Microplastics

A short guide to understanding exposure, movement, and how it shapes the environments we live within

Fragments that continue to move.

Microplastics are small particles
formed as larger plastic materials break down.

They are typically defined
as particles smaller than 5 millimetres.

Some are visible.
Many are not.

At smaller scales,
nanoplastics are able to move more freely
through air, water, and biological systems.

Importantly,
microplastics are not only formed through
breakdown.

Some are intentionally manufactured
and added to products —
including certain cosmetics, personal care items,
and industrial materials.

This means they enter the environment
both by design
and through degradation over time.

Microplastics are now present
across many environments.

They have been detected in:

– food and drinking water
– air and household dust
– soil and water systems
– textiles and synthetic materials

Exposure reflects multiple pathways:

– ingestion
– inhalation
– contact with surfaces and materials

Sources may include:

– environmental contamination of food
– processing and packaging materials
– synthetic textiles and indoor dust
– tire wear and urban particles
– personal care products and industrial inputs

This creates a pattern
of continuous, low-level exposure
across daily life.

What becomes visible here
is not a single source —

but a system of movement.

Microplastics do not remain fixed.
They circulate, disperse,
and fragment further over time.

They move between:

– air and water
– surfaces and dust
– outdoor and indoor environments

This means exposure is not contained.
It is diffuse, mobile, and ongoing.

The body is not responding
to a single moment.

It is continuously sensing,
interpreting, and adapting
to what surrounds it.

With microplastics,
this interaction may occur
at very small scales
and across multiple tissues.

Microplastics have been detected
in human samples including
blood, lungs, placenta, and breast milk.

Some studies suggest
they may influence:

– cellular stress and inflammation
– hormonal signalling
– how the body regulates and repairs

Observational research has also linked
their presence in tissues
with increased risk of cardiovascular
and neurological outcomes.

These findings are associative,
not yet causal.

Understanding of dose, thresholds,
and long-term effects
remains incomplete.

How this may be felt

These experiences are not specific
to one cause alone.

But they may reflect
how the body responds
to ongoing environmental input.

– a sense of fatigue that lingers
even when rest is present

– subtle shifts in focus or clarity
that are difficult to explain

– changes in how the body regulates
sleep, temperature, or energy

– increased sensitivity
to environments, materials, or air quality

– a feeling of the body
working a little harder
to maintain balance

This is an area
where knowledge is still developing.

Global health bodies emphasise that:

– exposure is widespread
– data gaps remain significant
– clear risk thresholds
have not yet been established

This does not remove relevance.

It reflects a system
that is being observed
as it unfolds.

Response is not uniform.

Certain life stages
may be more sensitive.

During pregnancy
and early development,
microplastics have been identified
in placental and fetal samples.

Some studies suggest associations with:

– changes in placental function
– inflammatory responses
– altered developmental markers

In children,
exposure relative to body size is higher,
and regulatory systems are still developing.

Beyond early development,
chronic exposure is being explored
in relation to:

– oxidative stress
– inflammation
– cellular ageing processes

These areas remain under investigation —
but they highlight
the importance of context.

Regulatory approaches are evolving.

In the European Union,
restrictions now apply
to intentionally added microplastics,
with increasing focus on source control.

In the United Kingdom,
microbeads in rinse-off cosmetics
have been restricted since 2018,
while broader sources remain under review.

In the United States,
oversight is developing
through food safety and drinking water
frameworks,
with increasing attention
to environmental monitoring.

This reflects a wider shift —
from individual products
towards system-level exposure.

Working with the environment

While microplastics are widespread,
the pattern of exposure
can still be influenced over time.

What shapes this pattern
is the direction of everyday contact.

Not through a single action —
but through repeated interactions
between materials, environments,
and the body itself.

Everyday contact

Often through ordinary routines
repeated quietly across daily life.

– reducing heating of food in plastic

– choosing glass or stainless steel
for food and drink where possible

– being mindful of packaging,
processing, and repeated plastic contact

– favouring loose-leaf tea
where appropriate,
as some tea bags release microplastic particles

– considering the materials used
in items that touch the body daily —
such as toothbrush bristles,
interdental brushes, and food containers

– where relevant,
exploring water filtration approaches
suited to the local water system

Indoor environments

– supporting airflow
– regular, gentle dust removal
– awareness of synthetic materials

Materials and textiles

– favouring natural fibres where possible
– moderating release from synthetic fabrics

Over time,
these patterns begin to change.

With pesticides,
we began to see how exposure repeats.

With PFAS,
we saw how substances persist.

Here,
we begin to see how materials fragment
and continue to move
through the environments we live within.

This guide is part of a wider exploration.

Each builds on the last —
forming a gradual understanding
of the environments we live within.

SOURCES

Regulatory & Public Health Bodies

World Health Organization (WHO)
European Commission (EU)
European Environment Agency (EEA)
UK Government — Microbeads Ban
US Environmental Protection Agency (EPA)
US Food and Drug Administration (FDA)

Key Scientific Literature

Leslie HA, van Velzen MJM, Brandsma SH, et al. (2022). Discovery and quantification of plastic particle pollution in human blood. Environment International, 163, 107199.

González-Acedo A, et al. (2025).
Microplastic exposure and human health risks across the life cycle: a focus on reproduction, development, and aging. Frontiers in Cell and Developmental Biology.

Marfella R, et al. (2024).
Microplastics and nanoplastics in atheromas and cardiovascular events. New England Journal of Medicine, 390, 900–910.

WHO. (2022).
Dietary and inhalation exposure to nano- and microplastic particles and potential implications for human health.

Wang Y, et al. (2023).
Microplastic sources, formation, toxicity and remediation: a review. Environmental Chemistry Letters, 21, 1497–1514.

Regulation & Global Context

Commission Regulation (EU) 2023/2055.
Restriction of intentionally added synthetic polymer microparticles.

European Commission (2025).
New legislation reducing microplastic pollution enters into force.

UK Government (2018).
Microbeads ban enters into force.

EPA (2026).
Draft Contaminant Candidate List — microplastics in drinking water oversight.

FDA.
Microplastics and nanoplastics in foods.

Additional Context

Peer-reviewed research continues to explore exposure pathways, biological interaction, developmental sensitivity, environmental distribution, and long-term health implications.

Current evidence supports reducing avoidable exposure while scientific understanding continues to evolve.