LIFE - MERMAIDS - Mitigation of microplastics impact caused by textile washing processes

LIFE13 ENV/IT/001069

Project description Environmental issues Beneficiaries Administrative data
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Project description:

Background

European oceans are contaminated by marine litter, especially plastics. Currently, it is estimated that global plastic production is increasing by 10% per year. Microplastics are particularly worrying, because wastewater plant treatments do not take them into account in their management processes and they are deposited in waterways and sewage sludge. Microplastic particles from synthetic clothing enter laundry wastewater and have been encountered in runoff and sewage waters, and in marine ecosystems in sediments. On average, more than 1 900 fibres of microplastics can be released by a synthetic garment during one wash. The main mechanisms responsible for the degradation of plastics in the marine environment are light-induced degradation and biodegradation. These processes are retarded in seawater due to lower temperatures and lower oxygen concentrations. Microplastics concentrate persistent organic pollutants via partitioning and they can be ingested by marine biota, thereby entering the food web.

Objectives

The main objective of the LIFE - MERMAIDS project is to contribute to the mitigation of the environmental impact of microplastic and nanoplastic particles resulting from laundry wastewater on European sea ecosystems. This objective

will be achieved by demonstrating and implementing innovative technologies, and additives for laundry processes and textile finishing treatments. The following specific objectives are listed in decreasing order of importance:

- To demonstrate innovative additives to improve finishing textiles and finishing fibre treatments to avoid garments' microplastic removal in laundry processes;
- To demonstrate innovative additives for detergent and laundry products to avoid garments' microplastic removal in laundry processes in wastewater;
- To elaborate good practices guidelines on microplastic retaining for plastic fibres manufacturers, textile industry and textile auxiliaries manufacturers, detergent manufacturers, and households; and
- To consolidate the knowledge of microplastic fibre-retaining technologies, the basis for the development of future policy recommendations in order to promote the widespread implementation of technologies that will contribute to reaching a good environmental status (GES) by 2020, as foreseen by the European Marine Strategy Framework Directive (2008/56/EC).

Expected results:

- Reducing at least 70% of the total amount of microplastic fibres currently discharged in laundry waste water;
- An estimation and study of the amount of micro- and nano-fibres in effluents of domestic washes of different types of synthetic textiles;
- A characterisation and quantification of microplastic and nanoplastic contents contained in almost ten different samples coming from washing wastewater;
- A set of tested recommendations for the optimisation of washing process using the new finished textiles, the new detergents, and synergistic combinations of the new finished textiles and the new detergents;
- Increasing the knowledge and awareness of 3 000 consumers and professionals on measures to reduce microplastics arising from washes by means of providing them with the Good Practices Guidelines handbook; and
- A set of policy recommendations based on a previous overview and a SWOT analysis of the regulatory framework concerning microplastic pollution control and prevention at a regional, national, European and International level.

Results

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Environmental issues addressed:

Themes

Environmental management - Cleaner technologies
Habitats - Marine
Industry-Production - Textiles - Clothing
Information - Governance - Awareness raising - Information
Risk management - Pollutants reduction

Water - Water quality improvement

Keywords

laundering, marine ecosystem, research project, plastic waste, chemical industry, plastic, textile industry, industrial waste water, pollutant elimination

Natura 2000 sites

Not applicable

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Beneficiaries:

Coordinator	Italian National Research Council(CNR)
Type of organisation	Research institution
Description	The Italian National Research Council (CNR) is a public organisation whose duty is to promote, spread, transfer and improve research activities. It is active in the sectors of knowledge growth and of its applications for the scientific, technological, economic and social development of the country.
Partners	POLYSISTEC(Polímeros y Sistemas de Aplicación Técnica, S.L.), Spain WFO(Waste Free Oceans Europe), Belgium LEITAT(Acondicionamiento Tarrasense Asociación), Spain

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Administrative data:

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Total budget	1,287,123.00 €
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Project location	Vlaams Gewest(België - Belgique) Région Wallonne(België - Belgique) Bruxelles-Brussel(België - Belgique) Cataluña(España) Piemonte(Italia) Valle d'Aosta(Italia) Liguria(Italia) Lombardia(Italia) Trentino-Alto Adige(Italia) Veneto(Italia) Friuli-Venezia Giulia(Italia)

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