

TURFGRASS TRENDS

PESTICIDE RESTRICTIONS

EPA Restrictions on Chlorothalonil Make Sense

By Paul Vincelli

With this past summer being a high disease-pressure year for cool-season turfgrasses in Kentucky and other locations, fungicides have been an important tool for turf managers.

Many turf managers are aware that the label for the important contact fungicide chlorothalonil includes restrictions added relatively recently. Chlorothalonil is found in such products as Daconil, Echo, Manicure, Chlorostar and Concorde SST. This material is a low-cost fungicide with broad-spectrum activity, providing partial to complete control of important turfgrass diseases such as dollar spot, brown patch, leaf spot/melting out, gray leaf spot and others.

Two restrictions that have particular importance for use patterns for turf disease control are highlighted in this article, with an explanation of the rationale for these restrictions. This information is based on the Reregistration Eligibility Decision for chlorothalonil published in 1999 by the U.S. Environmental Protection Agency. This document is an impressive 337-page, 2-inch thick document that describes the scientific basis of EPA's decision to allow reregistration of chlorothalonil, as well as the conditions under which reregistration was permitted. Under the 1988 amendment to the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), all pesticides registered before Nov. 1, 1984, must be reregistered to ensure that they meet current stringent standards.

The restrictions described below are not limited to certain soil types or turf situations, other than what is outlined in the tables. Furthermore, these restrictions cannot be waived by state regulatory agencies. State governments may take action that is more restrictive than federal action but not less restrictive.

Use for home lawns

Chlorothalonil is no longer labeled for use on home lawns. While this restriction has been in place for several years, it is such an important one that it is worth revisiting.

Prior to the institution of this restriction, chlorothalonil was probably the No. 1 fungicide used on residential lawns. This restriction was agreed to by manufacturers of chlorothalonil in order to reduce overall exposure of two populations to the active ingredient: toddlers exposed after the application on home lawns, and residential handlers and applicators of chlorothalonil on home lawns.

Keep in mind that chlorothalonil is registered for disease control on a variety of

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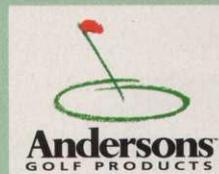
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TABLE 1

Maximum allowable application rates for chlorothalonil

Site	Maximum individual application rate per acre (minimum retreatment interval)*	Maximum seasonal total
Golf course greens	11.3 lb ai (14 days)	73 lb ai/A
	7.3 lb ai (7 days)	
Golf course tees	11.3 lb ai (14 days)	52 lb ai/A
	7.3 lb ai (7 days)	
Golf course fairways	11.3 lb ai (one application)	26 lb ai/A
	7.3 lb ai (7 days)	
Sod farms	11.3 lb ai (one application)	26 lb ai/A
	7.3 lb ai (7 days)	
Turf (general)	11.3 lb ai (one application)	26 lb ai/A
	7.3 lb ai (7 days)	

*Higher application rates require longer intervals between sprays. Lb ai = pounds of active ingredient.

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crops, including food crops. In order to reduce overall exposure to chlorothalonil in these populations and be in compliance with the Food Quality Protection Act, manufacturers agreed to voluntarily remove home lawn uses from the label.

Use restrictions on golf courses

Chlorothalonil may be applied only according to the maximum allowable application rates given in Table 1. The restrictions outlined in Table 1 are based on ecological concerns regarding aquatic ecosystems. When applied, chlorothalonil can contaminate surface water as a result of drift or application to standing water.

After application, chlorothalonil can move to surface waters in two ways: through runoff as a dissolved chemical and through soil erosion as active ingredients are adsorbed to soil particles. Chlorothalonil is highly toxic to various aquatic organisms: fish, aquatic invertebrates, mollusks and shrimp.

I was surprised to learn that a limited number of fish kills have been documented following application of chlorothalonil, including applications to turfgrass. Although chlorothalonil is used on many crops, turfgrass uses are considered to pose a high risk to aquatic ecosystems because of the high application rates used frequently and repeatedly. EPA concluded that institution of the restrictions outlined in Table 1 would bring ecological risks from chlorothalonil applications down to an acceptable level.

An example of how these restrictions apply to a formulated product is provided in Table 2.

Honoring these restrictions

In the real world of day-to-day turf disease management, complying with the restrictions outlined in Table 1 undoubtedly poses difficulties in some instances. Some turf managers conscientiously follow these restrictions. However, when the health of a putting green, tee or fairway is on the line, a turf manager is under a lot of pressure to take all available steps to maintain turf health and may even fear for his or her job. Faced with that, the incentive to overlook these label restrictions certainly can be powerful.

It's important to understand that these restrictions are a foundation of EPA's decision to allow reregistration of chlorothalonil on turfgrasses. Violations of these restrictions not only pose the risks described above. Repeated violations also could place at risk the registration of chlorothalonil on turfgrasses. This is an important point.

While living with these restrictions can be difficult at times, consider the alternative: How much tougher would your job be if the registration for chlorothalonil use on turfgrasses were revoked? EPA did not single out turfgrasses. Similar restrictions apply to a long list of crops. The good news for turf managers is that chlorothalonil was reregistered. But you can't assume that it will always remain registered, particularly if its use is abused.

Turf managers must experience a great deal of

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QUICK TIP

One of the most often asked questions concerning Roundup Ready Creeping Bentgrass is how it can be controlled. This new variety of bentgrass is tolerant to Roundup only, meaning it can be controlled with other nonselective herbicides such as Finale.

TABLE 2

Maximum allowable application rates for Daconil Ultrex 82.5WDG

Site	Maximum individual application rate per acre (minimum retreatment interval)		Amount of product per year	
	per acre	per 1,000 sq ft	per acre	per 1,000 sq ft
Golf course greens	13.6 lb (14 days)*	5.0 oz (14 days)*	88.5 lb	32 oz
	8.8 lb (7 days)	3.2 oz (7 days)		
Golf course tees	13.6 lb (14 days)*	5.0 oz (14 days)*	63 lb	23 oz
	8.8 lb (7 days)	3.2 oz (7 days)		
Golf course fairways	13.6 lb (1 app)	5.0 oz (1 app)	31.5 lb	11.6 oz
	8.8 lb (7 days)	3.2 oz (7 days)		
Sod farms	13.6 lb (1 app)	5.0 oz (1 app)	31.5 lb	11.6 oz
	8.8 lb (7 days)	3.2 oz (7 days)		
Turf (general)	13.6 lb (1 app)	8.8 lb (7 days)	31.5 lb	11.6 oz
	5.0 oz (1 app)	3.2 oz (7 days)		

*Apply no more than two sprays per growing season at the high rate.

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frustration when restrictions are imposed on pesticides that play an important role in pest management. You are the people that are directly and negatively affected by such decisions. It may help ease the frustration to know that EPA did a vast amount of careful evaluation of the science regarding chlorothalonil before making its reregistration decision. There was a solid foundation in science and in sound, balanced reasoning behind this decision, and this has been my general experience with EPA throughout my 15-year career as a professor.

It may surprise readers to learn that more chlorothalonil is used as an antifungal agent in paint than is used on golf courses. This widespread use in such a common product as paint may lead turf managers to mistakenly conclude that the environmental and public-health effects of chlorothalonil use on turfgrass must be trivial. However, there typically is no significant aquatic exposure when fresh paint is applied to walls, whereas there is definitely some potential for movement of chlorothalonil into streams, rivers, and estuaries when applied to turfgrass and other crops. Furthermore, toddlers are usually not exposed to fresh paint (and, in fact, major reductions in chlorothalonil concentration in paint have also been mandated by EPA).

Perhaps understanding the rationale for these label restrictions will provide encouragement to the turf manager to use alternative products as needed. Ask yourself why you got into turf management in the first place. Many times, it's

because of a love for nature and being outdoors. Perhaps one can draw on that motivation in those times when there is a great deal of pressure to overlook these restrictions. I'll never forget the glee with which superintendent Mark Wilson showed me the fish nests in the creek running along Valhalla CC in Louisville, the site of the 1996 and 2000 PGA Tournament, proving that golf course development is perfectly at home with environmental protection. I can't imagine a better role model than that.

Alternatives to chlorothalonil

Chlorothalonil has been a widely used fungicide against a broad range of turfgrass diseases. Clearly, turf managers need to be familiar with products that can be used as alternatives to chlorothalonil.

Your state extension turfgrass pathology program probably has a list of fungicides that may be used against the same turfgrass diseases as chlorothalonil. The University of Kentucky Extension publication PPA-1, *Chemical Control of Turfgrass Diseases*, may prove useful. PPA-1 is available on the Web site at www.ca.uky.edu/agc/pubs/ppa/ppa1/ppa1.pdf. PPA-1 should be used only as a starting point from which you can look into your options since products listed there may not be registered for use in your particular state.

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