

Thursday, 06 May



Interplay between science and society

The evolution of research, public
discourse and societal concerns

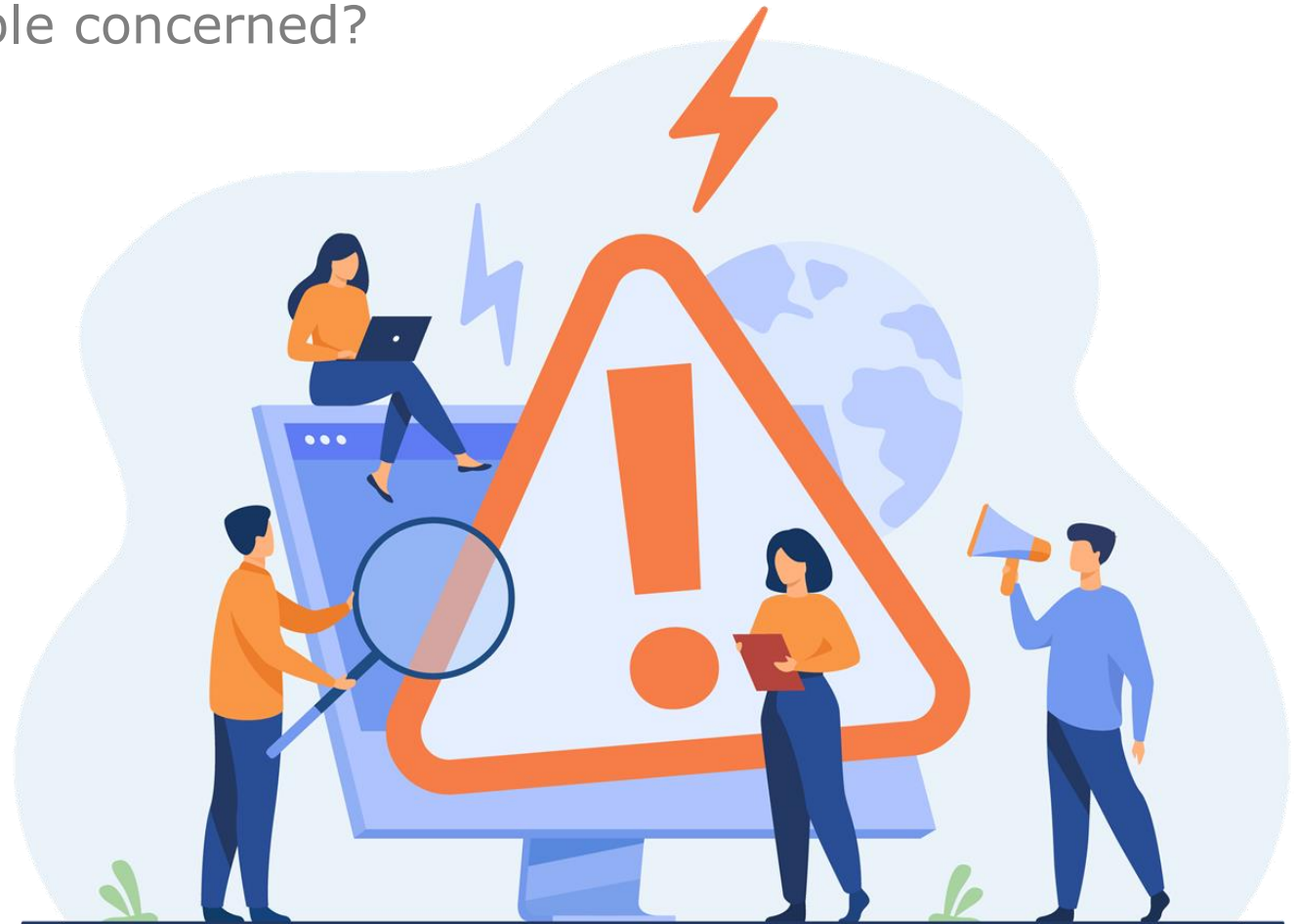
Domagoj Vrbos & Severine Koch

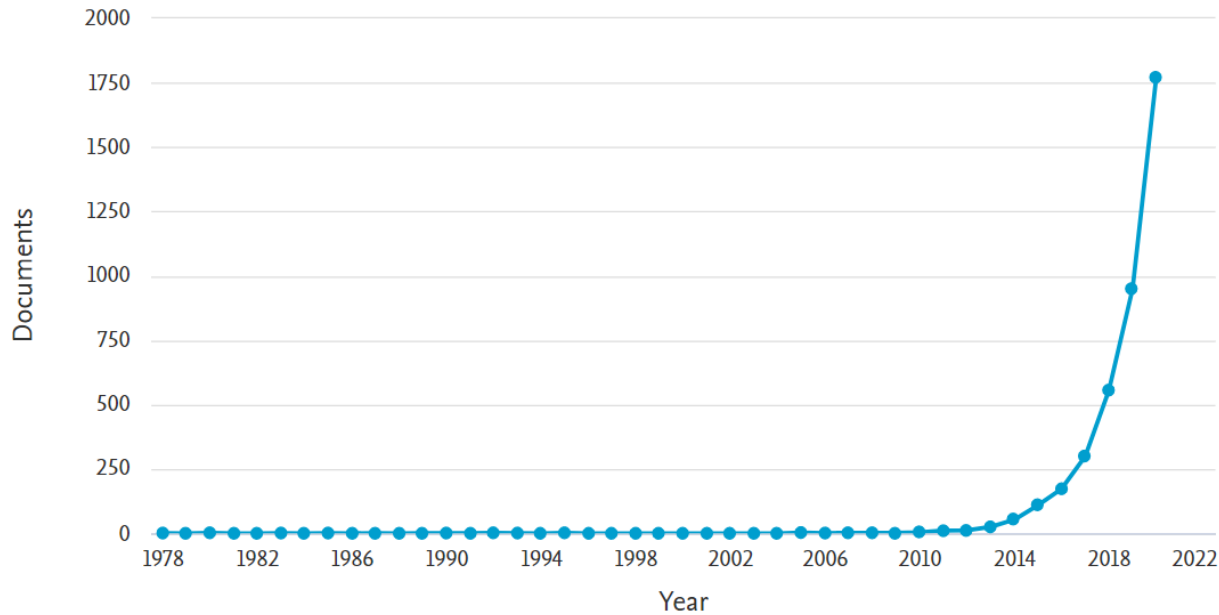
Trusted science for safe food



Our talk today | **Some insights from society**

- What do we know from research?
- Are people interested? Are people concerned?
- What drives these trends?



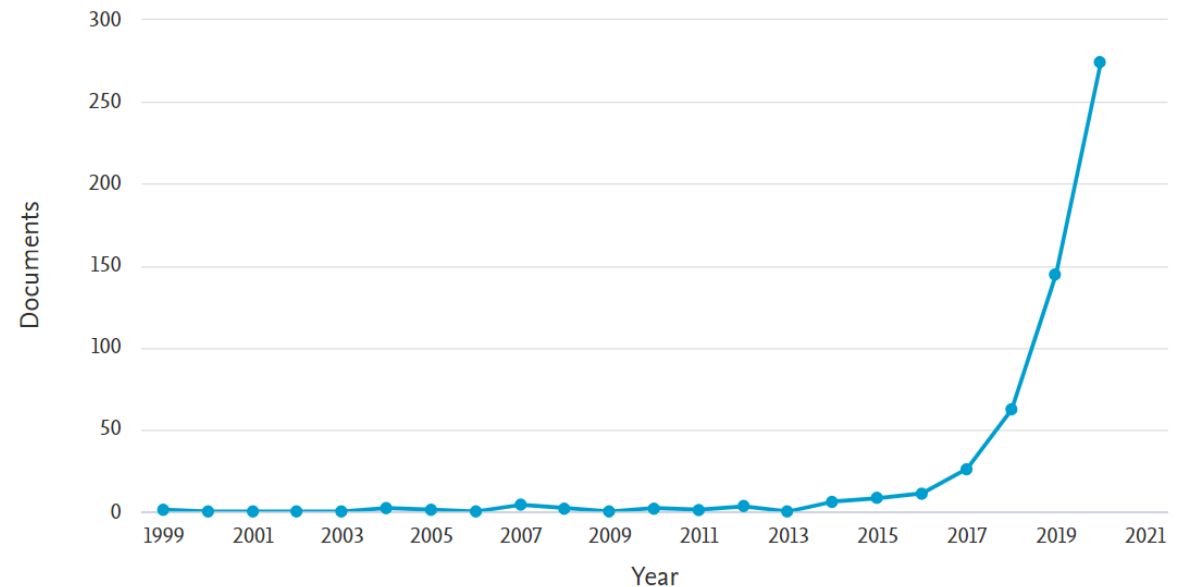


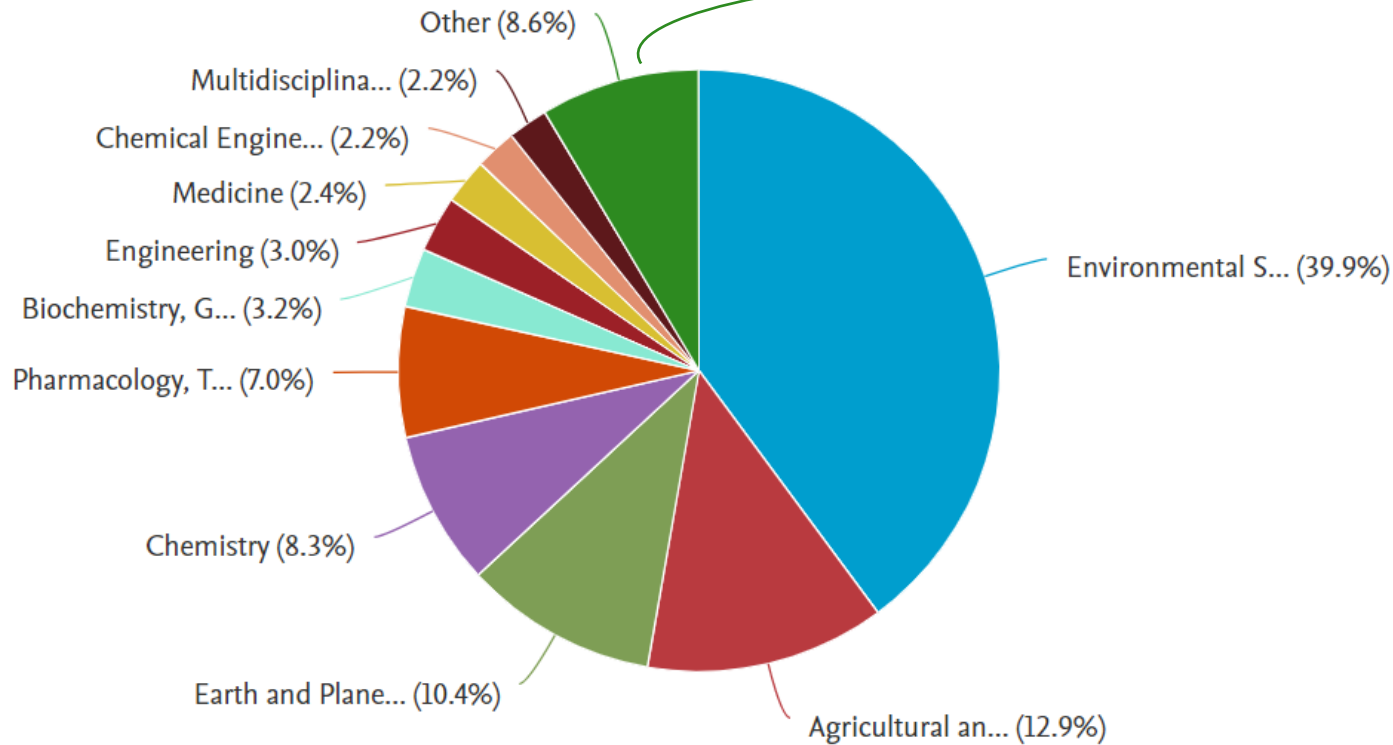
Microplastics

- **Total of 3987** documents
- **First appearance in 1978**
- **1771** published in **2020**

Nanoplastics

- **Total of 548** documents
- **First appearance in 1999**
- **274** published in **2020**



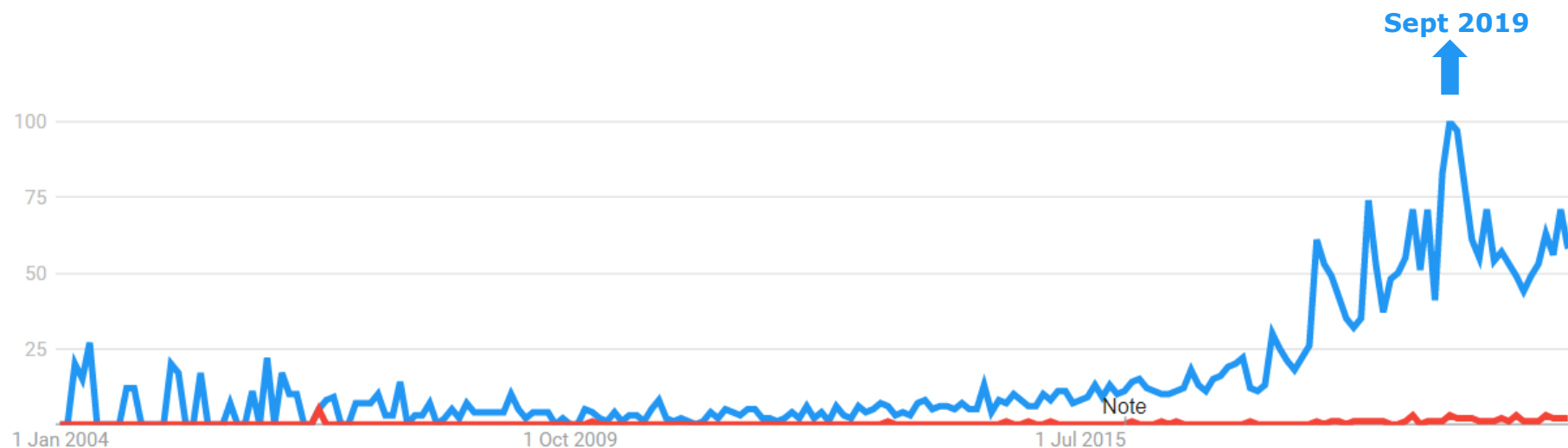


Other

- Materials Science - 141 documents
- Social Sciences - 127 documents
- Physics and Astronomy - 110 documents
- Energy - 87 documents
- Immunology and Microbiology - 48 documents
- Computer Science - 43 documents
- Health Professions - 27 documents
- Mathematics - 23 documents
- Economics, Econometrics and Finance - 16 documents
- Business, Management and Accounting - 14 documents

Public interest | Online search over time

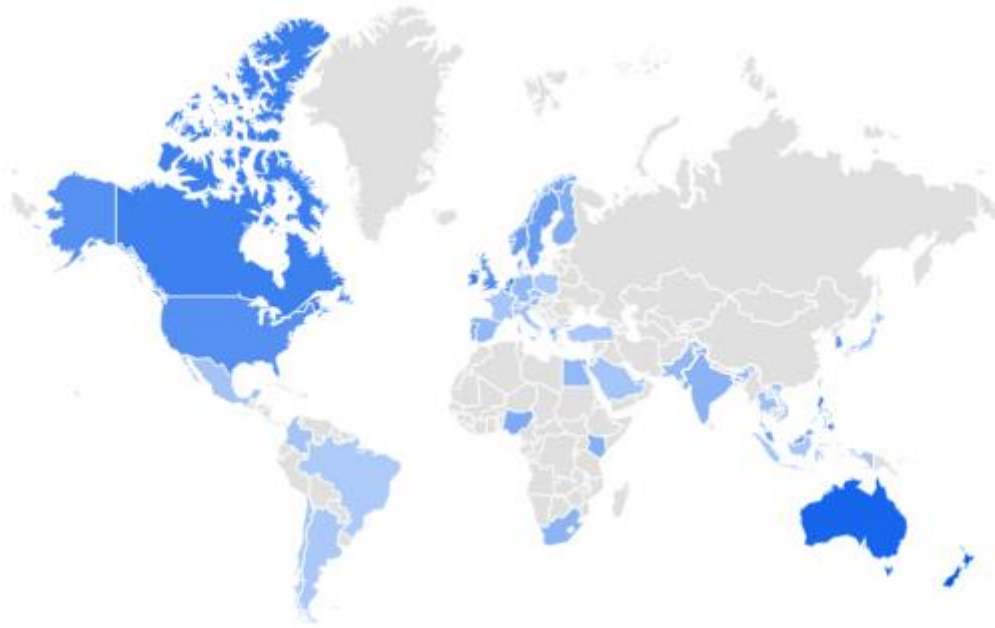
Web search



News search



Public interest | Online search by location



Web search

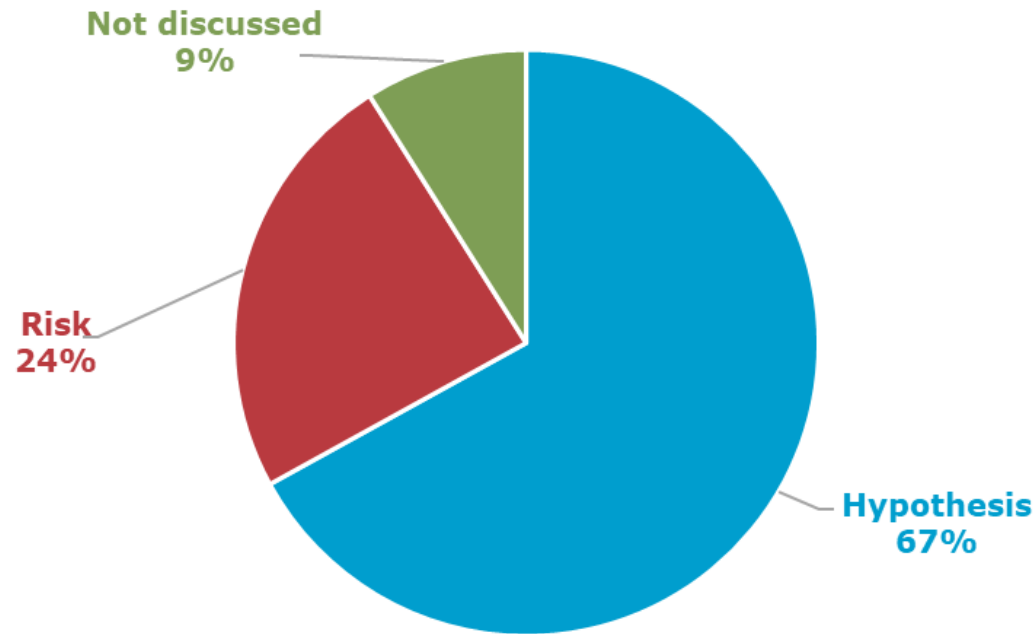
● microplastics
Search term



Web search

● nanoplastics
Search term

Source:
Google Trends, April 2021

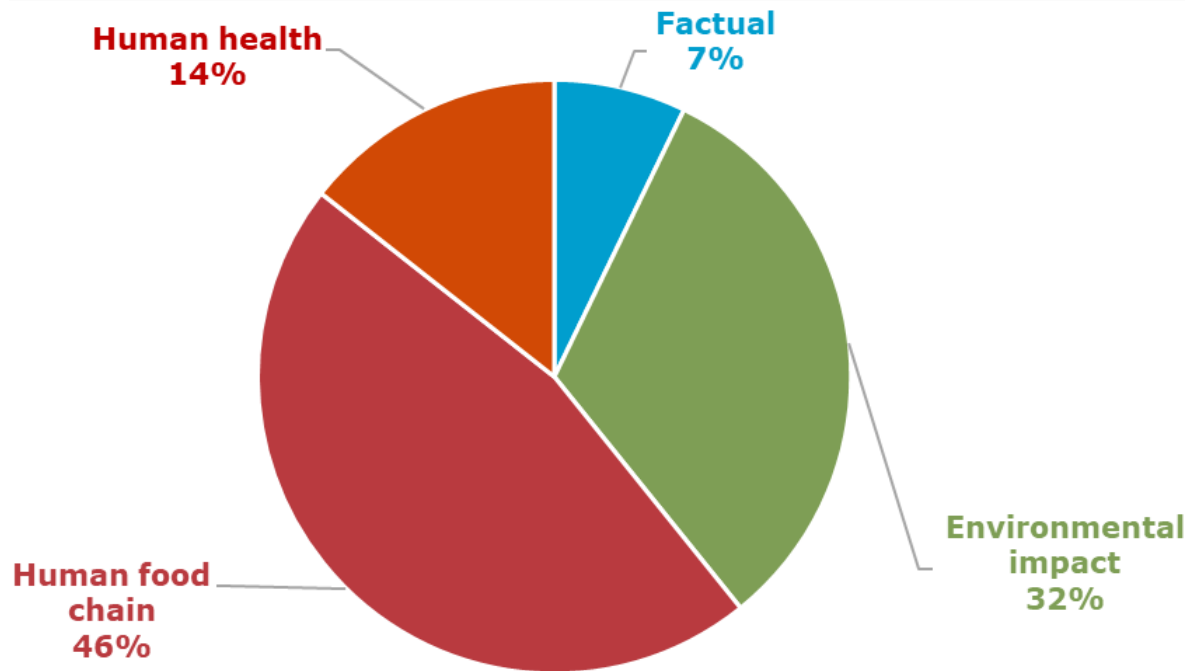


- Most of scientific studies frame the environmental risk of microplastics as **hypothesis**, i.e., a potential risk to be investigated
- Almost a quarter frame the environmental impact as actual environmental **risk**
- In a small percentage of scientific studies the risk is **not discussed**

Source: <https://onlinelibrary.wiley.com/doi/full/10.1002/gch2.201900010>

In total, 464 peer-reviewed, scientific articles were selected from journals frequently publishing studies on microplastics in the aquatic environment. The journals were selected based on their impact in the field of environmental sciences as well as the frequency of publications on microplastics. Articles were obtained using the search term "microplastics" on the respective journal homepage from the journals Aquatic Toxicology (7), Biology Letters (1), Chemosphere (19), Ecotoxicology and Environmental Safety (3), Environmental Pollution (105), Environmental Research (8), Environmental Science & Technology (71), Environmental Toxicology and Chemistry (13), Marine Pollution Bulletin (170), Science of the Total Environment (35), Scientific Reports (19), and Water Research (13) and included original research papers as well as reviews. The articles cover the years 2006 until January 2018, most articles are from 2017.

Framing of microplastics risks in the media (1)



Factual – representation of scientific findings without mentioning impacts

Environmental impact – “microplastics [...] are causing oysters to develop serious reproductive problems”

Human food chain – “[...] can lead to the spread of pollutants throughout the food chain including to humans”

Human health – “[...] microplastics, has been shown to absorb toxic chemicals linked to cancer”

Source: <https://onlinelibrary.wiley.com/doi/full/10.1002/gch2.201900010>

In total, 186 media articles from The Guardian (45), The Sun (14), New York Times (45), USA Today (18), and HuffPost (66) were found and selected for the analysis.

Framing of microplastics risks in the media (2)

WAR ON PLASTIC Here's how much plastic YOU eat and breathe – as test reveals particles in shop-bought fish

Food sold on open counters in supermarkets are contaminated with potentially dangerous particles that float in the air, a study found

THE shocking amount of plastic we eat and breathe in has been revealed after tests were carried out on shop-bought fish.

An investigation found food exposed on open counters in supermarkets were contaminated with potentially dangerous particles that float in the air.



Microfibre Plastics Could Be In Your Food

They've been found in seafood, table salt, honey and even beer.

Tiny plastics known as 'microfibres' may very well be floating around in your food. They are released when you wash your clothes, flow into rivers and oceans and can end up in seafood.

Almost half (44%) of people do not know this happens, according to a new poll by green charity Hubbub. Previous studies have found these plastic fibres in foods including mussels, table salt, honey and even beer, the charity said.

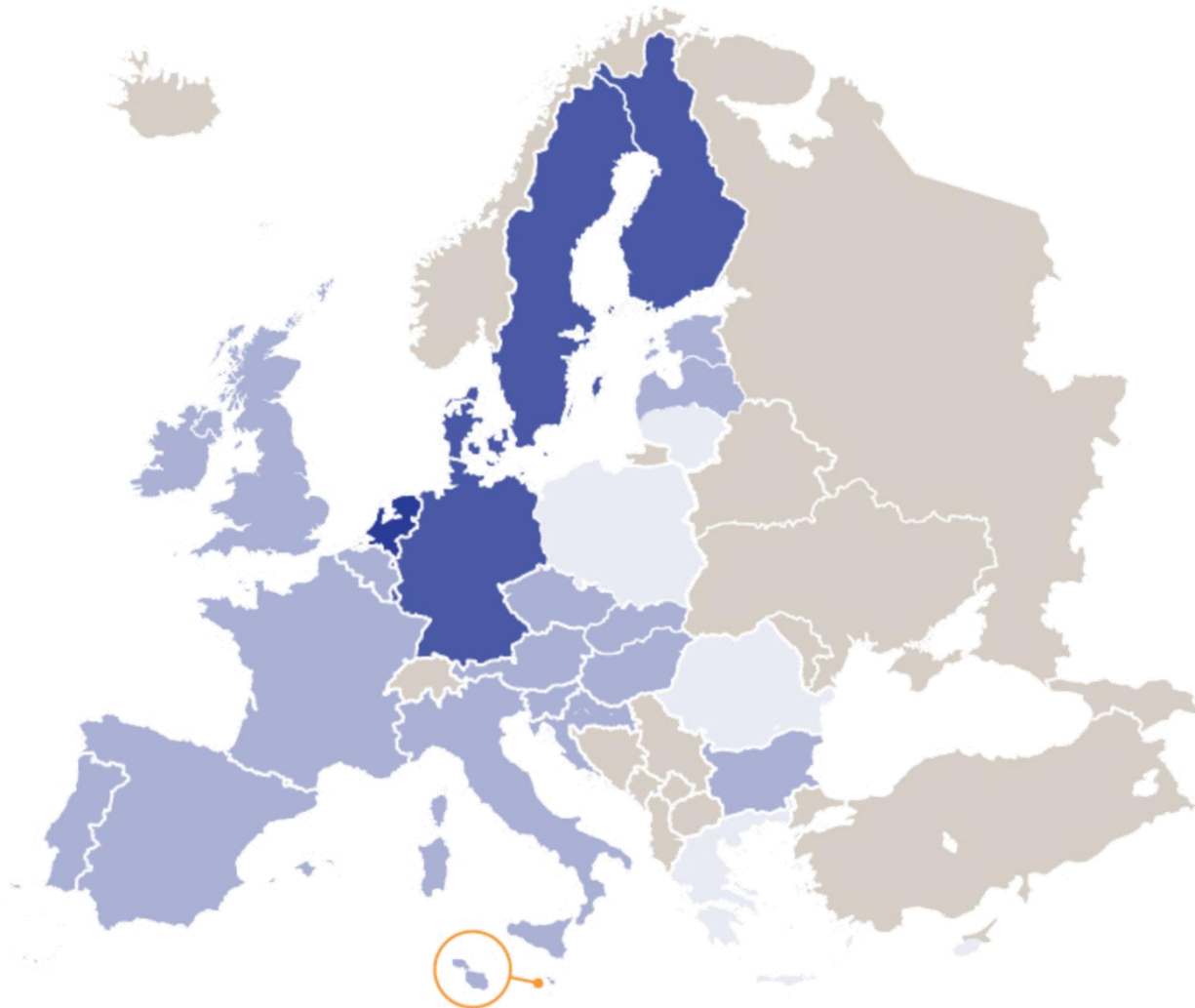


Sources:

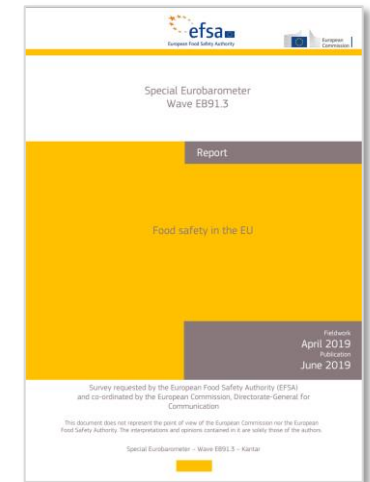
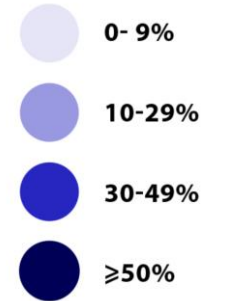
<https://www.thesun.co.uk/news/5843470/plastic-pollution-supermarket-fish/>

https://www.huffingtonpost.co.uk/entry/what-are-microfibres-and-why-are-they-in-my-food_uk_5b165742e4b014707d27f919

To which extent are EU citizens concerned?



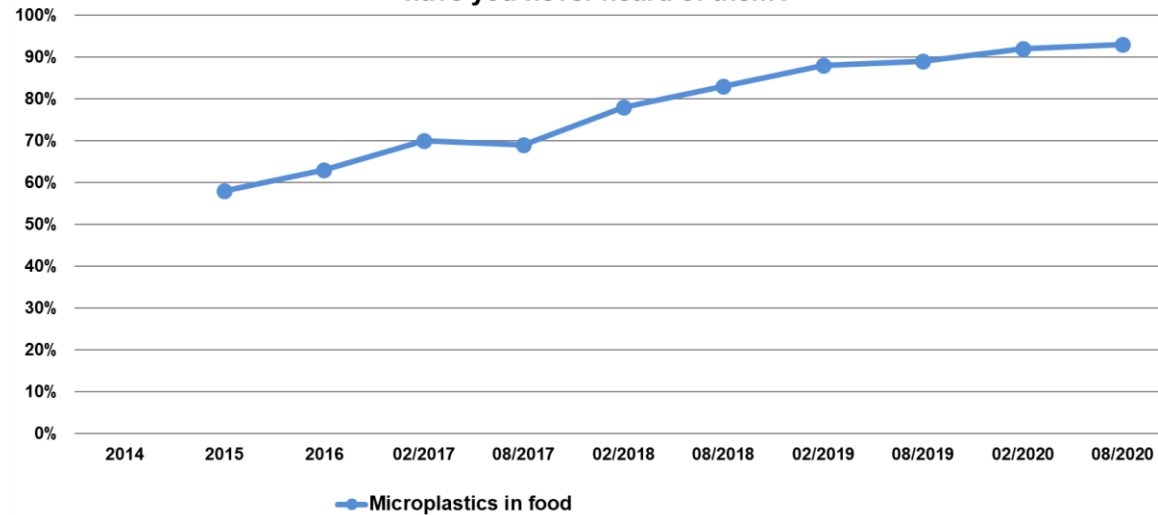
% of EU citizens concerned about microplastics in food*
increased over the past 10 years



*Data is based on a list of 15 topics

Source:
[EB Food Safety in the EU \(2019\)](#)

Have you already heard about the following health and consumer topics or have you never heard of them?



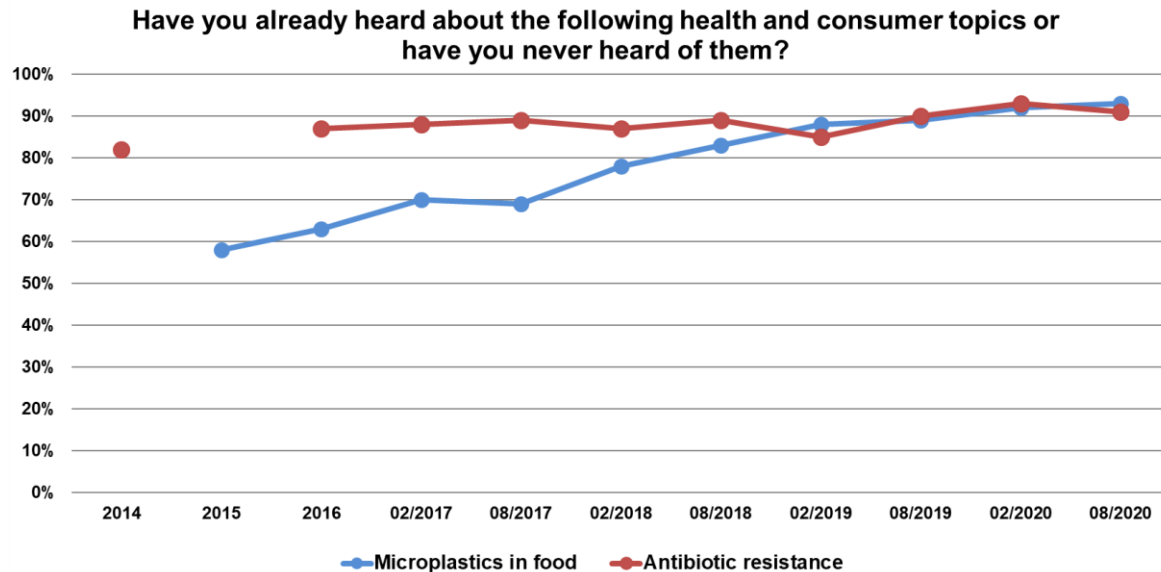
BfR Consumer Monitor

- Increasing awareness
- 58% in 2015
- 93% in August 2020



Source:
[BfR Consumer Monitor](#)

Germany > A closer look

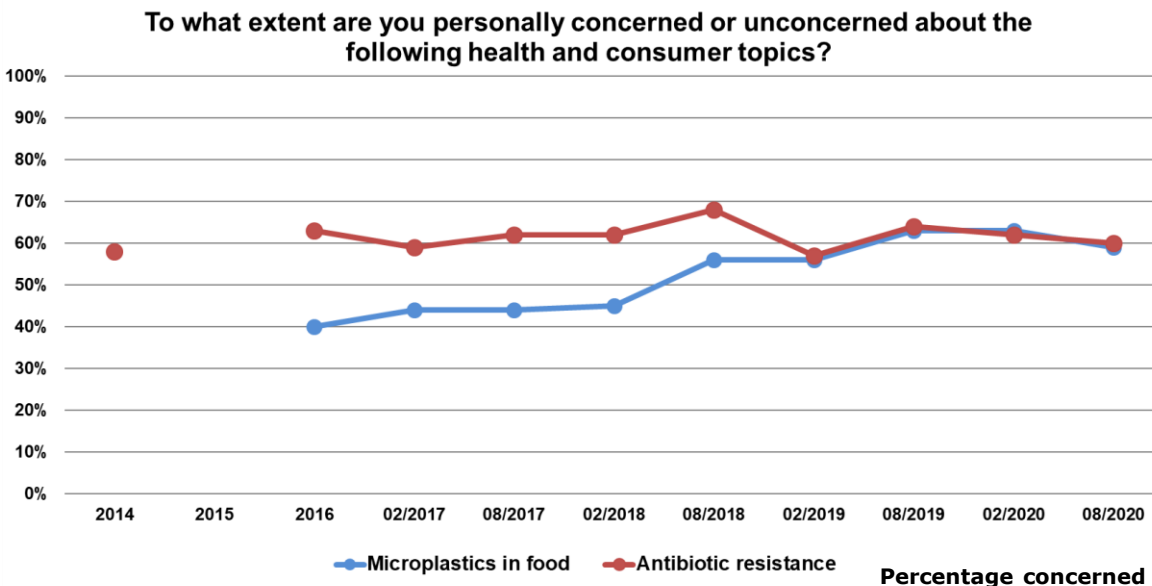


BfR Consumer Monitor

- Increasing awareness
- 58% in 2015
- 93% in August 2020

BfR Consumer Monitor

- Growing concern
- 40% in 2016
- 59% in 2020





Open question „Where would you expect to find microplastics?“; cosmetics and body care products 26%, environment: in sea and waters 23%, plastic in general and other items of daily use 21%, packaging and plastic bottles 18%, humans and animals 13%.



1.010 respondents



computer-assisted
telephone interviewing



conducted in 2018

Germany > An even closer look

Level of risk

Health risk for humans



Risk for the environment

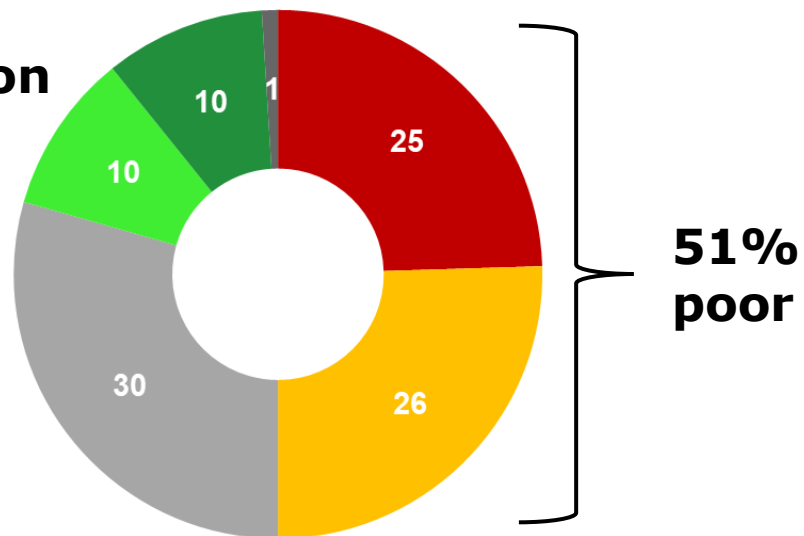


■ (5) very high ■ (4) ■ (3) ■ (2) ■ (1) very low ■ don't know

Questions "How high or low do you estimate the health risk of microplastics for humans?"; "How high or low do you estimate the risk of microplastics for the environment in general?"; results in percentages.

Level of information

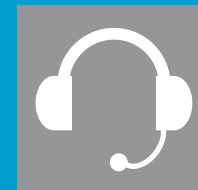
■ (1) very poor
■ (2)
■ (3)
■ (4)
■ (5) very good
■ don't know



Question "How well or poorly informed do you feel about the possible risks of microplastics?"; results in percentages.



1.010 respondents

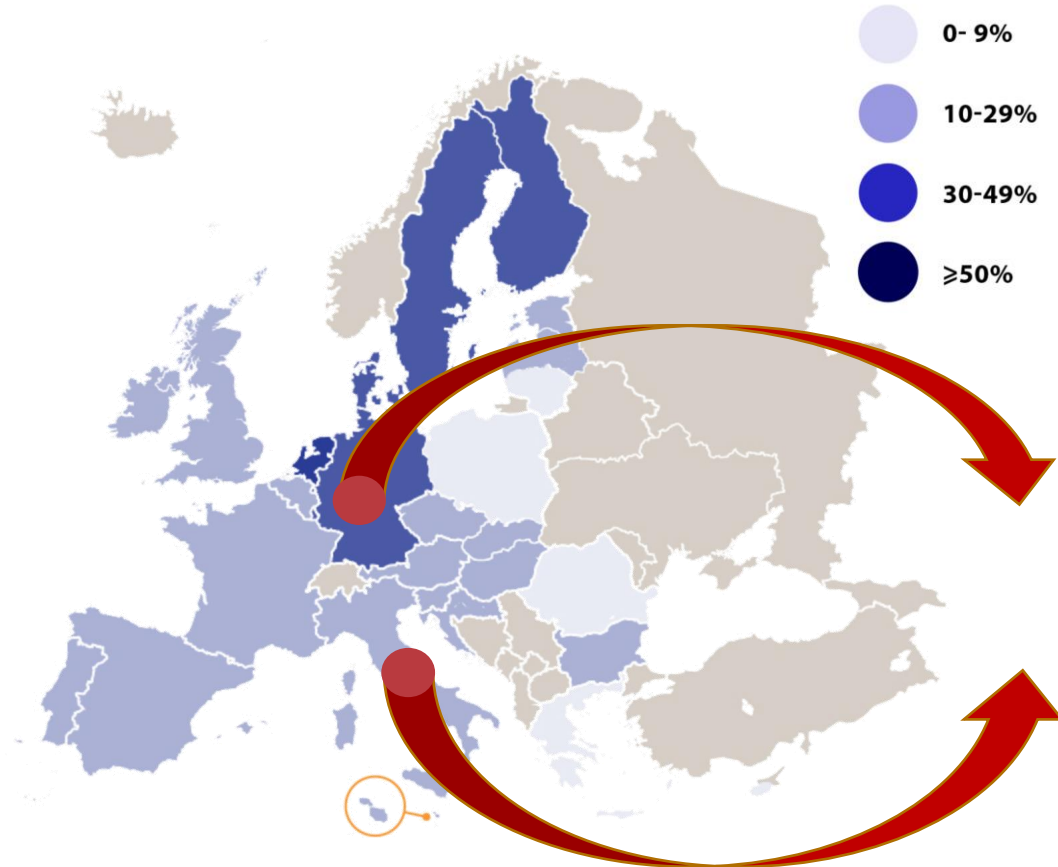


computer-assisted
telephone interviewing



conducted in 2018

Why are people concerned?



Joint BfR-EFSA research project on understanding perceptions of microplastics and improvement of risk communications

(under Framework Partnership Agreement)

Phase 1



Phase 2



Methodological framework
Mental Models Approach

Learning

Further understanding of **what drives citizen concerns**

Informing

Provide **insights** for **risk assessors** and **policy makers** on areas of citizen's interest

Framing

Explore if and how these concerns can be addressed in **future risk communication**



Thanks to



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