

HOW ARE HERBICIDES REGISTERED FOR USE?

A GLIMPSE INTO THE ROBUST REGISTRATION PROCESS FOR HERBICIDES USED IN PLANT MANAGEMENT

Plant management oftentimes requires the use of herbicides in both aquatic and terrestrial systems. **Herbicides are a type of pesticide intended for preventing, destroying, repelling, or mitigating problematic or pest plants.**

Before an herbicide is able to be distributed or sold in any U.S. market, the manufacturer must put the product through an extensive and expensive registration process that ensures it meets federal safety standards. These safety standards are regulated under two laws: **the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Federal Food, Drug, and Cosmetic Act (FFDCA)** to protect human and environmental health.

In 1947, FIFRA was enacted to regulate the registration, distribution, sale, and use of pesticides in the United States. This was originally under the U.S. Department of Agriculture (USDA).

In 1970, the U.S. Environmental Protection Agency (EPA) was formed and by 1972, FIFRA was revised to reflect the current policy. Stating that the formation of all pesticides must be registered through the EPA.

FIFRA states that a pesticide, when used according to the label specifications, will not generally cause unreasonable adverse effects on the environment.

This is defined in two ways: “(1) any unreasonable risk to man or the environment, taking into account the economic, social, environmental costs and benefits of the use of any pesticide, or (2) a human dietary risk from residues that result from a use of a pesticide in or on any food inconsistent with the standard under section 408 of the Federal Food, Drug, and Cosmetic Act (FFDCA).”

The FFDCA requires that the registration process also determines that there is reasonable certainty that no harm will result from pesticide residue found in foods.

Before the EPA registers a pesticide, it must be evaluated by a thorough series of scientific tests to demonstrate that it meets human, animal, and environmental safety standards.

Once a product is registered it is sold and distributed with a label that is a legally binding document.

It is important for land managers and aquatic applicators to safely and legally handle pesticide products based on the directions and precautions on the label. These safety standards and handling procedures on the label are an essential part of the registration process.

The Label is the Law

*All pesticide labels state:
“It is a violation of Federal law
to use this product in a manner
inconsistent with its labeling.”*

Registration Process Categories

To put things into perspective, the registration process can take over 11 years until the pesticide product reaches the market.

Simply completing the extensive testing process for registration does not always lead to a registered product. The collective risk of all the test categories combined must be assessed and passed before becoming registered. In other words, this process is rigorous and many pesticides do not pass the extensive and expensive process.

The registration process is organized into nine risk categories. Together, these categories include over 240 types of scientific tests that provide important information about an herbicide’s safety and effectiveness.

Product Chemistry

Studies related to the product chemistry refer to the manufacturing and characteristics such as flammability.

Product Performance

Studies used to ensure that the herbicide will control the plants listed on the label. These data also ensure that ineffective products do not enter our environment.

Human and Domestic Animal Exposure

These studies are used to assess the potential hazards to humans and domestic animals in a variety of scales; from short and long-term experiments to product metabolism (or how it breaks down in the organism).

For example, this series of studies ensure that consuming water that has been treated doesn't result in negative health impacts.

Non-target Organism Exposure

Studies used to examine the short and long-term effects on birds, mammals, fish, invertebrates, and plants. These studies start in a lab and progress into applied field tests.

For example, if a duck lands in a body of water that was just treated with herbicide to control waterhyacinth (the intended target), these tests evaluate the impact on the duck (non-target).

Applicator/Worker Exposure

These studies are used to evaluate the potential exposure risks to any workers applying herbicides as they may be exposed to higher concentrations while handling the products.

For example, these studies determine the appropriate Personal Protective Equipment (PPE) to ensure the safety of those handling the product.

Post-Application Exposure

Studies used to assess the hazards of an herbicide after it is applied to an area. This data helps inform how applicators and the public become exposed and how long they must wait until reentering treated areas.

For example, these series of tests determine the swimming restrictions of an aquatic herbicide, or how long someone should wait to enter a body of water after a treatment.

Product Spray Drift

Studies used to evaluate herbicide droplet size and deposition aid in understanding the potential risks from herbicide exposure to humans, wildlife, and the environment after being applied.

Spray drift is defined as the unintentional airborne movement of pesticides following treatment. For example, data from these studies determine what impact an aquatic herbicide used in a lake has on the nearby forest or creek.

Environmental Fate

Environmental fate studies relate to the presence and persistence of herbicides in the environment and how that may impact water quality, as well as, land and wildlife resources.

For example, these studies determine how long an herbicide persists in lake sediment after treatment.

Product Residue Chemistry

This category refers to the FFDCA which requires the EPA to determine that there is reasonable certainty that no harm will result from pesticide residue found in foods. This stage of the process involves combining the data found from the previous categories.

These data are combined and calculated to determine the amount of potential exposure estimates in food. This allows the EPA to set and enforce tolerance levels.

Information Adapted From

United State Environmental Protection Agency. (30 March, 2021). *Data Requirements for Pesticide Registration.*

Visit [epa.gov/pesticide-registration/data-requirements-pesticide-registration](https://www.epa.gov/pesticide-registration/data-requirements-pesticide-registration) for more detailed information

