Pesticides

A short guide to understanding exposure and reducing impact

PhilNutriomics

Pesticides are substances designed to prevent, destroy, or control pests —
including insects, weeds, fungi, and rodents.

They are widely used in agriculture,
but also in public spaces and around the home.

Exposure is rarely a single event.

It happens in small, repeated ways —
through the environments we move through each day.

Not always visible.
But present in the background of everyday life.

Over time, these repeated, low-level exposures become part of the environment the body is responding to.

Pesticides are often associated with food production.

But their presence extends beyond what we eat.

They can be encountered in:

– parks, lawns, and green spaces
– home environments, including gardens and treated areas
– indoor dust and air
– what is carried indoors on shoes, clothing, and pets

This means exposure is not confined to one place.

It moves with us —
between outdoor and indoor spaces.

Often quietly,
and without direct awareness.

Exposure happens through everyday contact:

– ingestion (food and water)
– inhalation (air and dust)
– skin contact (surfaces, soil, treated areas)

The body is not responding to a single moment.

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

Over time, this ongoing interaction can begin to influence how the body regulates, repairs, and maintains balance.

Not always in obvious ways.
But often through subtle shifts that accumulate.

This might be felt as:

– changes in how we respond to everyday stress
– differences in energy across the day
– shifts in sleep quality or depth
– a sense that the body is working a little harder to recover

Not everyone responds in the same way.

The effect of exposure is shaped by:

– frequency and duration
– life stage (including pregnancy and childhood)
– cumulative exposure from multiple sources
– the body’s capacity to process and respond

Two people may move through similar environments,
yet experience them differently.

A young child playing on treated grass,
or someone already under sustained stress,
may respond differently to the same level of exposure.

Pesticide use is shaped not only by individual choices,
but by agricultural systems, policy, and regulation.

Across Europe, pesticides are regulated under one of the most stringent systems globally, with around 500 active substances approved and a policy commitment to reduce overall use by 50% by 2030.

In the United States, over 800 pesticides are currently registered for use,
reflecting a different regulatory approach.

In Great Britain, pesticide regulation has begun to diverge from EU standards since Brexit, with some substances no longer authorised in the EU still in use.

Recent discussions between the UK and EU have led to renewed alignment —
a shift that may help strengthen protections over time.

Exposure reflects the environments we live in, and the systems that shape them.

While it is not possible to avoid all exposure,
it is possible to reduce it in meaningful ways.

The aim is not perfection —
but a gradual lowering of everyday contact.

Food and preparation

Washing produce thoroughly helps remove
surface residues.

Soaking in a baking soda solution for around 10–15 minutes
can further reduce certain residues before
rinsing.

When possible, choosing food produced with
lower pesticide use
can reduce overall exposure.

Availability and context will vary —
small shifts where possible are sufficient.

What enters the home

Pesticides are often brought indoors from outside environments.

Removing shoes at the door
and being mindful of clothing, bags, and pets,
can reduce what accumulates indoors over time.

Home and garden use

Limiting pesticide use in the home and garden reduces direct and repeated exposure.

Where possible, consider alternative approaches that do not rely on chemical control.

Pets and indirect exposure

Some flea and tick treatments for pets contain pesticide compounds,
including substances associated with environmental concern.

These can transfer to hands, fabrics, and surfaces —
particularly through close contact.

Being aware of what is used and how often can help reduce indirect exposure within the home.

Small shifts, repeated over time,
begin to change the overall pattern of exposure.

SOURCES

Regulatory & Public Health Bodies

European Commission (Eurostat)
European Food Safety Authority (EFSA)
UK Health and Safety Executive (HSE)
US Environmental Protection Agency (EPA)
National Institute of Environmental Health Sciences (NIEHS)
UK Food Standards Agency

Key Scientific Literature

Ahmad MF, Ahmad FA, Alsayegh AA, et al. (2024). Pesticides impacts on human health and the environment with their mechanisms of action and possible countermeasures. Heliyon, 10(7), e29128.

Kim KH, Kabir E, Jahan SA. (2017). Exposure to pesticides and the associated human health effects. Science of the Total Environment, 575, 525–535.

Mostafalou S, Abdollahi M. (2017). Pesticides and human chronic diseases: Evidences, mechanisms, and perspectives. Toxicology and Applied Pharmacology, 268(2), 157–177.

Yang T, Doherty J, Zhao B, et al. (2017). Effectiveness of commercial and homemade washing agents in removing pesticide residues on apples. Journal of Agricultural and Food Chemistry, 65(44), 9744–9752.

Additional Context

Peer-reviewed research on indoor exposure pathways, including household dust and take-home exposure.