

📖 Topic Page: [pesticide](#)

Definition: **pesticide** from *Merriam-Webster's Collegiate(R) Dictionary*

 [pronunciation](#)

(ca. 1925) : an agent used to destroy pests

pes·ti·ci·dal \ pes-tə- sī-dəl *adj*



Image from: [While pest control is necessary, the health... in Encyclopedia of Global Health](#)

Summary Article: **pesticide**

From *The Columbia Encyclopedia*

biological, physical, or chemical agent used to kill plants or animals that are harmful to people; in practice, the term pesticide is often applied only to chemical agents. Various pesticides are known as insecticides, nematocides, fungicides, herbicides, and rodenticides, i.e., agents primarily effective against insects, nematodes (or roundworms), fungi, weeds, and rodents, respectively.

Pesticides can be derived from plants (e.g., pyrethrin, neem) or minerals, or they can be chemically manufactured (e.g., DDT, 2,4-D). Natural predators and other biological methods are also used. Among the biological agents, parasites and predators feed on pests, pathogens sicken them, and pheromones interfere with insect mating. There are also genetically engineered pesticides, such as the toxin-producing *Bacillus thuringiensis* strain used against moth larvae.

Chemical pesticides are usually contact, stomach, or fumigant poisons. Contact poisons may have immediate or delayed effects after physical contact with a pest. Fumigants, which may initially have the form of a solid, liquid, or gas, kill pests while in a gaseous state.

Some insecticides and fungicides are systemic, i.e., they are translocated by a plant from the area of application to other plant parts, where they affect only pests that feed on the crop. Nonselective pesticides can affect both the targeted pest and other organisms; selective pesticides affect only the target pest. Persistent pesticides are those that remain in the environment for a long time.

Since the publication of Rachel Carson's *Silent Spring* in the 1960s, there has been concern regarding the effects of chemical pesticides on humans and on the environment. In the environment, the biological concentration of chemical pesticides (the amount retained in an organism through direct contact or consumption of affected plants or animals) tends to increase the higher the animal is in the food chain. DDT, for example, severely reduced the rate of reproduction in many fish and birds.

Chemical pesticides now undergo exhaustive and expensive trials prior to government registration and release. The carcinogenicity of some pesticide components, however, is a vigorously debated topic. Government testing often uses massive amounts of such substances on laboratory animals, creating what some critics feel is an exaggerated assessment of their danger. Humans are heavily exposed to pesticides usually as a result of acute exposure, such as accidental inhalation, on the job.

Potential dangers from pesticide use must be weighed against improved crop quality and yield and greatly improved human health around the world, as well as the availability of disease-preventing fresh fruits and vegetables that the use of pesticides has made possible. Nevertheless, many consumers are

concerned about the effects of pesticide residues in foods, especially for infants, whose systems may not be able to convert toxic chemicals into harmless substances as readily as adult systems can. In addition, concerns have been raised for farm workers in developing countries that lack the protective safeguards required in the United States; their health is threatened by the continued use of pesticides that are known health hazards. Efforts are being made to reduce chemical pesticide use in favor of Integrated Pest Management (IPM), biological controls, and plant breeding for inherent pest resistance.

See Carson, R. , *Silent Spring* (1962);

Hurst, P. et al., *The Pesticides Handbook* (1991);

Marco, G. J. et al., ed., *Regulation of Agrochemicals* (1991).

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