sciensano

toute une vie en bonne santé

MIGRACARTO

“Migratables from paper and board food contact materials and their associated potential risks”.

EDQM-AESAN symposium on

“Recent developments in food contact materials and articles”

September, 19th 2024

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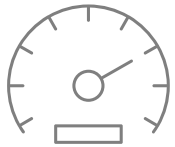
Today’s Agenda

CONTEXT



OBJECTIVES

RESULTS

CONCLUSION

Context

CONTEXT

Context

1. July 2021: **Ban** on certain single-use plastics in the EU (plates, straws, cutlery, cups, etc.)
2. Needs for **alternatives**
3. Decrease the need for **virgin materials**
   - 40% of plastic
   - 50% of paper
4. Boosting Europe's **recycling** capacity

Context & Research Questions

Are the substances harmful for the human health ?

Migration of substances into food ?

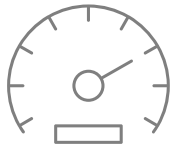
Is there any threat for the consumers ?

One of the many alternatives to single use plastics

Are P&B a real alternative?

Objectives

CONTEXT



OBJECTIVES

Objectives

WP1

Market study

WP2

Selection of compounds

WP3

Selection of the samples

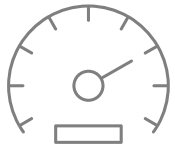
WP5

Risk assessment of migrants

WP4

Identification of (potential) migrants

Results

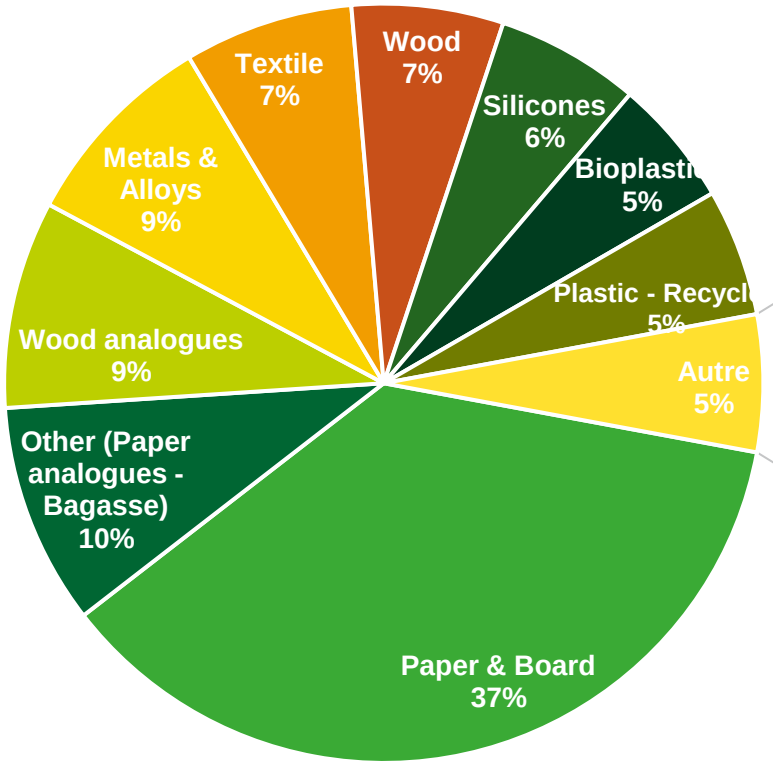


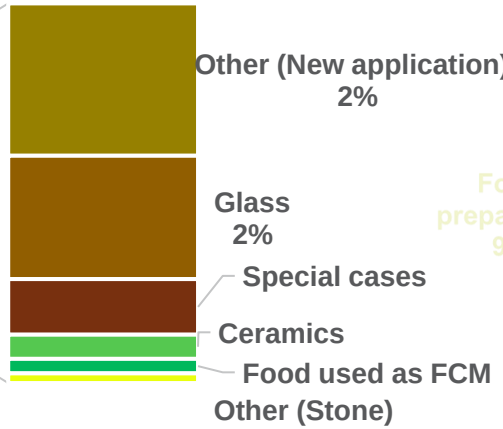
CONTEXT

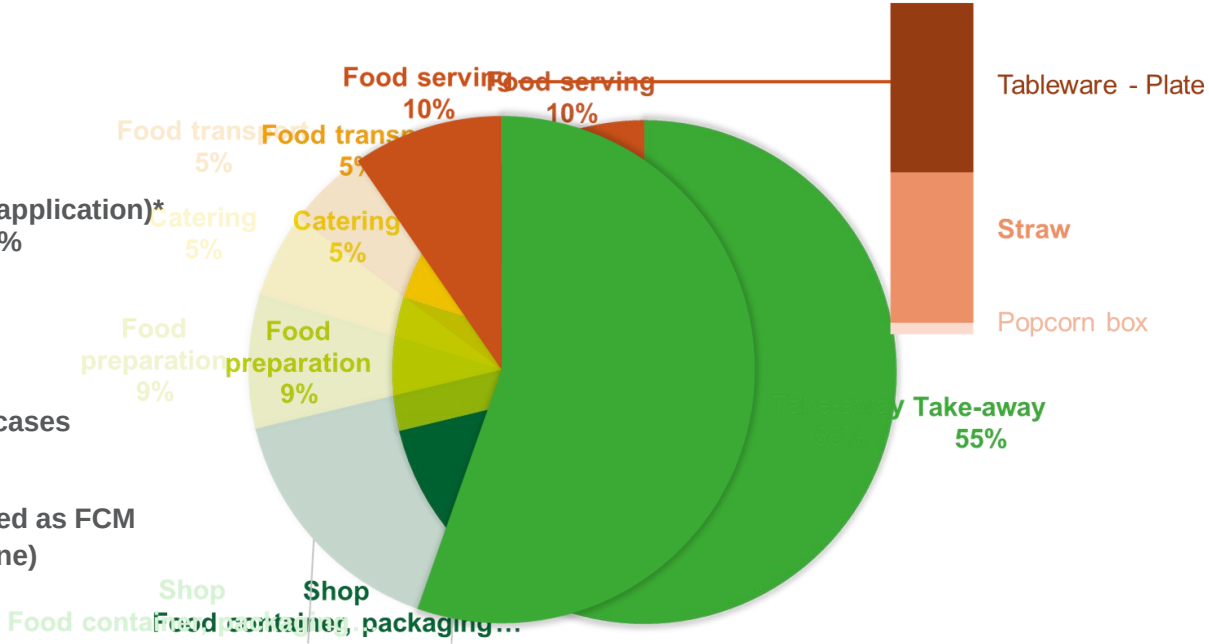
OBJECTIVES

RESULTS

Market study





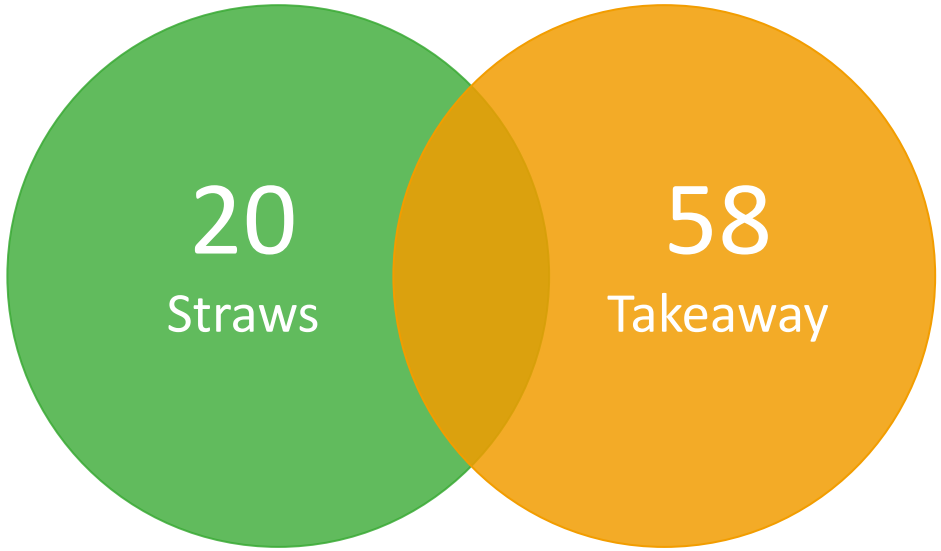


Ciano S, Di Mario M, Goscinny S, Van Hoeck E. Towards Less Plastic in Food Contact Materials: An in-depth overview of the Belgian Market. Foods. 2023 Jul 18;12(14):2737.

Sampling

BLACK & WHITE
PAPER STRAWS
NATURAL STRAWS
Paper straws
50
Lepel
17.5cm
Delighting Food Moments
biodore
preserve
COMPOSTABLES
TA-11
IF YOU CARE
Paper Snack & Sandwich Bags
48
This is a kind cup.
KAKAO
Coffee
Tea

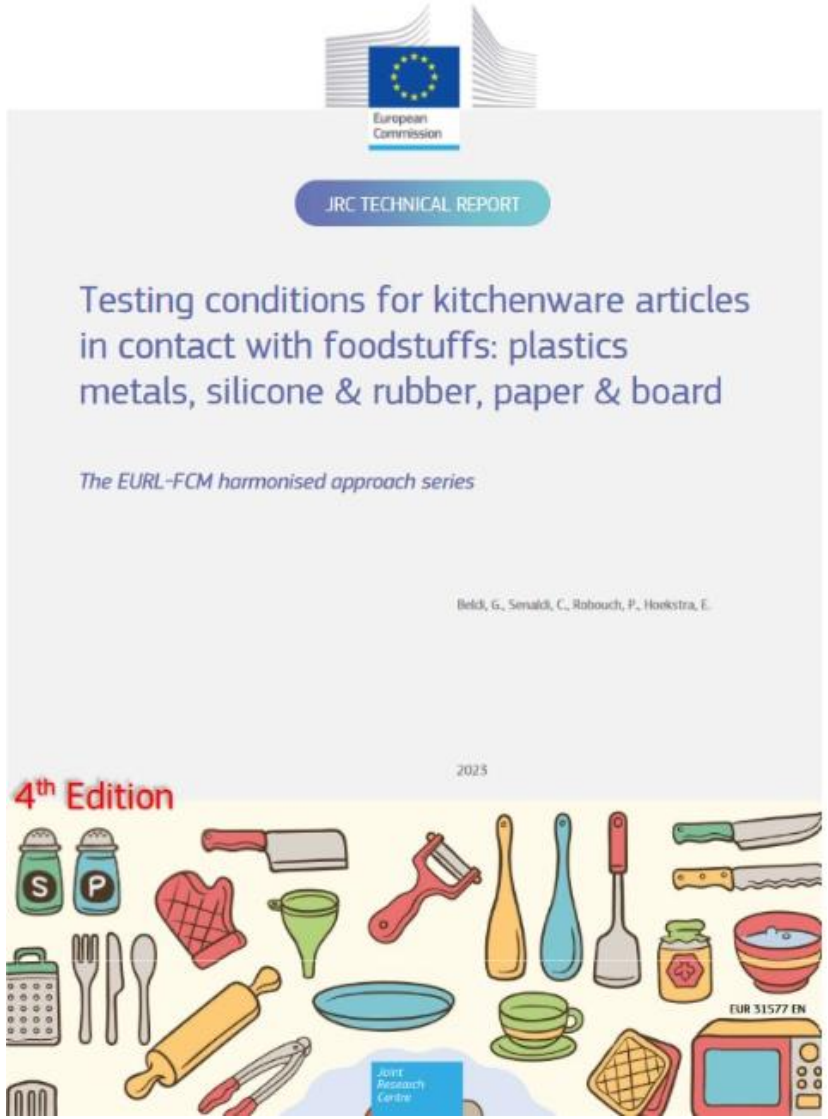
Sampling



7 fast food restaurants

78 samples

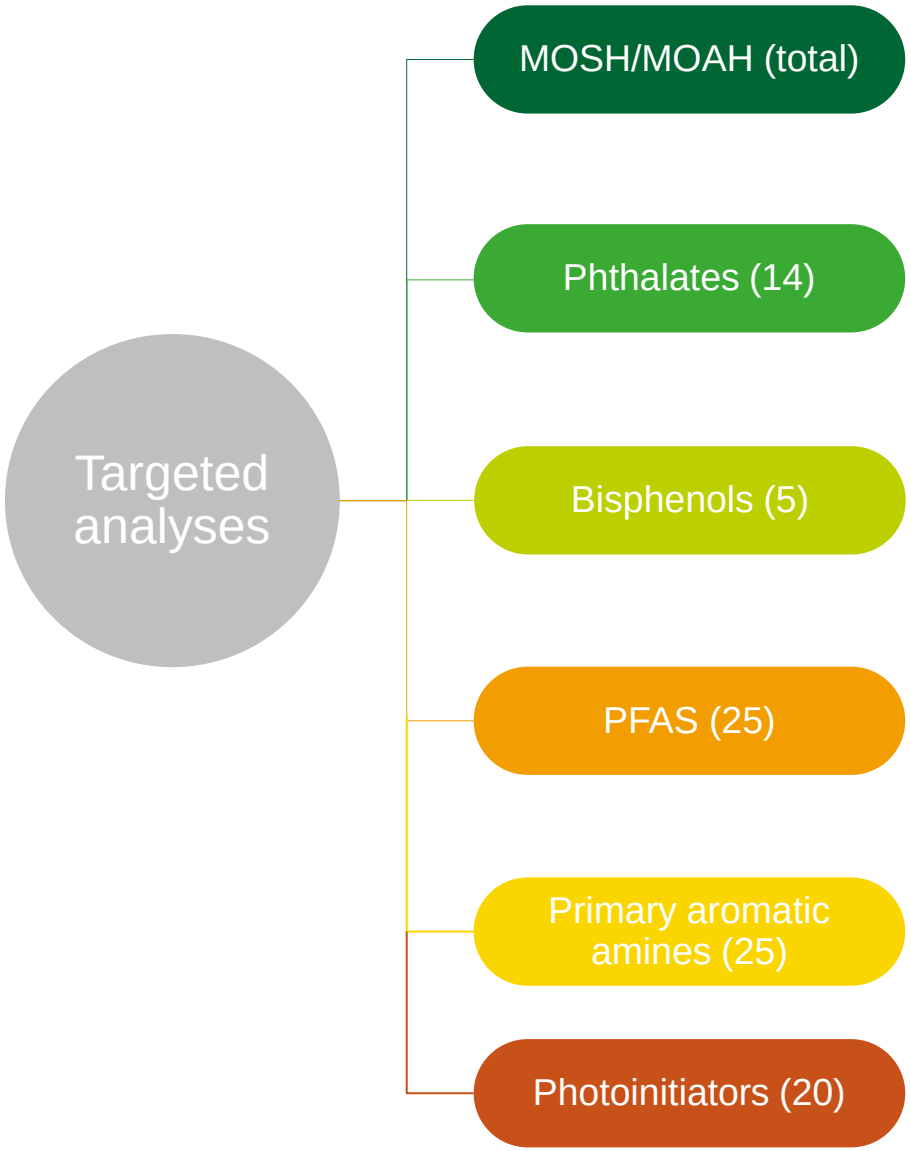
Methodology



2nd Draft

- FSI/CAH1 (straws, spoon…)
- FC/CAH1 (pizza, noodle, hamburger boxes + bowls)
- FSU/CAH6 (Fries, snack trays, fries bags)
- Undefined (hamburger wrap)
- FSU/CAH1 (cups)

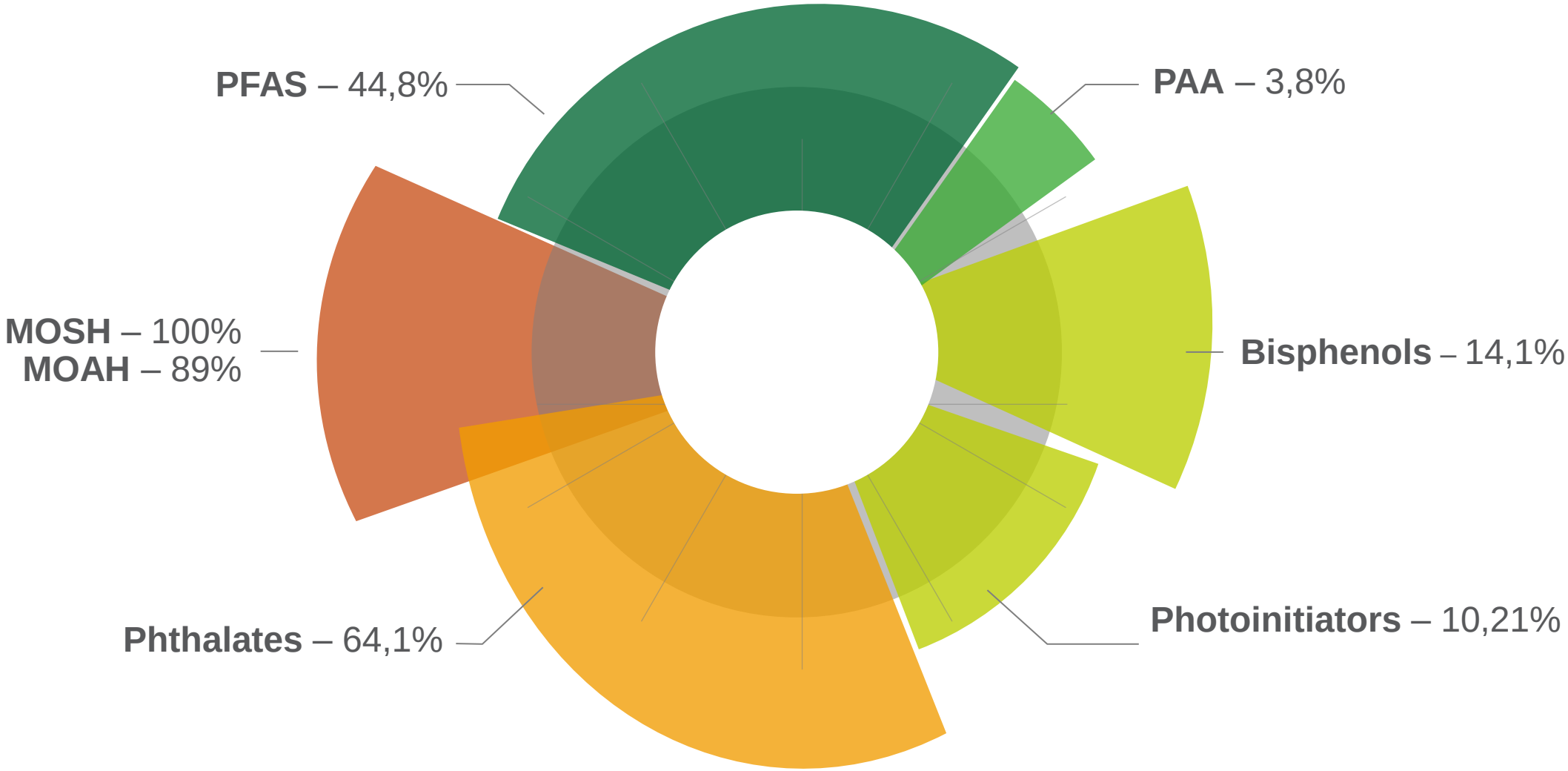
Targeted analyses



91

Compounds

Results of targeted analyses



EFSA Risk Evaluation Methodology: RACE tool

FAST risk evaluation of food contaminants, including FCM substances

TECHNICAL REPORT

efsa
European Food Safety Authority
Supporting Publications

APPROVED:16 April 2019

doi:10.2903/sp.efsa.2019.EN-1625

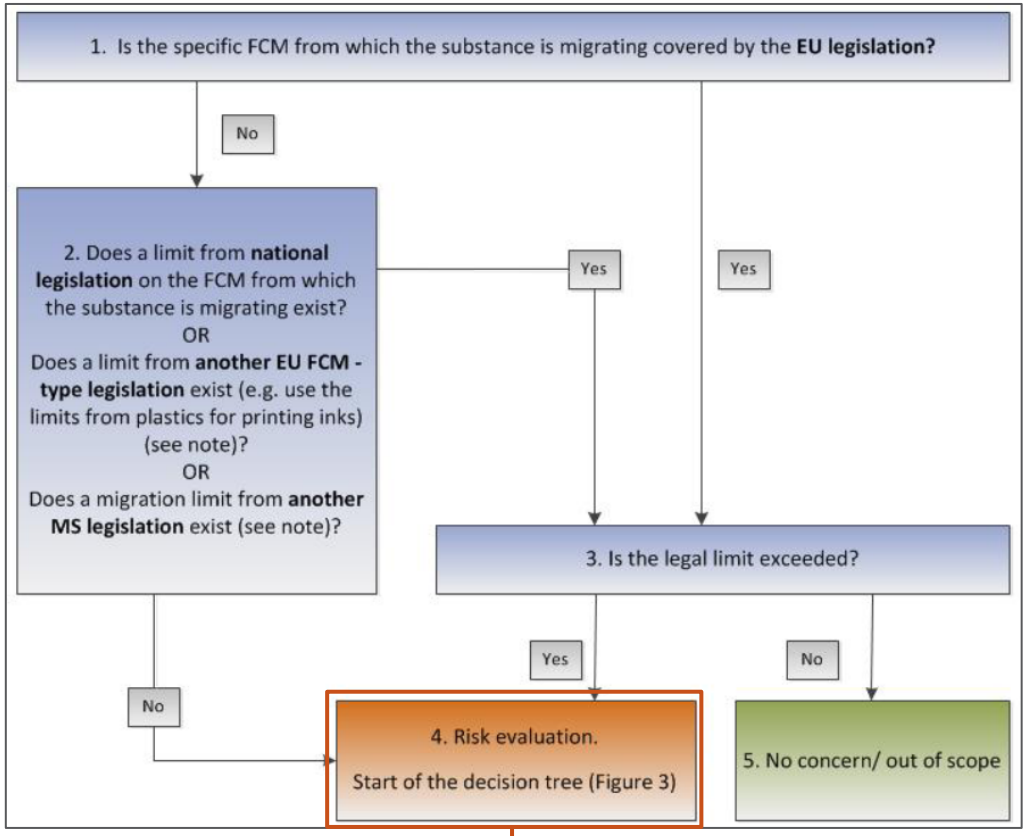
Risk evaluation of chemical contaminants in food in the context of RASFF notifications:

Rapid Assessment of Contaminant Exposure tool (RACE)

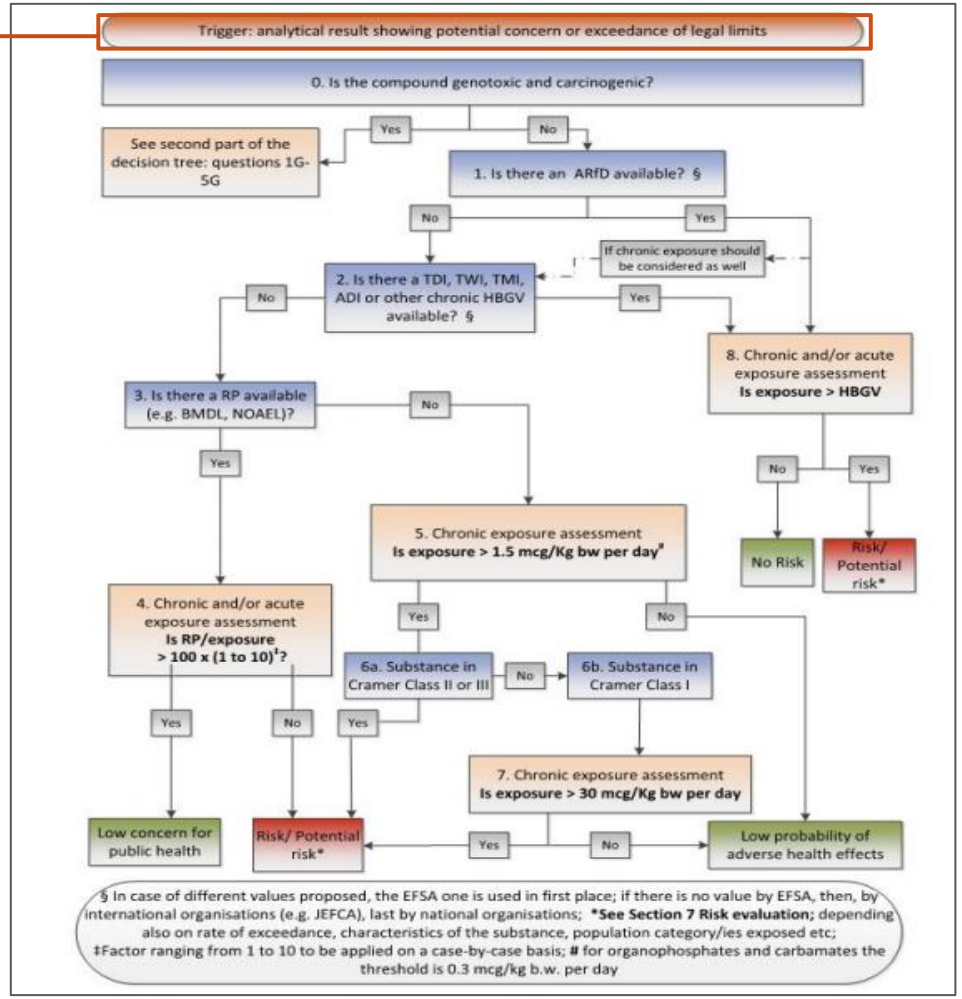
European Food Safety Authority (EFSA), Peter Fürst, Maria Rosaria Milana, Karla Pfaff, Christina Tlustos, Christiane Vleminckx, Davide Arcella, Eric Barthélémy, Paolo Colombo, Tilemachos Goumperis, Luca Pasinato, Ruth Roldán Torres and Ana Afonso

EFSA RACE tool

Pre-decision tree for food contact materials



Decision tree for food contact materials



EFSA supporting publication (10.2903/sp.efsa.2019.EN-1625)

EFSA RACE tool

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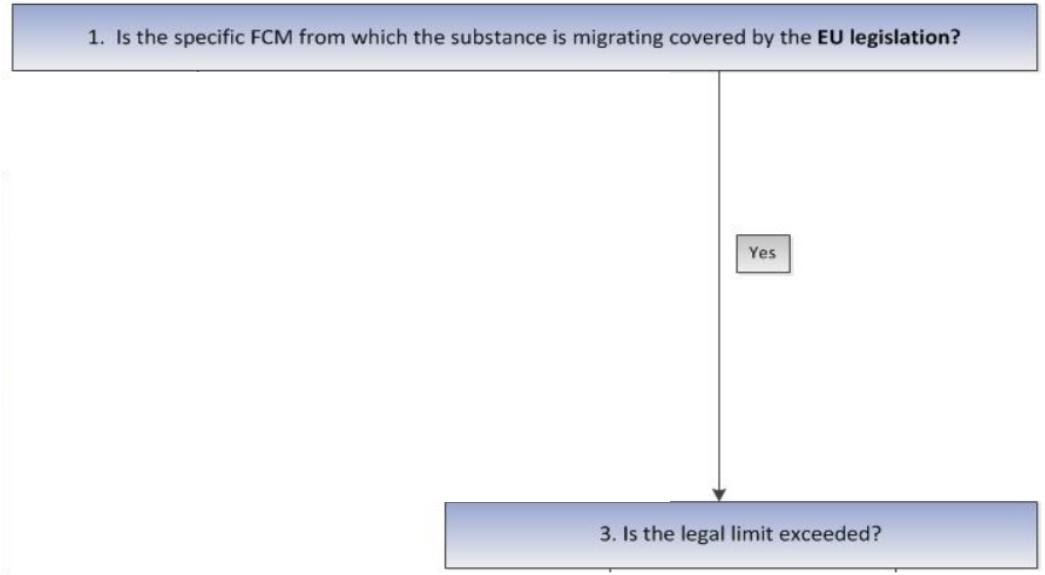

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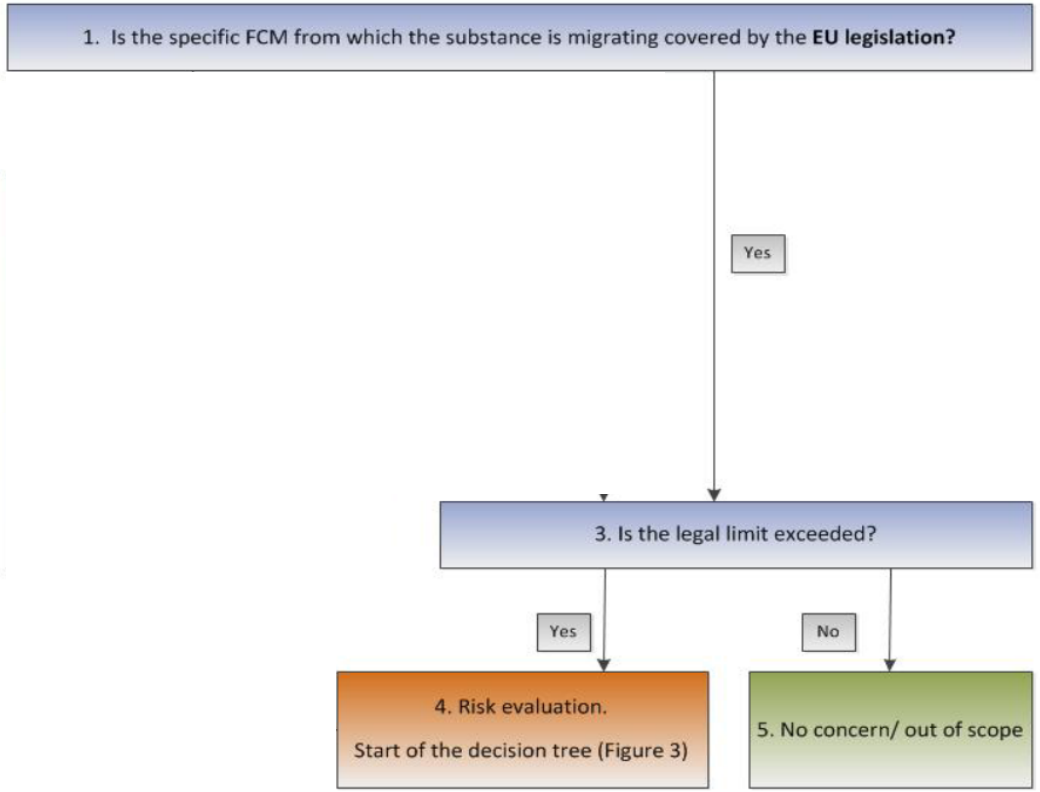

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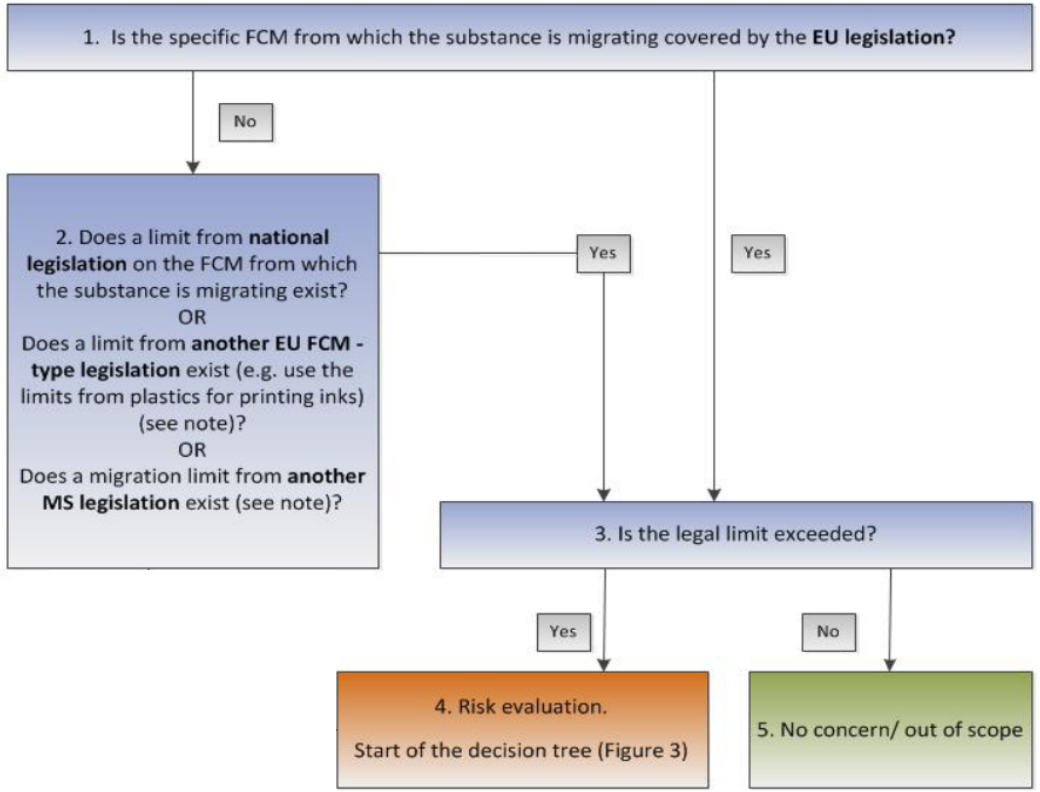

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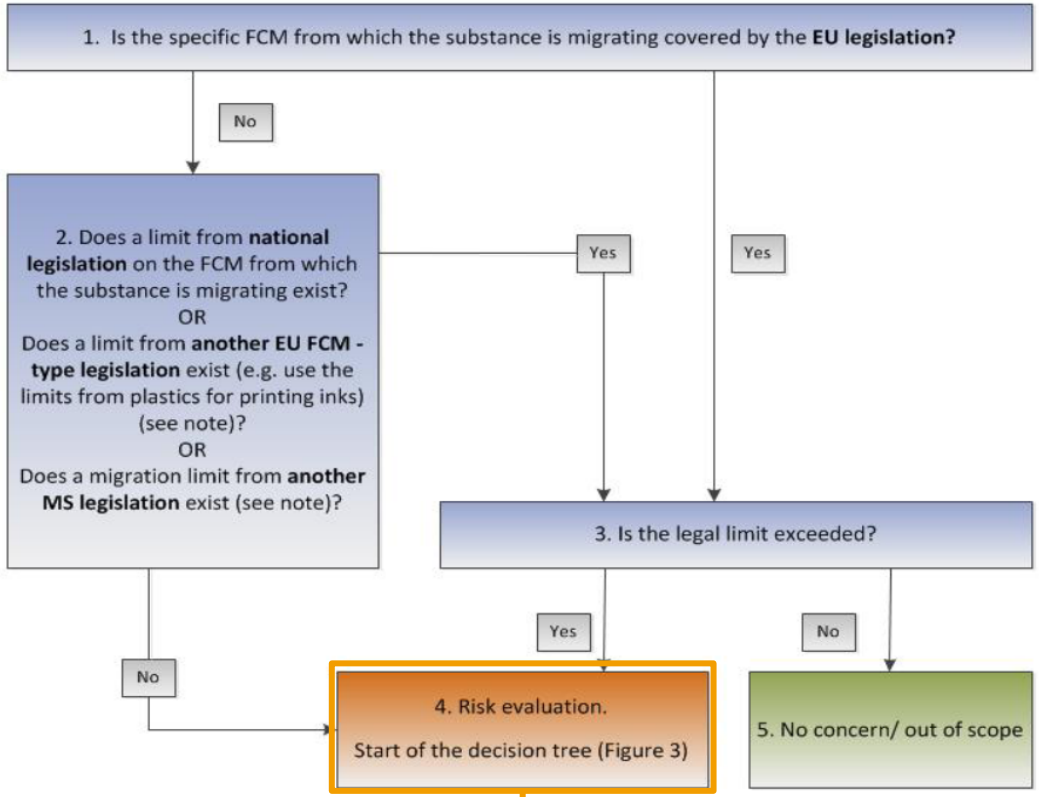
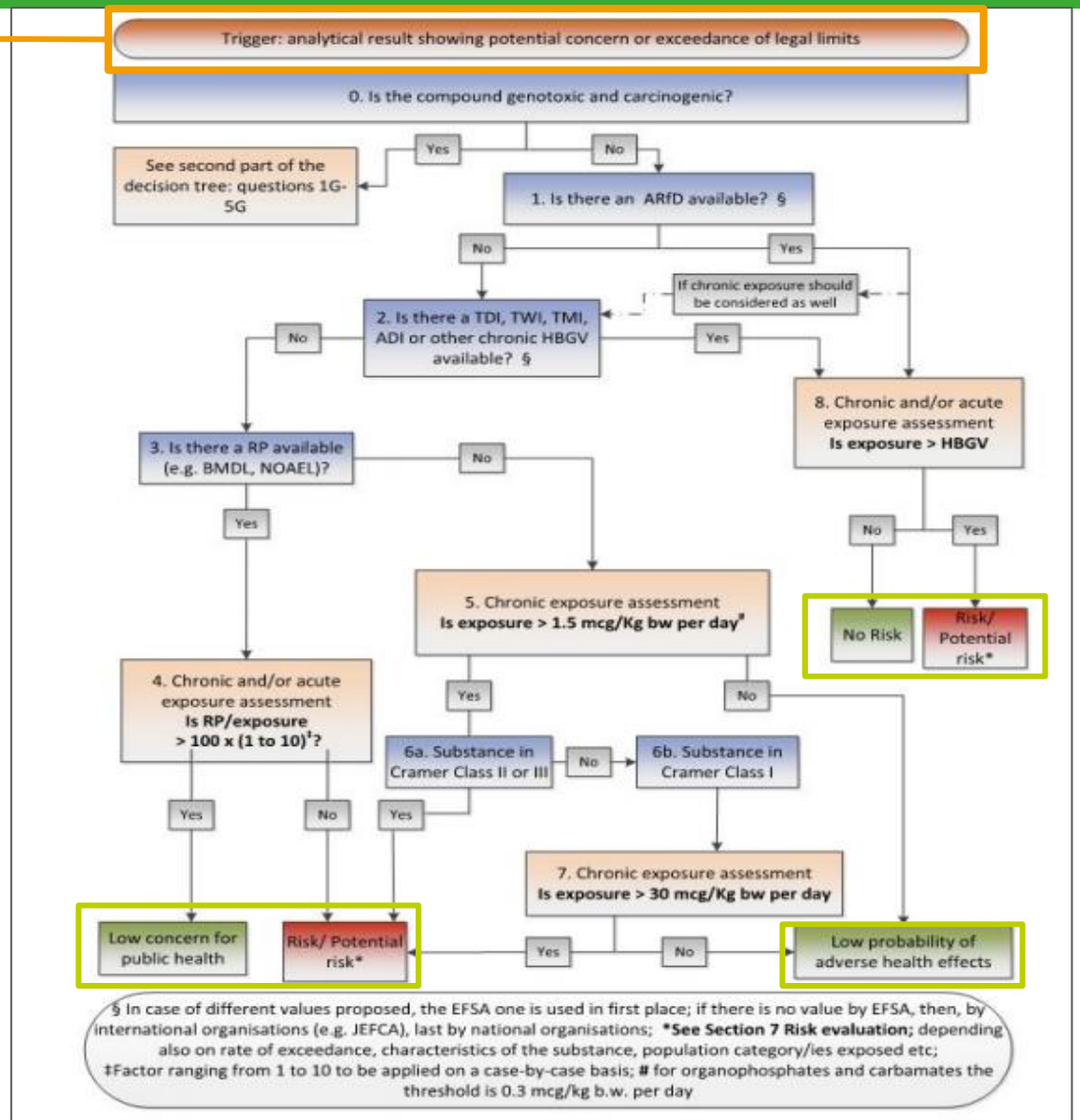




EFSA supporting publication (10.2903/sp.efsa.2019.EN-1625)

Targeted populations

Children
(3-10 years old, 23 kg)

Teenagers
(14-18 years old, 61 kg)

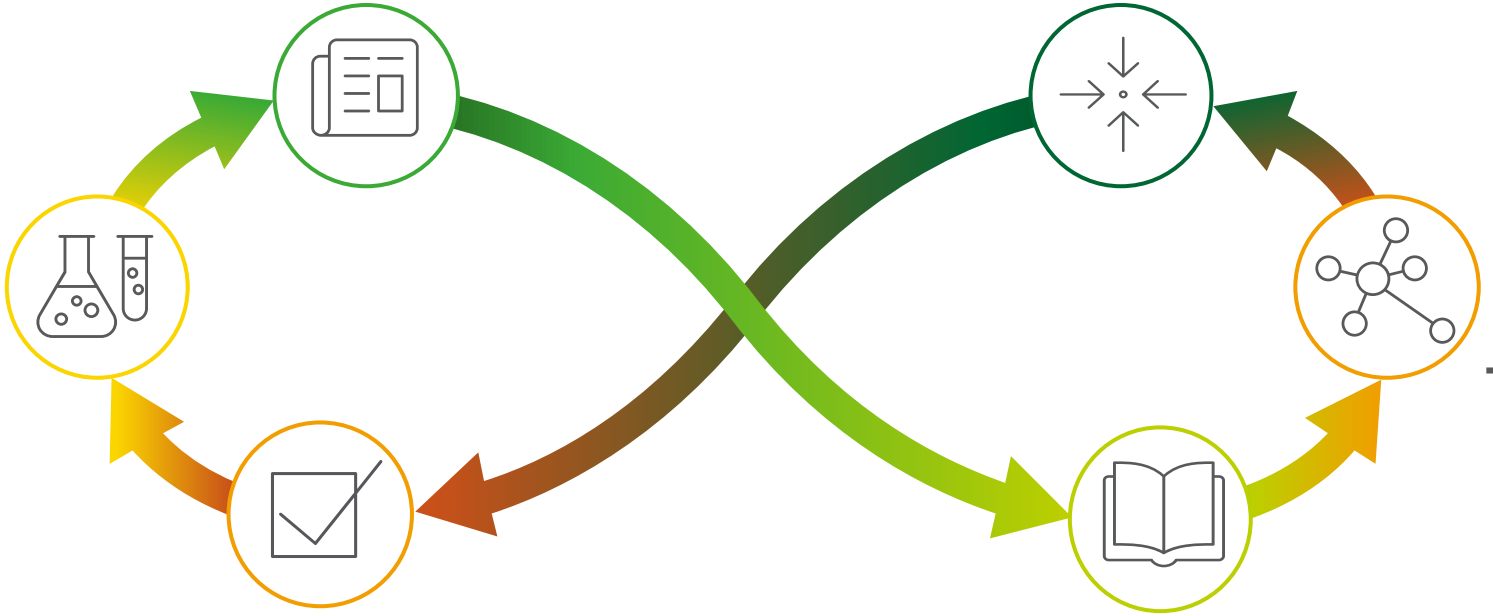
Adults
(18-64 years old, 70 kg)

Workflow of the risk assessment

Determination of the hypotheses of consumption per population category

If no reference point was available:
➔ TTC was used

Determination of the amount of substance that could potentially migrate from the FCM



If no toxicological information available :
➔ Reference point (NOAEL, BMDL)

Combinaison of:

- Quantity of substance
- Weight of the population
- Hypothesis of consumption

➔ **Exposure in mg/kg bw/day**

➔ **Evaluation according to the RACE tool**

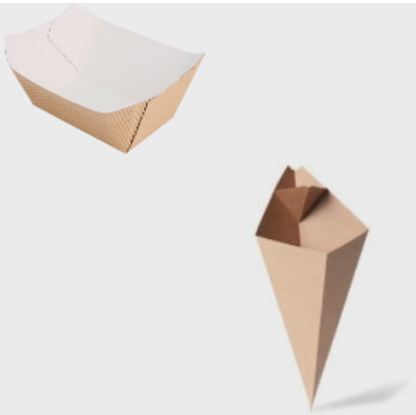
Literature search of toxicological information (e.g., TDI)

Risk assessment : BPA

Pizza boxes

Noodle box

Hamburger box



Fries trays

	Pizza boxes	Noodle box	Hamburger box	Fries trays
Children	Potential risk	Potential risk	Potential risk	Potential risk
Teenagers	Potential risk	Potential risk	Potential risk	Potential risk
Adults	Potential risk	Potential risk	Potential risk	Potential risk

TDI: 0.0002 µg kg^{-1} bw day

Risk assessment : 3,3-DMB + MOSH

3,3-DMB

Pizza box

Children	Potential risk
Teenagers	Potential risk
Adults	No risk

TTC: 0.0025 µg kg^{-1} bw day

MOSH

Straw

Children	Potential risk
Teenagers	Potential risk
Adults	Potential risk

NOAEL : 236 mg kg^{-1} bw day

Risk assessment : MOAH

Scenario 1 : 10%

	Boxes	Straws	Cups	Fries and snack trays	Ice cream bowl	Spoons
Children	Potential risk	Potential risk	Potential risk	Potential risk	Low concern	Potential risk
Teenagers	Potential risk	Potential risk	Potential risk	Potential risk	Potential risk	Potential risk
Adults	Potential risk	Low concern	Potential risk	Potential risk	Low concern	Potential risk

BMDL10 : 0.49 mg kg^{-1} bw day

Risk assessment : MOAH

Scenario 2 : 1%

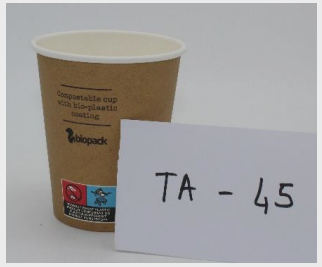
Coffee cup

Straw

Children	Potential risk	Potential risk
Teenagers	Potential risk	Potential risk
Adults	Potential risk	Potential risk

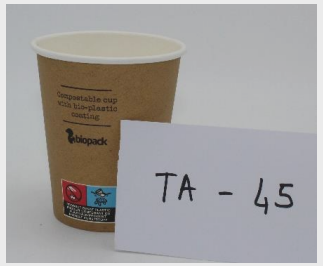
Risk assessment : PFAS

Scenario 1 :
Σ EFSA-PFAS



Scenario 1

Scenario 2



Scenario 2

Scenario 2 :
Σ all detected PFAS

	Scenario 1	Scenario 2	Scenario 2
Children	NA	Potential risk	No risk
Teenagers	Potential risk	No risk	Potential risk
Adults	Potential risk	No risk	Potential risk

Today’s Agenda

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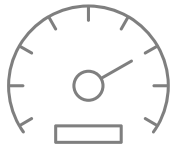

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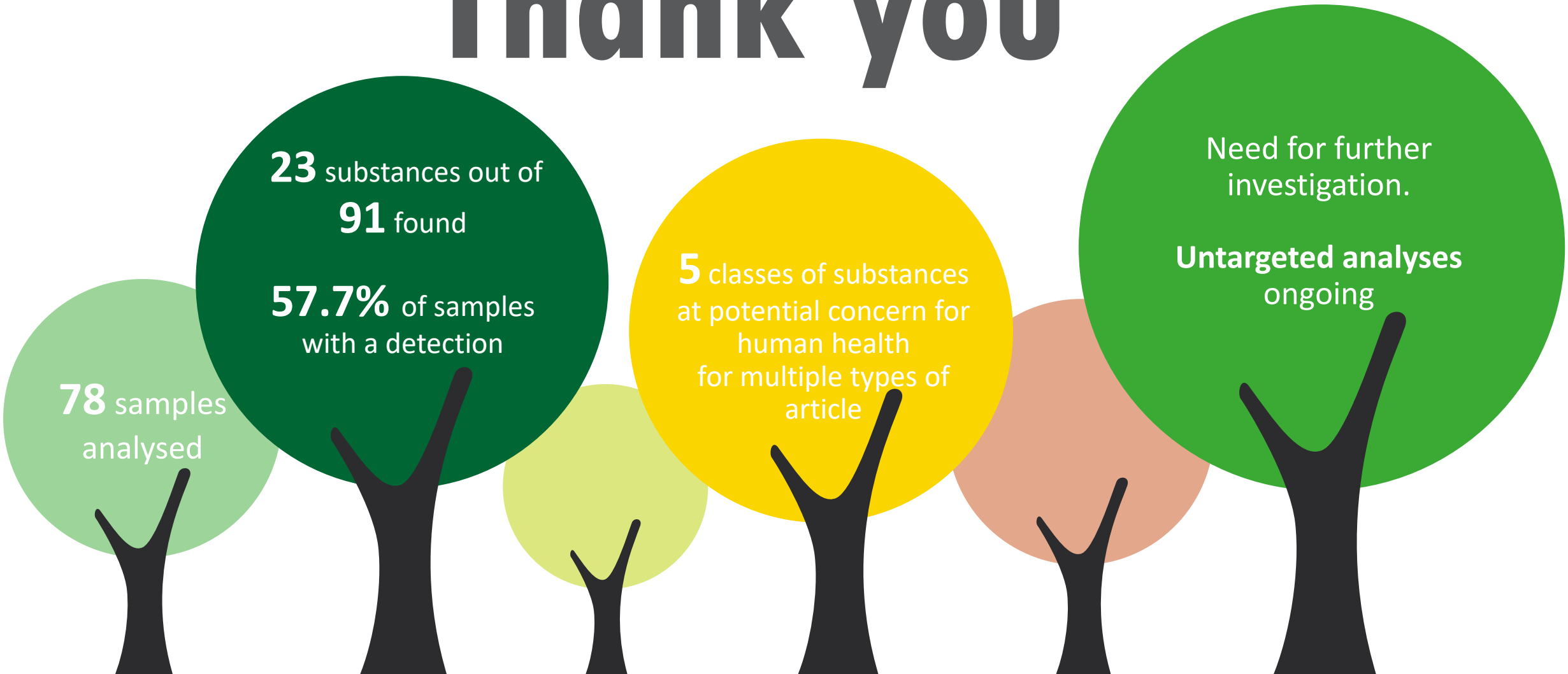
Thank you