

Microplastics

The Invisible Pollution Crisis

Investigate the growing microplastics crisis — how tiny plastic fragments have infiltrated our oceans, food, and bodies,...

B2 Reading · 35 min · Environment

1 Before You Read — Reflect & Discuss

Consider the following questions and discuss with a partner or your teacher:

1. How many plastic items have you used today? Think of everything from food packaging to clothing.
2. Where do you think plastic goes after you throw it away? Does it ever truly disappear?
3. Have you ever heard the term "microplastics"? What do you already know about them?

2 Reading

A World Full of Tiny Plastic: The Crisis We Cannot See

In 2018, scientists studying some of the most remote regions on Earth made a disturbing discovery. High in the French Pyrenees mountains, far from any city or factory, they found microplastics — tiny fragments of plastic less than five millimetres in size — falling from the sky with the rain. The particles had been carried by wind currents across hundreds of kilometres, settling on pristine mountaintops as silently as snowflakes. Since then, microplastics have been found in Arctic sea ice, in the Mariana Trench — the deepest point in the ocean — in the air we breathe, in the food we eat, and most recently, in human blood, lungs, and **placental** tissue. Plastic, it seems, is now everywhere — including inside us.

Where Do Microplastics Come From?

Microplastics originate from two main sources. **Primary** microplastics are manufactured intentionally at a tiny size. They include the microbeads found in facial scrubs and toothpaste, the plastic **pellets** used as raw material in manufacturing, and the synthetic fibres that shed from polyester and nylon clothing every time they are washed. A single load of laundry can release over

700,000 **microscopic** plastic fibres into the water system.

Secondary microplastics, on the other hand, are created when larger plastic items **degrade** over time. A plastic bottle discarded on a beach does not biodegrade like wood or paper. Instead, sunlight, waves, and temperature changes cause it to break into progressively smaller pieces — but the plastic never truly disappears. It simply becomes invisible to the naked eye, entering the soil, waterways, and eventually the ocean, where it joins an estimated 14 million tonnes of microplastic already resting on the sea floor.

Into the Food Chain

Once in the ocean, microplastics enter the **food chain** at its lowest level. Tiny marine organisms such as **plankton** and filter-feeding shellfish ingest microplastic particles, mistaking them for food. These organisms are then eaten by small fish, which are eaten by larger fish, which are eventually consumed by humans. This process, known as **bioaccumulation**, means that microplastic concentrations increase at each level of the food chain. By the time plastic reaches our plates — in seafood, salt, honey, beer, bottled water, and even tap water — the **contamination** is virtually impossible to avoid.

Research published in 2019 estimated that the average person **ingests** approximately five grams of plastic per week — roughly the weight of a credit card. This figure, though widely cited, remains debated among scientists. What is not debated, however, is that microplastics are now a **ubiquitous** presence in the human diet, regardless of geography, income, or lifestyle.

Health Risks: What We Know and What We Don't

The health implications of microplastic exposure remain one of the most urgent and least resolved questions in environmental science. Laboratory studies on animals have shown that microplastics can cause **inflammation**, disrupt hormonal systems, damage cells, and impair reproductive function. Microplastics also act as carriers for other **toxic** substances: they absorb pesticides, heavy metals, and industrial chemicals from the water around them, potentially delivering concentrated doses of these **pollutants** into the bodies of organisms that consume them.

In humans, the evidence is still emerging. A landmark study published in 2022 detected microplastics in human blood for the first time, confirming that these particles can cross biological barriers and circulate throughout the body. Subsequent research found microplastics in lung tissue, liver samples, and placental tissue — raising particular concern about potential effects on **foetal** development. However, scientists caution that detecting the presence of microplastics is not the same as proving they cause harm. The field is still in its early stages, and large-scale, long-term studies on human health effects have yet to be completed.

Why the Problem Is So Difficult to Solve

Unlike many environmental problems, microplastic pollution has no single source and no simple solution. Plastic is deeply **embedded** in modern life: it is used in packaging, clothing, construction, medicine, electronics, and agriculture. Global plastic production has increased from 2 million tonnes in 1950 to over 400 million tonnes today, and only approximately 9% of all plastic ever produced has been recycled. The rest has been burned, buried in **landfills**, or released into the environment.

Cleanup efforts, while valuable, face enormous challenges. Microplastics are too small to be filtered by most water treatment plants, and once dispersed across oceans, soils, and the atmosphere, they are practically impossible to retrieve. Some researchers have proposed **innovative** solutions — magnetic particles that attract and remove microplastics from water, enzymes that break down certain types of plastic, and **biodegradable** alternatives to conventional plastics. But most experts agree that the most effective strategy is **prevention**: reducing plastic production and consumption at the source, rather than attempting to clean up what has already been released.

A Problem That Demands Collective Action

The microplastics crisis illustrates a broader truth about environmental challenges: they are systemic problems that require systemic solutions. Individual actions — using fewer single-use plastics, choosing natural fabrics, supporting recycling programmes — are important, but they are insufficient without **regulatory** change at national and international levels. The United Nations has begun negotiating a global plastics treaty, aiming to establish binding commitments on plastic production, waste management, and pollution reduction. Whether this treaty will be ambitious enough to match the scale of the problem remains to be seen.

What is certain is that the age of invisible plastic has arrived. The particles are in our water, our food, our air, and our bodies. Understanding where they come from, what they do, and how to stop them is no longer an academic question — it is one of the defining environmental challenges of our time.

3 Key Vocabulary

Word / Phrase	Definition	Example Sentence
placental	relating to the placenta, the organ connecting a developing foetus to its mother	Microplastics have been detected in placental tissue.
primary	first in order or importance; in this context, manufactured directly at small size	Primary microplastics are intentionally made tiny for products like scrubs.

Word / Phrase	Definition	Example Sentence
pellets	small, rounded pieces of a substance, compressed or moulded into shape	Plastic pellets are the raw material used in manufacturing.
microscopic	so small that it can only be seen with a microscope	Microscopic fibres shed from synthetic clothing during washing.
secondary	coming after or resulting from something primary or original	Secondary microplastics form when larger plastic items break apart.
degrade	to break down or deteriorate over time	Plastic does not biodegrade — it degrades into ever smaller fragments.
food chain	the series of organisms through which energy and nutrients pass	Microplastics enter the food chain through tiny marine organisms.
plankton	tiny organisms that drift in water and form the base of aquatic food chains	Plankton mistake microplastic particles for food.
bioaccumulation	the gradual build-up of substances in organisms at higher levels of the food chain	Bioaccumulation means that predators carry higher concentrations of plastic.
contamination	the presence of an unwanted or harmful substance in something	Microplastic contamination of food and water is virtually impossible to avoid.
ingests	takes food or liquid into the body by swallowing or absorbing it	The average person ingests approximately five grams of plastic per week.
ubiquitous	present, appearing, or found everywhere	Microplastics are now a ubiquitous presence in the human diet.
inflammation	a bodily response to injury or irritation, causing redness, swelling, and pain	Animal studies show that microplastics can cause inflammation.
toxic	poisonous; capable of causing harm to living organisms	Microplastics absorb toxic chemicals from surrounding water.
pollutants	substances that contaminate the environment, especially air, water, or soil	Microplastics deliver concentrated doses of pollutants into organisms.
foetal	relating to a foetus — an unborn baby in the later stages of development	Researchers are concerned about potential effects on foetal development.
embedded	firmly and deeply fixed within a surrounding mass or structure	Plastic is deeply embedded in every aspect of modern life.
landfills	sites where waste is buried under layers of earth	Most plastic ends up in landfills or the natural environment.
innovative	introducing new ideas, methods, or products	Scientists have proposed innovative solutions to remove microplastics.

Word / Phrase	Definition	Example Sentence
biodegradable	capable of being broken down naturally by bacteria or other organisms	Biodegradable alternatives to plastic are being developed.
prevention	the act of stopping something from happening before it occurs	Prevention is more effective than cleanup in fighting plastic pollution.
regulatory	relating to official rules or laws that control how something is done	Individual action alone is insufficient without regulatory change.

4 Useful Collocations

plastic pollution · microplastic particles · food chain · marine ecosystem · water treatment · environmental impact · single-use plastic · carbon footprint · waste management · global treaty · toxic chemicals · hormonal disruption · climate change · binding commitment · long-term effects · collective action

5 Reading Comprehension

1. What surprised scientists about the microplastics found in the French Pyrenees?

- a) They were larger than expected
- b) They were found in a remote location far from any city or factory ✓**
- c) They were a new type of plastic never seen before
- d) They had been placed there deliberately by researchers

2. What is the difference between primary and secondary microplastics?

- a) Primary ones are larger; secondary ones are smaller
- b) Primary ones are manufactured at small size; secondary ones result from the breakdown of larger plastics ✓**
- c) Primary ones come from the ocean; secondary ones come from land
- d) Primary ones are dangerous; secondary ones are harmless

3. What is bioaccumulation?

- a) The process of recycling plastic into new products
- b) The natural breakdown of plastic by bacteria
- c) The gradual build-up of substances in organisms at higher levels of the food chain ✓**
- d) The growth of marine organisms in polluted water

4. How much plastic does the average person reportedly ingest per week?

- a) About one gram
- b) Approximately five grams — roughly the weight of a credit card ✓**
- c) Around fifty grams
- d) Less than one milligram

5. Why are microplastics particularly dangerous as carriers?

- a) Because they dissolve in stomach acid
- b) Because they absorb pesticides, heavy metals, and chemicals, delivering concentrated toxins into organisms ✓**
- c) Because they multiply inside the human body
- d) Because they block sunlight from reaching marine plants

6. Why is cleanup alone insufficient to solve the microplastics problem?

- a) Because governments have banned all cleanup technology
- b) Because microplastics are too small, too dispersed, and too numerous to effectively retrieve ✓**
- c) Because cleanup makes the pollution worse
- d) Because only private companies are allowed to do cleanup

7. What does the text suggest is the most effective strategy against microplastic pollution?

- a) Developing better recycling technology
- b) Banning all plastic products immediately
- c) Prevention — reducing plastic production and consumption at the source ✓**
- d) Moving all plastic waste to space

6 Vocabulary Exercise — Fill in the Blanks

degrade · bioaccumulation · ubiquitous · contamination · inflammation · pollutants · embedded · biodegradable · prevention · regulatory

1. Plastic does not biodegrade — it simply _____ into ever smaller fragments over time.
2. Through _____, microplastic concentrations increase at each level of the food chain.
3. Microplastics are now a _____ presence in the human diet — they are found virtually everywhere.
4. Microplastic _____ of food and water is practically impossible to avoid.
5. Animal studies show that microplastics can cause _____ and damage to cells.
6. Microplastics absorb and carry toxic _____ such as pesticides and heavy metals.
7. Plastic is so deeply _____ in modern life that eliminating it entirely seems impossible.
8. Scientists are working on _____ alternatives that break down naturally in the environment.
9. Most experts agree that _____ is more effective than cleanup in fighting plastic pollution.
10. Individual actions alone are insufficient without _____ change at national and international levels.

7 Answer Key

Vocabulary Exercise Answers

1. degrades
2. bioaccumulation
3. ubiquitous
4. contamination
5. inflammation
6. pollutants
7. embedded
8. biodegradable
9. prevention
10. regulatory

8 Grammar Focus — Key Structures in the Text

B2 Grammar: Passive Voice, Quantifiers & Hedging Language

Complex passive: Microplastics **have been found** in Arctic sea ice, the Mariana Trench, and human blood.

Hedging (academic caution): Scientists **caution that** detecting presence **is not the same as** proving harm.

Quantifiers with precision: **Only approximately** 9% of all plastic ever produced **has been** recycled.

Participle clause: **Carried by** wind currents, the particles settled on mountaintops hundreds of kilometres away.

Contrast connector: Individual actions are important; **however**, they are insufficient **without** regulatory change.

9 Speaking & Writing Tasks

Speaking Task

Discuss these questions with a partner or your teacher:

- Were you surprised by any of the facts in this text? Which one stood out to you most, and why?
- Who should bear the greatest responsibility for reducing plastic pollution — individuals, companies, or governments? Justify your answer.
- The text mentions that only 9% of plastic has ever been recycled. Why do you think recycling rates are so low, and what could be done to improve them?
- If you could implement one policy to reduce microplastic pollution, what would it be?

Useful Phrases for Discussion

The text highlights the fact that microplastic pollution has no single source and no simple solution.

What concerns me most is the potential impact on foetal development and future generations.

While individual action is valuable, the evidence suggests that systemic change is essential.

It could be argued that companies that produce plastic should bear the cost of its environmental impact.

Writing Task

Write a structured essay (180–230 words) on the following topic:

"Microplastic pollution is one of the greatest environmental challenges of the 21st century. What are the main causes of this problem, and what practical steps can be taken to address it?"

Your essay should identify two or three main causes, propose practical solutions, and include a conclusion. Use vocabulary and evidence from the text to support your argument.