



WHAT YOU SHOULD KNOW ABOUT PATHWAY HERBICIDE

Vegetation managers and foresters use Pathway* herbicide to control unwanted weeds, brush and trees beneath electrical powerlines, along railroad beds, roadsides, pipelines, in commercial forestry, and wildlife openings including grazed areas on these sites. Pathway is a trademark of Dow AgroSciences for herbicides containing picloram and 2,4-D as the active ingredients.

The following information provides specifics on Pathway, and explores questions commonly asked by people concerning its use.

Why do you need to control vegetation in these areas?

For most rights-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. Excessive vegetation also prevents proper drainage, which can damage roadbeds by creating potholes and other hazards.

Trees growing into powerlines 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.

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 can also 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 prevent 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.

Invasive plants, 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 wildlife habitats. Soon native grasses, flowers and other plant species, along with native animals and birds, are driven out of the area.

Selective herbicides control these invasive plant species which promotes native plants that in turn attract a wide range of wildlife. Nearly 50 years of research by Dr. William Bramble, a forest ecologist, and Dr. William Brynes, an ecologist specializing in forest soils, support the use of selective herbicides to increase biodiversity. (The Bramble and Brynes study was done in conjunction with Penn State University, Purdue University and the Pennsylvania Game Commission.)

Why do you need to use Pathway? Can't you just cut the vegetation?

Mowing and trimming remain important parts of any vegetation maintenance program. But mechanical means alone cannot protect these areas adequately. Besides being very labor intensive, mechanical methods cause

soil compaction that can lead to soil erosion. And flailing blades and moving parts pose a danger to employees, livestock and wildlife. Flying debris from mowers can potentially damage your property.

Mowing creates 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.

Pathway is used following many mechanical treatments to eliminate resprouting. Because the brush is not allowed to resprout, crews and heavy machinery visit the area less frequently, meaning less impact on property near yours.

Who will be applying Pathway?

A vegetation manager plans Pathway herbicide treatments and oversees crew activities. Trained, professional applicators apply Pathway 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 are reviewed by the Environmental Protection Agency.

How do I know these applicators are trained properly?

It's in the best interest of any organization to hire qualified people to handle applications – for the good of the organization itself and its standing in the community. Also, 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.

How will they apply Pathway?

After removing the upper portions of a problem plant, crews apply Pathway to the freshly cut surface of the unwanted tree stump. A thin stream of the premixed, ready-to-use herbicide solution is applied to the stump's outside growth ring (cambium area). These cut-stump treatments virtually eliminate the chance for herbicide exposure to nearby vegetation and can be made any time of year.

How do these applicators know they are applying the correct amount of Pathway?

The label indicates the rates to be used. Before an application begins, crews test the application equipment and calibrate all spray nozzles to ensure they meet these label directions.

Will Pathway harm my ornamentals or garden?

Pathway has the potential to harm any woody or broadleaf plant that comes in direct contact with the spray solution. Therefore, applicators take care to apply Pathway only on targeted vegetation specified by the vegetation manager. Pathway will not harm grasses, like those in your lawn.

The cut-stump technique makes damage to ornamentals or gardens highly unlikely. Once crews apply Pathway to the target cut-stump, it essentially "locks" into the plant. Proper application technique ensures that Pathway should not contact desirable vegetation through spray drift or herbicide movement. Crews use extra caution to protect your ornamentals or garden, leaving untreated "buffer" zones that add an extra measure of protection.

Is Pathway considered toxic?

Picloram, the active ingredient in Pathway, has been classified as Category E – “evidence of non-carcinogenicity to humans” by the EPA (the most favorable classification possible), and has been found to be “practically nontoxic” to mammals, birds, and honeybees. The EPA has classified 2,4-D as Category D – “not classifiable as to human carcinogenicity,” and has been found to be “practically nontoxic” to mammals, birds and honeybees.

Toxicological studies show no evidence that the active ingredients, picloram and 2,4-D, in Pathway causes cancer, birth defects, genetic damage, genetic mutations, adverse effects on the immune system or nervous system in humans.

All pesticides sold in the U.S. must be registered by the EPA based on scientific studies showing that the pesticide will perform its intended function without unreasonable adverse effects on 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 Pathway applied won't hurt animals?

Pathway affects plants only. The herbicide's active ingredient disrupts the growth process within the plant by affecting enzymes unique to plants. Pathway does not have a similar effect on animals or insects.

Because crews apply the product in a specialized manner only to the cut stump – not the leaves – of unwanted brush, it is unlikely wildlife would contact the product. Foraging animals will avoid the treated stump, preferring instead the leaves, tender branches and berries of untreated vegetation.

How does this relate to my protection?

Considering that the only way to be exposed to Pathway is through contact with the treated stump, exposure should be nonexistent if you avoid the area until the stump has completely absorbed the solution.

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 after.

What happens to plants after they've been treated?

The active ingredients in Pathway work like growth regulators found only in plants. They enter treated vegetation through the cut surface, and use the plant's own transportation system to move into the roots. It induces rapid growth, which disrupts food production and causes the plant to die from lack of nutrients.

Will Pathway remain in the soil?

Pathway 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 Pathway's breakdown.

Is it likely that Pathway will seep into groundwater?

Dow AgroSciences strongly believes that it is highly unlikely that Pathway will seep into groundwater. The application technique limits the amount of Pathway introduced into the soil to extremely small amounts. Should

any Pathway enter the soil, it will bind to organic matter and clay particles. This limits its downward movement and keeps it from contaminating groundwater.

Who may I contact for more information?

Contact your Dow AgroSciences sales specialist or visit our Web site at www.dowagro.com/ivm. To receive printed materials, please fax your request to Dow AgroSciences at 1-800-905-7326. If you have further questions or require technical assistance, please contact our Customer Information Center via e-mail at info@dowagro.com or call 1-800-263-1196.



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