affairs
Manager at*



PRIMUS regulatory WP Leader.

Holds a master in Chemical Engineering specialised in Materials and Processes, her graduation research on the development of PP recyclates from old household appliances led her to the plastic recycling world. After working as a Plastics engineer at WEEE recycling facility, she is now focused on the chemicals' legislation as well as on R&D projects at Plastics Recyclers Europe.



FOOD CONTACT REGULATION FOR RECYCLED PLASTICS

Break-out session

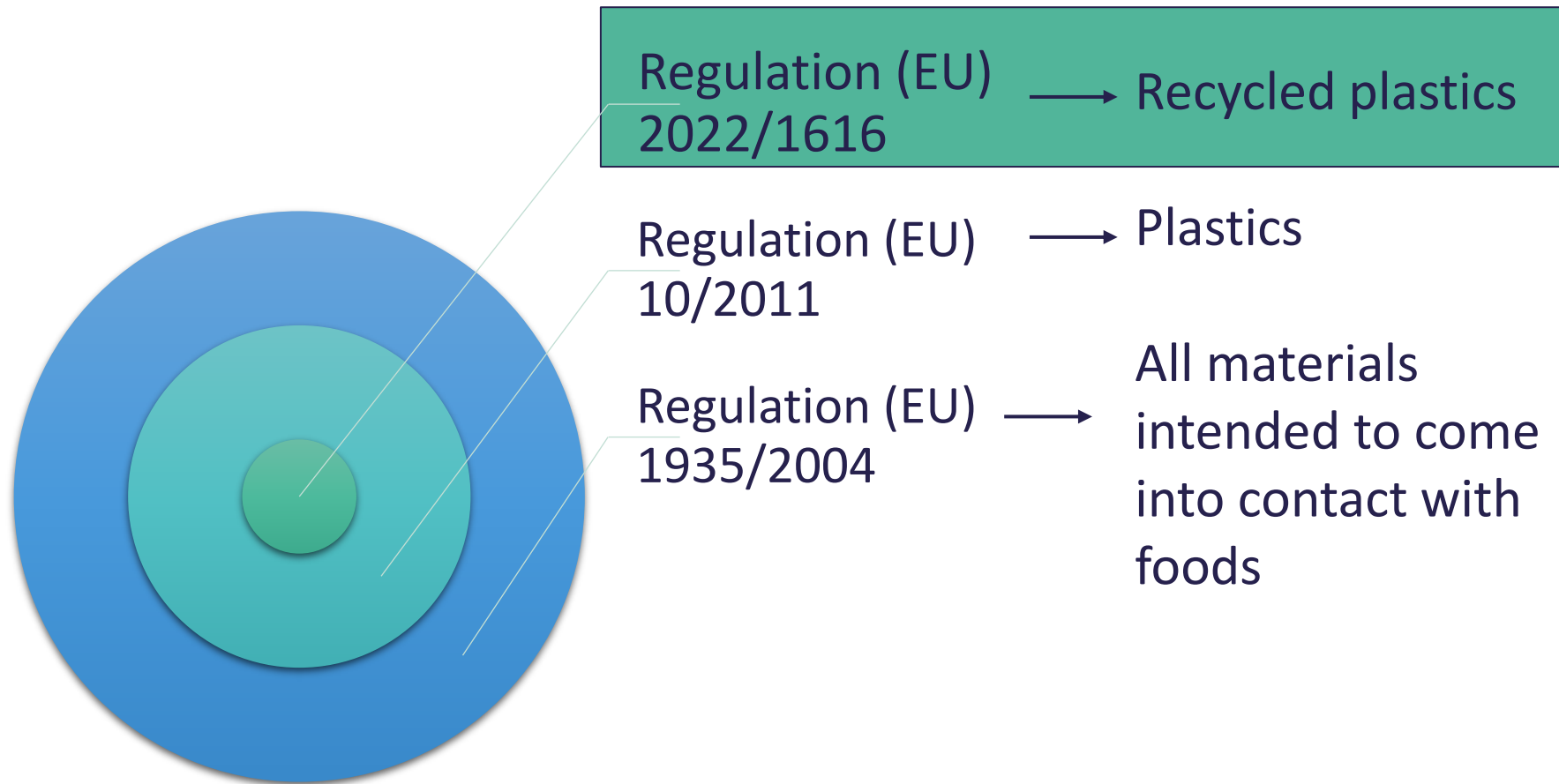
OBJECTIVE

The goal of the session is to provide the audience with the key elements of the regulation, framing the use of food contact recyclates.

The process of novel technology will be the focus of this session with the PRIMUS case, from refrigerator to refrigerator.



Food contact legislation



Scope of the Regulation

• What is included?

The regulation aims to cover **all recycling processes** that produces a material or article **intended to come into contact with foods**

It also includes **all types of waste** (e.g. Pre-consumer waste)

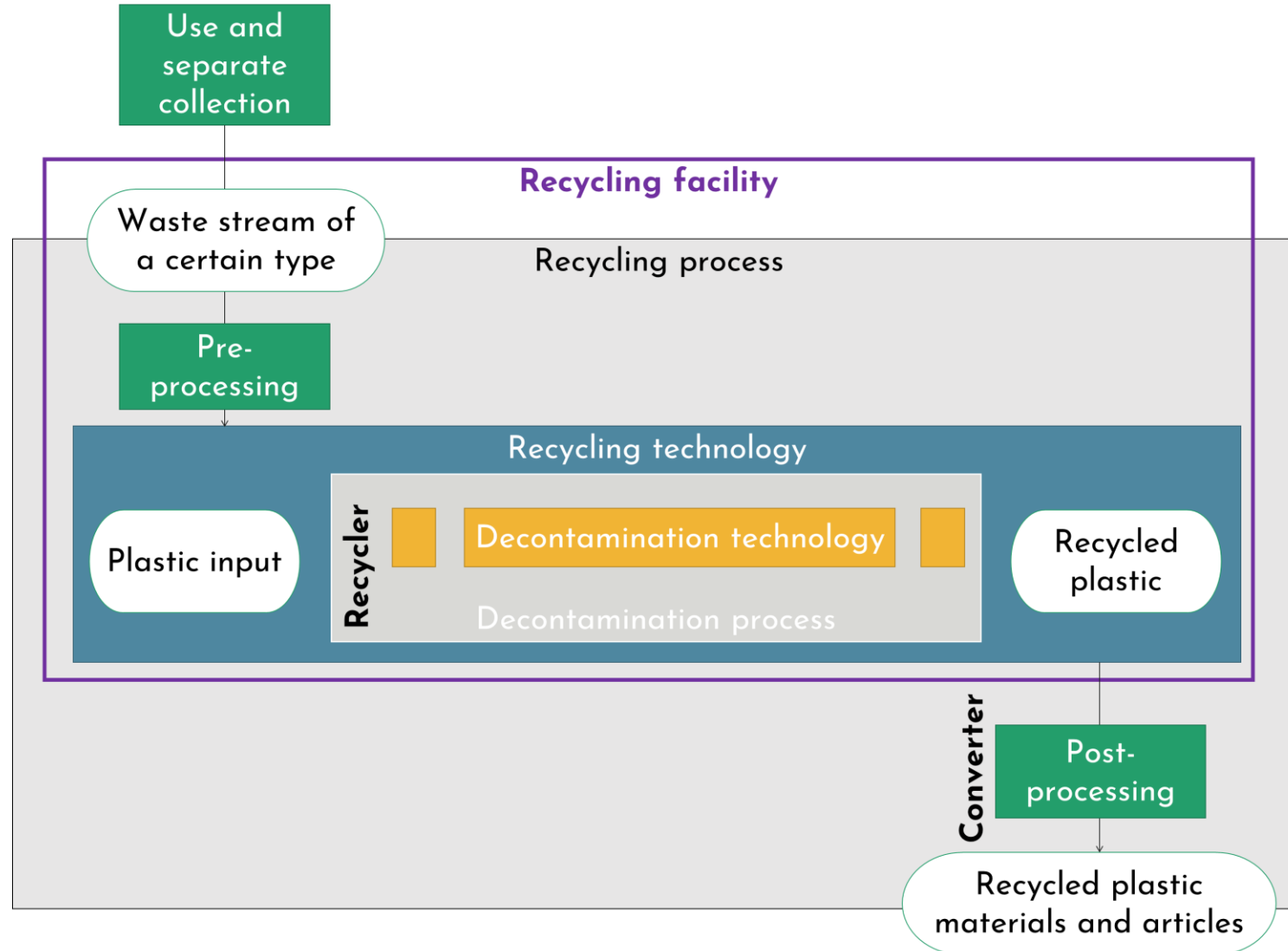


- Therefore, in the draft, the following is included:
 - Functional barriers
 - Chemical recycling processes
 - Physical recycling processes
 - Mechanical recycling
 - Closed loop recycling ...
- The goal is to cover **all polymers**, not only PET.



WASTE

PRODUCT



REGULATION (EU) No 2022/1616



HORIZON EUROPE GA No. 101057067

Recycling technologies

Suitable technologies

Post-consumer mechanical PET recycling
Recycling from product loops which are in a closed and controlled chain



Processes where sufficient data has been generated in the past to consider them suitable.

Novel technologies

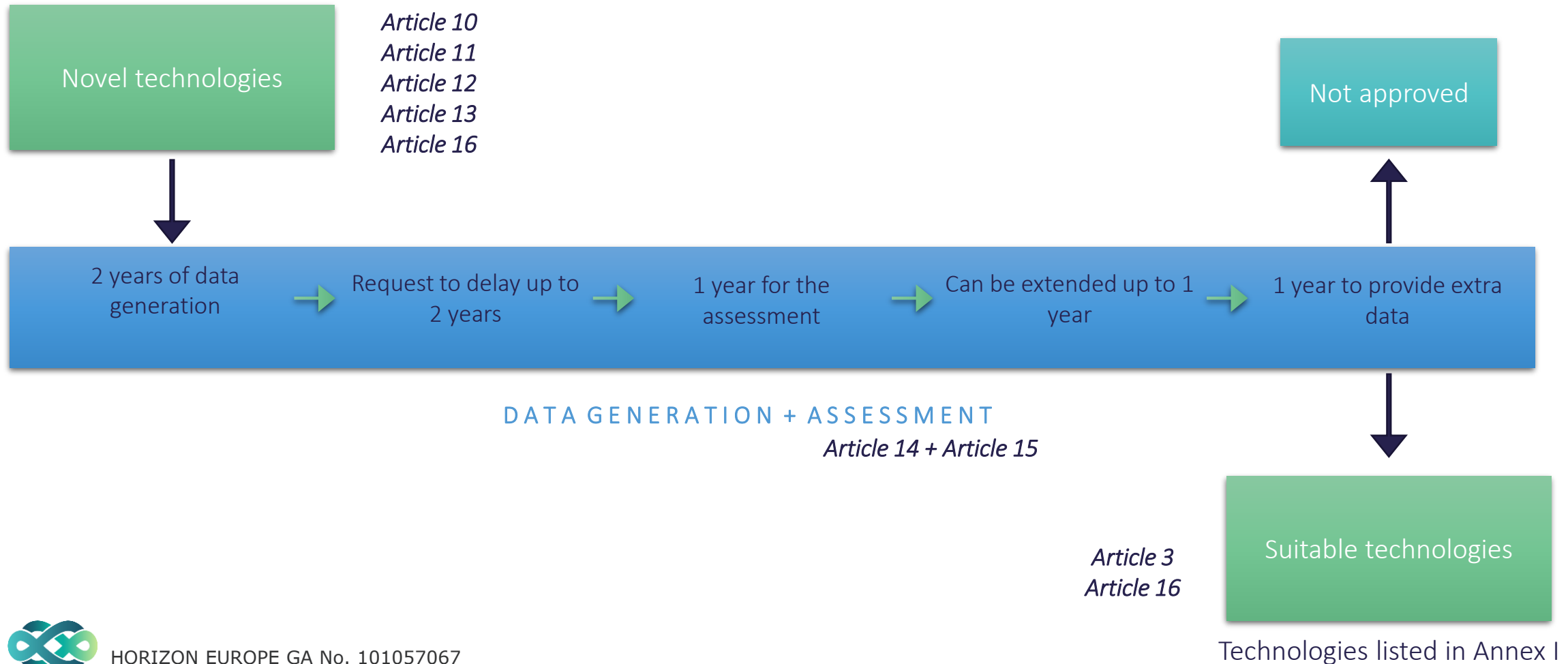
All the other recycling technology that are currently not yet considered suitable.



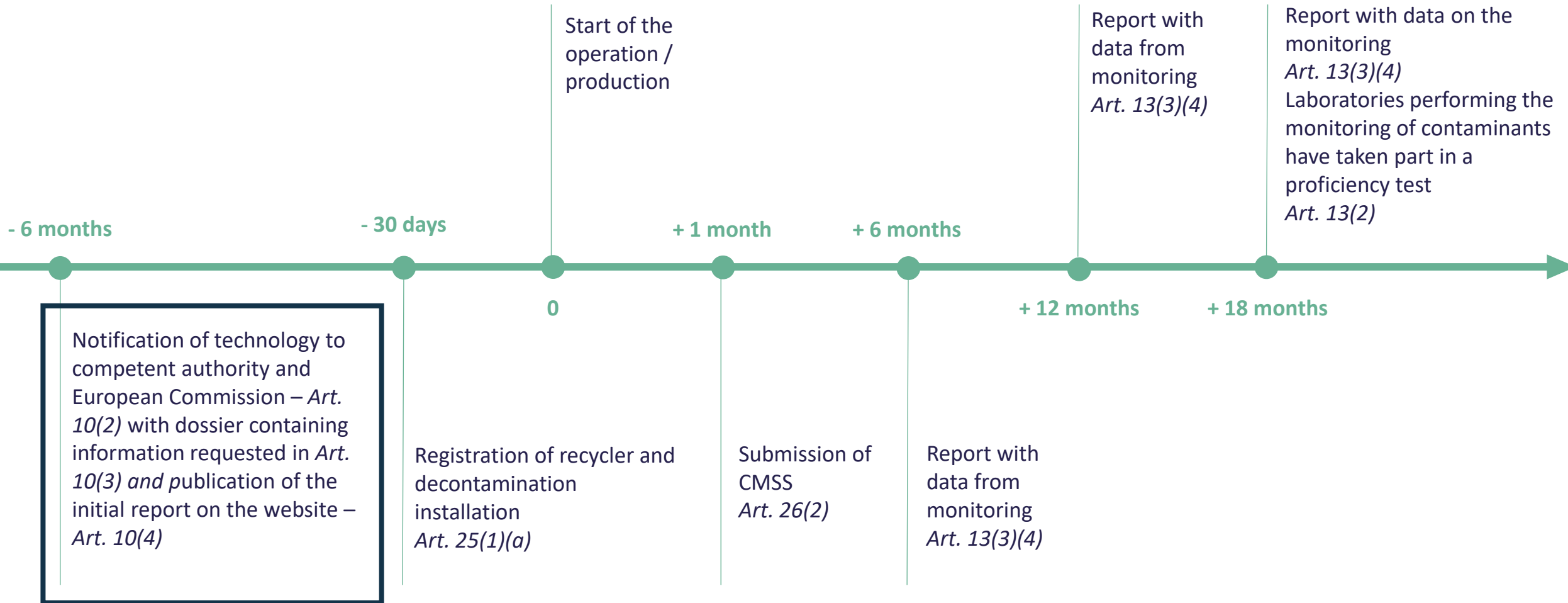
Processes where further data needs to be generated to be able to assess the technology.



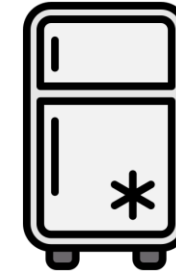
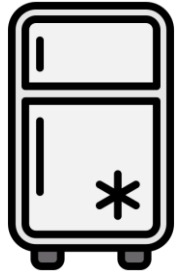
Structure of the Regulation



Timeline for novel technologies



What we did in PRIMUS? From refrigerator to refrigerator

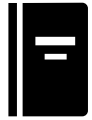


- The path to take is the **novel technology path**.
- 1) Defining the decontamination technology.
- 2) Generating the data listed on the right side of the slide.

- Description of the technology
- Information on the input material
- Data on the chemical contaminants in input and output
- Migration levels – estimation and measurement

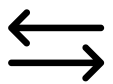
Guidance and migration modelling tool

Publicly available documents



In the course of the project, we have developed a guidance document to explain in detail the process of applying for novel technology. This allows plastics recyclers, wanting to achieve food contact application, to have a clear understanding of:

- the responsibilities of each roles.
- the timeline before obtaining a potential approval.
- the data to be generated.



A migration modelling tool has been developed especially for the application of fridge-to-fridge. The tool can be used to risk-assess substances and understand their migration potential for this specific application. This is of interest for recyclers that wish to introduce recycled plastics in new refrigerator.



HOW WILL THESE RESULTS BE USED AFTER THE PRIMUS?



A novel technology process is a very long process. The application will continue after the project thanks to the partner Coolrec.



This shows the opportunities that the Regulation provided in terms of new recycled plastics that can be placed on the market as a food contact application.





PRIMUS

WWW.PRIMUS-PROJECT.EU



**Funded by the
European Union**

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.

THANK YOU!

Any questions?

Mathilde Taveau

Mathilde.Taveau@plasticsrecyclers.eu

HORIZON EUROPE GA No. 101057067