

Level of Awareness and Attitudes towards Plastic Contamination by Students of An Italian University

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Table S1. Number of undergraduate students enrolled in the first and second years of 6 science-oriented bachelor's degree courses at the University of Modena and Reggio Emilia (n = 889) and those who decided to participate in this study (n = 220). Academic year 2021-2022. Students from Biological and Natural Sciences are displayed as a single group as explained in the Methods section.

Bachelor's course	1° year (n)	2° year (n)	Total (n)	Participants to this study (n)	Participants to this study (%)
<i>Biological & Natural Sciences</i>	260	115	375	146	39
<i>Biotechnologies</i>	65	49	114	19	17
<i>Geology</i>	12	17	29	6	21
<i>Mathematics</i>	62	50	112	29	26
<i>Informatics</i>	149	110	259	20	8

Questionnaire “Micro for life – Plastic that lasts”

Presentation of the questionnaire

Plastic pollution represents a global threat. Over 80% of marine litter is made up of plastic. Due to its slow degradation rate, plastic accumulates in the seas, oceans and on beaches: in addition to large fragments, part of the waste is made up of particles not visible to the naked eye, *microplastics*, which have a diameter below 5 mm. Marine organisms such as fish, sea birds, crustaceans and sea turtles ingest plastic waste, which accumulates along the food chain, reaching humans.

We are all responsible for this environmental crisis, and the best way to make a difference is to **be aware** of the impact that our habits and daily choices have on the environment.

This quiz will help you learn more about plastic pollution, thanks for your contribution!

Section 1: Profile of respondents

- 1) Which undergraduate program are you following?
- 2) Gender:
 - Female
 - Male

Section 2: Awareness

- 3) Are you worried about the impacts of plastic pollution on the environment and the human beings? State your level of concern on a scale from 1 to 5, with 1 = I have no knowledge about this and 5 = Yes and I think it is necessary to act to reduce the problem
- 4) In your opinion, why is plastic an essential part of our daily life? (Maximum three answers)
 - It is resistant
 - It has a long life
 - It is low-cost production material
 - It is light
 - There is high availability of plastic products
 - It has unlimited applications
 - Lack of valid alternative materials
- 5) In your opinion, which are the main problems associated with plastic waste dispersion in the environment? (Maximum two answers)
 - Impacts on wildlife, (e.g., gut blockage and internal injuries)
 - Environmental pollution
 - They are harmful to human health
 - They obstruct drains and sewers
- 6) Before this activity, had you ever heard about microplastics? (Multiple answers)
 - Yes, at school

- Yes, on television
- Yes, within the family
- No

7) During which of these activities you could be most exposed to microplastics? (Multiple answers)

- Washing teeth
- Walking on a carpet
- Going for a walk in the countryside
- Washing a cotton t-shirt
- Eating seafood (mussels, clams)
- Eating an apple
- Eating lettuce

8) Which effects of microplastic seem more serious to you? (Maximum two answers)

- Microplastics are a “cocktail of contaminants”, concentrating pesticides, drugs and other pollutants present in the environment
- They damage the intestinal tract of marine organisms, with negative effects on their growth and reproduction
- They cause suffocation and malnourishment of marine organisms
- They can accumulate in animals which are eaten by human beings
- Once in the air, they can be transported or be deposited on surfaces, thus being inhaled or ingested in human beings

Section 3: Knowledge. What do you know about plastic pollution?

9) Is plastic recyclable?

- Yes, all plastic waste can be recycled
- Yes, but only some materials, such as packaging, are recyclable
- No, it must be disposed of as undifferentiated waste

10) Which are the most abundant materials found as beach litter in Italy?

- Plastic pieces and polystyrene foam
- Building materials
- Cotton swab
- Cigarette butts
- Bottles and beverage containers

11) According to scientists, there will be more plastic waste than fish (by weight) in the sea by 2050

- True
- False

12) Which of these objects takes the longest to degrade once lost at sea?

- A cigarette
- An aluminum can
- A plastic bottle
- A cotton t-shirt

13) To date, plastic has been found in the gastro-intestinal system of 90% of sea birds, and one turtle out of two ingested plastic. Which type of impact can plastic have on their health? (Multiple answers)

- Physical, as ingested plastic could obstruct or damage the intestine, or not be digested
- Chemical, as plastics release harmful substances
- No significant impact

14) Can the size of ingested plastic fragments influence the type of damage?

- Yes, with larger fragments being more harmful
- Yes, the size of the fragments drives the type of damage, physical or chemical
- Yes, but only the smallest particles are harmful
- No, the type of damage does not depend on the size of the fragments

15) What shape do microplastics have?

- Thin and elongated like fibres
- Spherical particles
- Irregular shape
- Variable shape, depending on the microplastic formation process

16) Which of these products can be identified as microplastics? (Multiple answers)

- Fragments of plastic bottles and inflatable balloons, straws and cigarette butts (> 5 cm)
- Glitter and microspheres found in scrub products, cosmetics, powder detergents (< 5 mm)
- Fibres derived from the abrasion of tires and from washing synthetic clothes (< 5 mm)

17) What is the main source of microplastics?

- Industrial processes for plastic production
- The release of fibres and particles into the water from fishing nets
- The degradation of plastic materials dispersed in the environment
- The release of microspheres from detergents and personal hygiene products into the oceans

18) What are the main sources that release microplastics directly into the environment? (Maximum two answers)

- Machine washing of synthetic clothes
- Personal care products, detergents and liquid soaps
- Vehicle tires abrasion
- Plastic waste dispersed in the environment

- Cosmetic products

19) Microplastic pollution also affects rivers and their concentration can vary considerably along the waterways. What could these variations be due to? (Maximum two answers)

- Proximity to large residential areas
- Proximity to industries/treatment plants releasing wastewater contaminated by plastic
- Vortices inside rivers creating accumulation spots
- Concentration of microplastics in water is subject to random oscillations

20) Can human beings assimilate microplastics? If so, how?

- Yes, by inhalation of the suspended particles in the atmospheric particulate matter
- Yes, by ingestion of contaminated products
- Yes, both by ingestion and inhalation
- Yes, through the skin
- No, they are found in the environment only

21) How much microplastic a person can ingest in a week?

- Less than 1 g
- About 5 g
- Up to 10 g
- Negligible amount

Section 4: Attitudes. How many microplastics do you consume/release each day?

22) Which is the composition of the clothes you are wearing?

- Natural fibres (e.g., cotton, linen, wool)
- Mixed fibres (e.g., cotton and nylon, as jeans)
- Synthetic fibres (e.g., nylon, polyester)

23) How often do you buy food wrapped in plastic?

- Very often
- Sometimes
- Hardly ever

24) How do you start your day?

- With a cup of tea (using a tea bag)
- With a coffee (capsule)
- With a coffee (moka)
- With a mug of milk

25) Which kind of water do you drink?

- In plastic bottle

- In glass bottle
- Tap water

Section 5: For a less-plasticised life...

- Avoid purchasing products with plastic packaging or in disposable containers and prefer those packaged in paper or in **glass**, which is a hygienic, ecological and reusable material.
- In the bathroom you can use a **toothbrush with replaceable or bamboo heads**, and wooden combs, which are more resistant than the plastic ones.
- Have you ever noticed that the composition of detergents or sanitizers is not shown in full on the bottles? Microplastics are not yet banned from detergents and liquid soaps. When possible, use **solid soaps**, such as bar soap.
- Most of sport and technical **clothing** is made of synthetic fibres. Whenever possible, also try to purchase items made from natural fibres.
- Contact lenses, wipes, cigarettes, sanitary pads, plasters are often made of plastic. Do not throw them down the drain and do not disperse them into the environment.
- When preparing packed lunches or snacks, bring non-disposable cutlery, stainless steel drinking bottles and **washable and reusable food containers**.
- Use **reusable mesh produce bags or cotton tote bags** for shopping.
- **Do not throw away** plastic materials into the environment... There are many ways to celebrate without littering!
- Give what you no longer use a second life.

Look around you, what material are the objects you use and that surround you made of from when you get up in the morning to when you go to bed at night?