



Following The Road To Rinse Pad Compliance

Golf course superintendents are responsible for many issues when it comes to managing a golf course. Turf and course management, landscaping, budgeting, crew management, customer and greens committee relations, and environmental issues highlight our daily duties. Another important responsibility we must deal with is complying with safety and health laws mandated by state and local agencies. Keeping up with right-to-know and crew-training laws, maintaining a current spray license and having up-to-date MSDS sheets available are some examples of these compliance issues. One very important Illinois compliance law, which has been around for 10 years, is the need for each golf course to have a pesticide-containment structure and a containment permit. The following is the process we used at Sycamore Golf Club to comply with this state law.

The "Lawn Care Products Application and Notice Act" is meant to keep pesticides and pesticide residue from contaminating the environment through runoff or leaching during the cleaning and rinsing process.

The law, officially known as the "Lawn Care Products Application and Notice Act," is regulated by the Illinois Department of Agriculture and became effective on January 1, 1993. The law states, "No washing or rinsing of pesticide residues from vehicles, application equipment, mixing equipment, floors or other items used for the storage, handling, preparation for use, transport, or application of pesticides to lawns shall be performed at a facility except in designated wash areas in accordance with the requirements of the law."¹ The law is meant to keep pesticides and pesticide residue from contaminating the environment through runoff or leaching during the cleaning and rinsing process. One of the main points of the law is that a permit stating how and where the containment structure will be built must be obtained before any construction begins. Just having a wash area you believe follows all the guidelines is not sufficient; you must first have a state permit. Failure to comply with the law will result in an administration hearing and monetary fines. Copies of the law and an application for the permit are available from the Department of Agriculture.

Even though this law has been around for 10 years now, a large percentage of golf courses in Illinois do not have both a permit and a containment structure. Like many of my peers, I knew about this law in the early '90s but did not pay too much attention to it initially because the language was a bit vague at first. The law was geared towards the agriculture industry and many in the golf industry were unsure if the law was applicable to them if they filled and washed out in the field. After some question-and-answer sessions with the Department of Agriculture, and updates to the compliance act itself, it became clear that all golf courses applying pesticides were required to follow the law.

I became the head superintendent at Sycamore in 1997 and knew building a rinse pad was something I needed to get done; admittedly, however, I still dragged my feet. I did not think the law was really being enforced consistently and the money to acquire a structure could be better spent elsewhere on the golf course. That notion ended in November of 1999 when we

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received a visit from a Department of Ag state inspector; he was looking for our rinse pad. The visit's purpose was not to give out fines, rather to get us going on the permitting and building process to comply with the law. We were given a law and permit-form packet, and a letter from the state followed issuing us a date by which to respond with a filled-out permit application. This scenario was not unique to Sycamore; I know of many other courses that were visited at the end of 1999 and during 2000. In any event, this was what started Sycamore Golf Course on the wash-pad compliance road.

Those of us who have already dealt with the permit application know it is thorough and time-consuming. Many specific requirements need to be outlined and met before a wash pad can be bought or built. The permit application needs to provide details not only of the wash pad you want to use, but where it will be placed in relationship to your maintenance facility. The location of wells, ponds, rivers, chemical storage, residential housing and

storm grates is among the details the state needs to know to make sure you are using pesticides in a safe area. The water source being used and where it originates must also be known. A fixed-air gap hose for filling, and a recovery system for the wash water, must also be addressed. We drew many maps of the area, including distances to water areas, wells, drains and housing, and even provided a soil map. The next step was to provide details on the type and size of sprayers used at our facility to determine the size of the rinse pad. The pad has to be large enough to hold 120% or more of your largest spray-tank volume and 1.25 times as wide and long as your spray vehicle with booms folded. Several other requirements must be met as well and are found on the application.

The next step is to figure out what type of structure you want to use, and the options are numerous. Money and budgets control the majority of decisions we make, no matter what type of golf course we maintain. The simple choice for us was to budget money to purchase one of the many prefabricated rinse pad units available on the market today. These mobile steel or polyalloy PVC resin-material rinse pads are convenient and ready to use. Several area courses have purchased these units and the state usually issues permits for them. Just select a size according to your sprayer capacity and compliance is achieved. A permit is still required for these units and should be obtained prior to purchase. We were hoping to build a new garage-like structure with one of these prefab units at our maintenance shop, until the process hit a roadblock. Sycamore Golf Course is located in a flood plain, thanks to our location near the east branch of the lovely Kishwaukee River. Although our maintenance shop has never flooded, a survey company came out and showed the lines determined by the county have our shop in the flood area. The rules for construction in a flood plain are very strict; building any new structures in our maintenance facility was prohibited. So, after many letters to the state letting officials know why I was delayed in sending in my permit application, we decided to apply for

the permit with our current shop configuration. I also decided to try to save some money by building our own rinse pad out of concrete, which is perfectly acceptable.

Now that I knew where the pad was going and what it was going to be made of, time to start drawing. We provided detailed handwritten drawings of the concrete pad. When custom-building a pad, specifics of the size and capacity need to be given so the state can calculate the amount of water it will hold. We use a 200-gallon sprayer mounted on the top of a turf utility vehicle, so our pad had to hold at least 240 gallons of liquid. The length and width of our vehicle with booms folded is 13' x 6', so the requirements calculated a pad surface of 16' x 8'. Using a bit of math, it was determined that a 3.5" curb around our pad would hold 280 gallons of liquid, more than required by the state law. A sump area measuring 1' x 1' and 8" deep was added to one corner of the pad, allowing liquid to be pumped out of the containment structure. The entire pad would have a 2% slope towards this corner sump so the water could quickly be pumped out using a basic sump pump. The slab of the rinse pad would be 4" thick and built around rebar for strength.

The application must also show where you intend on transferring this rinse liquid once it is pumped out of the structure. A storage tank nearby may be used, but the law does not require a tank. I decided to pump the liquid directly back into our spray tank for later use or spray out in the rough of the golf course. Limited space for a large holding tank was the reason we decided to pump directly back into the spray tank. I also made it known that the pad would be covered with either a carport-type roof or just a simple waterproof tarp to keep rain water out when the pad was not in use. If a cover is not used, the pad must hold more than the volume generated by a 6"/24-hour rain storm.

The next drawings required had to show where water supply for filling and washing was coming from and

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where else the water flowed. We have a well that only services a hose spigot in our shop area near our rinse pad location. I first feared that because of the location of this well, we would not be able to build a pad within 200 feet of it as stated in the law. A call down-state assured me that labeling the well "nonpotable water" allows for use near a rinse pad, as long as the water is only used for filling and washing. An elevated drawing was provided, showing where our water came from, where the flow ended and how the water well spigot was to be labeled.

The last requirement of the application was to show how back-flow prevention from the water source was to take place. A fixed-air gap-protection device, or a reduced-pressure principal backflow valve, must be added to the end of the hose being used to fill and wash the sprayer. We opted to make a "spider" fixed-air gap attachment for the end of our 5/8" hose. This is basically a steel ring that threads onto the end of the hose that funnels out to a 20" diameter hoop that will not allow the hose to enter the spray-tank opening. Now the tank mix cannot access the water system, as a 6" gap from the end of the hose and end of the steel hoop is required. A drawing showing this device was added to the packet of drawings.

We submitted the application form and drawings with a cover letter explaining our plans in detail. Now began the wait to see if we would obtain our permit or if changes had to be made. I had heard from other superintendents that I should expect to have to clarify several details of the wash-pad application before a permit would be presented. I sent in our application in March 2001 and heard back two months later. The Department of Agriculture was asking us to elaborate on seven different areas so they could obtain a better understanding in greater detail of our containment-structure plans and location. The depth of our well, the width of the curb around the pad, a drawing of all connections to a public water supply within our park boundaries, the location of our pesticide storage area in relation to the pad and an elevation drawing of the entire

wash-pad structure were required for further clarification. May is a very busy time for all of us in the golf industry, so my additional work on the permit application was put on hold until later in the fall; graciously, the state accommodated my need for more time. At the end of 2001, all questions and additional forms were sent back to the state. In January 2002, I received another letter from the state asking for a few more points of clarification, but this time a phone call would clear up the remaining confusion. All this taken care of, we received a lawn-care containment permit in March 2002. Time to build!

The difficult part over, the construction phase of rinse pad compliance was all that was left. We hired a local concrete contractor after obtaining a couple of other bid prices. The hand drawings I had submitted to the state were all the contractor needed to build the rinse pad. Changes were made during construction; these changes included making the curb walls higher towards the rear of the pad as it sloped towards the sump area. This way the walls around the pad would remain level and the pad would now actually hold more liquid. Raised hooks were also included in the rebar construction at the four corners so that the entire pad could be lifted and moved with a small crane when we relocate our maintenance facility in the future. The pad curbs were formed and the rebar placed on a rock bed level with the ground. We had the pad built on the ground surface level so it would be mobile. The outside wall height increases from 8" to 12" from front to back. Half-inch negative crusher-run rock was placed around the pad to form the ramp needed to drive the spray tank inside the containment structure. Mobile wheel ramps 3' high are placed on the inside of the entrance curb to allow a smooth drive into the pad. For now, we are using a tarp to cover the pad when not in use, but plans are to build a simple roof on four posts for protection in the future. The sump system works well and water used to wash off the sprayer and clean the tank is pumped back into the sprayer and used in the next load, or taken and sprayed into the

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rough. The entire cost of the concrete rinse pad was \$4,500, which included labor, concrete, form wood, rebar and base rock. This was a price much lower than I had originally budgeted for, so we were pleased with the whole project.

The road to rinse pad compliance was long for us because of some unique situations, some procrastination and some budget issues. Just remember that many options are available for obtaining a legal rinse pad structure. Remember, too, that the Department of Agriculture requires not only the existence of a chemical-containment structure, but also an approved permit-application form before construction or purchasing of a pad may even begin. Even if you think your situation would not allow for approval from the Department of Agriculture, send in a completed application—the state is willing to work with any situation and budget. Moreover, fines will not be

handed out as long as you show an effort and keep up a correspondence with the state. Once I looked into the process, I was surprised at how simple a pad could be to comply with the law. Complying with this state law is another step we as superintendents can take to help keep the environment safe and our soil and groundwater clean from contaminants. For that large percentage of us who have not started the rinse pad compliance process, call the state soon and request a permit application. Keeping up with environmental laws and regulations is another necessary and important responsibility superintendents must incorporate into their already-busy careers.



¹ Illinois Department of Agriculture, Lawn Care Products Application and Notice Act, 2000, p. 3

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Ten Ideas to Make You a Better Turfgrass Disease Manager

(A Short Refresher For The “Old” Pros!)

It is now July; the 2003 spring in the Midwest was good and moderately wet. From the InteractiveTurf.com program, we know that the soil-borne and leaf-blighting pathogens were active. This means that the stage is set for serious summer diseases if the weather goes hot and humid, and in the Midwest, it usually does. Turfgrass diseases are the most difficult aspect of turfgrass management to handle, and for some very good reasons.

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I once made the mistake of suggesting that turfgrass management was “child’s play” compared to managing turfgrass diseases. My horticultural colleagues looked at me askance! Nevertheless, dealing with turfgrass diseases is difficult because it involves not just one living organism, turfgrass, but a second living organism, the pathogen. When these living organisms interact, especially in a pathological way, it is a very complicated process, and usually results in plant death.

In this short article, I will try to give you some useful ideas for managing turfgrass diseases. Remember, no one is all-knowing about turfgrass diseases, so get some help, talk to your friendly plant pathologist and read!

What is a turfgrass disease? Not all problems in your turf are caused by pathogens. A pathogen is a microscopic (darn small), living organism that interacts with a grass plant, one cell at a time. If the pathogen is allowed to kill enough cells, you will see the dead cells, and that is the symptom of the disease on one plant. If the pathogen is allowed to spread from one plant to the next and the next and the next, until there are hundreds or thousands of plants showing symptoms, you have a small epidemic. Most turf diseases are recognized by their epidemic symptoms, which I call the BIG picture. It is also interesting to note that nearly all pathogens that cause epidemics in turf are *fungi*. Nematodes also cause damage to grass roots. Predicting their damage to turf is difficult, however, in general the number of nematodes that must be in soil to cause serious damage is higher than recent reports would suggest. Dr. Randy Kane and I have some excellent information for dealing with nematodes, so if you think you have a problem, contact us. There are bacteria that have caused epidemics in turf, but these occurrences are rare. Rest assured that other microbes—including viruses, mycoplasmas and viroids—also attack turfgrasses, but so far we have no clue how much damage they are doing to the turf!

What is turfgrass disease management? It is the practice of stopping a pathogen from killing *too many* grass cells and *causing* an epidemic. This sounds simple, but believe me, the pathogens that attack grass plants have been doing it for thousands of years and they are very good at it. In addition, many of the cultural practices you use to manage your turf actually predispose the same turf to attack by pathogens. Life is just not fair to the superintendent!

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How do you manage turfgrass diseases? Turfgrass disease management can be divided into two phases: *Prevention* and *Recovery*. The most effective superintendents are those who are able to minimize the severity of turf epidemics. Once a disease epidemic has developed, the superintendent must both slow down the pathogen and speed up the growth of the grass. Here are some useful ACTIONS that you can use to be more effective in both Prevention and Recovery!

Preventing turfgrass disease epidemics!

The goal here is not to eliminate all turf disease-causing fungi. Remember, many of the same fungi that cause turfgrass diseases also are important in nutrient cycling, especially as it relates to thatch breakdown. You don't want to kill the "little rascals," you just want to ride herd on them!

1) Plant the best grass genetic material you can for your area.

- Grasses with resistance to pathogens that are active in your area.
- Grasses with the best adaptation for summer and winter survival.

2) Keep a record of and watch the climatic and edaphic (soil) conditions!*

- The single most important piece of information you can gather for predicting disease development is temperature: both in the verdure and about two inches deep in the soil. Pathogens start to become active at certain temperatures, which can be used to predict their development and time the management practices to control them. See Table 1, *Disease Activation Temperatures and Infection Sites*. This information is specifically written for the Midwest and generated through your support of the ITF.
- Moisture is also important, but a bit more difficult to measure and interpret. Moisture can exist as humidity (vapor) or as free water. Moisture is required by nearly all fungal pathogens, and the most important factor for disease is the length of time that plant surfaces or soil are moist!

3) Keep a historical record of disease epidemics in your area. Knowing which, when and where diseases develop each year in your area will give you a tremendous advantage over the pathogens. It is very likely that a given disease will develop in the same area of the same turf, year after year. However, you may only see it during years when conditions are favorable for pathogen development.*

4) Know and watch disease "hot spots!" Whether you manage lawns, golf courses or sports fields, there will be specific locations in your area that always develop disease epidemics first! Learn these, and check them during that part of the year when the temperature and moisture are favorable for disease.

5) Communicate! Thousands of eyes are better than your two! Call, visit, e-mail or read, but learn what others are seeing. Do not restrict your reconnaissance to your course. Know where diseases come from, and get information for areas up to 100 miles away from you. *This is the very heart of the InteractiveTurf.com program.*

6) Know your diseases! Generally, there are only a handful of pathogens that routinely cause problems on your course. The "ole-timers" and local plant pathologists will know which ones these are. There will also be a group of pathogens that rarely show up; know these, too. *Expect the usual diseases, but keep your eyes open for the unusual ones.* The next important aspect about a disease is to understand if it is a "Killer" or a "Non-Killer." By this, I mean what part of the grass plant the pathogen is attacking. Killing pathogens are going to cause you and your turf problems; non-killers can generally be managed with mowing, fertilization and time. Here are some general rules for assessing the threat from a turf disease.

- If it is attacking the *crown*, it is serious!
- If it is attacking the *lower, older leaves or tips of leaves*, it is not as serious.
- If it is attacking the *new leaves or base of grass leaves*, it could become serious.
- If it is attacking the *roots*, it will predispose the turf to heat and drought, and could be serious.

Table 1

Turfgrass Disease Activation Temperatures and Infection Sites

DISEASE'S NAME	ACTIVATION TEMPERATURE (°F)	INFECTION SITE
Anthraxnose	46° – 61°	base of leaves
Brown patch	80° – 95°	base of leaves
C-15 decline	61° – 77°	leaves
Dollar spot	61° – 77°	leaves
Fairy rings	61° – 87°	thatch layer
Gray snow mold	32° – 55°	lower leaves
Leaf blights	61° – 77°	leaves
Necrotic ring spot	45° – 61°	roots
Nigrospora blight	61° – 77°	leaves
Pink snow mold	55° – 68°	lower leaves
Powdery mildew	61° – 77°	leaves
Pythium foliar blight	86° – 100°	leaves
Pythium root & crown rot	50° – 60°	crowns & roots
Red thread	61° – 77°	leaves
Rusts	61° – 95°	leaves
Smut	50° – 75°	leaves
Summer patch	68° – 70°	roots
Take-all patch	55° – 60°	roots
Yellow patch	46° – 61°	crowns & lower leaves
Yellow ring	61° – 77°	thatch
Yellow tuft	46° – 61°	crowns & leaves

Recovery from a turfgrass epidemic!

The disease that you have seen develop in your turf is now increasing to the small epidemic. There are two basic actions you can take, and which or both you select will depend on which disease you are dealing with, and what part of the turfgrass plant is being attacked (see #6). *The two actions are: reduce the pathogen activity, and grow new grass tissue.* However, both of these are dependent on knowing exactly which pathogen is attacking your turf.

7) Diagnose the turfgrass disease! With a bit of experience, you can combine your knowledge from scouting, temperature-recording and handy reference materials (see the end of this article for a list of useful reference materials) to make a solid diagnosis. In Illinois, superintendents are “blessed” by having four turfgrass pathologists to assist them. With the use of a digital camera, e-mail and the telephone, a call to a plant pathologist (or via InteractiveTurf.com) can confirm your diagnosis. *Guessing is not an option for a good superintendent!*

8) Reduce or manage pathogen activity with cultural and chemical practices. Once the epidemic has started, the pathogen has the upper hand in the turf. You are not beat, but you are on the ropes as a superintendent! To bring back a balance between turf and pathogen, the pathogen’s activity must be slowed. There are a lot of ways to do this, and you should include both cultural and chemical approaches. *How fast and how serious the disease epidemic is will dictate whether you have time to work with only cultural practices, or whether fungicides or other biological treatments will be required.*

9) Grow new grass tissue! Once a pathogen has attacked a turfgrass plant, there is no recovery: the cells have died, and they are not coming back. However, that is where turf offers you a special advantage as a superintendent. Turfgrasses are vegetative and perennial, which means they will grow new tissue as long as they have enough heat, water and nutrients. Unfortunately, some of the tougher diseases attack turf when the

grass is not growing: summer and winter. In the summer, it is possible but tough to try and push a diseased turf to grow; in the winter, there is no chance of growth. In these cases, it is best to wait until turf-growing conditions return in the fall and spring and install sod or overseed.

10) Remove diseased tissue from the turf! Once you have reduced the pathogen’s activity and started to grow new tissue, your next objective is to remove the diseased (dead) tissue from the turf. I have seen many cases in which the disease was diagnosed correctly and an effective fungicide was applied, but the turf did not recover. Recovery of turf following an epidemic is dependent on growth. If heat and moisture conditions will not permit grass to grow, the turf will look like it still has an epidemic, even though the pathogen is not active. However, once the grass is growing, simple procedures like mowing, raking and topdressing will help to remove the disease symptoms and restore the turf to “health!”

Remember!

Turf diseases are tough to manage! You must be diligent and relentless in your pursuit of them. By all means, you should work cooperatively with other superintendents and pathologists to solve your pathological problems!

* Conducted as part of the InteractiveTurf.com program.

Some useful references!

1. Illinois Pocket ID Series: Cool-Season Turfgrass Diseases. H.T. Wilkinson and D. Pedersen. ISBN: 0-9722902-0-6 (English); 0-9722902-1-4 (Spanish). Call 217-333-7738 to order (all sales support turfgrass pathology research).

2. Controlling Turfgrass Pests. T.W. Fermanian, M.C. Shurtleff, R. Randall, H.T. Wilkinson, and P.L. Nixon. Third Ed. Prentice Hall, Upper Saddle River, NJ. ISBN: 0-13-098143-5.



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