



## THIRAM: *Public Safety and Re-Entry Questions*

By Dr. Gayle L. Worf

Those of us involved with turf management have not been much involved with questions about re-entry — that is, how soon after application of a pesticide before individuals are allowed back into the treated area. That situation is changing rapidly as both public concern, EPA requirements and industry responses are combining to alter the picture. Thiram is perhaps the most recent of such chemicals about which questions of this sort are being asked.

Re-entry limitations for certain chemicals being applied to crops for food use have been in place since 1974, the first year that the EPA was charged with the responsibility of adding this as one of the registration requirements for pesticides. Concerns by migrant and other workers who were allegedly working in fields right after their treatment with toxic chemicals helped initiate this process. Dermal exposure is the primary concern in setting the standard for re-entry requirements, which are usually on the basis of 0, 24 or 48 hours after application.

Most fungicides that we are using carry only a "caution" label (as opposed to "warning" or "danger" labels) and their oral and dermal LD<sub>50</sub>'s are comparatively high, usually well above 1,000. Except for the mercurials (and chromium- and cadmium-containing products, which we cannot use in Wisconsin), there has not been a traditionally major concern about their use, and subsequent public exposure. But a number of events have conspired to change this concept, and we notice a number of changes occurring on labels that illustrate that fact. "The area being treated must be vacated by unprotected persons" or "do not enter treated areas without protective clothing until sprays have dried" — even instructions directing that treated areas be properly posted until chemicals have dried — are appearing on several commonly used turf fungicide labels now. Many of these are new (1986 and 1987) statements appearing on old products, e.g.,

chemicals we have used and been familiar with for a long time. Read the newer labels — you'll see what I mean! Whether these are required by EPA or are actions being taken by the chemical industry to safeguard themselves I do not know. But if it appears on the label, it is a legal requirement, and we in turn will have to follow those instructions in order to safeguard both ourselves (against possible litigation) and the public we serve.

But the matter of not being able to enter the treated area — even after the chemical has dried — for a 24 hour period is a new wrinkle for turf people to contend with. That's what it says on some — but not all — turf thiram labels! The fact that it appears on some, but not all labels adds yet another confusing aspect to the story. Is it required by the EPA? And if so, then why not on all labels? To get the answer, I recently called a contact with the Environmental Protection Agency, who didn't have the answer immediately at hand. But he promised to get back to me with some information, and he kindly did so a few days later. The telephone response went like this:

Thiram for use on "crops" now requires a one day re-entry period. Sod production of turf is categorized as a crop, and as such, turf also requires such a statement. However, "other turf uses", such as golf course and home lawns, are not presently designated as "crops", and products labeled specifically for their use would not necessarily carry such a requirement.

I've checked three thiram products labeled for turf use. Two of them contain the re-entry statement, one does not. Yet I cannot interpret "turf as a crop" designation any differently from one label to the next! As the EPA official pointed out, "it is admittedly confusing" right now, and he also indicated some additional rules on turf use in general are likely to be forthcoming (!) Incidentally, you may be interested to know that, while thiram has registration on several fruit and

vegetable crops, its use has virtually disappeared over the past several years, at least partly because of superior products, as well as the loss of patent rights, making profits questionable. I wanted to verify the re-entry limitation on fruit crops, but no major companies offer the product any longer, and so we don't have any current thiram-fruit labels on hand! In other words, turf, along with rabbit-repellent and some seed treatments are about all of the actual uses remaining for this product.

Thiram is an old product. It was introduced in 1931 — one of the earliest organic fungicides ever produced. It came about as a by-product of the rubber vulcanizing industry, where it was thought that it might be useful in enhancing the activity of sulfur, which was one of the few fungicides available at that time. While that didn't work out, it became useful in its own right, and really deserves a proper niche in the evolution of fungicide development. It belongs to the chemical group called "dimethyldithiocarbamates", to which also belong ferbam and ziram. The latter two have likewise virtually disappeared, after having served long and useful chemical lives before being replaced by products that weathered better and provided a broader spectrum of fungus control.

Thiram is widely recognized as a skin irritant. Anyone who has worked with it knows of its irritability to both the skin and nose. Consumption of alcohol increases the toxic characteristics, according to one label. Another label points out that the user should not take alcohol beverages before or after use of this product (but it doesn't say how long afterward!!)

Limited use of chemicals because of skin irritation is not a new concern to the industry. One golf course in the state has not used thiram for years because of the unusual sensitivity of one or more of its members. And one of the best fungicides I ever worked with is captafol (Difolatan), an analog

of captan and Phaltan. It has a broad spectrum of activity and possesses unusual retention and redistribution potential. Unfortunately, a small percentage of people are allergic to it, so the company chose to restrict its development to certain horticultural

crops, and prohibited its labeling for turf and ornamentals. For the crops that it is labeled, it properly identifies the skin allergy potential for the user's safety.

In our experience, thiram is inferior

to most labeled fungicides for snow mold, dollar spot and leaf spot disease control. Brown patch has never occurred in our trials, so we have no information on its effectiveness against that disease, which is what several superintendents have in mind for its use.



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