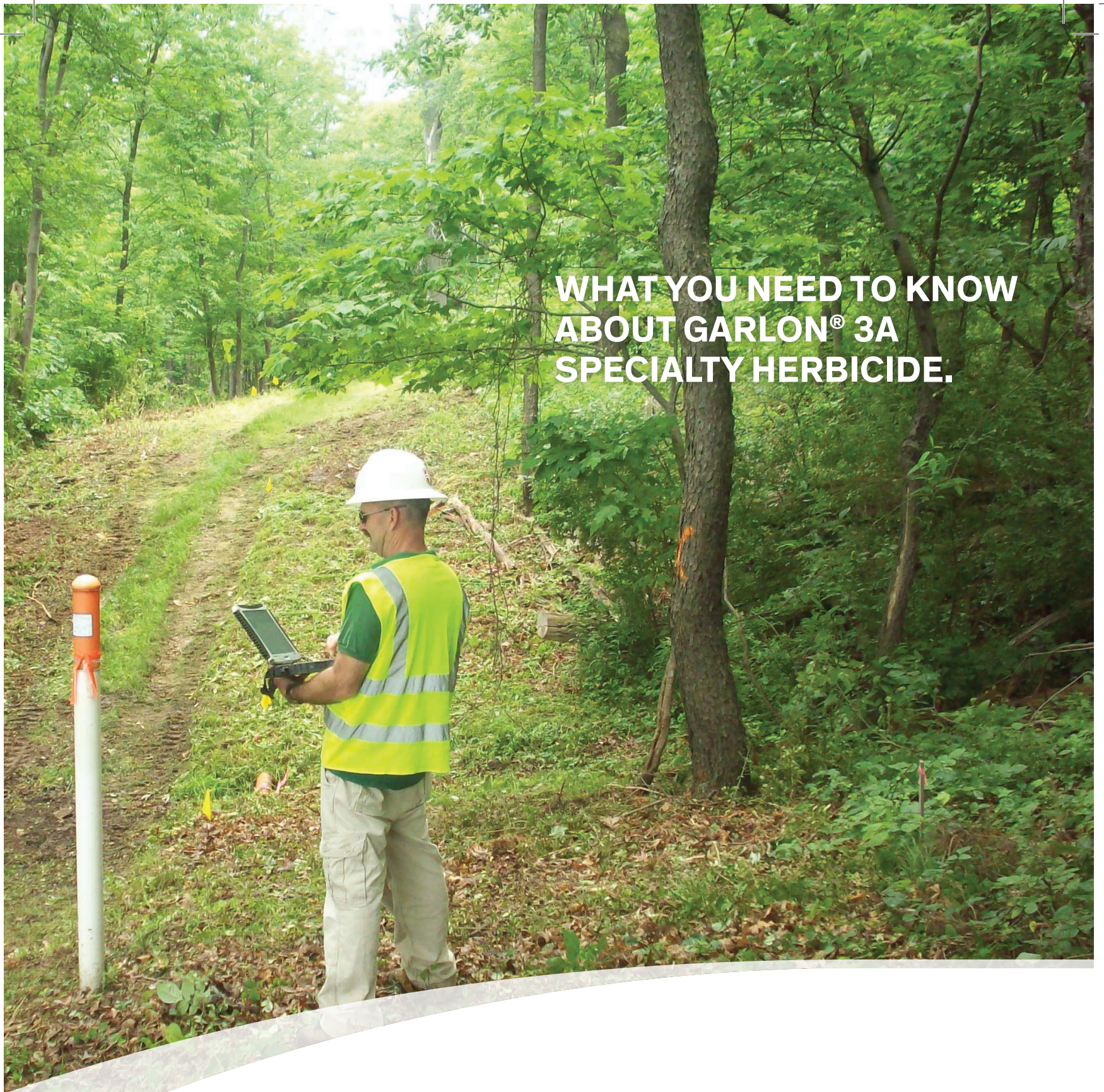


**WHAT YOU NEED TO KNOW
ABOUT GARLON® 3A
SPECIALTY HERBICIDE.**



Dow AgroSciences

Solutions for the Growing World

Garlon®

3A

SPECIALTY HERBICIDE

GARLON® 3A: WHAT YOU NEED TO KNOW

Vegetation managers and foresters use Garlon® 3A herbicide to control unwanted weeds, brush and trees beneath electrical power lines, along railroad beds, roadsides, pipelines, in forestry and wildlife openings, including grazed areas on these sites. Garlon 3A contains the active ingredient triclopyr.

The following information provides specifics on Garlon 3A and explores questions commonly asked by people concerning its use.



Why do you need to control vegetation in these areas?

For most right-of-way uses, safety remains a major reason for managing vegetation. Trees, brush and weeds along these rights-of-way can create hazards.

For driver and passenger safety, vegetation must not be allowed to block traffic signs or roadside markers. It also must not conceal guardrails or overtake road shoulders. Vegetation must not obstruct driver vision at intersections or block the line of sight around curves. It must not block driver sight of wildlife, especially deer entering roadways. Excessive vegetation also prevents proper drainage, which can damage roadbeds by creating potholes and other hazards.

Trees growing into power lines can cause electrical power outages and make maintenance difficult and dangerous. In addition, areas around utility substations and land beneath transmission towers require a vegetation-free zone to prevent fire hazards and ensure the transfer of electricity. There are real dangers and human health problems if there is a lack of power to hospitals, police and other public services.

Railroad companies need to control weeds along their rights-of-way to maintain roadbeds. Weeds hold water around railroad ties. This causes them to rot, increasing chances for derailment accidents. Sparks from the rails also can ignite weeds and brush growing too close to the roadbed, which can create a fire hazard for neighboring

residents. Brush that obstructs motorists' views at railroad crossings is especially dangerous. Controlling it can help avert car/train accidents.

Foresters control vegetation to maximize the amount of timber they can harvest, resulting in more timber harvested on less land. Controlling brush also decreases the potential for forest fires and allows young stands to get started.

Invasive plants, the ones that affect all of the areas we have talked about, threaten to create a monoculture where one plant type dominates an area. Invasive plants choke out native plant species and change wildlife habitat so animals cannot utilize the area. Selective herbicides control these invasive plant species while promoting native plants that in turn attract a wide range of wildlife. More than 50 years of research by Dr. William Bramble, a forest ecologist, and Dr. William Byrnes, an ecologist specializing in forest soils, support the use of selective herbicides to increase biodiversity. (The Bramble and Byrnes study was done in conjunction with Penn State University, Purdue University and the Pennsylvania Game Commission.) While mechanical methods can be used to manage invasive plants, these techniques often cause more damage to an area than herbicides and can open areas to new invasion of other invasive plants.



**Why do you need to use Garlon 3A?
Can't you just cut the vegetation?**

Mowing and trimming remain important parts of any vegetation maintenance program. But mechanical maintenance alone cannot protect these areas adequately. Besides being very labor-intensive, mechanical methods can cause soil compaction that can lead to soil erosion. In addition, flailing blades and moving parts pose a danger to employees, livestock and wildlife.

Mowing brush tends to cause the plants to respond by sending out multiple resprouts — the plant's natural defense to the cutting. This only worsens the vegetation problem.

In some cases, mechanical methods quite simply cannot be used. Steep terrain may limit access by mowers, and in the case of railroads and substations, their crushed-stone construction makes mechanical weed control impossible.

Cut-stump application



Garlon 3A controls unwanted brush and eliminates resprouting. Because of this improved control, crews and heavy machinery visit the area less frequently, meaning less impact on property near yours.

Who will be applying Garlon® 3A specialty herbicide?

A vegetation manager plans Garlon 3A herbicide treatments and oversees crew activities. Trained, professional applicators apply Garlon 3A in designated areas using approved application techniques. Organizations may use on-staff crews or hire custom applicators. In either case, these applicators follow directions on the product label, which is reviewed and accepted for registration by the U.S. Environmental Protection Agency (EPA) and corresponding state agencies.

Aerial applicators are highly trained and use specialized equipment to make applications.

How do I know these applicators are trained properly?

Most states enforce strict standards requiring applicators to be state certified. An experienced crew foreman oversees the application process to ensure all workers follow the specified vegetation-control plan outlined by the vegetation manager. It's in the best interest of any organization to hire qualified people to handle applications — for the good of the environment, the organization itself, the safety of its applicators and its standing in the community.

How will they apply Garlon 3A?

Crews apply Garlon 3A to unwanted vegetation through a variety of application techniques. Options include foliar and cut-stump treatments. Foliar applications spray a solution of Garlon 3A in water on the plant's leaves, while cut-stump applications spray or brush a solution on the stump's surface

Foliar application



GARLON® 3A: WHAT YOU NEED TO KNOW

after the tree has been cut and removed.

The vegetation manager assesses plant variety and size, and environmental conditions at each site, before determining the correct application rate and technique for that location. The manager considers many factors, such as time of year, temperature, weather and terrain.

How do these applicators know they are applying the correct amount of Garlon® 3A specialty herbicide?

The label indicates the rates to be used. Before an application begins, crews test and calibrate the application equipment to ensure they apply the right amount and meet the label directions.

Will Garlon 3A harm my ornamentals or garden?

Garlon 3A has the potential to harm sensitive woody or broadleaf plants that come in direct contact with the spray solution. Therefore, applicators take care to apply Garlon 3A only on targeted vegetation specified by the vegetation manager. Crews use extra caution to protect your ornamentals or garden, leaving untreated “buffer” zones that add an extra measure of protection. When making foliar applications, crews carefully monitor wind speed and direction to assure accuracy.

Drift control agents also may be mixed with the spray solution to produce larger, heavier droplets that aid application accuracy and reduce the chance of off-target drift.

What is the toxicology profile of Garlon 3A?

Triclopyr, the active ingredient in Garlon 3A, has been classified by the EPA as “practically nontoxic” (the least toxic category used by EPA) to mammals, insects, freshwater fish and invertebrates. Toxicological studies show no evidence that triclopyr causes cancer, birth defects, genetic damage, genetic mutation, or adverse effects on the immune system or nervous system in humans.

All pesticides sold in the United States must be accepted for registration by the EPA based on a minimum of 120 scientific studies showing that the pesticide will perform its intended function without unreasonable adverse effects on humans, animals or the environment. The EPA defines unreasonable adverse effects as any unreasonable risk to man or the environment, taking into account the economic, social and environmental costs and benefits of the use of the pesticide.

How do you know the amount of Garlon 3A applied won't hurt animals?

The mode of action of triclopyr, the active ingredient in Garlon 3A, affects plants only. The herbicide's active ingredient disrupts the growth process within the plant by affecting enzymes unique to plants. Garlon 3A does not have a similar effect on animals or insects.

To ensure there are no unintended effects to pets, livestock or wildlife, the EPA requires extensive testing. Researchers determine the highest dose of a product that still shows no negative effect on animals and call this the No-Observable-Adverse-Effect Level (NOAEL).

Scientists also determine a maximum exposure level — exposure to the highest estimated concentration level that could be expected with normal use. Using these two measurements, they calculate a “safety factor.” This factor shows a multiple of the highest labeled application rate that an animal would have to be exposed to in order to reach NOAEL.

For instance, a factor of 10X means that an animal would have to be exposed to 10 times the maximum expected labeled application rate of Garlon 3A to reach NOAEL.

As you can see in the Exposure Assessment chart, factors for wildlife range from 3X to 225X.

You'll also find a relative toxicity designation. Scientists group substances together according to their toxicity level, as you see on the scale.



EPA'S TOXICITY SCALE		LC50 (ppm)
LOW	Practically Nontoxic	>100
	Slightly Toxic	10 - 100
HIGH	Moderately Toxic	1.0 - 10
	Highly Toxic	0.1 - 1.0
	Very Highly Toxic	<0.1

EXPOSURE ASSESSMENT FOR WILDLIFE			
Animal	Type of Exposure	Factor Over the Rate Used	Toxicity Category
Bobwhite	Diet	34x	Slightly Toxic
Mallard	Diet	174x	Slightly Toxic
Bluegill	Freshwater	126X	Practically nontoxic
Rainbow Trout	Freshwater	72X	Slightly Toxic
<i>Daphnia magna</i>	Freshwater	71X	Slightly Toxic
Eastern oysters	Saltwater	3X	Moderately Toxic
Pink Shrimp	Saltwater	225X	Practically nontoxic

**There is no safety factor over maximum labeled rate.

How does this relate to my protection?

To avoid exposure from the application, you should stay away from the treated area until the vegetation has dried. Since the product degrades in a short time and is absorbed into the vegetation, you control your exposure by using common sense and avoiding the area until the vegetation has dried. If you were to become exposed, it would happen through either accidental ingestion, like eating treated berries, or skin absorption from touching treated vegetation before it dries. The next three sections will address these two situations.

What if I have eaten some treated berries?

You should not consume berries that have been treated with Garlon® 3A herbicide. However, scientists have studied accidental ingestion in humans. These studies, like the animal studies mentioned above, use NOAEL as a benchmark. Based on these studies and residue levels likely to be found at the highest labeled use rate, scientists have determined that an average person (150 pounds) could accidentally consume 5.5 quarts of treated berries each day for the rest of his or her life without experiencing any adverse effects. Still, we do not recommend consuming berries that have been treated with Garlon 3A.

What if I walk across a treated area?

Exposure may occur from walking across an area still damp from a foliar treatment. However, the dose you'd receive from this type of activity is not likely to cause any harm. Using NOAEL figures and the maximum expected exposure, scientists have determined that an average person's exposure would be substantially below the level where any adverse effect would be expected when walking through an area that was sprayed at the maximum labeled rate. Still, we do not recommend walking through a treated area until the vegetation has dried completely.

Do I need to stay indoors during the application?

No. However, it's a good idea to stay away from the application site during treatment and shortly thereafter. After applicators apply the foliar treatment, avoid walking through the area until the vegetation dries.

What happens to plants after they've been treated?

The active ingredient, triclopyr, works like a growth regulator found only in plants. It enters treated vegetation through leaves and uses the plant's own transportation system to move into the roots and leaves. It induces rapid growth, which disrupts food production, and causes the plant to die from lack of nutrients. This only happens in plants because animals do not have the same enzymes that are affected by Garlon 3A.

Will Garlon® 3A specialty herbicide remain in the soil?

Garlon 3A is broken down by soil microorganisms (fungi and bacteria) and sunlight. Final breakdown products are carbon dioxide, water and other organic materials. The breakdown rate depends on rainfall, soil temperature and how these factors impact soil microorganism activity — the main cause of breakdown. The time required to break down 50 percent of the active ingredient in soil ranges from 30 to 45 days.

Is it likely that Garlon 3A will seep into groundwater?

It is not likely that Garlon 3A will seep into groundwater due to environmental factors and the product's chemical properties. Garlon 3A binds tightly to soil organic matter and clay particles over time, which limits its downward movement in soil. Researchers find most of the active ingredient remains in the upper 12 inches of soil — far from the water table.

GARLON® 3A: WHAT YOU NEED TO KNOW

For More Information

Online

www.VegetationMgmt.com

Customer Service

info@dow.com

800.263.1196



www.VegetationMgmt.com



Dow AgroSciences

Solutions for the Growing World



®Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow
Always read and follow label directions.
V01-101-021 (07/14) DAS 010-50552