

Summary & Outlook

Summary: Achievements in Migratox Project

- Selection of Bioassay Battery

- Comparison of 8 different genotoxicity assays, selection of miniaturized Ames test



- Sample preparation:

- Development of 2 sample preparation methods, concentration factor 300 – 2.000
 - Possible: 10 - 95% ethanol, 3% Acetic Acid, not possible: Olive Oil, Tenax



- Sensitivity:

- Approx. 5-fold Improvement by Miniaturization of Ames Test
- Further Improvement with the optimized miniaturization format Ames Sense



- Validation:

- Whole method validated, Intra- and Interlaboratory Studies prove reliability



- Sample Screening:

- >250 samples tested: Mutagenicity very rare in virgin materials: e.g. sometimes connected to epoxy monomers in coatings.
- Alarming mutagenic activities uncovered in recycled (non-deinked) printed polyolefins



Summary: Achievements in Migratox Project

• Standardization

• ILSI Expert Group Recommendations

(published in *Food Additives & Contaminants: Part A* (2019), 36(12), 1903-1936)

- Migratox Strategy aligned with ILSI Expert Group, Migratox Research (e.g. Detection Limits) important input to Expert Group publication

• Methods published in Scientific Journals:

- Rainer, Mayrhofer et al (2019). *Food Additives & Contaminants: Part A*, 36(9), 1419-1432.
- Pinter, Elisabeth, et al. *Foods* 9.2 (2020): 237.

- Activity at AOAC, Presentation to Authorities (AGES, ANSES, EFSA)



• Regulatory Acceptance of Migratox Methods:

• Industry Self Assessment:

- Part of NIAS Assessment (together with chemical analysis)
- Support Classification of Unknowns as Cramer Class III



- Submission of Dossiers to Authorities: e.g. for positive list
 - Full OECD format Ames Test + Micronucleus required!
- Substitution of required target analysis for mutagens
 - In case of suspicions: Target Analysis always required!



Migratox - End of the Project, but Research goes on!

> Funded FFG Project No. 866854 “Migratox” is finished!

> **But: The research goes on!**

Method Development & Validation

Project Migratox

Application of developed Methods

Project PolyCycle:
Application for recycled
Plastic

Project SafeCycle: Identification of
sources for mutagenicity

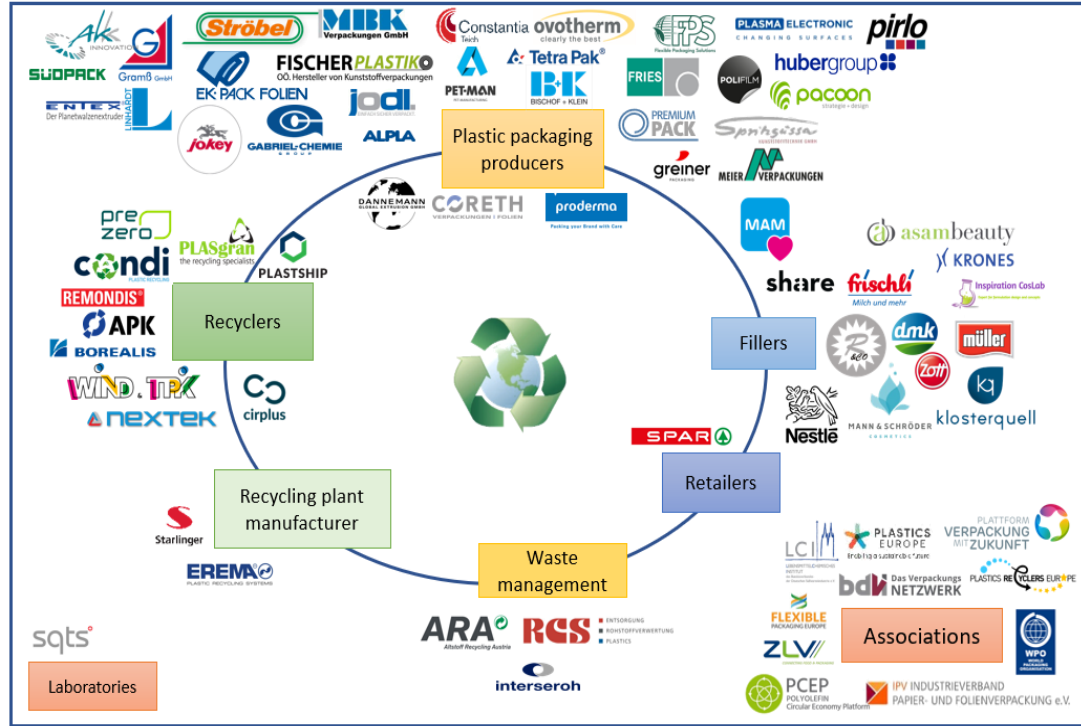
Project Pack2theLoop: Evaluation
of Recycling Loops

Project MOSH-MOAH: Migratox-Methods
for Mineraloil contamination

Project SustainFibresFCM: Migratox Methods
for Alternative Fibre Materials

Routine Testing with Migratox Methods

Project SafeCYCLE: Application of Migratox Methods for Recycling



Research goes on!

Authorities

Bundesministerium
Soziales, Gesundheit, Pflege
und Konsumentenschutz

of developed Methods

Project SafeCycle: Identification of
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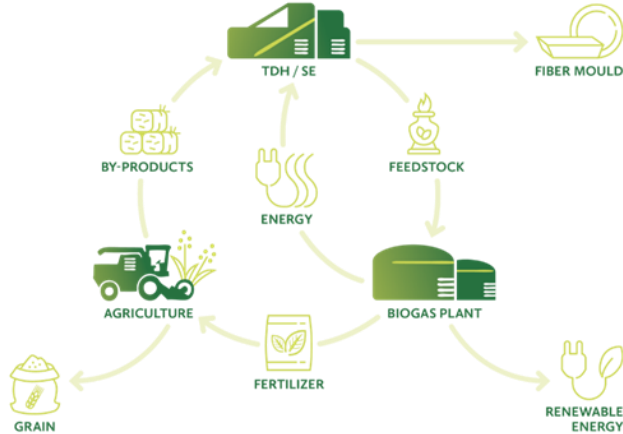
2theLoop: Evaluation
recycling Loops

Project MOH: Migratox-Methods
for Mineraloil contamination

Project SustainFibresFCM: Migratox Methods
for Alternative Fibre Materials

Routine Testing with Migratox Methods

Project: *SustainFibreFCM*
Migratox Methods as Part of a
Safety by Design Approach



Project, but Research goes on!

854 "Migratox" is finished!

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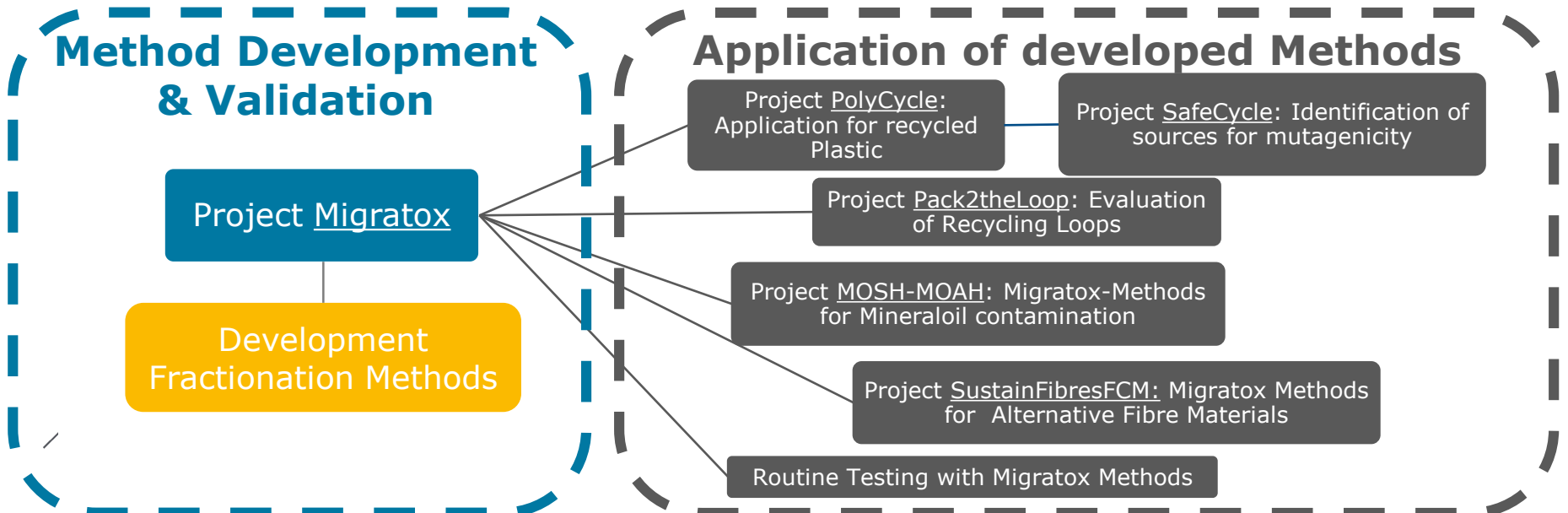
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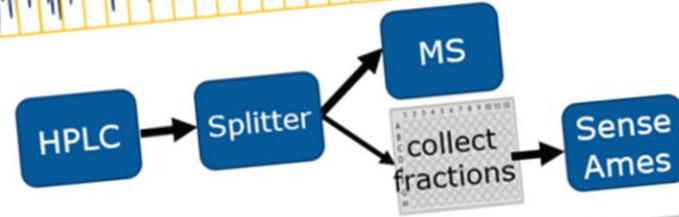
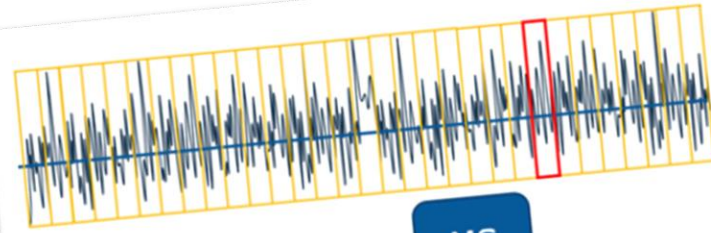
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Effect-detection by planar SOS-Umu-C genotoxicity bioassay and chemical identification of genotoxins in packaging migrates, proven by microtiter plate assays SOS-Umu-C and Ames-MPF

Daniel Meyer^a, Maricel Marin-Kuan^b, Elisa Mayrhofer^c, Christian Kirchnawy^c, Emma Debon^b, Helia Latado^b, Amaury Patin^b, Benoît Schiller^b, Gertrud Morlock^a



Original Approach:

> Testing whole mixture

Modern Approach?

> Chromatographic Fractionation (HPTLC, HPLC, SPE?)



Research goes on: Biodetection: >30 years behind in development compared to instrumental chemical analysis

Still many open questions!

First Experience as part of Migratox Project:

- Many positive results when using umu-c bioassay coupled to Thinlayer Chromatography
 - Due to improved Detection Limits?
 - Risk of false/misleading positives??
- Insufficient detection limits with normal Ames, but promising approach with Ames Sense

Modern Approach:

> Chromatographic Fractionation (GC, HPLC, IC)

Biodetection

Original Approach:

Testing whole mixture

Modern Approach?

> Chromatographic Fractionation (HPTLC, HPLC, SPE?)

Migratox ends, Research goes on:

> Offer for interested companies:

> Membership after End of funded Project still possible:

> Same Advantages, same Conditions:

> Analysis of your own samples for all research supporters

> 7 samples (10.000€), 3 samples (5.000€)

> Results from analysis as „early warning“ and as additional support for difficult NIAS analysis

> Information, update, possibility to influence the direction of new developments

> We will get in touch to discuss your personal wishes

Thank You
for the active Participation
and the Valuable Input!

Tomorrow: Symposium at different Location!

Advances in Safety Assessment of Packing Materials -
January 25th, 2024



Supporters



- > 25.01.2024 at FH Campus Vienna (Hybrid Meeting)
- > 09.30: Breakfast and coffee
- > 10.00: Start of Conference

Important!

Different Location:

Favoritenstrasse 226, 1100 Vienna
(near U1 Station „Altes Landgut“)



Thank you for your attention!

Open Questions?

FH-Prof.ⁱⁿ Dr.ⁱⁿ Silvia Apprich

silvia.apprich@fh-campuswien.ac.at

Dr. Christian Kirchnawy

christian.kirchnawy@ofi.at