



PlasticsFatE

Improving our present understanding of the impact of micro- and nano-plastics and associated additives/adsorbed contaminants in the human body

Newsletter No.2 11-22

www.plasticsfate.eu

In this issue:

Welcome from our Scientific Coordinator	2
PlasticsFatE Meetings	3
Engaging with Communities	4
Work Package Updates	6
In other News	11
Forthcoming Events	12
Papers and Posters	14
About PlasticsFatE	15
About CUSP	16

Engage with us:

-  [Email us](#)
-  [Visit our website](#)
-  [Join our community](#)
-  [Follow us on Twitter](#)
-  [Join us on LinkedIn.com](#)
-  [Watch our videos on YouTube](#)
-  [Access our publications on Zenodo](#)

Glossary:

A/C	–	Adsorbed Contaminants
DSS	–	Decision Support System
IATA	–	Integrated Approaches to Testing & Assessment
JRC	–	Joint Research Centre of the EC
MCDA	–	Multi-Criteria Decision Tool
MNP	–	micro and nanoplastics
NTA	–	Nanoparticle Tracking Analysis
SOP	–	Standard Operating Procedure
WP	–	Work Package

Contact us:

Scientific Coordinator
[Rudolf Reuther, ENAS](#)

Project Coordinator
[Mark Morrison, Optimat Ltd](#)

Project Manager
[Hildegard Luhmann, ERS](#)

Communications and Dissemination Lead
[Lesley Tobin, Optimat Ltd](#)



PlasticsFatE has received funding from the European Union's Horizon 2020 Research and Innovation programme, under the Grant Agreement number 965367





Dear colleagues, Dear readers!

I warmly welcome you to this 2nd PlasticsFatE Newsletter, where we want to share with you some of the highlights of the work we have done so far and the first results we have achieved in our pioneering research towards a better understanding of how micro-and nano-plastics (MNPs) and associated chemicals may affect human health.

During these first 18 months, our team has been especially busy with selecting and providing a panel of relevant and representative test materials (polymers with various sizes, shapes, surfaces, ages etc.) to test the performance and applicability of available methods to MNPs, including sample preparation, physicochemical measurement, biological assays, fate modelling, and to adapt and develop them further, where needed.



Ultimately, only well-tested and validated methods will produce the scientifically sound and robust data we need to assess true exposure, fate, and hazard; and to develop a new and appropriate risk assessment strategy that will help us to estimate, predict or at best avoid possible adverse effects caused by MNP particles and/or any chemicals that have been added or adsorbed from the environment.

First results indicate that the pristine materials we used (including PE, PET, PS) to test and/or further develop our methods hardly show any significant effects, e.g., on cell viability, depending on the doses used: this is something we did expect. For this reason, we have now started to use new and advanced assays, such as 2D/3D cell models that represent the gastrointestinal and respiratory tracts (the two main uptake and exposure paths for MNPs in humans), and more "realistic" samples derived from ageing and weathering, and from products on the market, to obtain a better understanding of what may really happen when these particles are taken up and enter the human body and may be translocated further in surrounding tissues and secondary organs (such as the kidneys, lymph nodes, liver, etc.).

Another focus in the upcoming months will be to monitor the exposure of workers to MNPs through inhaled air at different industrial sites where plastics are manufactured, used or recycled; and to use specific biomarkers to disclose any related and, in particular, long-term health effects. These studies will form part of the case studies that we will run to ultimately demonstrate the applicability of the methodologies we have developed and of the quality and robustness of the data we have received, under more authentic conditions.

Together with our sister projects in the CUSP cluster, with our findings we can help improve and strengthen relevant policies and regulations, such as the EU Plastics Strategy and REACH, as well as contribute to the needed method standardization and harmonization, to ensure the safe and sustainable handling of current and future plastics along their life cycle.

We hope you enjoy reading this newsletter and we welcome any feedback from you!

Warm regards,
Rudolf



PlasticsFatE Meeting and CUSP Assembly, June 2022, Ispra, Italy

PlasticsFatE partners defied the challenges of airport chaos, staff shortages, baggage disappearances, delays and cancellations to finally meet at the Palace Grand Hotel, Varese, Italy from 7th-10th June 2022, for our first face-to-face project meeting, prior to a [three-day CUSP Assembly](#) hosted by JRC in Ispra.

Read more about it [here](#)



Image: PlasticsFatE Consortium members, Varese, Italy. June 2022

PlasticsFatE General Assembly, September 2022, Edinburgh, Scotland

More than 45 PlasticsFatE partners travelled from across Europe to convene in Edinburgh for its 2022 General Assembly from 27th - 28th September within the grand Edinburgh City Chambers building.

Read more about it [here](#) and watch the short video (with traditional Scottish music!) [here](#)



Image: PlasticsFatE Consortium members, Edinburgh, Scotland September 2022



PlasticsFatE at NanoWeek 2022

Limassol, Cyprus. June 2022

PlasticsFatE Project Coordinator, Mark Morrison (OPTIMAT, UK) and WP6 Lead Lesley Tobin (OPTIMAT, UK) took part in the recently held NanoWeek event, organised in Limassol, Cyprus in conjunction with the final conference of the NanoCommons project. Titled “Evolution of Nanosafety and materials sustainability as we transition into Horizon Europe”, the event attracted over 250 participants. Mark and Lesley took the opportunity to present the project’s second year of activities and outcomes.



Images: PlasticsFatE and CUSP poster session

NanoWeek also enabled members of Communities of Research (CoRs), including CUSP, to engage in discussions with counterparts. A session titled “Nanoplastics characterization, detection, and informatics: Lessons from nanoEHS” chaired by Vladimir Lobaskin (Associate Professor at University College Dublin) and Anil Patr (Director, Nanotechnology Core Facility — Office of Scientific Coordination, USA Food and Drug Administration) opened a window of opportunity for PlasticsFatE to talk about its current activities, with a particular focus on FAIRification of data for the benefit of other members of the nanosafety community.

European Bioplastics Research Network (EBRN)

Online June 2022

PlasticsFatE Scientific Coordinator, Rudolf Reuther (ENAS, Germany) was invited to present the project at [the 6th European Bioplastics Research Network \(EBRN\) Event](#). Organised by BIOPLASTICS EUROPE, the event was aimed at glean insights from 10 Horizon projects on the EU policy for bio-based and biodegradable plastics. Rudolf discussed how the final contribution of PlasticsFatE and CUSP to relevant EU policies will comprise recommendations to policy makers based on newly generated scientific human exposure, fate and effects data for micro- and nano-plastics (MNP) reduce, limit or ban production, application, consumption, disposal of harmful plastics and of MNP down to a basic and fundamental level. Rudolf also described how PlasticsFatE and CUSP will contribute to the EU Strategy for Plastics as part of the EU’s Circular Economy Action Plan.

PlasticsFatE is specifically addressing the following:

- European Green Deal and the Zero Pollution Action Plan
- Chemicals Strategy for Sustainability
- EU “Strategic Research and Innovation Plan (SRIP) for safe and sustainable chemicals and materials”
- EU REACH chemicals legislation
- Directives, such as the EU drinking water directive

Through dedicated workshops, roundtables, policy briefs, peer-reviewed publications, conference presentations, and social media, the project is engaging with a wide range of stakeholders to inform its policy-related work.



6th EBRN EVENT

„Insights from 10 Horizon projects: EU policy for bio-based and biodegradable plastics“



GAIKER Researcher Introduces New Approach Methods to Human Tox Students

PlasticsFatE partner Alberto Katsumiti (GAIKER) recently delivered a highly informative training session at the Research in Environmental Contamination and Toxicology event, held under the aegis of Investigación en Contaminación y Toxicología Ambientales (INCYTA), at the Marine Station of Plentzia, University of the Basque Country.

In his presentation, titled “Assessment of environmental pollution and its impacts on human health,” Alberto discussed the use of New Approach Methodologies (NAMs) to assess endpoints of interest in toxicology and presented the testing strategy adopted in PlasticsFatE to assess the effects of micro and nanoplastics on human health.

Read more about it [here](#)

Gaiker

MEMBER OF
BASQUE RESEARCH
& TECHNOLOGY ALLIANCE



www.ehu.es/CTA
INGURUMEN KUTSADURA ETA TOXIKOLOGIA
CONTAMINACION Y TOXICOLOGIA AMBIENTALES
ENVIRONMENTAL CONTAMINATION AND TOXICOLOGY
GRADUONDOKO MASTERRA / MASTER DE POSTGRADO UPV/EHU
Mención De Calidad MEC 2005-2012
Ref. MO2006-00749



Image: Alberto Katsumiti presents new approach methods

PlasticsFatE at VAMAS Event: Measurement needs for microplastics

Two PlasticsFatE partners - Korinna Altmann (BAM) and Ulrike Braun (UBA) supported and participated in the Versailles Project on Advanced Materials and Standards (VAMAS) Technical Working Area 45, 'Micro and Nano Plastics in the Environment' event.

During Korinna's presentation on "Harmonisation efforts of the CUSP projects," she introduced the [CUSP](#) research focus and its harmonisation efforts. This included the announcement of an international laboratory comparison study in 2023 and information on the production of reference materials at BAM. In a talk titled "Microplastics in international standardization," (ISO, CEN) Ulrike gave an overview about the actual state of standardisation of microplastics. Specific emphasis was placed on the scope and the work program of the Joint Working Group of ISO/TC 147, as well as the first outcome of standardized protocols.

Read more about it [here](#)



Image: Korinna Altmann presents at VAMAS



Achievements

1. WP1 established the PlasticsFatE repository of representative MNPs. A first set of MPs including some primary plastics, some commercial samples and some secondary micro particles (MP), was obtained through cryo-milling process; a second set of NPs (PE, PP and PET) was obtained through synthetic methods and tested for their size reproducibility and endotoxin contamination.
2. WP1 performed a basic physicochemical characterisation (Particle Size and Morphology by imaging techniques, Particle Composition, Surface chemistry, Specific surface area, Density, Crystallinity, Colloidal properties once dispersed in water or in pristine dispersed samples) of target samples, by providing a technical data sheet of the most representative ones.
3. WP1 investigated the dispersability of target samples by providing protocols for the preparation of stock and working dispersion, testing known dispersants (Sodium Surfactin, Tween, Triton) and natural surfactants present in biological relevant fluids (simulated lung or gastrointestinal tract surfactants, human/bovine albumin or human/calf serum), mimicking real matrices.
4. WP1 tested the applicability of different techniques for identifying, characterizing and quantifying MNPs in real matrices. To understand their behaviour and relationship between physicochemical properties and their effects vs human targets, we measured particle numbers, sizes and shapes and we tested methods for MNP concentration and mass-based characterization.
5. WP1 is planning two internal inter laboratory comparison (ILC) studies for the detection of MNP size through diffraction laser (MPs) and DLS technique (NPs). WP1 is coordinating ILS studies at CUSP level.
6. WP1 is developing a new method for the analysis of Polyvinyl-chloride (PVC) as a mass determination method. The method is based on combustion ion calorimetry (CIC), and we are contributing with expertise in standardization (ISO/TC 147/SC2-JWG-1), being heavily involved in the preparation of first standards.

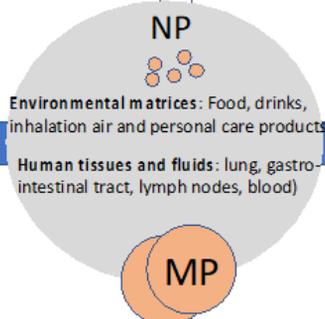
SIMULATED SAMPLES-LABORATORY TESTS

T1.1

1. **Milling/Aging/Weathering/Synthesis:** providing target MNPs
2. **Pchem identity:** collecting data of basic characterisation, preparing Technical Data Sheet
3. **Dispersability:** preparing reproducible stock and working suspension
4. **Labelling:** investigating methods for MNPs traceability within exposure matrices

T1.4

8. **Interlaboratory studies (ILS):** implementing ILS to validate the developed methods and techniques



T1.3

5. **Evolution of MP/NP in testing/exposure media:** develop and «validate» analytical method for their characterisation before passing to real samples.

REAL SAMPLES-SAMPLING

T1.2

6. **Extraction:**
Digestion protocols;
Solid Phase Cytometry (SPC);
Sampling air-transported microplastics.

7. **Characterisation:**
Micro-FTIR and micro-Raman mapping;
Electronic and optical microscopy;
Flow Particle Imaging Analysis;
Thermal Extraction and Desorption Gas Mass (TED-GC/MS)
Solid Phase Cytometry (SPC)

T1.5

9. **International procedures:** adapting and transferring international procedures to and from PlasticsFate



Achievements

1. WP2 is progressing with MNP excretion (faeces and urine) and structuring task distribution
2. A fast-screening SPC method has been developed to assess MPs in unknown food / water samples, and a small case study has been performed
3. Protocols for air sampling and analysis of MNP in different working environments have been established and the first sample collections have been performed (personal and stationary samplers): personal samples levels below DL are being tested by TED-GCMS.
4. Different air sampling devices have been made available and are being tested. This entails the collection of MPs above ground at 1,8 m height to simulate human inhalation and the inhalable and respirable fraction of nanoplastics
5. A new fate model "SimpleBox4MP&NP" has been developed. This is based on the multimedia, nano-specific fate model 'SimpleBox4Nano' which is to be adapted and validated for MNPs
6. Physiologically based pharmacokinetic (PBPK) and compartmental models will be developed to determine the fate of MNP entering the body by ingestion (example: BPA) and inhalation (example: styrene),
7. The selection of PCPs is undergoing finalization. Meanwhile there is now a standard operating procedure (SOP) for MNP extraction from different PCPs in the ongoing preparation and selection of meaningful products that resemble the 3 main exposure routes: dermal exposure (liquid eyeliner and face cream), ingestion (lipstick/lip care and toothpaste), and inhalation (make-up powder and deodorant spray)
8. A draft QA/QC document has been developed on "Microplastic analysis, Best Practices and Method Validation: A guide for scientists investigating the occurrence of microplastics." The focus is on good laboratory practices, sampling, analysis (microscopic detection, FTIR, Raman, Pyr-GC/MS), reporting and method validation. Additional topics include sample storage and transportation, contamination or other detection techniques, will be shared within the CUSP cluster.

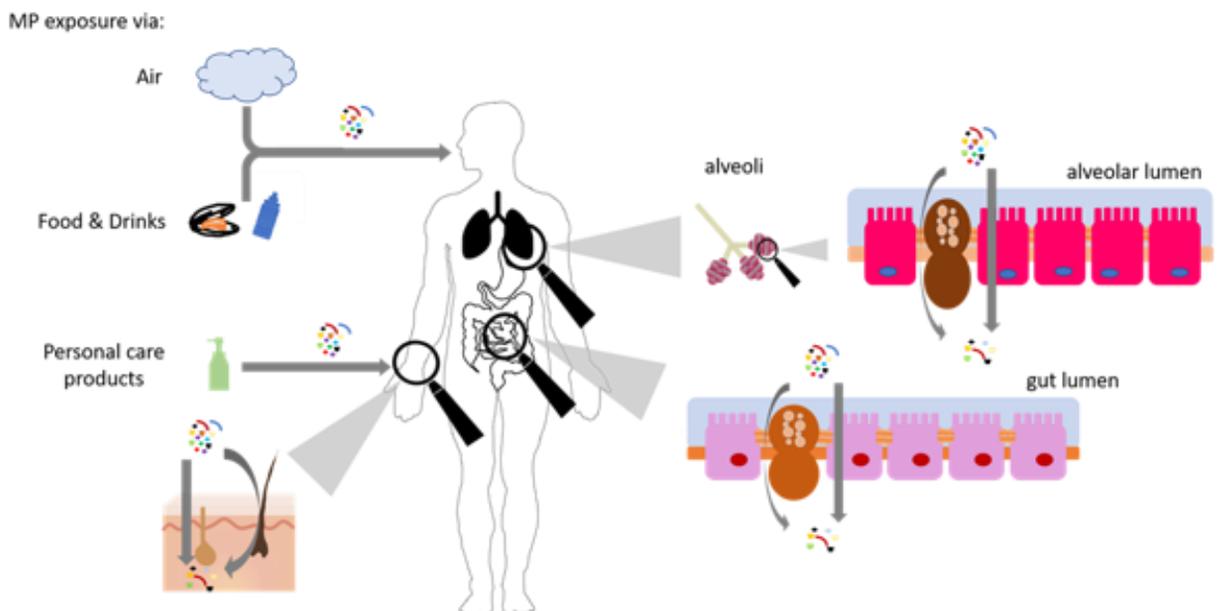


Figure. Graphical abstract of the manuscript submitted to Nanoimpact entitled "Human exposure to micro- and nano-plastics and their translocation into the human tissues"



Achievements

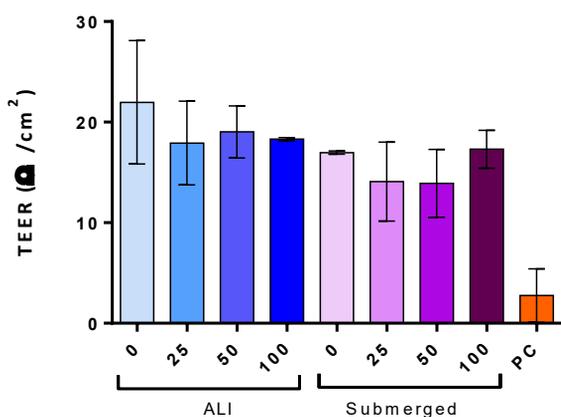
1. Preliminary studies completed on the acute effects of selected MNPs, such as HDPE296, PET002, PETb001 and PS934Eu, on the viability of cells from the respiratory and gastro-intestinal tracts as well as the liver and immune system and results achieved. No significant effect on cell viability for doses below 200µg/mL
2. Preliminary tests of the acute effects of HDPE296, PET002, PETb001 and PS934Eu on membrane integrity of cells from respiratory, gastro-intestinal tracts, liver and immune system completed and results achieved
3. Preliminary test of immune effects (IL8, IL6, RANTES, MCP-1, TNF alpha, TGF beta at gene level) of HDPE296 and PS934Eu on Calu3 in ALI exposure system completed and results showed no significant effects for doses up to 45µg/cm²
4. Preliminary test of immune effects (IL6 and IL8 at protein level) of PET002 on Caco2 and Hep-G2 in submerged exposure system completed and results revealed dose dependent release of IL6 and IL8.
5. Preliminary work completed on digested HDPE296 particles and exposure to cells and results achieved.

The University of Ljubljana reports that in addition to dietary intake, inhalation of indoor air is an important route of human exposure to microplastics. Therefore, it is important to study the effects of different types of microplastics on lung tissue. In our study (UL), we mainly focused on the effects of microparticles of polyethylene terephthalate (PET), one of the most widely produced polymers in Europe, on the integrity of the lung epithelial barrier.

To mimic lung tissue, A549 cells were grown on cell culture inserts, either in submerged or at the air-liquid interface (ALI). The latter is more similar to the natural environment in the alveoli. The integrity of the lung epithelial barrier before and after exposure of A549 cells to PET microplastics was assessed by measuring transepithelial electrical resistance (TEER) and epithelial permeability (measured by the Lucifer Yellow assay). TEER measures how much of this electrical signal is blocked by the cell layer, quantifying the integrity of the barrier. A decreased TEER value is an indicator of an impaired barrier or loosening of tight junctions. Lucifer yellow is a small, hydrophilic molecule that moves through the cell monolayer by passive paracellular diffusion and thus serves as a marker for the establishment of proper tight junctions.

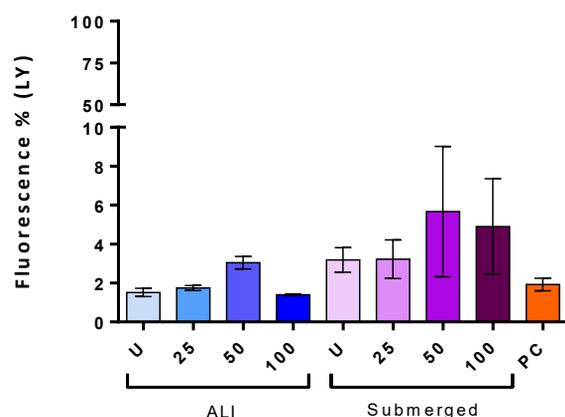
The results showed that after acute exposure (48 hours) PET_002S_NP_F particles had no significant effects on the integrity of the lung epithelial barrier.

Transepithelial electrical resistance (TEER)



PET_002S_NP_F concentration (µg/mL)

Epithelial permeability (Lucifer Yellow assay)

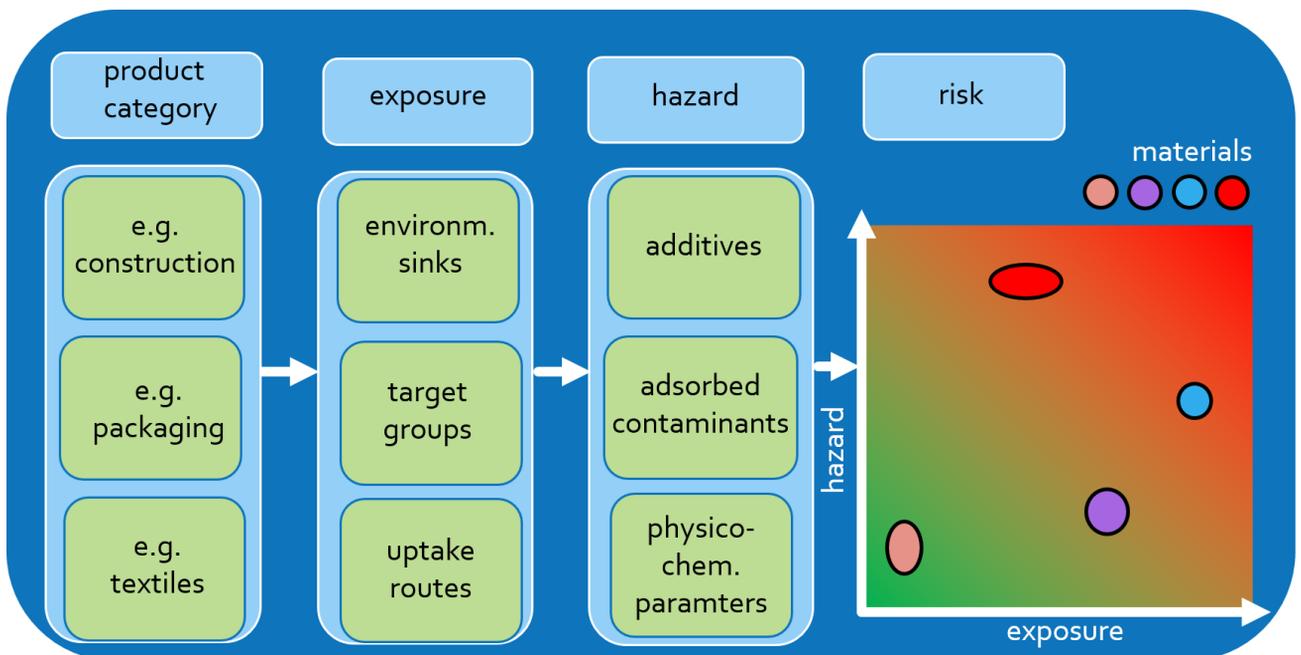


PET_002S_NP_F concentration (µg/mL)



Achievements

1. IATAs for nano- and microplastic including associated chemicals: initialisation of IATA development by setting up a case study on plastic as food contact material.
2. Development of a structure for a decision tree as backbone for PMCDSS consisting of the most-relevant criteria regarding nano- and microplastic exposure and hazard. A guided set of questions has been formulated that require as little input from the user as possible.
3. A first draft for a web-based platform for stakeholders has been prepared. The platform will ultimately integrate all WP4 results and guide users through the selection of analytical, testing and/or modelling approaches for nano- and microplastic and associated chemicals
4. Establishment of a close collaboration with relevant CUSP working groups



Web-based decision support system

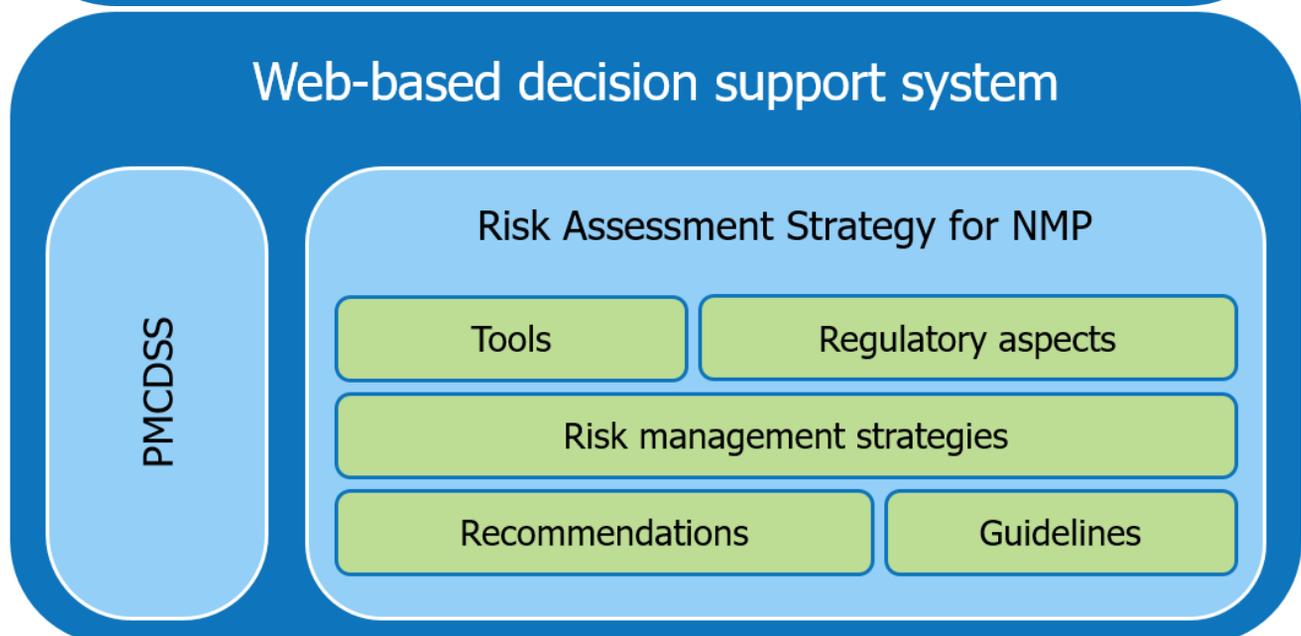


Image credits:
top – BOKU; bottom - ITENE.



Achievements

- To validate methods for MNP detection and new strategies for occupational exposure monitoring and bio-monitoring:
 - i) a first approach to the elaboration of a common procedure for occupational exposure monitoring work has been made with the participation of the different partners involved in this respect, which will be taken as a starting point for the development of the monitoring strategy;
 - ii) several pilot field campaigns have been performed on industrial facilities (plastic packaging companies and plastic bag producing plant), including the collection of air samples by personal stationary samples, and characterisation analysis of the samples collected by the sampling devices used are being analysed;
 - iii) the necessary agreements and documents concerning the ethical aspects related to bio-monitoring involving the participation of workers have been obtained.

- In order to study the potential of plastic particle surfaces of reference MP/NP to act as vectors of potential pathogens, several analyses are in progress:
 - i) toxicity evaluation of metals from tyre MPs to bacteria and a study on transfer of antibacterial resistance gene (ARG);
 - ii) incubation of aged different MNPs in biofilm reactors using 3 different bacteria strains, and bacterial growth determination;
 - iii) studies on biofilm development.

- For the preliminary investigations on long-term MNP effects in the human body:
 - i) on the one hand, first studies on exposure by food and air are being carried out, including quantification of uptake of MNPs via aquatic organisms that constitute a significant part of the human diet (freshwater food) also using benthic organisms; and
 - ii) considering the potential effects that the exposure to MNPs can have on workers handling plastic, a panel on biomarkers of inflammation and oxidative stress on possible target organs/systems have been defined as a basis for the subsequent work on bio-monitoring.

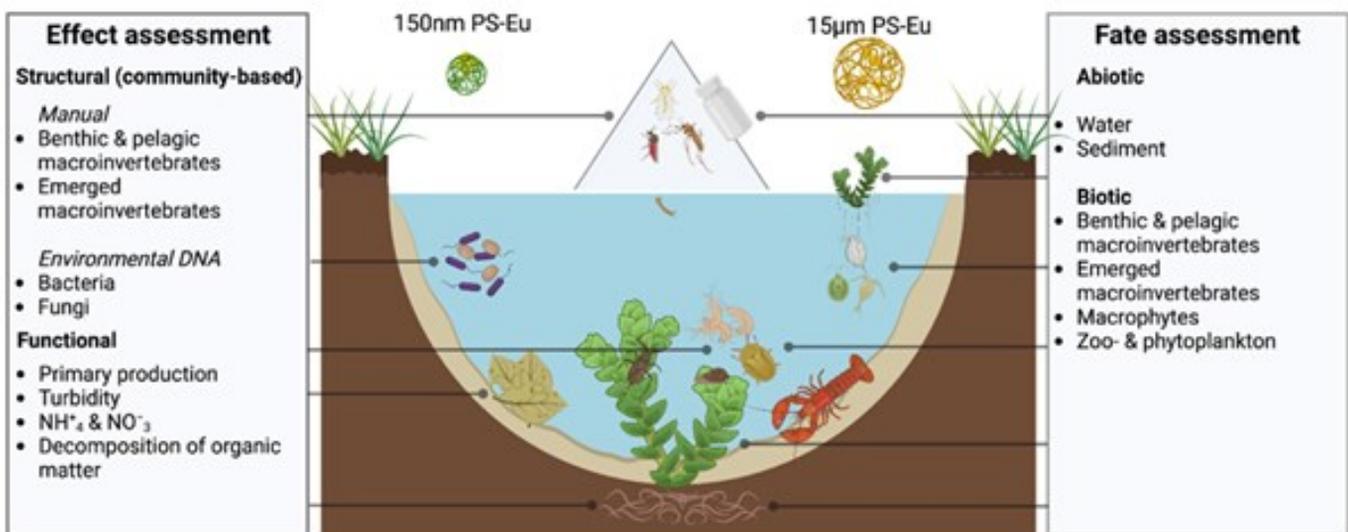


Image Overview of the assessed points planned to study on preliminary investigations on long-term effects of MP/NP in the human body.



From Science to Policy – CUSP’s first policy brief published

The five CUSP projects have produced the first policy brief explaining how the initiatives have come together to translate science into policy-relevant data.

How micro- and nanoplastics (MNP) might be affecting human health is still unknown, and so policymakers and regulatory authorities around the world are increasingly implementing regulatory measures to address this concern. The multi-disciplinary teams within the five projects and their six transversal working groups are collaborating closely with the European Commission’s Joint Research Centre (JRC) to enhance the policy relevance and impact of the research. The scientific teams are putting together their efforts to better understand the exposure routes; to generate new knowledge in the assessment of hazards and risks; to develop new analytical tools and to foster data-sharing, to perform interlaboratory comparisons, and to communicate and disseminate the research results.

In the first of our policy briefs, you can find out about the EU policy and legislative areas that can be informed by CUSP findings, such as chemicals, plastics, food, and water, and how we are achieving this. The document includes a detailed list of EU regulation, initiatives and missions related to micro- and nanoplastics, to which the CUSP activities could contribute.

Access the policy brief [here](#)

Environment & Health - New EU factsheet and catalogue

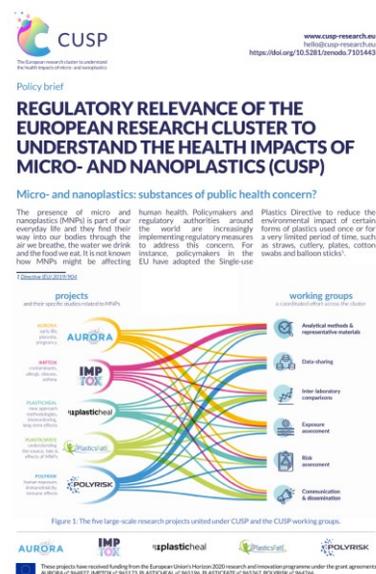
The European Union has just published two documents as part of its commitment to protect citizens’ health from the impacts of environmental degradation.

The EU has established an extensive policy framework related to environment and health and has also been providing increasing financial support for research and innovation for over 20 years that consolidates the evidence needed to support the implementation of this policy framework. Scientific knowledge, research data and innovative solutions are necessary to contribute to achieving the objectives of the European Green Deal where a toxic-free environment, the protection of the citizen’s health, reducing both climate and environmental pressures are identified as priorities for the EU. In this context, the following two documents have been issued, both of which feature PlasticsFatE and CUSP:

[Project Catalogue](#) [European research on environment and health](#), the latest edition that is focused on the analysis of projects funded by Horizon 2020 and Euratom

[EU Factsheet](#) [Research and innovation to address the impact of environmental factors on health](#), the September 2022 edition

For more information, contact RTD-ENVIRONMENT-HEALTH@ec.europa.eu, or visit the [EU Environment & Health research webpage](#).





7th European BioPlastics Research Network Event

The EC is funding several projects and initiatives to investigate under which conditions biodegradable and bio-based plastics can contribute to reduce pollution in our ecosystems. These projects play a role in providing policy recommendations and supporting policy makers with data, research outcomes and the identification of gaps that should be addressed to actively support the EU's plastics strategy. Nevertheless, there is an urgent need to encourage a holistic, collaborative debate, shortening the gap between research projects and decision-makers.

To respond to these needs, a collaboration between the Glaukos project, Bio-Plastics Europe, the European Bioplastics Research Network, and the European Bioeconomy Network have held a number of events. The forthcoming 7th European Bioplastics Research Network (EBRN) event, organised in collaboration with the GLAUKOS project, will see representatives of projects as well as numerous EU policy officers in the field of bio-based and biodegradable plastics come together to discuss recommendations to EU policy for these materials. The event will be streamed live on the [BIO-PLASTICS EUROPE YouTube channel](#):



For more information, visit <https://bioplasticseurope.eu/news-events>

UNESCO – EU2020 LimnoPlast Conference

Diving into freshwater microplastic pollution: Connecting water, environmental and social sciences

PlasticsFatE partner Christian Laforsch (University of Bayreuth, Germany), who is also the Project Coordinator of the [LimnoPlast](#) project is welcoming participants to the UNESCO – EU2020 [LimnoPlast Conference](#), titled “Diving into freshwater microplastic pollution: Connecting water, environmental and social sciences”. The event is taking place from 6th-8th March in Paris, France.

The conference aims to put the challenge of freshwater microplastic pollution at the centre of the UN global agenda for sustainable development. Not only will knowledge and innovative solutions, generated by the scientists and Early-stage Researchers supported by the H2020 LimnoPlast project, be disseminated, but the conference will also provide a global discussion platform on action that can be taken by all stakeholders to reduce the freshwater microplastic pollution and its impact on water resources, ecosystems, wildlife and the ocean.

Conference conclusions, key messages and recommendations for policy makers will be a contribution to the 2023 UN Water Conference.

[Register here](#)



Image: Above. Prof. Dr Christian Laforsch



Forthcoming Events

EEMGS / SEMA 2023 Meeting

The [Spanish Environmental Mutagenesis and Genomics Society \(SEMA\)](#) invites you to participate in the 51st congress of the [European Environmental Mutagenesis and Genomics Society \(EEMGS\)](#), that will take place with our 27th Scientific Meeting. The congress will be entitled “*Back to the sunny seashore of genotoxicology: a dive into new developments and applications*” and held in our beautiful city of Málaga (Spain) from May 15th to 18th, 2023.



The EEMGS/SEMA 2023 congress will be accompanied by a satellite workshop organised by [HESI](#) and focused on “*Quantitative Interpretation of Genetic Toxicity Dose-response Data for Risk Assessment and Reg Decision-making*”, that will take place on May 15th, just before the beginning of the congress.

Inhaled Particles / NanOEH Conference

May 15-18 2023 - [Bookings are now open!](#)



In 2023, two internationally renowned conferences, Inhaled Particles and NanOEH are coming together to disseminate the current knowledge and understanding surrounding (nano)particle and fibre hazard, exposure and risk. This collaborative conference will be held in Manchester (UK) at the Hilton Deansgate Hotel, between the 15th and 18th of May 2023.

The two conference strands will run in parallel with some joint sessions and all delegates will be free to attend any sessions of interest within the programme.

More information can be found [here](#).

Opportunities

SCCS - Call for external experts of the Scientific Committee on Consumer Safety

The SCCS Secretariat launched a [call for specific external expertise](#) in agreement with the SCCS chair and vice-chairs:

Experience in **risk assessment** related to consumer safety is **considered essential** and additional expertise in the following areas is also requested: **exposure risk assessment** (kinetics, PBPK, probabilistic exposure, aggregate exposure, mixture) & **hazard and risk assessment** (regulatory toxicology, alternative testing methods, NAMs, NGRA, alternative non-testing methods (e.g. QSAR models, read-across tools), new Generation Risk Assessment (NGRA), omics methods, integrated testing approaches, IATA, AOP, in vitro/in vivo extrapolation, weight of evidence in risk assessment). **Additional expertise** (e.g. endocrine disruption, extrapolation of exposure data) will be a plus.

The deadline to apply is 05 December 2022, 23:45 (CET)



Our collection of peer-reviewed papers, and our project posters is continually growing. You can access them all on our website [here](#) and via our Zenodo Community [here](#)

Papers

PET microplastics affect human gut microbiota communities during simulated gastrointestinal digestion, first evidence of plausible polymer biodegradation during human digestion

Access the paper here: <https://doi.org/10.1038/s41598-021-04489-w>

Quantitative tracing of uptake and transport of submicrometre plastics in crop plants using lanthanide chelates as a dual-functional tracer

Access the paper here: <https://www.nature.com/articles/s41565-021-01063-3>

From properties to toxicity: Comparing microplastics to other airborne microparticles

Access the paper here: <https://doi.org/10.1016/j.jhazmat.2021.128151>

Quantifying the trophic transfer of sub-micron plastics in an assembled food chain

Access the paper here: <https://zenodo.org/record/7111685>

Posters

Useful Gut Model for Plastic Particles Assessing

Access the poster here: <https://zenodo.org/record/7267318>

Simgi® as an advanced model for the study of the interaction between food-derived microplastics, the human gastrointestinal tract and gut microbiota

Access the poster here: <https://doi.org/10.5281/zenodo.4747440>

Hazards assessment of micro- and nanoplastics and associated additives/contaminants to human health

Access the poster here: <https://zenodo.org/record/7099454>

How to Investigate Additive-Related Effects from Microplastics

Access the poster here: <https://zenodo.org/record/7111648>

Rapid Detection and Quantification of Micro-plastic Particles using MuScan® Technology

Access the poster here: <https://zenodo.org/record/7111693>

Novel approaches to risk assessment and decision support

Access the poster here: <https://zenodo.org/record/7111718>

Co-culture of human type I and type II pneumocyte cell lines as a model of alveolar epithelium

Access the poster here: <https://zenodo.org/record/7142483>



About PlasticsFatE

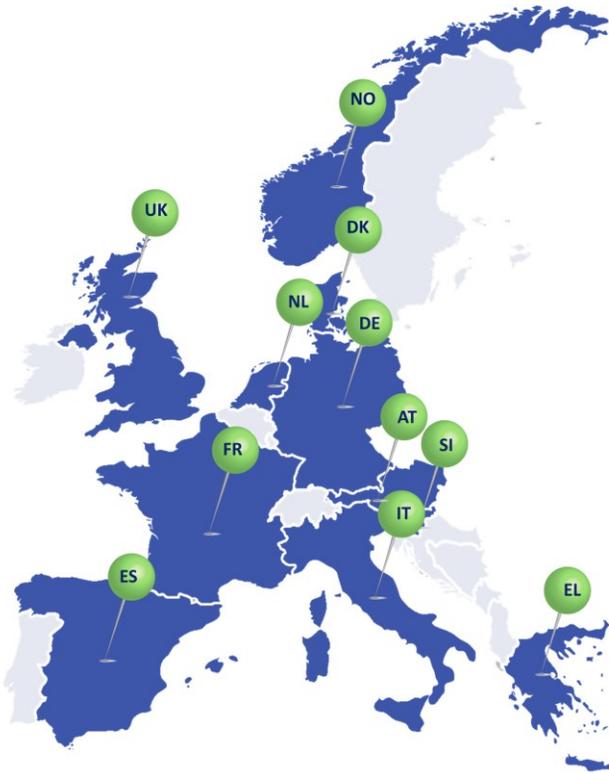
PlasticsFatE is a 48-month project funded by the Horizon 2020 Research and Innovation programme of the European Union. The project will run from 1st April 2021 to 31st March 2025.

Its main goal is to improve our present understanding of the impact of MNPs and associated additives/adsorbed contaminants (A/Cs) in the human body. To achieve this, a highly interdisciplinary approach is required, and so we have pooled some of Europe's foremost experts in these fields, and laboratories that have the scientific and technical capacities, experience, and resources to jointly develop scientifically sound and innovative procedures, methods and instruments for human hazard, exposure and risk assessment of plastics in the environment.

The partners have been chosen for their competences, strong track-records, synergies, and complementarities, to collectively achieve the critical mass of expertise and infrastructure necessary to meet the project's impact-focused ambitions and goals. This unique partnership will ensure the required innovation of current relevant methodologies and their successful implementation to arrive at a better understanding of the health impacts of exposure to micro- and/or nano-plastics found in the environment.

The Consortium: 28 partners from 11 countries

- 7 private-public research organisations (ISTEC-CNR, CSIC, ITENE, UFZ, FHG, IGB, GAIKER)
- 4 national governmental agencies (STAMI, BAM, NRCWE, UBA)
- 2 medical research centres (UMCU, FAU)
- 9 universities (WFSR, ULEIDEN, UL, BOKU, UBT, UNITO, URTV, UP, NTUA)
- 5 SMEs (ENAS, ERS, INNO, OPTIMAT, DECHEMA)
- 1 large company (ECAMRICERT)





Early in 2021, the European Commission funded five large-scale research projects under the European Union’s Horizon 2020 research and innovation programme (see figure 1) and united them under the European Research Cluster to Understand the Health Impacts of Micro and Nanoplastics ([CUSP](#)).

In total, CUSP unites a multidisciplinary team of scientists, industries, and policymakers from 75 organisations across 21 countries. The five projects collaborate in understanding exposure routes; in assessment of hazard and risk; in developing new analytical tools, in data-sharing, in interlaboratory comparisons, and in communicating and disseminating research results.

By establishing six CUSP working groups, our synergies seek to amplify the efforts of individual projects. The close collaboration with the European Commission’s Joint Research Centre (JRC) and a constant dialogue between scientists, stakeholders and policymakers will enhance the policy relevance and impact of the research.



Projects

Specific studies related to MNPs

Working Groups

Coordinated efforts across the cluster

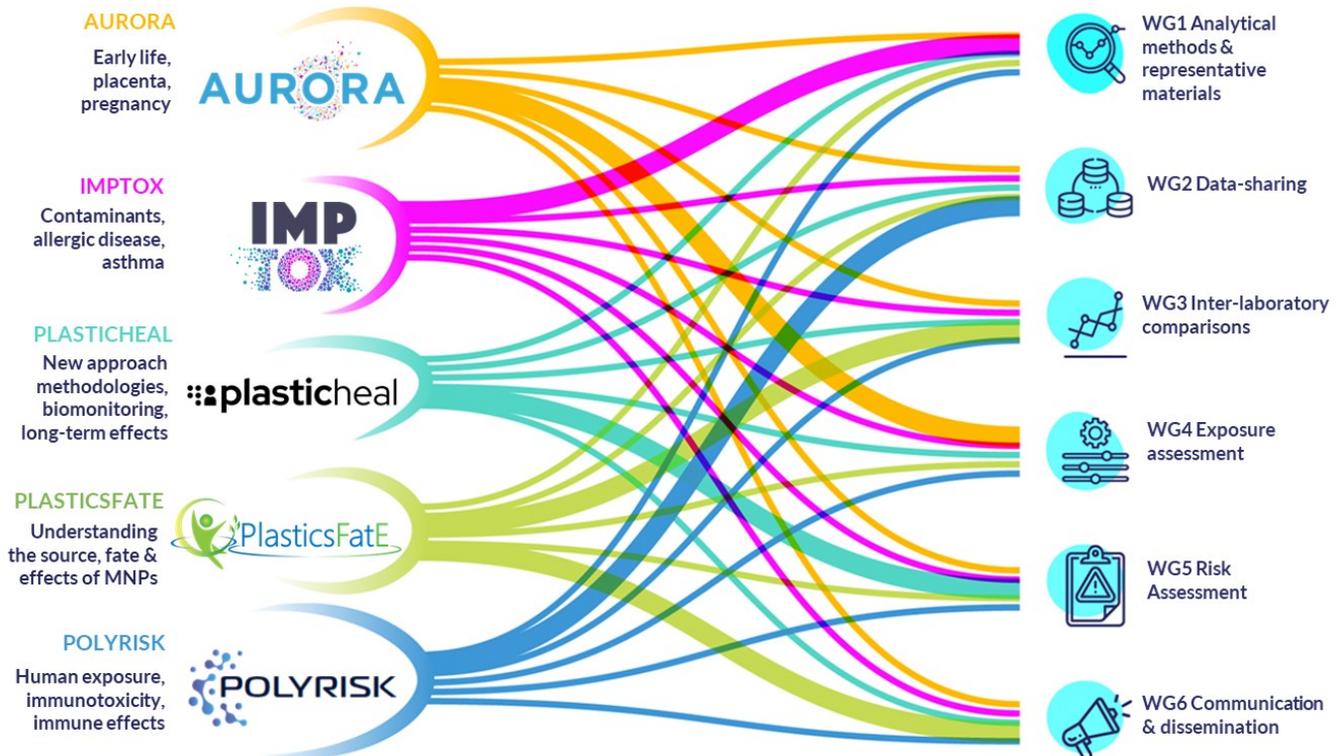


Image by [Promoscience](#)

Get in touch – find out more



[Email us](#)



[Visit our website](#)



[Receive the latest news](#)



[Follow us on LinkedIn](#)



[Follow us on twitter](#)



[Find us on Zenodo](#)