



Plastics Fate and Effects in the Human Body

Summary of Deliverable Number: D1.2
Deliverable Title: Analytical characterization data for the first
set of MP/NP samples

WP1: Material selection and physicochemical characterization
Lead Beneficiary: Annegret Potthoff (Fraunhofer)
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Deliverable Information

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Summary of Deliverable No. 1.2

Deliverable Title: Analytical characterization data for the first set of MP/NP samples

Introduction

This document provides a summary of D1.2, which is a confidential deliverable within the scope of PlasticsFatE. This summary contains the essential details of the original deliverable. In compliance with intellectual property protection, no confidential information is given.

Summary

In WP 1, four specific objectives will be addressed: (1) successfully handle and govern the sample management, preparation and operational flow through the project; (2) deliver a panel of pre-characterized MP/NP test materials, suitable for exposure, fate and hazard testing in WP2-5, (3) set up “state-of-the-art” measurement techniques and characterization methods for identification and testing of MP/NP in the project and, (4) develop standard operation procedures (SOPs) on how to handle, sampling, testing (basic characterization) and distribute the selected test materials among all partner laboratories.

Deliverable 1.2 focuses on analytical data of a first set of MP/NP samples, that are distributed among the partners. The set consists of both, primary and secondary plastic particles of various chemical composition (UHMW-PE, LDPE, HDPE; PET), which were produced and provided by project partner BAM. All materials were delivered to PlasticsFatE partners for testing in WP 2-5 as specifically re-quested.

The quality of toxicological and ecotoxicological studies is determined by the availability of valid data for relevant properties of the sample. The relevance of properties is discussed, and a list of parameters is selected in accordance with previous studies as Jemec Kokalj et al. 2020 [2].

Together with the selection of polymer samples, a basic characterization has been done (see Deliverable 1.1). In this deliverable, a broader spectrum of analytical methods is used, whereas standardized methods or standard operation procedures are applied.

The main goal is, that all partners in PlasticsFatE should be enabled to access the same data for interpretation of test results and for publications. In this respect, the deliverable relates to all specific objectives of WP 1. The goal is to prepare “Technical Data Sheets” (TDS) that contain all relevant data for each type of distributed polymers.

For the first set of samples, data were provided from three PlasticsFatE partners: BAM, CNR-ISTEC and Fraunhofer. Measurement procedures are harmonized and in accordance with standards. All available data were included in the TDS. If additional information occur, TDS might be supplemented. Therefore, each data sheet receives a version number and a date.

Properties as particle size distribution that are crucial for quality control are measured by more than one partner. Standard Operation Procedures (SOP) for analysing were developed and discussed in CUSP WG1. In Task 1.4, an ILC “Quality control measurement of particle size distribution parameters of microplastics (1-1000 µm) using laser diffraction” is currently organized by BAM with the support of Fraunhofer.

Important to know: The characterization of properties is strictly limited to the polymer as it is and does not consider interactions with exposure media while testing. Extrinsic parameters that depend on experimental setup for testing are excluded.