

What are pesticides?

Pesticides are created by humans to manage what humans define as pests. Pests are anything that stands in the way of human food, health, or comfort—no, not your alarm clock!



There are several types of pesticides that include:

- Acaricide: targets mites, ticks, and spiders
- Antimicrobial: targets bacteria, viruses and other microbes
- Attractant: attracts pests for monitoring or killing
- Avicide: targets birds
- Fungicide: targets fungi
- Herbicide: targets weeds
- Insecticide: targets insects
- Molluscide: targets snails and slugs
- Nematicide: targets nematodes
- Piscicide: targets fish
- Predacide: targets vertebrate predators
- Repellent: repels pests
- Rodenticide: targets rodents
- Synergist: improves performance of another pesticide

900,000 farms and 70 million households use pesticides in the United States with agriculture using 75% of all pesticides. However, 85% of U.S. households have at least one type of pesticide, while 65% of U.S. households have 1-5 in storage.;

The History of Pesticides

The movie 10,000 B.C. unrealistically ends with the protagonist being handed seeds from a tribe he befriended along his journey. This movie starts with a group of hunters and exposes the start of agriculture for a reason: it is hard for people today to imagine a life without farms. In actuality, humans began farming in 8000 B.C.

Agriculture is a fantastic means of providing food to large populations, but pests get in the way. So, the first recorded use of insecticides was in 2500 B.C. by Sumarians, who used sulphur compounds to control insects and mites. Other methods arose as time went on, such as:

- Controlling body lice in China with mercury and arsenical compounds in 1200 B.C.
- Burning sulfur to kill insects and using salt to control weeds in ancient Rome.
- Controlling ants with honey and arsenic in 1600.



It was not until after WWII that pesticide popularity soared with the discovery of the effects of DDT (dichloro-diphenyl-trichloro-ethane), BHC, aldrin, dieldrin, endrin, and 2,4-D. These products were effective and inexpensive with DDT being the most popular, because of its broad-spectrum activity.

DDT was easy to use, appeared to have low toxicity to mammals, and reduced insect-borne diseases, like malaria, yellow fever, and typhus; consequently, in 1949, Dr. Paul Muller won the Nobel Peace Prize in medicine for discovering the insecticidal properties of DDT. Unfortunately, in 1946, the first report of insect resistance to DDT in houseflies occurred in Sweden. Soon after, in the 1950's and 1960's, widespread resistance to DDT and other pesticides was documented.

Public debate arose after Rachel Carson's book, *Silent Spring*, was released in 1962. The book described how DDT entered the food chain, remained toxic in the environment even after it was diluted by rainwater, and caused cancer and genetic damage after accumulating in fatty tissues of animals. Carson's conclusion that DDT and other pesticides had contaminated the entire world food supply sparked concern about pesticides and shortly after, in 1970, President Nixon formed the EPA (Environmental Protection Agency).



On December 2, 1970, the EPA opened and had inherited from the USDA (United States Department of Agriculture) its staff and the function of pesticide registration. In 1972, William D. Ruckelshaus, the first EPA Agency Administrator, banned DDT since EPA studies reported DDT posed carcinogenic risk to humans.

In the next two decades, alternatives to synthetic pesticides developed, which included:

- More targeted synthetic insecticides
- Baits
- "Low dose" insecticides
- Pheromones
- Insect Growth Regulators
- Bio-pesticides (natural materials)

Concerns still remained in 1996 and the Food Quality Protection Act (FQPA) was passed in order to change the way the EPA approves and regulates pesticides. The act mandated the implementation of "minimum risk" and "reduced risk" pesticide categories and removed chlorpyrifos and diazinon, two types of synthetic pesticides, from the market. A decade later, on August 3, 2006, the EPA recommended restrictions on thousands of uses of pesticides after a

study was conducted. Jim Jones, the director of the agency's pesticide office, revealed plans for the EPA to review all the pesticide chemicals and their uses in a similar way in 15 years.



The Future of Pesticides

If pesticides were banned in the U.S., it is estimated that 132,000 people would lose jobs, U.S. food aid programs to poor countries would slow, and worldwide hunger would increase. Additionally, a ban could hurt the environment in that farmers would need more farmland, thus in turn would ruin habitats; plus, other countries with less strict or fewer regulations may increase pesticide usage to take advantage of the reduction of U.S. exports. Perhaps most importantly, pesticides have helped control diseases caused by pests, so banning pesticides would endanger public health.

The future of pesticide usage is uncertain. Many people, organizations and companies are working toward being more environmentally-friendly; however, a committee on the Future Role of

Pesticides in US Agriculture concluded “that chemical pesticides will continue to play a role in pest management for the foreseeable future, in part because environmental compatibility of products is increasing—particularly with the growing proportion of reduced-risk pesticides being registered with the EPA, and in part because competitive alternatives are not universally available.”



This does not mean environmentally-friendly options aren't available. Even for your household, there are organic insecticides, that use natural plant oils as the active ingredient and food-grade inert ingredients that are safe for the environment as well as safe to use around children and pets, yet proven effective by university and field testing.