



Recycling of plastic materials and articles intended to come into contact with foods

Recycled plastic with the intended use as food-contact material (FCM) needs to be recycled at a high safety level. EFSA defined different requirements for recycling processes depending on whether they are based on a Suitable technology or developed as a Novel technology [1]. For FDA, a uniform approach is recommended to show that the recycled material is safe for use in contact with food [2]. Both organizations consider a challenge test an important element of the safety evaluation.

The following pages contain information on Recycling of PET: PET Challenge tests (EFSA, FDA) and Recycling of non-PET: Novel technologies (EFSA)



Triskelion supports your FCM recycling authorization

- Dedicated analytical-chemistry teams can address your experimental questions at exactly the right level: efficient screening analysis with excellent throughput as well as tailor-made research studies on state-of-the-art analytical equipment operated by dedicated experts (PhD level).
- With more than 40 year experience in Food Contact Applications and Food Contact Notifications, we will support you with expert insight during dossier compilation.
- Triskelion experts have an excellent track record in consortium management and will ease your administrative burden of joint submissions.

References

[1] Commission Regulation (EU) 2022/1616 of 15 September 2022 on recycled plastic materials and articles intended to come into contact with foods, and repealing Regulation (EC) No 282/2008

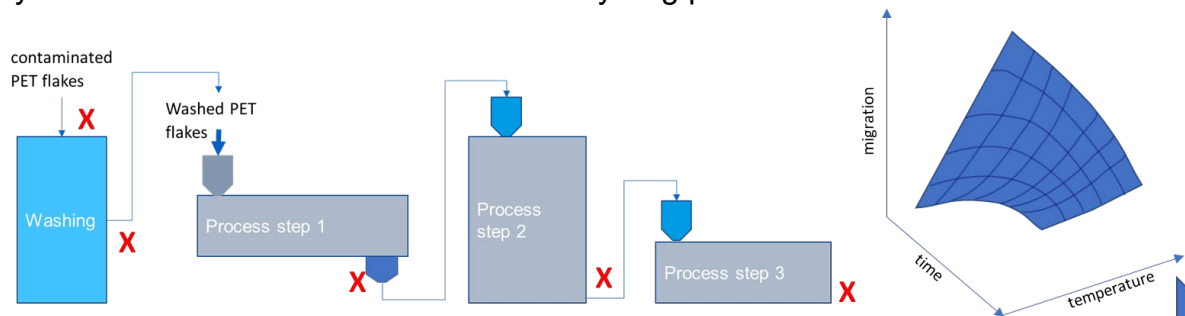
[2] Center for Food Safety and Applied Nutrition, Office of Food Additive Safety: Guidance for Industry: Use of Recycled Plastics in Food Packaging (Chemistry Considerations), July 2021.



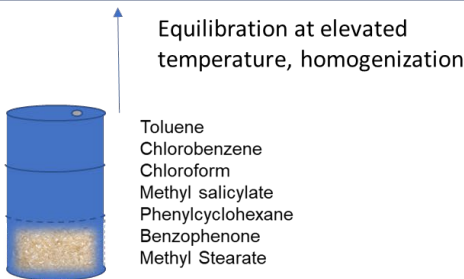
Recycling of PET: PET Challenge tests (EFSA, FDA)

EFSA considers mechanical recycling a Suitable Technology for recycled PET which is intended to come into contact with foods. Each process needs to be authorized individually and a Challenge test shall be conducted according to well-defined safety assessment criteria [3]. For FDA, a Pre-notification Consultation (PNC) can be requested to obtain a Letter of No Objection (LNO). A challenge test is one of the key elements of such a PNC request.

- Plastic material is spiked with surrogate contaminants.
- The contaminated material is decontaminated, relevant samples are taken (X).
- Chemical analysis to determine the residual content of the surrogates in the samples.
- Safety calculations to demonstrate that the recycling process leads to safe material



a) Polymer contamination b) Decontamination and sampling c) Verification of decontamination d) Safety calculations



Why outsource your PET challenge test to Triskelion?

- Challenge test pioneers support Triskelion as consultants
- Triskelion has dedicated tools and procedures for a well-controlled contamination process
- Triskelion has more than **40 years** experience in migration and residual-content testing which is the core of the analytical chemical work in a Challenge test
- Triskelion developed state-of-the-art analytical methods for residual surrogate analysis
- Triskelion performs *in silico* modeling for tailor-made safety calculations

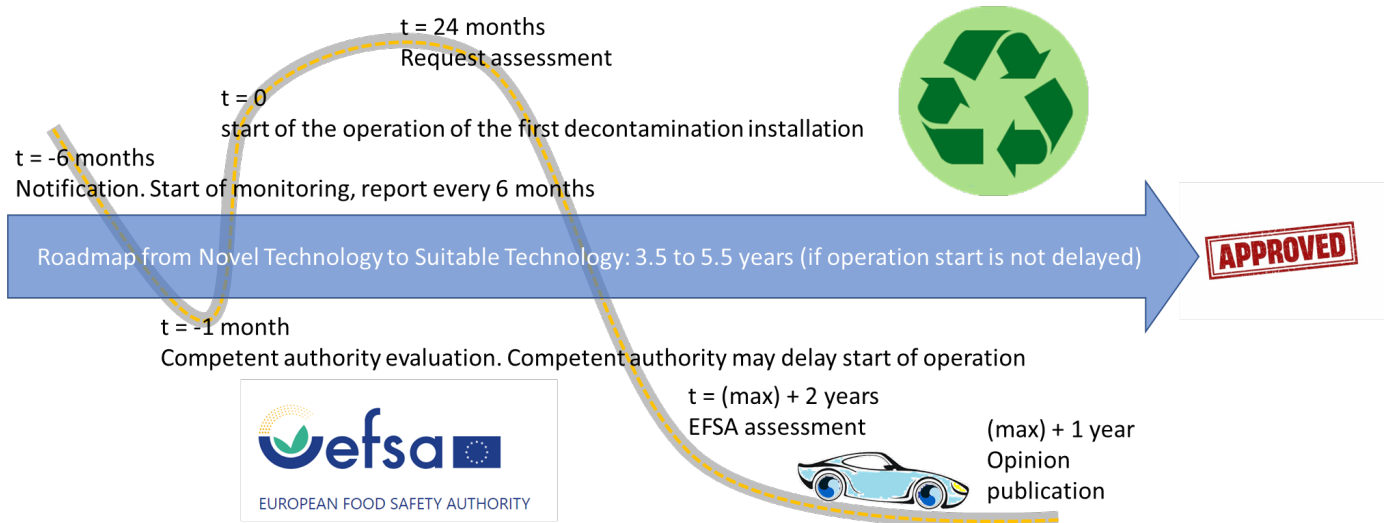
References

[3] EFSA Panel on food contact materials, enzymes, flavourings and processing aids (CEF); Scientific Opinion on the criteria to be used for safety evaluation of a mechanical recycling process to produce recycled PET intended to be used for manufacture of materials and articles in contact with food. EFSA Journal 2011;9(7):2184.



Recycling of non-PET: Novel technologies (EFSA)

EFSA considers every technology not listed as a Suitable technology a Novel technology. A Novel technology needs to be notified before recycled FCM can be placed onto the market and regular monitoring should be conducted. After at least a two-year period, the developer can request the assessment of the Novel technology.



Triskelion services for Novel technologies

- Design of a testing strategy

When notifying a Novel technology, the developer needs to show that the produced material is safe for use as FCM. With significant experience in petitioning and the multidisciplinary team of chemical engineers, mechanical engineering, analytical chemists and food scientist, our project managers advise and support you for the studies that should be conducted.

- Monitoring

Triskelion offers different analytical screening methodologies to target all relevant contamination in the input materials and the residual contaminant levels in the final materials and articles. Special sample preparation methods can increase sensitivity. The transfer of contaminants to food can be determined *in silico* with modelling software or in migration experiments.

- Challenge testing

The multidisciplinary team of project managers has the perfect competence mix to design the challenge test (select the surrogates, contamination procedure and analytical methods) for the Novel technology you are developing.