Photo 1: Imprelis damage on Norway Spruce in a condominium landscape.

Photo 2: The difference in susceptibility of tree species to Imprelis is remarkable. Maples (right) and Oaks appeared to be largely unaffected while honey locust was quite sensitive.

Photo 3: Being water soluble, Imprelis had the potential to move through the soil and from its area of application. This honey locust's roots could have assimilated Imprelis through its roots in the nearby turf or from runoff. Note that the honey locust in background surrounded by cement walkways remains unaffected.

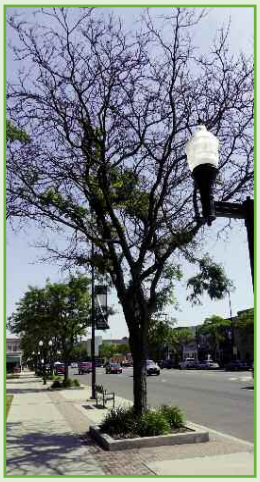

Photo 4: Imprelis tends to concentrate in the extremities of plants. In the meristematic areas of the top of this pine, no new shoots are expected to develop.

The Plant Doctor's LANDSCAPE TIPS

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IMPRELIS HERBICIDE UPDATE – SUMMER 2012

INTRODUCTION:

Imprelis (aminocyclopyrachlor) herbicide was released by DuPont Professional Products to limited markets in 2010 and to expanded markets in 2011. Its primary targets were broad leaf weeds in turfgrasses, which may include lawns, golf courses, athletic fields, cemeteries and sod farms. Imprelis was designed for outstanding weed control in turf situations; purportedly, some turf managers are attracted to some claims that only one or two applications were necessary to provide season long control. It was regarded by some as the "silver bullet" for lawn weed control attacking many difficult-to-control weeds. Imprelis herbicide belongs to a group of chemicals known as pyrimidine carboxylic acids, designed to compete with the "dandelion control" standards, 2,4-D, 2,4-DP, dicamba, clopyralid, mecoprop, etc..

By late spring and early summer of 2011, numerous complaints began surfacing from many states about damaging effects on many non-target landscape plants. Imprelis herbicide seemed to be the common denominator. Generally, the most commonly voiced concerns were those involving conifer plants, especially Norway spruce and white pine (Photo 1). Many other species of plants were also affected. In the deciduous category, honey locust, redbud and dogwood seemed to be very sensitive. There was a marked difference in reaction of tree species to Imprelis (Photo 2). DuPont and its advisors subsequently admitted to the problem and during the past 10 months or so have painstakingly developed some laborious strategies for examining, documenting and processing claims for plant losses.

UPDATE 2012:

We now know several characteristics about Imprelis that the average turf manager probably did not know at the time of application in 2011. Besides its effects on non-target plants, Imprelis was discovered to be readily soluble in water; as such, it easily moved through the soil to tree roots and from sprayed areas to unsprayed areas (Photo 3). This movement of the herbicide was probably exacerbated by the unusually wet spring in 2011. In addition, it was disclosed that the herbicide concentrated in the apexes of plants. While possessing a fairly stable condition in the soil (its half-life measured in months depending on temperature, moisture, etc.), the herbicide is even more stable in plant tissues. Its concentration in meristematic tissue is the reason why shoots of plants were killed, stunted and/or deformed (Photo 4). It was noted by some observers that Imprelis was still active in plants this season (2012), perhaps even being recycled or translocated in plant tissues. Many conifers continued to decline in 2012. It is important to understand that with conifers, the concentration of Imprelis in the growing tips may have prevented new shoot development even though trees may appear just fine (Photo 5); these severely affected trees will continue to hold onto their needles for their prescribed number of years and then die, even though they may appear fine at this time.

Perhaps appropriately, DuPont wanted to wait for claims on deciduous plants until the spring of 2012; according to some experts, most deciduous plants were expected to recover. Many mildly affected deciduous trees appear to be recovering just fine (Photo 6). Others, however, have not recovered (Photo 7).

One concern that keeps many of us in the landscape industry awake at night is residue levels of Imprelis. Can we plant trees, shrubs and flowers into soil or turf areas treated with Imprelis? Can we use wood chips from trees killed by Imprelis? While residue levels can be ascertained at a testing lab, the results may still not provide sufficient assurance. One very quick and reliable (I think) method of determining safety from possible lingering Imprelis effects is to simply plant green beans into the medium to be tested. Green bean is extremely sensitive to Imprelis.

ETHICAL ISSUES:

DuPont is typically regarded as a "blue chip" company with a sterling reputation. In dealing with its Imprelis problem, all evidence suggests that DuPont is trying very hard to repair its image by doing the "right thing." Obviously, that 80-foot Norway Spruce that Grandpa planted can never be replaced. However, the indicators on the street are that in most cases, people are very happy with the claims settlements. In fact, many of the landscapers, arborists and people whose plants were affected by Imprelis seem to voice a rather uniform agreement that the settlements are quite generous if not impressive. I'm sure that DuPont has learned some valuable lessons from its development and marketing of Imprelis. And, I'm sure that other companies, whether in the Agrichemical or other consumer products arena, have also assumed new guidelines about unwarranted risks with new products as a result of the Imprelis situation.

Technology is quickly adopted by some and rather slowly adopted by others. It is interesting that those turf managers who quickly adopted the new chemical Imprelis into their weed management regime, often at the advice of Universities and experts, were the ones that were burned this time. Others waited cautiously for the experience garnered by others while still using their old standby and proven arsenal. Most turf managers who used Imprelis readily acknowledged the mistake (not their own) and many of us as turf managers, arborists and scientists stepped up to try to defuse the unfortunate situation with the public. Obviously, many of us in the plant industry are concerned about our reputation as we should be as professionals.

Regrettably, and perhaps due to concern for their reputation, a few turf managers were less than ethical. I recall one situation last year in which one turf manager denied ever using Imprelis; the evidence was overwhelming that he had. In another situation involving two affluent properties in Bloomfield Hills this summer (2012), the homeowners had no clue as to why their trees were dying until an arborist and I were contacted (Photo 8). Apparently, the turf manager had not bothered to inform their clients of the Imprelis problem last year, and the clients' frequent absence from their homes delayed the diagnosis of Imprelis until June 2012.

Being involved in the plant industry is a very unpredictable and risky venture. Often, our clients' expectations for perfection exceed what is possible in "nature" and/or urban environments. Nevertheless, we should continue to help each other through these unfortunate accidents and events in our green industry.

If anyone has any comments they'd like to share regarding Imprelis, please feel free to contact me at robertsd@msu.edu.

For more information, please feel free to email David Roberts at robertsd@msu.edu or contact a professional plant health care provider. The author, MSU and MGIA do not endorse any particular products. If using pesticides, be sure to read and follow label directions.

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Photo 5: Even though these Norway spruce twigs initially appear normal, all buds are dead–no shoot development occurred in 2012. Unless new shoots can develop, this tree will die in a few years, as it eventually sheds its older needles, even though it erroneously appears normal and viable at this time.

Photo 6: This Sterling Silver linden exhibited mild symptoms of Imprelis throughout its canopy (Insert) in 2011. It has recovered nicely in 2012.

Photo 7: These Honeylocust trees in this parking area have not recovered in 2012 from exposure to Imprelis in 2011. In 2011, the cambium exhibited green, succulent tissues. In 2012, twigs and branches were necrotic and brittle.

Photo 8: Imprelis injury on these spruces and white pines was not discovered until June 2012. The turf manager who applied Imprelis in 2011 neglected to inform their clients of the problem with Imprelis.