



COLORADO ENVIRONMENTAL PESTICIDE EDUCATION PROGRAM

Pesticide Fact Sheet #102
CEPEP 5/00
Updated 6/06

DISCOVERY AND DEVELOPMENT OF NEW PESTICIDES

L.G. Skoglund
S.K. McDonald

This fact sheet covers the major events in the discovery and development of new pesticides.

<http://www.cepep.colostate.edu>

Discovery and Development of New Pesticides

The pesticides you buy are the result of ten or more years of research and testing. The process starts with the discovery of a new chemical and proceeds to initial evaluation of activity against pests and preliminary toxicology screening. Eventually, the compound undergoes extensive field and toxicology testing. Finally, the formulated pesticide is evaluated by the [Environmental Protection Agency](#) (EPA) to determine if it can be registered. Standards for registration of pesticides are provided by the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and the Food Quality Protection Act (FQPA) of 1996.

FIFRA standard calls:

- Negligible risk to workers, homeowners, avian and aquatic life, plants, endangered species, and surface/ground water.
- If a significant risk can be mitigated, then registration can be granted.

FQPA standard calls for “reasonable certainty of no harm”

- Negligible risk from all combined sources of exposure to pesticides (aggregate exposures). FQPA also considers the combined effects of human exposure to different pesticides that may act in similar ways on the body (cumulative exposure). The FQPA contains special provisions to protect infants, children, and other sensitive groups.
- If a significant risk can be mitigated, then registration and reregistration can be granted.

Major Events in Pesticide Development Process

Chemical Research

- Synthesis from known chemicals
- Synthesis from plants, fungi, etc.

Patent Review

- 17 year time limit on patent

Lab and Greenhouse Screening

- Efficacy
- Toxicology
- Environmental safety

Field Trials

- Efficacy
- Environmental safety

Toxicology

- Acute toxicity
- Subchronic toxicity
- Chronic toxicity and carcinogenicity
- Reproduction/Developmental toxicity
- Neurotoxicity
- Genetic toxicology



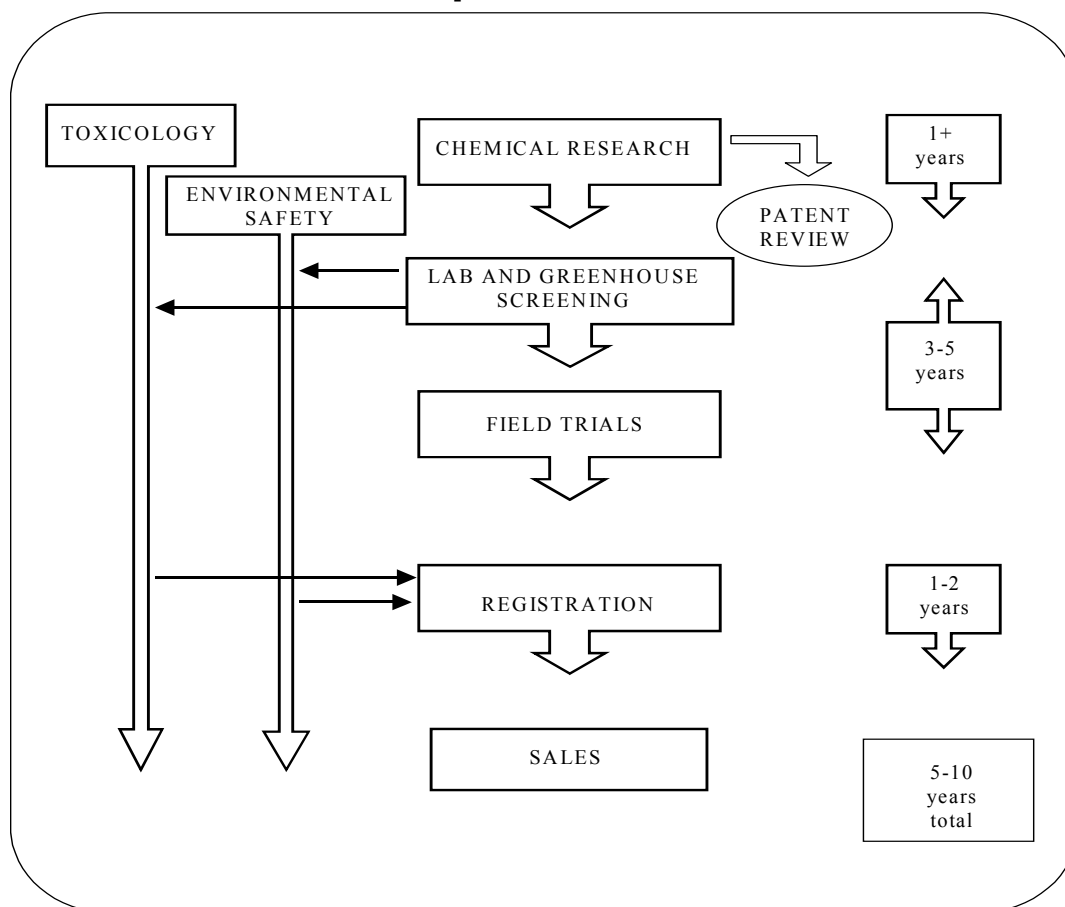
Environmental Safety

- Environmental effects on soil, water, and air
- Residue/decomposition studies

Registration

- Label information
- Toxicology data
- Environmental safety data
- Worker safety data

Pesticide Development Events and Timeline



Schulze, L.D. July 1993. *Pesticide Development - From Lab to Label*. July 1993. The Label Vol. 5, No. 5. Cooperative Extension, University of Nebraska - Lincoln, Institute of Agriculture and Natural Resources, Pesticide Education Office.

From Lab to Label: The Research, Testing and Registration of Agricultural Chemicals, Washington, D.C. 2001. <http://www.croplifeamerica.org/>.

[CEPEP Home Page](#)