

- The “LIFE” cycle of microplastics from synthetic fibres - Experimental DATA/Results/Studies:

Creation of microplastics - Studies

- Every washing cycle (6 kg of synthetic products), releases around 700,000 microscopic fibre particles in the environment. (Washing of synthetic garments with temperatures between 30 and 40 degrees and different combination of detergents - Mare Vivo/Plymouth University study – United Kingdom)
- Acrylic fibre is able to release 730,000 tiny particles, 5 times more than mixed cotton-polyester fabric which releases 137,000 particles. A 5 kg washing machine load of polyester material produces between 6 and 17.7 million microfibrils. (Environmental Pollution (2017) - De Falco, F., et al., Evaluation of microplastic release caused by textile washing processes of synthetic fabrics)
- A polyester sweatshirt deposits up to 1 million microfibrils in the water used for washing it, an acrylic scarf 300,000, a pair of nylon socks 136,000. (Data from the EU Life+ Project Mermaids, developed by CNR-Institute for Polymers, Composites and Biomaterials (IPCB) and Institute for Macromolecular Studies (ISMAL), LEITAT (Spain), Plastic Soup Foundation PSF (Holland), and Polysistec, SL (Spain))
- Every washing of fleece products creates 1.78 grams of microfibrils. (University of California Santa Barbara)
- A washing of around 6 kg of synthetic products releases in the environment an average of 137,951 polyester or polyester-cotton fibres, 496,030 fibres from polyester and 728,789 from acrylic. (Plymouth University Study)

Passage in water basins - Data

- Lake Como 157,000 particles per square Km - Lake Maggiore 123,000 particles per square Km - Lake Bracciano 117,000 particles per square Km - Lake Iseo 63,000 particles per square Km - Lake Garda 10,000 particles per square Km – Lake Trasimeno 8,000 particles per square Km. (Legambiente Goletta dei Laghi 2017)

- Rhine basin Basel 202,900 particles per square Km – Duisburg 2,333,000 particles per square Km – Rotterdam 286,000 particles per square Km – Lake Geneva 220,000 particles per square Km – Lake Constance 61,000 particles per square Km.
- Cortez Sea, Baja California USA, 0.7 fragments of plastic per cubic metre. (University of Siena, Marine Megafauna Foundation, Murdoch University (Australia), published in the international scientific review “Trends in Ecology & Evolution”)
- USA park beaches (no. of microfibrils (average) out of 1 kg of sand): Alaska 58 – Great Lakes 133 – Northeast 100 – West Coast 91 – Pacific Islands 146. (2017 NOAA National Oceanic and Atmospheric Administration study)
- 1.2 million **microplastics** in the Mediterranean per square kilometre. (Data from the 2016 Nature Scientific reports by Ismar – Cnr)
- Microplastics in the Mediterranean sea g/square Km: Sea of Crete 250 – NW Mediterranean 2,020 – W Mediterranean 187 – Central Mediterranean 580 – Middle Adriatic 670. (Study published in Springer Nature 2016)

Passage to living beings

- **Water** – % of samples containing plastic fibres out of 159 drinking water samples from large and small cities throughout the five continents: USA 94% - Beirut 94% - Europe 72% - Jakarta 76% - Kampala 81% - New Delhi 82% - Quito 75%. (Orb Media/State University of New York and University of Minnesota)
- **Water** – Out of 259 bottles of water tested, an average of 325 plastic particles per litre were found in each bottle. 93% of the water brands analysed contained **microplastics**. Out of the 259 bottles tested, only 17 did not have microplastics. (Orb Media/State University of New York, Fredonia)
- **Air** – Every year between 3 and 10 tonnes of synthetic fibres are deposited on the surface. (University of Paris-Est Créteil 2015)
- **Soil** – **Microplastics** are (4 to 23 times) more widespread in terrestrial environments than water environments. It is estimated that agricultural lands alone contain more plastic than oceanic basins, reaching up to 60% in weight on more contaminated lands. (Leibniz

institut für Gewässerökologie und Binnenfischerei (IGB) and Freie Universität of Berlin published in Global change biology)

- **Food/Honey – Microplastics** were present in all the 19 samples of honey taken in Germany, France, Italy, Spain and Mexico (around 200 grains for every Kg). (Research “Non-pollen particulates in honey and sugar” - Gerd Liebezeit)

Out of 12 samples of packaged honey there were an average 265 microparticles of fibres from textile plastics. (French review “60 Millions de consommateurs” published by Institut national de la consommation (INC))

- **Food/Beer** – Out of 24 different German beer brands, all samples contained plastic fibres and micro-fragments. (University of Oldenburg)
- **Food/Salt** – Out of 15 brands of table salt sold in supermarkets, up to 600 particles per kilogram were found. (University of Shanghai (China))
- **Food/Fish** – 170 marine organisms (vertebrates and invertebrates) ingest microplastics. Out of 121 examples of fish in the Central Mediterranean, 3 of which are commercial species (swordfish, red tuna and albacore tuna), 18.2% had **microplastic** fragments inside them. 35% of fish that feed on plankton of the North Pacific have **microplastic** fragments. (Greenpeace’s “Plastics in seafood” report)