Dow AgroSciences™

Clopyralid and Compost

INTRODUCTION

Weed-control products containing clopyralid have been used safely and effectively for more than 14 years. Recently, incidents have been reported in which clopyralid traces were detected in compost material at a level sufficient to cause damage to sensitive plants grown in the compost medium. These incidents appear to involve unique or unusual circumstances. Nevertheless, Dow AgroSciences, the manufacturer of clopyralid products, is concerned and committed to resolving issues regarding the use of clopyralid.

The company is working with university researchers, the compost industry and grower groups to develop a thorough understanding of actual use practices of the products and the potential of the products to contribute residues to compost materials. The labels on all Dow AgroSciences clopyralid products state that manure and foliage treated with clopyralid should not be used as a source for compost. Dow AgroSciences is working with the U.S. Environmental Protection Agency to further emphasize the label language, and the company is developing an educational program to increase awareness of this compost restriction among farmers, ranchers, homeowners and lawn care providers who use clopyralid products.

BACKGROUND

Clopyralid is an important tool for integrated weed management because it is effective against hard-to-control weeds that other methods cannot control. These include noxious weeds such as Canada thistle, knapweed and yellow starthistle, which pose a serious threat to crops, rangelands and wildlife areas. It is also effective against kudzu, an invasive species that chokes out native plants in vast areas of the Southern United States. In turf uses, clopyralid is very effective against clover and dandelions. Prior to its introduction, lawn care companies treated three to five times per year with other products, which are applied at much higher rates. Clopyralid has helped applicators reduce the amount of herbicides applied and allowed operators to be more efficient with their time, fuel and equipment.

Clopyralid is the active ingredient in a number of products, including Confront®, Curtail®, Lontrel®, Redeem,® Stinger® and Transline® herbicides. Clopyralid is a selective herbicide, meaning it is effective only on certain plant species, primarily members of the *Leguminosae, Solanaceae* and *Compositae* families. These families include weeds such as clover, thistle and dandelions, but also crops such as peas and beans, tomatoes and sunflowers. Studies show that clopyralid affects susceptible plants at concentrations as low as 3 parts per of billion. Clopyralid has a favorable toxicological profile and according to U.S. Environmental Protection Agency criteria is "practically non-toxic" to humans and wildlife.

INVESTIGATION OF REPORTED TURF INCIDENTS

Confront herbicide is the most widely used clopyralid product for turf. Other turf products with clopyralid include Battleship, Chaser Ultra, Millenium Ultra, Momentum, ProScape fertilizer and Strike Three Ultra.

The labels on these products state that grass clippings from treated lawns should not be used for composting. In investigating reported incidents involving clopyralid residues in compost, several key factors have been identified.

Those factors include:

- The percentage of treated lawns that contribute grass clippings for compost in violation of label precautions;
- The ratio of grass to other material in the compost, such as leaves and wood;
- The amount of soil that was blended with compost during planting.

INVESTIGATION OF REPORTED TURF INCIDENTS (continued)

Spokane, WA, area. In Spokane, which had recently implemented curbside collection of lawn waste for use in the regional composting facility, compost was linked in a few instances to damage to tomatoes and other susceptible plants. Significant clopyralid residues were found in finished compost. An investigation showed that several factors worked together to create a situation that would not be expected in other communities. Consider:

- A high percentage of lawns in the Spokane area (pop. 400,000) are professionally treated. Applicators estimate the percentage of treated lawns may be as much as twice the national average. The majority of lawns are treated with Confront herbicide because of its effectiveness on weed species that are prevalent. More Confront was sold in Spokane (by volume and on a per/acre basis) than anywhere else in the U.S. In 2000, 1,367 gallons were sold in and near the community. For comparison, only about 460 gallons were sold in all of western Washington State, stretching from 50 miles north of Portland, OR, to the Canadian border, an area with five times more population.
- A very large percentage of homes in the Spokane area contribute grass clippings to the community's composting facility via curbside pickup service.
- The compost involved in reported Spokane incidents contained a high percentage of grass to other organic matter, estimated at 85 percent.
- In some reported incidents, the compost users did not sufficiently blend compost with soil, as recommended by the composting industry. In one incident, the compost was used 100 percent as potting material for tomato plants. In another incident, a large amount was used in a garden. The compost industry recommends that compost be blended with soil at a 10 percent rate (4 cu yd per 1000 sq ft, or 1-in. layer incorporated).

Because of the unique situation in Spokane, Dow AgroSciences voluntarily suspended sales to residential areas in the community pending further evaluation. Even with its unusually high percentage of treated lawns, Spokane had operated a regional compost facility since 1993 without incident. However, in 1998 the city initiated curbside collection of lawn clippings in an effort to reduce landfill waste. Homeowners, many of whom may not have collected clippings in the past, began contributing to the compost effort. It is apparent that some whose lawns were treated with clopyralid also contributed clippings, contrary to label instructions.

Penn State University. The university, which operates a composting facility on campus, experienced plant growth problems primarily in covered greenhouse type settings. Clopyralid found in the compost was traced to the vegetative material collected from the university's lawns in the fall of the year. Grass clippings from about 300 acres of treated lawns were not saved for compost, but leaves on the lawns were collected by a leaf vacuum and used for compost. Investigation showed that some of the leaves were apparently over-sprayed with clopyralid during September and October applications. In addition, some grass clippings left in the lawn were also vacuumed up with the leaves. As a result, a high percentage of the material used for composting contained clopyralid residues. The university continues to use clopyralid on athletic fields, which do not contribute leaves or clippings for compost.

Dow AgroSciences is working with the U.S. Environmental Protection Agency and state regulatory agencies to develop a revised product use label that will ensure that homeowners and other turf customers are informed about the restrictions regarding composting and mulching. In addition, the company is developing an awareness effort aimed at composters, professional lawn care operators and their customers.

EXAMINATION OF AN INCIDENT RELATED TO NON-TURF USE

An incident at the composting facility at Washington State University in Pullman has demonstrated that agricultural use of clopyralid products can affect composting operations. The clopyralid issue at that facility emerged during the investigation of an issue with another herbicide. It is believed that when farmers in the surrounding area provided straw to the university's veterinary facility, it apparently contained traces of the herbicide. When bedding and manure were collected from veterinary stables, traces of clopyralid were detected in the stable waste. The labels for clopyralid-containing agricultural products prohibit the composting of hay or straw from treated fields or manure from animals that have grazed in treated areas. However, the farmers may not have been aware that the straw would be used for compost. Currently, the university composting site is only accepting straw from acres that have not been treated with clopyralid.

Based on this incident, Dow AgroSciences is conducting an investigation of non-turf uses of clopyralid and is committed to resolving any issues that may be identified.

AGRICULTURAL USES

Clopyralid, sold under the trade names of Curtail, Redeem and Stinger herbicides, is an important tool in agriculture and ranching for spot control of thistles and other noxious weeds. Producers of wheat and barley use clopyralid, as do people who produce mint, asparagus, Christmas trees and grass seed. Growers of these "minor crops" have limited choices of agricultural pest control products because a limited number of products are registered for these uses. All agricultural labels state that hay, straw and manure from crops treated with clopyralid cannot be used for compost or mulch.

Some agricultural uses, such as rangeland and Conservation Reserve Program, contribute little if any material to composting. In other applications, which may contribute material to composting, the use of clopyralid is not widespread. For example, less than 2 percent of wheat and barley acres are treated with clopyralid. Some of the minor crops are grown by a small number of growers, so that targeted communication and education could be possible. In some cases, a food processor and not the grower may be the most likely contributor to compost.

Dow AgroSciences is committed to improving awareness through education, stewardship and label changes where necessary. While there is potential for agricultural uses to contribute clopyralid to compost, a preliminary investigation indicates that the potential is low and manageable.

ROADSIDE AND INDUSTRIAL USES

Clopyralid, sold under the brand name Transline herbicide, is used to control specific weeds along highways, railways or utility rights-of-way. It is used in spot applications to control thistle and various other noxious weeds. Dow AgroSciences is investigating whether and to what extent industrial and transportation rights-of-way contribute materials to composting, but the potential appears to be low.

WILDLIFE HABITAT MANAGEMENT

Clopyralid is used to stop the spread of invasive weeds, such as spotted/diffuse knapweed, Canada thistle, yellow starthistle and hawkweeds, which can crowd out native vegetation and diminish wildlife habitat. Less than 1 percent of wildlife management acres are treated with clopyralid. Vegetative material from wildlife management areas is not used for composting.

COMMITMENT TO SOLUTIONS

Dow AgroSciences is concerned about the recent reports of clopyralid being found in compost at levels that can harm beneficial plants. The company is actively engaged in investigating the potential for any labeled use of the product to contribute to compost. Where the problem exists, the company is committed to solutions, which may include new label instructions, increased communication and improved product stewardship. The company is actively working with universities and governmental agencies to develop more data that will answer emerging questions. In addition to the already robust body of data on clopyralid, ongoing efforts include:

- Studies to determine how fast clopyralid breaks down in various composting situations.
- Studies to identify how much clopyralid residues in grass decrease with subsequent mowings.
- Mitigation techniques to speed degradation if clopyralid is detected at a phytotoxic level in compost.
- Developing educational programs concerning proper disposal of treated lawn clippings when lawns have been treated with clopyralid.
- Working with commodity groups, ag extension agents and others to increase understanding of label restrictions.

CONCLUSIONS

Clopyralid is an important herbicide for use in integrated vegetation management programs because it controls many noxious weeds that are not adequately controlled by other methods. It also is important to minor crops, which have few herbicide options. Very few compost incidents have occurred with clopyralid despite years of use in agriculture, vegetation management, and turf and ornamental industries. The incidents that have occurred can be traced to off-label uses or misunderstanding. Dow AgroSciences is committed to improving product labels and to developing educational efforts to reduce the likelihood of future incidents involving compost.

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Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268-1054