HEALTH BASICS

Pesticides

Pesticides are products used to control insects, weeds, fungi, rodents, and other unwanted organisms.

WHAT IT IS
Products used to control unwanted organisms

WHERE IT COMES UP
Food residues, home products, workplaces, gardens, and exposure concerns

WHY IT MATTERS
Exposure can irritate tissues or cause poisoning

WHAT IT IS NOT
Not a disease or diagnosis

WHO TO ASK
Poison centre, primary care clinician, or occupational health service

HOW IT IS CHECKED
Exposure history and targeted tests in selected cases

Overview

"Pesticide" is a broad term for products used to prevent, repel, or control pests. Pests may include insects, weeds, fungi, rodents, germs, or other unwanted organisms.

Pesticides are not a disease or diagnosis. They are a group of products with different ingredients, uses, and health effects. Insecticides kill insects, herbicides control weeds, fungicides control fungi, and rodenticides control rodents. Some disinfectants are also regulated as pesticides because they control bacteria, viruses, or other microbes on surfaces.

Pesticides may be used in homes, gardens, farms, workplaces, schools, parks, and public health programs. Small residues can also remain on or in food after agricultural use.

A product's source does not determine whether it is harmless. Both naturally derived and synthetic pesticides can cause harm if they are misused or if exposure is high enough.

How it works

Each pesticide acts on a particular biological process. An insecticide might interfere with an

insect's nervous system. A herbicide might block plant growth. A fungicide might damage fungal cells.

The same process may also affect people or animals, especially when a product is swallowed, inhaled, splashed into the eyes, or left on the skin. However, pesticides differ greatly in toxicity. Information about one pesticide should not be applied to every other product.

Health risk involves both hazard and exposure . Hazard means a product's ability to cause harm. Exposure means how much reaches your body, by which route, and for how long. A hazardous concentrated product may present little risk when it is stored correctly and not contacted. A less hazardous product may still cause problems after incorrect or repeated use.

Product labels identify the active ingredients and explain approved uses, protective equipment, storage, disposal, and first aid. The concentration matters: a farm concentrate and a ready-to-use household spray may contain the same ingredient but present different exposure risks.

Regulators assess pesticides for possible short-term and long-term effects. Food residue limits are set for individual pesticides and foods. Monitoring programs test samples to check whether residues meet those limits.

Why it matters for your health

Most everyday contact with pesticides does not cause poisoning. Risk is more likely to increase with concentrated products, poor ventilation, spills, incorrect mixing, missing protective equipment, or repeated workplace exposure.

Children may have more contact with treated floors, soil, or dust because they crawl and put their hands or objects in their mouths. Their smaller bodies and developing organs can also affect how an exposure is assessed.

Pregnancy is another time when avoiding unnecessary exposure is reasonable. The relevant questions are which product was involved, how exposure happened, and how much contact may have occurred. Simply noticing a pesticide smell does not measure the amount absorbed.

Food residues are different from directly handling a pesticide concentrate. Government programs monitor foods for pesticide residues and compliance with legal limits. Concern about residues is not usually a reason to stop eating fruits and vegetables.

People who mix, apply, transport, or clean up pesticides at work may need specific training and health monitoring. Requirements depend on the product, job, and local workplace rules.

What can go wrong

Acute pesticide poisoning is illness caused by a significant exposure over a short period. Possible effects depend on the ingredient and route of contact. They can include vomiting, marked sweating, confusion, breathing difficulty, muscle weakness, or seizures. These effects are not caused by pesticides as a single group; they occur with particular exposures.

Other named problems include:

Some pesticides are assessed for possible effects on the nervous system, cancer risk, fertility, pregnancy, or child development. Evidence and risk are specific to the chemical, dose, and exposure pattern. A claim about one pesticide does not establish a risk from all pesticides.

Repeated minor symptoms during pesticide work deserve routine medical or occupational health review. Bring the exact product name or label and a record of when exposure occurred.

Call emergency services for collapse, a seizure, severe confusion, serious breathing difficulty, or inability to wake the person normally.

Contact a poison centre urgently after swallowing a pesticide, intentional exposure, a large spill onto the body, significant eye exposure, or concerning symptoms. In the United States, Poison Help is available at 1-800-222-1222. Elsewhere, use your local poison information service. Do not wait for symptoms after swallowing a concentrated product.

- Irritant or contact dermatitis: inflamed, painful, or itchy skin after contact
- Chemical eye injury: irritation or tissue damage after a splash
- Airway irritation or asthma worsening: breathing symptoms triggered by sprays, dusts, or fumes
- Organophosphate or carbamate poisoning: excessive nerve activity caused by certain insecticides
- Anticoagulant like warfarin or apixaban rodenticide poisoning: abnormal bleeding after sufficient exposure to certain rat poisons

What you can do

Before using a pesticide, identify the pest and consider whether cleaning, traps, barriers, or removing food and water sources could address the problem. If a pesticide is needed, choose one labelled for that exact setting and pest.

Read the full label before opening the container. Follow its instructions for protective clothing, ventilation, application, re-entry, storage, and disposal. Do not use more than directed or mix

products unless the label specifically instructs you to do so.

Keep pesticides in their original labelled containers. Never transfer them into drink bottles, food containers, or unmarked jars. Store them away from children, pets, food, and medicines.

For fruits and vegetables, wash produce under running water and remove damaged areas or unwanted outer leaves. Soap, bleach, and household cleaning products are not intended for washing produce. Washing may reduce dirt and some surface residues, but it cannot remove every residue.

If exposure occurs, move away from the source without putting yourself at risk. Remove contaminated clothing and rinse exposed skin or eyes with clean water. Move to fresh air after inhalation if it is safe to do so. Check the label and contact a poison centre for instructions. Do not make someone vomit unless a poison specialist or the product label directs it.

Keep the container or photograph the label, but do not take a leaking container into a vehicle or healthcare setting. Useful details include:

There is no useful routine pesticide test for most people. Blood or urine tests exist for selected chemicals, and cholinesterase testing may be used in some organophosphate or carbamate work settings. A detectable chemical does not automatically mean that injury has occurred. Testing is most useful when chosen and interpreted for a specific exposure.

- Product and active ingredient names
- Registration number, if shown
- Time and route of exposure
- Approximate amount involved
- Protective equipment worn
- Symptoms and when they began

Common questions

Does "organic" mean pesticide-free?

No. Organic farming may use approved pesticides, including substances from natural sources. "Natural" does not mean non-toxic. Residue rules and safe handling still matter.

Should I avoid fruits and vegetables because of residues?

Usually, no. Washing produce and eating a varied diet are practical steps. If you are concerned about a particular recalled or contaminated food, follow the instructions from the relevant food safety authority.

Can smell tell me whether exposure is dangerous?

Not reliably. Some pesticides have little smell, while solvents or added ingredients may smell strong at low levels. Assessment should use the product, route, amount, duration, and any health effects-not smell alone.

Should I get tested after household pesticide use?

Usually there is nothing to test after correct use without a spill or concerning exposure. Ask a poison centre or clinician about targeted testing if a specific product was swallowed, heavily inhaled, or spilled onto the body.

What if exposure happened during pregnancy?

Record the exact product and how contact occurred. A poison information service can assess the exposure, and your pregnancy care clinician can arrange follow-up if needed. Emergency symptoms require emergency care in the usual way.

What if a pet is exposed?

Contact a veterinarian or veterinary poison service promptly. Human poison centres may not be able to advise on animal treatment.

Sources

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