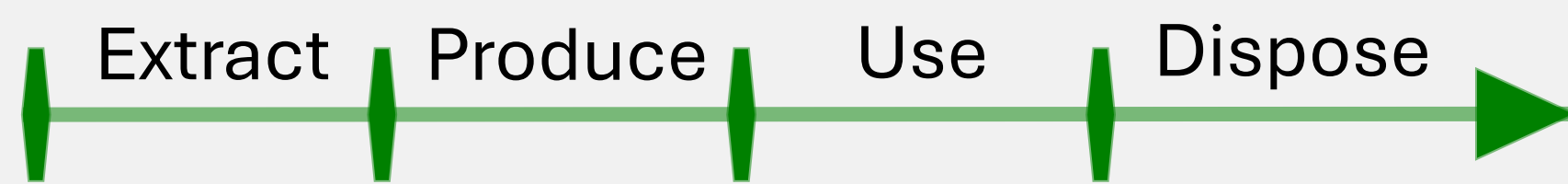


Advancing Circular Economy: Assessing Compound Migration in Recycled PE for Food Packaging

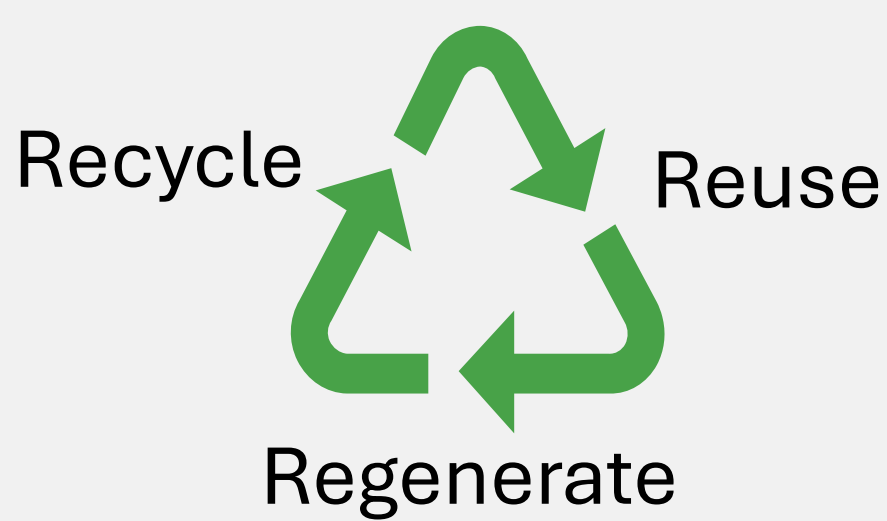
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Problem



- Loss of biodiversity
- Depletion of natural resources
- Increase in waste and pollution



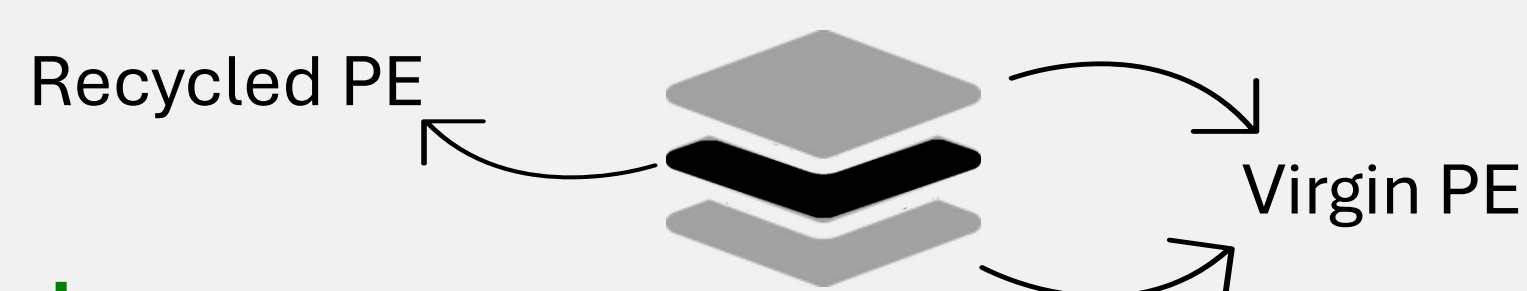
Solution

- Long term sustainability
- Less environmental impact
- Conservation of natural resources

The Plastic Problem requires a necessary **change from a linear global economy into a circular one**, especially when it comes to Food Contact Materials (FCM), which are mainly made from virgin plastics.

Method and Sampling

Objective: Compare and evaluate **Overall Migration (OM)** of non-volatile substances from three-layer samples with and without an anti-UV additive.



Samples:

- **Three-layer polyethylene (PE)** plastic package for contact with food
 - **Middle layer: Recycled PE**, contaminated with an anti-UV additive
 - **Outer layers: Virgin Plastic**

Control Samples:

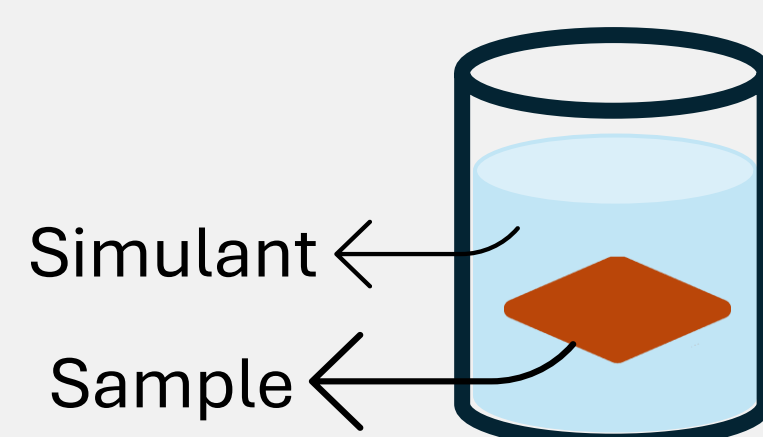
- Three-layer PE, recycled middle layer, without additives

Test details:

Duration: 10 days

Temperature: 40°C

Simulant: Ultra-pure water



Regulation: European regulation (EU) No. 10/2011 for food contact materials. In accordance with standards EN 1186-1:2002 and EN 1186-3:2002.

Preliminary Results

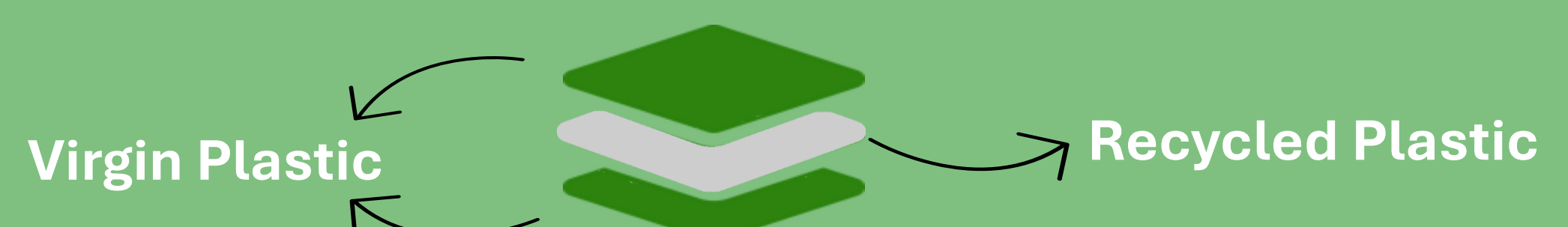
0 mg/dm²

Compound Migration

In PE three-layer samples, with recycled PE as middle layer

The use of recycled plastic for food contact is limited by regulations which requires it to come from a closed-loop recycling process.

Alternatively, recycled plastic can be used without direct food contact, with only virgin plastic touching the food, thus reducing the use of virgin plastic while, also incorporating recycled plastic.



Achieved Purpose

evaluate the overall migration of substances from plastic packaging, due to the presence of recycled materials and additives, assessing the safety for food contact.



Future work

Optimizing the testing protocol

Improving the evaporation method

Enhance the accuracy and applicability of these preliminary results to real-world and industry conditions