

A photograph of three people on a porch. On the left, a man in a light blue long-sleeved shirt, khaki pants, a black cap, and safety glasses is holding a smartphone and talking to a woman in the center. The woman is wearing a teal top and blue pants. On the right, a man in a blue t-shirt and khaki shorts is looking towards the other two. The porch has a white railing and a blue door. There are plants and a flower box in the foreground.

**The Role of Pesticides
in Urban Integrated
Pest Management**

The Role of Pesticides in Urban Integrated Pest Management

A Partnership Between the Client and the IPM Professional

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and the JPM Professional*

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Introduction

Attitudes are changing quickly among pest management professionals who are responsible for protecting food, public health, structures, turf, and ornamental plants. In the past, companies hired many professionals to make preventive, blanket pesticide applications. Today, progressive companies employ problem-solving, environmental consultants and use pesticides much more judiciously than in the past. And today's pest management professionals partner with health care professionals to reduce pests that carry, transmit, or trigger illness and disease.

Full-coverage spraying of lawns, flower beds, or interior baseboards is no longer desirable to many customers, nor is it the most cost effective solution in most cases. Increasingly, clients prefer pest management services performed by well-trained professionals who manage pest problems with minimal or no pesticide use.

Integrated Pest Management (IPM) is a concept that satisfies this change in clientele expectations. IPM uses a variety of materials and techniques to control pests, minimizing the use of pesticides. IPM includes these key elements:

- Knowledge of pest biology and behavior
- Inspection
- Monitoring
- Sanitation
- Exclusion
- Mechanical control
- Cultural control
- Chemical control
- Evaluation



Tom Myers



Freedom Lawns



Fred Whitford



Dr. Janna Beckerman

Top left: Knowledge of the biology and behavior of termites is essential in explaining to clients how to prevent their entry into a structure — or in getting rid of them once they're in.

Top right: Preventive measures such as pulling weeds eliminate pest harborage.

Bottom left: Information gathered from follow-up monitoring by trained observers helps evaluate on-going mosquito control programs.

Bottom right: Landscape plant inspections facilitate early detection and control options. Pictured is a hollyhock severely infested with rust, which obviously limits control options.

The goal of IPM is to minimize the occurrence of pests by using the lowest-risk combination of tools appropriate for each situation. This requires the use of sound, consistent pest monitoring techniques and a knowledge of pest biology. IPM emphasizes the need to address the root causes of pest problems while reducing or eliminating pesticide use. That emphasis challenges professionals and encourages them to develop new approaches to pest management. If pesticides are necessary, responsible IPM professionals choose products with low overall risks and restrict applications to areas with significant pest activity.

Pest management companies are learning that IPM programs are marketable and profitable. The approach introduces additional revenue-producing opportunities both in service and product sales because it goes far beyond pesticide application. A sound IPM program differentiates your company, your employees, and your services from those of your competitors that remain pesticide-oriented. With IPM you market a “greener” product to customers who are concerned about the home environment and safety.

But IPM involves much more than a title. It represents a new attitude toward pests and the problems they cause — and a new approach to their control. IPM emphasizes the education of service personnel and clients, increased and improved documentation of services, new tools and materials, and a commitment to the basic premise.

Careful pesticide use does not violate the IPM principle. In fact, when carefully selected and used, pesticides can be an integral component of IPM. This publication describes the role pesticides play in IPM programs and introduces pesticide use strategies that reduce exposure to people, nontarget animals, and the environment.

Differences between pesticide-based and IPM-based pest management programs are best illustrated by example. Let’s say a customer calls a pest management company to control Asian lady beetles indoors. The customer complains that the beetles are annoying. A pesticide-based approach would be to use surface-applied, residual insecticides outside the home to kill the beetles before they gain entry. The IPM approach, by contrast, would be

to teach the customer how and where to seal cracks around the home to prevent the beetles from entering, and to tell the customer that vacuuming is an effective method of getting rid of beetles. Some companies offer these services.

Mark Sheperdigian



Vacuum cleaners designed for removing pests are in some cases excellent substitutes for pesticides.

In another example, a homeowner calls a lawn care company to control weeds. The traditional, pesticide-dependent approach would be to spray the entire lawn, but an IPM practitioner would educate the customer on proper mowing, irrigation, and lawn management. If warranted, the IPM professional might apply a selective herbicide timed for maximum effectiveness, targeting specific areas where weeds are prevalent and noticeable.

Both programs control pests, but the former approach relies mainly on pesticides. The IPM approach educates and works with customers to reduce the amount of pesticides required for desirable results.



All photos, fotolia.com



Mulching, watering, aerating, mowing, and spot treating are components of good landscape management.



Customer Expectations and Communication

In general, clients pay pest management professionals to solve specific pest problems in their homes, businesses, lawns, and ornamental landscapes. Many expect total pest control with minimal risk to human health and the environment; and if a company can't completely control the pest, it may lose the customer.

But the ability to educate clients about realistic pest control expectations is one of the most important aspects of a successful IPM program. The process of sharing your knowledge is essential in building long-term relationships with customers; the information you provide helps them become active, educated participants willing to accept the responsibility to make changes and implement procedures to limit pest populations.



The first approach to controlling a minor infestation of the tent caterpillar is to simply prune the affected branches from the tree.

Ideal IPM customers understand relative risk and know that 100 percent control may not always be the objective. Rather, the objective may be to control as many weeds or insects as possible with as little environmental and safety impact as possible. For example, when it comes to controlling turf weeds, the goal should never be 100 percent control. That's unrealistic because there are millions of weed seeds in the soil, waiting to germinate, and only repeated herbicide applications can stop them all; it's expensive, and it exposes the home environment to chemicals. Rather, the objective should be to make the customer's lawn a less hospitable place for weeds to grow.

That might involve implementing practices that create dense, high-cut, healthy turf that shades weeds and makes it difficult for the millions of seeds in the soil to germinate and spread. Not only can these practices reduce weeds, they will lead to a healthier, more attractive lawn that will not require herbicide applications.

Freedom Lawns



The recommended healthy cutting height for cool season turf is 3 to 3½ inches. This allows the grass to shade weed seedlings, which discourages their growth.

But there are some situations where 100 percent pest control is a reasonable and achievable goal, without pesticides. Trapping, for example, might eliminate rodents inside a reasonably well-maintained structure, and sealing entry points can prevent further infestation.

Gerry Wegner



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Trapping is recommended for the occasional mouse. Check for entry points such as openings around plumbing and cracks in the foundation. Structural repairs often solve pest problems permanently.



When pests pose a significant health risk, complete elimination may be the goal. Hospitals and other sensitive areas are of particular concern; for example, even a single fly in a surgical unit is unacceptable. An IPM program that combines sanitation, air curtains, light traps, window screens, caulking, and carefully applied low-toxicity insecticides can provide 100 percent fly elimination from a structure. Cockroaches may carry allergens that trigger asthma attacks; to resolve this problem in a home setting, an integrated approach would combine sanitation as a nonchemical control with targeted insecticide applications.



How many flies would you consider acceptable in the room where YOUR surgery is taking place?

The bottom line is that IPM practitioners must educate their customers and encourage them to tolerate low-level pest populations that rarely cause serious problems. For example, most lawns have a few grubs, but they cause visible turf damage only in high numbers or when the weather is very dry. In other words, grubs are a problem only when conditions are right. Low-level pest populations actually can support natural predators that have a positive effect on overall control.

No IPM program can succeed without the customer's active participation. The customer's primary responsibility is to discourage pests by making his property uninviting. In other words, the customer must be willing to make structural and aesthetic changes to his property to limit pest populations.



Fred Whitford

Customers' expectations of their pest management services vary greatly, and so does their willingness to participate in the pest management process.

IPM practitioners must diagnose pest problems much as physicians diagnose health problems. Just as physicians educate their patients on preventive medicine, IPM professionals must educate their clients on preventive pest control practices. To be a successful IPM practitioner, you must demonstrate that sanitation, cultural practices, and pest monitoring are necessary to achieve success and reduce pesticide use. You might provide printed materials, initially, and follow up with informative newsletters on a regular basis. These will educate your clients, help you to keep in touch, and continually reinforce the value of your services and the value of client participation in a successful IPM program.

Gerry Wegner



Pest management professionals understand that the more involved their customers are, the greater the opportunity for success in managing the pest.

Dr. Al Fournier



Sticky traps are used to monitor cockroach populations in commercial accounts.

Any pest management program, IPM or pesticide-intensive, can fail; and without the active participation of the client, your IPM program will be compromised. Property management is essential, and although most clients appreciate the concept, some do not. If your clients expect you to resolve pest problems without their cooperation, you might be forced to rely on pesticides as a primary approach.

As a pest management professional, it is up to you to determine your customers' preferences — IPM or a pesticide-oriented approach — and to work with them to meet their expectations. Sometimes, clients have difficulty translating their IPM goals into action, which can put you in a difficult position. The problem is particularly difficult when there are multiple clients, such as a married couple with different views on what should be done. Encourage pesticide-oriented customers to adopt IPM principles, taking it one step at a time if necessary.



When you are called to control cockroaches in a residential kitchen, make sure your clients understand that dirty dishes in the sink and on the counter can be a major attractant — and that you need their commitment to keep the area clean.

Both IPM and pesticide-based approaches can fail in the face of unrealistic expectations, leading to ongoing pest problems and expensive callbacks. If your client will not participate in the IPM process, you must decide whether to relinquish the account or switch to a pesticide-based program.

The Use of Pesticides as a Component of IPM

IPM does not necessarily exclude or include pesticides. Pesticides can be an important IPM component when combined with other strategies such as sanitation in the kitchen, using pest resistant plants in the landscape, proper lawn fertilization and mowing, and pest proofing doors and windows.

All three photos, fotolia.com



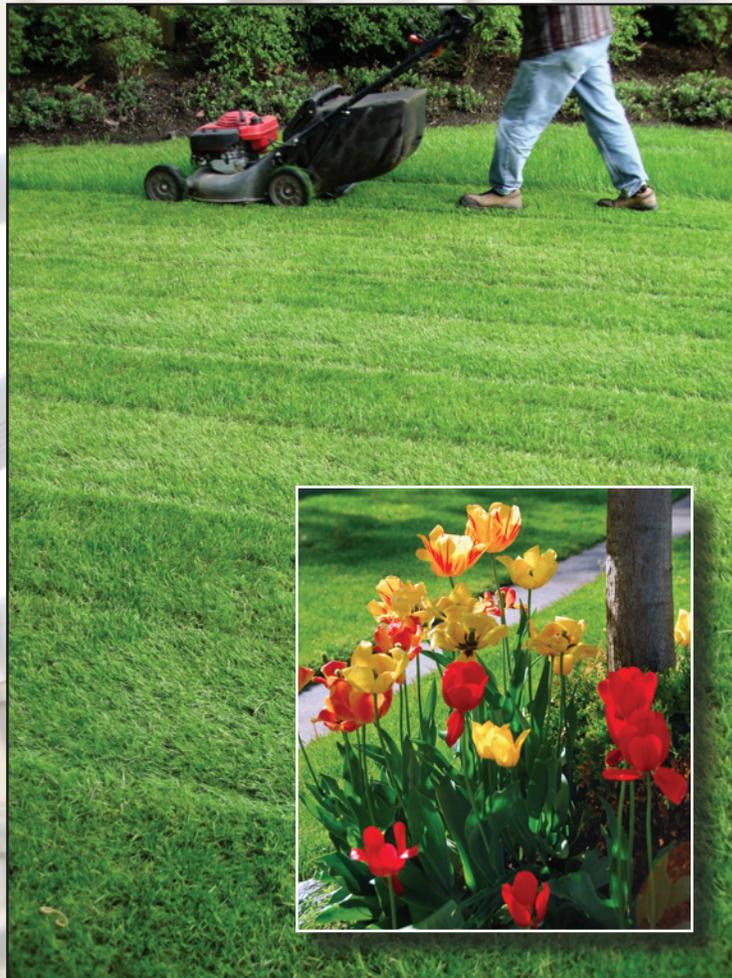
Cockroaches don't like clean kitchens!





Caulking around doors and windows helps keep pests out.

Mowing at the recommended height and properly fertilizing your landscape plants promotes healthy growth — and a healthy landscape discourages pests.



The most basic principle of IPM is that *the use of any pesticide must be justified*. To justify pesticides, you should satisfy these criteria:

- Pests definitely are present.
- The number of pests is above the acceptable level.
- The weather or time of year is conducive to both pest damage and pest control.
- The pests may significantly damage health, property, or aesthetics if left untreated.
- The pesticide and the application technique under consideration are those least likely to pose risk to people, pets, and the environment.

Background photo, Fred Whitford



Which pond would your client rather view outside her window? Aesthetics are important, and pesticides are the best solution in certain situations.

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Managing weeds and algae in a pond requires great skill. Once the problem is controlled, the participation of the IPM client is essential in preventing the rapid recurrence of unwanted pond weeds.

Monthly indoor applications of sprays or baits to protect against pest infestations are not considered an IPM approach. In fact, routine applications — quickly becoming outdated and unwelcome — often are less effective than well-designed IPM programs.

Routine pesticide applications often are not biologically based. A sound IPM program is designed to integrate all applicable tools to quickly solve an existing pest problem and prevent reinfestation. Pesticides are included in the plan only when necessary.

IPM pest management professionals use their knowledge, training, and experience as educators and diagnosticians to determine why an organism has become a pest in a given situation. IPM professionals manage pests in the safest, most practical, and most economically feasible manner while involving the customer as a participating partner.

Freedom Lawns



It would be impossible to control a dandelion infestation this severe without using a herbicide — and eliminating the dandelions would not improve the turf stand. Reseeding would be needed to reestablish the turf, and fertilization and proper mowing height would be important in maintaining a healthy lawn that would suppress weeds. Client participation is paramount in these situations.

Understand Pests

Understanding a pest's biology and environmental interaction is critical to understanding why it is a problem in the first place. For instance, in addition to understanding the biology of turf pests, lawn and landscape IPM practitioners need to understand a variety of concepts, including these:

- Turf species and biology
- Common landscape trees, shrubs, perennials, and annuals
- Soil types and fertility
- Soil physics
- Differences between shady and sunny areas
- The effects of moisture

Such knowledge makes it easier for you to address your customers' questions and establish your reputation as a responsible professional. Again, printed materials are effective in educating customers on factors that contribute to overall lawn and landscape health; and fostering that understanding of the preventive concept encourages customers to implement long-term strategies to avoid pest problems. For example, removing restaurant products from corrugated cardboard cartons before storing them reduces harborage sites for cockroaches and stored product pests.

Your clients will learn a lot about IPM from the printed materials that you provide. And sending a newsletter at regular intervals keeps you in touch, even during the off season. A note scribbled in the margin beside an article that is especially pertinent to a client adds a personal touch.



Gerry Wegner

Target Pests

Another critical IPM concept is to target only the affected area when applying pesticides. For the average lawn, one to five weeds per thousand square feet of turf is a realistic goal, and the typical landscape bed has only a few insects. That means that only a few weeds, a mere one to three percent of a lawn or landscape, may represent the entire “infested” area. Where pesticide treatments are deemed necessary for such low-level infestations, spot spraying only the areas that host weeds or insects reduces pesticide use by about 99 percent.

Freedom Lawns



The use of pesticides within IPM is based on three principles: use only when other methods are not practical; apply only to problem areas; and use as little product as possible to achieve the desired result. The applicator in this photo (left) is applying a herbicide to weeds found only near the pavement.

This technique (right) allows the professional applicator to apply dust products inside voids where pests enter a structure. One of the recommendations made to customers is to seal gaps to prevent insects from entering. Over time, simple maintenance can reduce pest numbers, changing the account to one of routine inspection instead of pesticide application.



Gerry Wegner

Spot treating also protects beneficial organisms, such as certain ants, lady beetles, lacewings, earthworms, soil microbes, and spiders. Populations of these beneficial predators remain unaffected in untreated areas and will repopulate the sprayed areas. But if pesticides are applied to the entire landscape, all organisms — the beneficial ones along with the pests — may be eradicated.

Proper timing of pesticide applications also helps minimize the effects on beneficial organisms. Making oil applications to trees and other landscape plants while honeybees and other beneficial insects are dormant reduces their vulnerability. Early, well-timed fungicide applications to control apple scab, anthracnose, or plum pockets prevent symptoms from developing and greatly reduce the need for subsequent applications.

Pesticides and Public Health

The greatest justification for including pesticides in an IPM program is to control pests that pose serious threats to public health and must be controlled as quickly as possible. Here are some situations that might qualify:

- Yellowjacket nests in yards, homes, or playgrounds
- Trap-shy mice in a childcare facility, aboard airplanes, or in food warehouses
- Fire ants in nursing homes
- Viral, bacterial, and fungal agents in hospitals
- Serious cockroach infestations in restaurants
- Termite infestations in homes
- Players being injured on turf damaged by insects

In cases like these, the immediate response may be to use a pesticide to eliminate the problem. But even when pesticides are used, IPM practitioners should reassess each situation to prevent recurrence of the pest, keeping in mind and respecting public concerns about pesticide risk.



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Certain situations call for pesticides as the first — and best — option. For example, when yellowjackets are nesting on a playground, it is important to kill them outright to prevent them from stinging children. Their stings can be fatal.

Dr. Tim Gibb



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Sometimes we get too busy to clean our gutters, and the situation pictured above (left) occurs. What many homeowners don't understand is that water pouring down to the foundation, over time, creates prime conditions for termites. Termites love moisture, and they particularly like the warmth and darkness under houses and other buildings. If moisture beneath a structure is left unresolved, termites may establish a colony there (lower right). The most effective way to treat an active termite colony is with insecticides.



A fire ant nest does not necessarily pose a threat. However, if it is located on a playground or near a public building such as a nursing home, it is viewed differently. Fire ant bites are painful and can be serious for children and the elderly, so a pesticide application is advised to eliminate the risk.

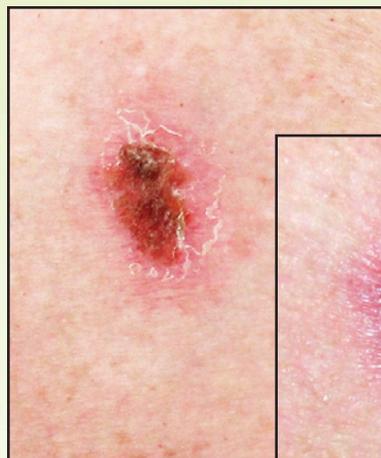
(Top right and lower left photos from fotolia.com. Upper left and lower right photos courtesy of Dr. Al Fournier.)



Dr. Ricardo Bessin, University of Kentucky

The brown recluse spider has a leg span about the size of a quarter. It is identified by the violin-shaped marking on its cephalothorax. This spider occupies dark, secluded places and tends to bite when handled or disturbed. Its bite causes a large, deep, painful wound that can take 6–8 weeks to heal. The effects can be debilitating. The best control method for brown recluse spiders is a pesticide application.

This is a lady's upper arm 10 days (left) and 28 days after being bitten by a brown recluse spider. Within a few hours of the bite, inflammation extended to about 4 inches in diameter and the site was very swollen, hard to the touch, and itchy. The victim was prescribed antibiotics within 24 hours of being bitten.



Photos by Arlene Blessing





Once an IPM program is in place and control is achieved, the IPM pest manager can focus on problem areas within the account. The goal is to make it less likely — or at least more difficult — for pests to find food, shelter, and water.

Incorporating Pesticide Use into an IPM Program

No matter how diligent you are in using alternative management strategies, pests may take the upper hand. In such cases, a well-designed pesticide approach is necessary to control the problem, and the IPM philosophy allows it.

Never take the pesticide decision-making process lightly. Always base your decisions to use pesticides on your experience, technical knowledge, customer preferences, and specific site conditions. Ask yourself these questions:

- Does the client understand and agree with the need to use a pesticide?
- Do the pests have to be eliminated before other tactics can be expected to work?
- Have I chosen the best pesticide for the job?
- What measures might I take to further reduce the risks associated with pesticide use?

Understand Pesticide Risk

All pesticides carry some degree of risk, and one goal of IPM is to maximize the benefits of these products while minimizing the associated risks. But in order to address “risk” we must understand the meanings of “toxicity” and “exposure.”

Toxicity represents the capacity of a pesticide to harm living organisms. Some pesticides are less toxic than others, but in all cases toxicity is dose-dependent; that is, it takes a certain amount of pesticide to produce a symptom.

Exposure, in this context, refers to organisms coming into contact with a pesticide — internally or externally, accidentally or intentionally. The *degree* of exposure is determined by the dose. And to learn that, one asks questions like, how much was spilled on the skin? Was it washed off immediately? How much was ingested? How long did the person or animal breathe the chemical?

Minimize exposure to yourself, others, and nontarget animals by following these practices:

- Select formulations that minimize contact with pesticides, such as soluble dose-packets.
- Choose application techniques that minimize airborne particles.
- Use appropriate personal protection equipment.
- Time treatments to minimize the presence of people.

The concept of risk is simplified by this equation:

$$\text{RISK} = \text{TOXICITY} \times \text{EXPOSURE}$$



Fred Whitford

This applicator is removing a bird feeder prior to treating a crabapple tree.

The greater the pesticide exposure, the greater the risk of ill effects. The dose that produces unwanted symptoms depends on the specific pesticide and factors such as the organism's age and weight. Pesticides may be used with relative safety when you minimize exposure and reduce risk.

Select Low-Toxicity Products for IPM

When pesticide manufacturers develop new products, they perform numerous laboratory and field tests based on current scientific and regulatory standards. Manufacturers must demonstrate that these products will not harm people, nontarget animals, or the environment when used according to label directions. The U.S. Environmental Protection Agency (EPA) reviews all products' test results and the proposed language of their labels. If the EPA deems that a product's benefits outweigh its risks, the product is registered.



Dr. Al Fournier

The selection of a pesticide for use in IPM goes well beyond product effectiveness. Always read the label carefully, select a low-toxicity product, and apply it precisely as specified by the manufacturer.

IPM practitioners can use the information developed for the EPA registration process to identify products that pose minimal risks to people, pets, and the environment. There are four things to look for on product labels when selecting pesticide products for use in an IPM program.

1. Signal words. What is the signal word on a pesticide label? A pesticide product's relative acute toxicity is expressed on the label with one of three signal words:

- DANGER — most toxic
- WARNING — moderately toxic
- CAUTION — least toxic

The signal word also can indicate the product's nonlethal effects, such as skin and eye irritation. As you might expect, products labeled CAUTION are preferred when pesticides become a necessary component of IPM.

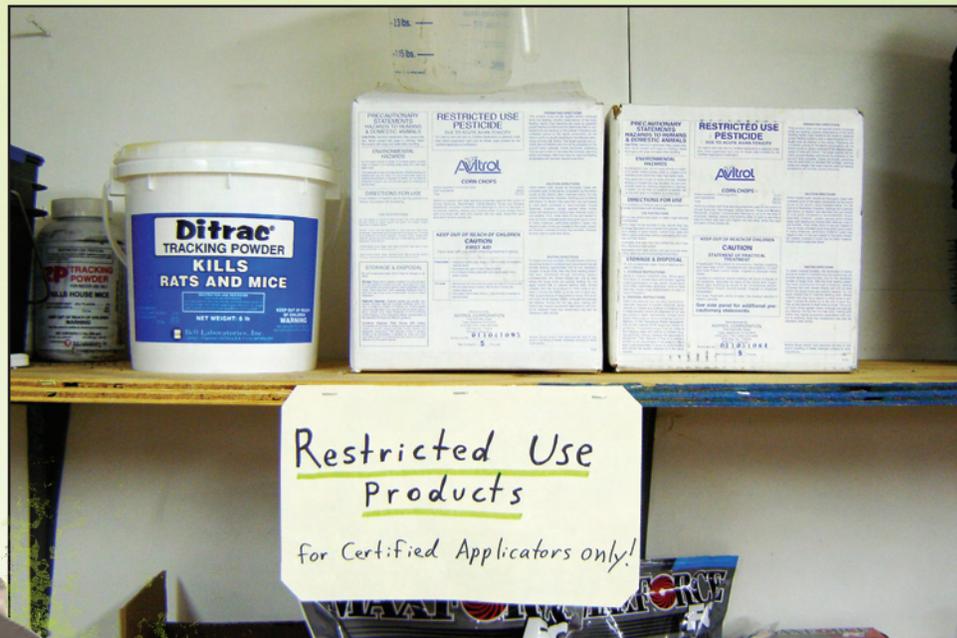
Fred Whitford



The use of biologically-based pesticides that target mosquito larvae is one example of using a low toxicity product against a specific pest. It makes scientific sense to target the larvae before they emerge as biting, disease-carrying adults.

2. Use classification. *Is the product classified for restricted use, or is it a general use product?* A good way to explain the distinction between restricted and general use is to use a medical analogy. Compounds that the EPA classifies as restricted use products (RUPs) are analogous to prescription drugs that may be administered only by trained, licensed professionals; in the case of prescription drugs, that means physicians; in the case of RUPs, that means certified, licensed pesticide applicators. Like over-the-counter medications, general use pesticides can be purchased and used by anyone.

A pesticide product receives an RUP designation if regulators are concerned that improper use carries a high potential for harm. RUPs are sold to and used only by those certified through a state agency, usually the state department of agriculture (in Indiana, the Office of the Indiana State Chemist).



Nathan Comase



It is this company's policy that restricted-use pesticides are to be used only by certified applicators. They post this reminder on the shelves where they keep their inventory of products.

If pesticide use is necessary, choose a general use product whenever possible, and always follow label directions. Even general use pesticides can cause harm if used improperly. Do not use a restricted use product in an IPM program unless there is no alternative.

3. Risk. *Is the product a reduced risk pesticide?* Some products pose fewer risks than others that control similar pests. EPA identifies these products as reduced risk pesticides. Manufacturers must submit substantive data to EPA to be considered for reduced risk classification. Their claims must be supported by evidence of reduced toxicity to humans or other nontarget organisms or by evidence of reduced environmental impact. In return, EPA expedites the product's registration process. Reduced risk pesticides are preferred for inclusion in IPM.

4. Effects. *Does the product produce acute and/or chronic effects?* Manufacturers produce a Material Safety Data Sheet (MSDS) for every pesticide. The MSDS provides a great deal of information about the product:

- Acute effects (from very short-term or one-time occurrences)
- Chronic effects (from multiple exposures, over time)
- Risks such as cancer and birth defects

It is important to remember that most MSDSs address the concentrated product in the jug or bag; a fewer number of MSDSs are based on the pure active ingredient; still others are based on the product in its ready-to-use form. Typically, the risks from the diluted, end-use product — the dilution actually applied — are lower than those of the concentrate.

As a professional pest manager, you must stay current with the literature regarding the health and environmental effects of the pesticides you use, regardless of EPA registration, signal words, or MSDS data. Staying current as a pest management professional is comparable to physicians who stay up-to-date with the literature on the medicines they prescribe.

Reduce Pesticide Exposure by Thinking Ahead

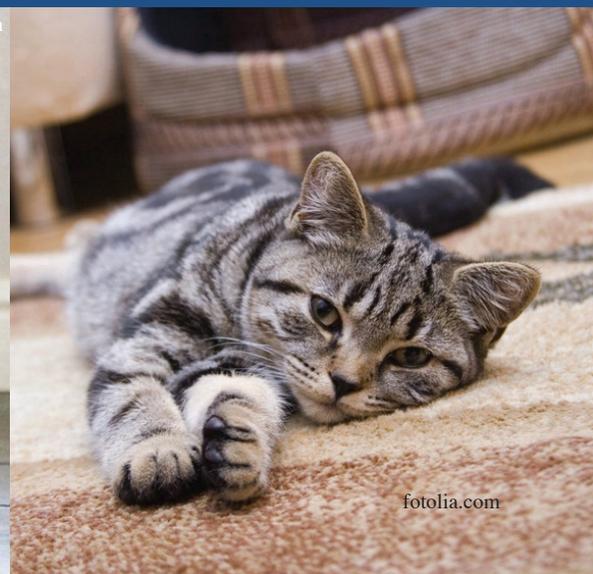
The second part of the risk equation involves exposure. In general, more exposure to a toxicant (pesticides, cleaning chemicals, gasoline) generates greater risk. It is important to understand how people, children, and pets may be exposed to any chemical applied in or around buildings.

Toxicants have three routes of entry into the body:

- Dermal — absorption through the skin or eyes
- Respiratory — inhalation through the lungs
- Oral — ingestion by mouth

Dermal: Skin contact. The most common dermal exposures occur when people or animals touch treated surfaces, such as a football player on a freshly treated athletic field, a baby touching a treated baseboard, or a cat resting on carpeting that was recently treated for fleas. The degree of absorption depends on the pesticide's properties, its formulation, the parts of the body exposed, the presence of cuts or scrapes, and the amount of time between the pesticide application and dermal contact. In today's urban environment, pets often are considered members of the family. Pet owners must be given clear instructions on the length of time to keep their pets off treated turf and carpeting.

Background photo, fotolia.com



Inhalation: Lung contact. Any substance that we breathe into the lungs enters the bloodstream rapidly. Bystanders could inhale a pesticide during a spray application; or a building's air intake vents could draw in herbicides applied outside, exposing those inside.



The air we breathe — and whatever it contains — enters the lungs and passes into the blood stream.



Before making a pesticide application near a school, even when the building is unoccupied, make sure you understand how air flows into the building. A mistake could allow the pesticide to be drawn into the building through air intake vents, setting up the possibility of inhalation exposure when students and employees re-enter. Note the air intake vents on the school shown above.

Oral: Stomach contact. Accidental pesticide ingestion can occur many different ways, such as eating food or chewing on toys left unprotected during pesticide applications. If children touch a treated surface, such as a floor or woodwork, then chew on their fingers, they might ingest pesticide residue. Adults are vulnerable, as well. For instance, applicators may fail to wash their hands after an application, then inadvertently transfer the pesticide to their mouths while eating or smoking.

Following a pesticide application, wash hands before eating or smoking.

Toys and food left unprotected during a pesticide application can become avenues of oral exposure.

Keep babies, children, and pets away from treated areas following a pesticide application.



Before applying pesticides, you must anticipate any way people and animals might come into contact with them. Before an application, study the target and everything around it. If you need to treat a tree, look nearby for bird nests and hanging feeders, the dog's water dish, outdoor toys and play equipment, hammocks, patio furnishings — anything the pesticide might contact directly or drift onto. Ask your client how and when people use the targeted area. Is the neighbor's garden downwind? Ask yourself how residents of buildings or others who use the grounds may come into contact with the pesticides you apply. Use good judgment when making pesticide applications.

Liquid pesticides applied to large areas of the landscape could potentially drift from the treatment site onto people or objects they touch. The pesticides

The dog's water container, the kids' tire swing and their favorite climbing tree, that relaxing hammock, the bird house, the doves' nest: all things great and small must be considered before making a pesticide application.



All photos, fotolia.com

When preparing to make a pesticide application to turf, look around. What's on the patio? Are there toys on the lawn? Give your client specific instructions to remove articles that might become contaminated and to keep children and pets off the turf until it is completely dry and the time specified on the label has elapsed.



Acquaint yourself with your surroundings before applying pesticides. Are there bird feeders on the property? Wildlife? Children playing? Toys in the grass? An ornamental pond? Is there a garden close by? Observations such as these allow you to make pesticide applications that can reduce exposure and lower risk.



can remain on blades of grass for a long time, so professionals and customers need to keep people — especially children — and pets away until the spray is completely dry. Always note wind speed and direction, and time liquid pesticide applications to reduce potential drift — or substitute a granular formulation. Granules drop down into the turf, so skin contact is less likely, but there are other issues to consider: granules often are less effective than sprays and, in some cases, pose risks to birds and other wildlife that might eat them.

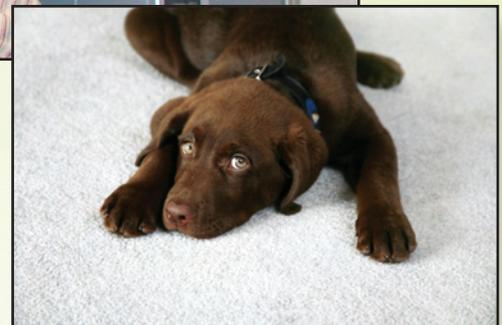
Strategic pesticide placement also can limit the potential for exposure. Consider cockroach control. If using a liquid insecticide, inject the material into cracks and crevices where roaches hide and breed, or place cockroach baits out of reach. Both methods are effective and minimize the potential for human and pet exposure when applied properly.

Dr. Al Fournier



fotolia.com

Placement of the product in an inaccessible location is the goal whenever a pesticide is used in IPM. Kids and pets are inquisitive, so guard their safety by placing pesticides out of sight and out of reach. No exposure, no risk!



Learn and Follow the Rules

Pesticide labels are state and federal legal documents worthy of your attention. Labels instruct users how to handle products safely and effectively. Pesticides are developed by manufacturers, registered by EPA, and sold to the public with the expectation (and legal requirement) that all label instructions will be followed.

Every pesticide label includes the statement, *It is a violation of federal law to use this product in a manner inconsistent with its labeling.* “Use” means more than just the pesticide application. State and federal regulations define pesticide use to include handling, mixing, loading, storing, transporting, and disposing. This all-encompassing definition covers every activity from purchase through application and disposal.

Courts and USDA regulators have recognized labels as binding contracts that require applicators to use the products exactly as directed. Therefore, any departure from label directions is an illegal use of the pesticide. Civil and criminal penalties including fines, revocation of certification, and prison sentences apply to cases of serious pesticide misuse. Furthermore, illegal pesticide use causes the public to lose confidence in the pest management industry, whether or not the misuse results in harm.

Besides the label, there are other legal considerations of pesticide use:

- State and local regulations governing pesticide applications
 - Notification requirements prior to applications
 - Posting signs on treated sites
 - Recordkeeping and documentation
 - Special rules for schools, childcare centers, and public buildings
- Guidelines issued by private or public institutions
 - Municipalities
 - Health care facilities
 - Educational institutions
 - Child care facilities
 - Trade associations



Watch for signs against spraying and align your applications accordingly. Golf course managers should post signs to advise the public whenever pesticides are being used on the course. Post signs following turf pesticide applications for both commercial and residential accounts.

The latter institutional guidelines often exceed those of state or federal governments, or those specified on labels; however, these guidelines must be strictly followed. Failure to do so may be considered a breach of contract.

Identify Customers' Needs

As we've already said, successful IPM programs require solid working relationships between professionals and customers. The first step in establishing such a relationship is asking your clients a few questions:

- Ask prospective clients what they expect from your service. Their answers will help determine whether to propose a conventional control plan or an IPM program.
- Ask new customers why they're switching pest management companies. Their answers may reveal what is important to them.
- Ask them what pest problems they have experienced; these problems may recur.
- Ask about any previous pesticide applications and document them in case you discover signs of previous misapplications.



Freedom Lawns



Gerry Wegner

Identify Potential Exposure Hazards and Concerns

You should always thoroughly understand your customers' pest problems. If pesticides will be used, minimize potential exposure by considering the following:

- When is public activity at its lowest? Consider timing applications to coincide with school breaks, holidays, non-business hours, or similar times.
- Are there any people or animals on the property that may pose special concerns regarding pesticide use?
 - Pregnant women
 - People with asthma or breathing disorders
 - People with chemical sensitivities
 - People or pets that are ill
 - Pets such as birds and fish that are especially sensitive to some pesticides
 - Individuals who simply do not like pesticides — depending on the nature of their opposition, you may need to reconsider your approach and adjust the timing of treatments.



Dr. Al Fournier

Consult with your commercial (far left) and residential (middle) clients to determine their needs and expectations before proposing a treatment plan. And be sure to ask if there have been previous pesticide applications at the site. Dead ants at a concession stand (immediate left) indicate that someone has taken action to solve a pest problem.

- How does the ventilation system move air into, within, and out of a building? Ask this question before making indoor applications or treating exteriors. If the ventilation system might pose a problem, schedule the treatment for a time when the system can be shut down and most occupants are gone.

Think of the potential for exposing the public by applying pesticides inside a mall. Always ask questions and inspect the property before making an application.



Dr. Al Fournier

- Are there any objects in the area? Before liquid pesticide applications, customers should remove objects such as toys and lawn furniture from the area to be treated.
- Are there wells, marshes, streams, ornamental ponds, or other surface waters nearby? Walk the property to identify these sites and avoid contamination.



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Remove toys, planters, decorative items, etc., before spraying. Permanent objects such as playground equipment should be carefully avoided. For instance, shield the swing set frame while spot spraying the weed shown above.



Ornamental ponds have become popular as landscape enhancements, but they must be protected from pesticide drift.

Bob Avenius

Establish Clear Lines of Authority and Communication

As the service provider you must establish with your customers clear, mutual understandings of goals and objectives. For the IPM process to succeed, you must communicate with your clients. Listen closely to what they say, and recognize how they communicate.

With some clients, you may have to overcome perceptions that pest management professionals are hired to “treat” the property. Stress to your clients that you are a professional IPM consultant and that your job is to solve pest problems, not merely to apply pesticides. Make clients aware that they are paying for your service, which is your professional expertise. As you communicate, steer their focus toward fewer pests and reduced risks, which might not include as many pesticide applications as before.

Stress to your customers the importance of their cooperation in the pest management programs you prescribe. Ask them to commit to making all pest management decisions jointly with you. Help them to understand why they should not apply pesticides, on their own, between your scheduled visits. Always assure them that you will provide additional service if necessary to maintain the agreed upon level of control, and follow through on those assurances.



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Spot spraying weeds along curb and taking a more intensive management approach to this area might significantly reduce the number of weeds.

Ask your customers to keep a log of pest activity on their property — aphids on the roses, flies in the kitchen, webworms on the west lawn, etc. — and give them a small notebook specifically for this purpose. Encourage them to have their family members participate, as well. Use the information they compile to identify problem areas, which may become the focus of your pest management plan.

Always inform customers of your ongoing pest management activities on their property, and ask them to take steps to eliminate the pests and prevent future infestations. Newsletters, fact sheets, sanitation reports, service tickets, and similar materials are good sources of information.

NEWSLETTER



Did you know it's been proven that beautifully grassed areas quickly affect people's moods?



Keep your eyes open for quickly developing patches of dead grass. They could be the first signs of an insect attack on your lawn.



For those of you planning to water your lawns during summer dryness, remember that it's best to water deeply and infrequently as opposed to lightly and often. Start with 1" to 2" per week.

Clip art, Jim Colias

Early spring, summer, fall, and winter are good times to send your newsletter. Offer suggestions for preparing and revitalizing your customers' property for the new season.

Point out things they can do, themselves, as well as services you provide. Stress the importance of their role in pest management. Address pest issues that are making local news. Advertise seasonal services and perhaps offer a price break for an annual contract. Feature a page for the kids to color — it will keep your name around the house longer. Never underestimate the value of keeping in touch!

Be prepared to solve annually recurring problems such as scab on apples, house flies in a kitchen, cluster flies in a home, black spot on roses, lady beetles in the house, or scales on euonymus. Suggest long-term methods to prevent or minimize recurring problems, and help customers understand the benefits of practices like removing problem plants instead of applying pesticides.



Dr. Janna Beckerman

Disease resistant cultivars such as "Knock-out," "William Baffin," and the Pavement series reduce or eliminate the need for fungicides to control black spot on roses.

When you do have to apply pesticides, clearly communicate that information to your customers. That includes telling them about re-entry periods, which are found on pesticide labels and in state or local regulations. Post signs on treated areas as required by the label or by state or local law. Voluntarily posting signs in treated areas shows respect for others who might use the property. Signs or flags should bear the name and phone number of the applicator's company, a time frame to stay off the turf, and other pertinent information. Remember to ask customers to remove the signs after the time interval mandated by policy or law for the specific site or location.



Notification is considered a cornerstone for many IPM practitioners.

Make Efficient and Effective Applications

Obviously, controlling pests and limiting human exposure to pesticides comprise the main focus of any application. The following application guidelines are ideal:

- Apply liquid pesticides and pesticide dusts when people and animals are not present. You may have to ask clients to vacate the premises temporarily and take their pets with them.
- Whenever possible, use spot treatments (e.g., for dandelion control) or crack and crevice treatments (e.g., baiting for ants and roaches) instead of broadcast applications.
- Apply pesticides at low pressure settings whenever possible, depending on the product and nozzles involved. High pressures disperse very fine particles that can drift for a long time and a long way, both indoors and out.
- Time pesticide treatments according to pest biology to achieve optimum control. In other words, make sure the chosen pesticide will be most active when the pests also are active.
- Advise customers to select outdoor lighting and landscape plants that do not attract pests.

- Encourage horticultural practices that can reduce the need for pesticides, such as fertilizing, mowing, thatching, pruning, and aerating.
- Advise clients about landscape techniques that make less inviting structures for pests. Such techniques include using crushed rock rather than mulch (photos below), keeping plants from contacting or hanging over the structure, and removing decaying organic material around the structure's foundation.



Pay Attention to Your Surroundings

Do the following when preparing to apply pesticides:

- Get your clients' permission before applying pesticides in or around occupied buildings.
- Assign a technician to each account; send the same person each time helps in achieving an understanding of the client and the property. Investigate your surroundings. Every lawn, athletic field, and public area is different. Make every effort to prevent pesticides from drifting onto swings, toys, pets, and other objects your client — or anyone — will use. If you inadvertently spray an object, wash it with soap and water before leaving the premises.

Jim Colias



Fred Whitford

Freedom Lawns



Freedom Lawns



Freedom Lawns

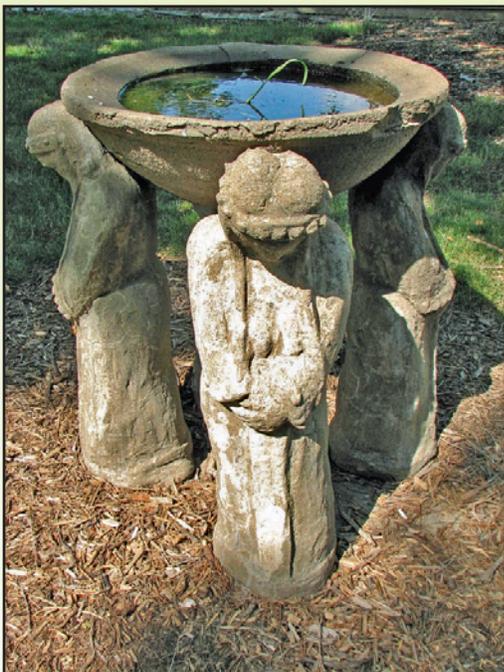
Top right: Wash any items that were sprayed with a pesticide.

Middle right: Try to keep granules from landing on hard surfaces.

Top left, bottom right: Blow or sweep back onto the turf any granules that land off-site.

Bottom left: Extra care should be taken when making an application around a drain.

- Avoid spreading granules over hard surfaces. If granules inadvertently land on hard surfaces, blow or sweep them onto the application site so they cannot wash into the street where they might reach storm drains and contaminate surface waters.
- Avoid aerosol applications, but use them wisely when they are necessary. Be aware of their potential to drift via air ducts, pipe chases, and air currents.
- Be aware of nearby vegetation such as shrubs, flowers, and vegetable gardens. Pesticide drift from treated areas may damage plants or contaminate food.
- Consider weather conditions when preparing for outdoor treatments. Wind can cause pesticides to drift off site — this can be a label violation — and rain can wash pesticides off their targets before they have a chance to do their job.
- Turn over or remove all water dishes, birdbaths, and bird feeders to prevent exposing pets and wildlife to pesticides.



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Large bird baths should be covered with plastic before spraying pesticides in the area. And if you encounter stagnant water as in the birdbath shown on the left, explain to your client the importance of keeping the water fresh to prevent mosquitoes from using it as a breeding site.



Freedom Lawns

- Use snap traps with caution. Although they may be the preferred method for rodent control, be sure to place them away from children, pets, and wildlife. Bait choice also is essential. Some baits, like peanut butter, are frequently used but can cause severe allergic reactions. It is a good idea to get signed authorization from the customer before using such products.
- As with all pesticides, use rodenticides with extreme caution in areas frequented by children or pets. The most advisable practice is to place block type anticoagulants in anchored, out-of-sight, tamper-resistant bait stations. Place the stations when children and pets are not present to avoid arousing their curiosity. Number each bait station and record its location on a map or descriptive list, and remove the stations as soon as the rodents have been eliminated. Install and maintain traps (or a limited number of bait stations, if absolutely necessary) near entry points and areas most likely to be reinfested.

Angela Storey



Making sure that baits are properly secured and inaccessible to children and pets is an important step in the management of rats and mice.

Dr. Al Fournier

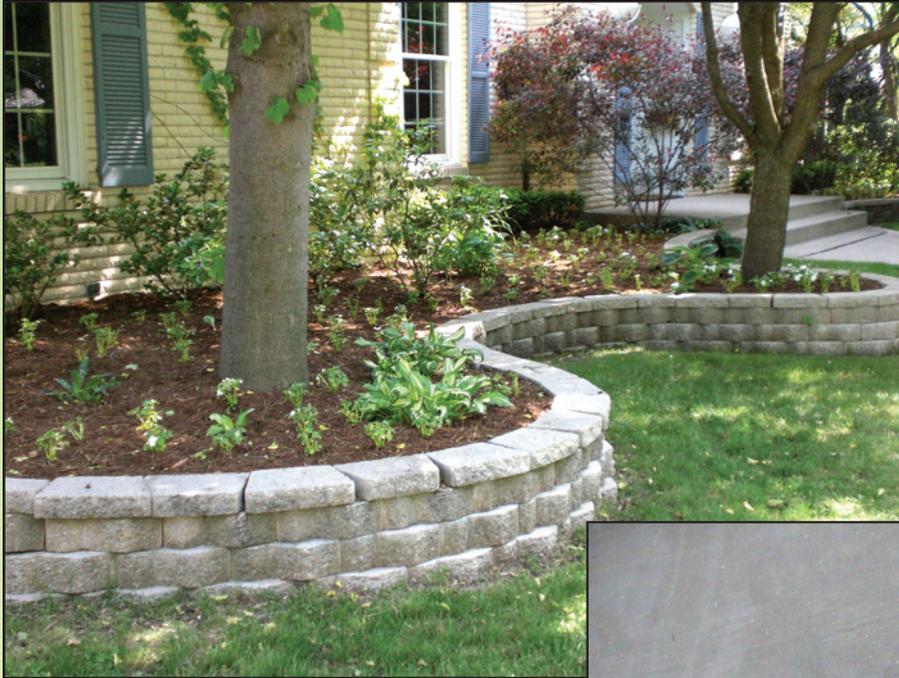


- Control Norway rat infestations by inserting loose pellets directly into their burrows. This is the best procedure and should be repeated at least weekly until all signs of rat activity cease. Do not substitute bait packs or bait blocks because rats tend to kick them out of the burrows; this not only allows the rats to survive, it also presents an exposure hazard to children and pets.
- Never control mice with pellets because mice are notorious hoarders and will move the pellets to a new location, which may present the possibility that children or pets could access them. In certain commercial accounts, pellets can contaminate food products.
- Never use rodenticide contact dust (also called tracking powder).

Leave a Paper Trail

Good recordkeeping is an important aspect of IPM. These details help your client address pest-conducive conditions and help make your case for customer involvement if the client becomes dissatisfied:

- Keep good records that detail when and where specific pests occur. Over time, this will help you anticipate and scout for pests before they reach damaging populations.
- Document the need for pesticides. In most situations, do not apply pesticides unless pests are known to be present. Make preventive treatments only to meet government health codes, when acceptable pest control cannot be achieved another way, or when the client mandates a zero pest threshold.
- Keep clear, accurate, detailed records of all pesticide applications. State and federal regulations specify the minimum information applicators must keep, but you may want to keep more than required. As a minimum, the following information should be included in the service report:
 - Pests known to be present
 - Pesticide(s) used (if any) and how much, when, where, and why
 - Conditions that contributed to the pest problem
 - Recommendations for correcting conditions conducive to pests
 - Label-mandated precautions such as re-entry intervals
 - Name(s) of those who made the application and completed the documentation



Jim Colias

The landscaping above is beautiful, but placing soil against the foundation serves as an open invitation to termites. The damaged door brush shown on the right allows insects and mice into the building.



Evaluating Your IPM Program: An Ongoing Effort

Part of the IPM process is to evaluate the effectiveness of the pest management tactics you have in place. Direct communication with your customers is the best way to make these evaluations. If pests are still present, it is important to determine how they are escaping your program; and you must decide whether additional pesticides or alternate approaches are necessary. It might be that cardboard boxes were never removed from a storeroom, that hard-to-reach areas were not cleaned, that plants were poorly maintained, or that

Dr. Al Fournier



If pests are persistent, perhaps the customer has not removed attractants such as a soiled mop (left). Prevalent weeds in turf (below) might indicate that the lawn has not been properly fertilized to bolster healthy growth, which helps crowd out weeds.

Freedom Lawns ▶



Dr. Al Fournier



Sticky traps (left) are used to determine the extent of insect activity before considering the use of an insecticide to solve the problem.

fertilizers were not applied. Detailed records will aid your understanding of why pest problems persist. In some cases — usually when clients are unable or unwilling to change behaviors or alter problematic conditions — pests will remain no matter what plan you put into place.

In other cases, pests may attack certain plants that are not well adapted to the area where they are planted. You might suggest replacing susceptible plants with resistant varieties known to thrive locally. This alone might forego the need for a pesticide solution to the problem.

Conclusion

Whether it's the parents of school children, the grounds manager at an apartment complex, or the sanitation manager at a food plant, your client expects two things from you: maximum pest control and minimal pesticide exposure.



Fred Whitford

Dr. Janna Beckerman



Managing the pests and respecting the client and her property are basic tenets of an IPM program.

IPM represents a major step forward for licensed pesticide applicators and their firms. It is a natural progression for companies focused on risk management. As your customers and government agencies struggle for a balance between the benefits and risks of pesticides in everyday life, sound IPM principles enable you to control pests and keep pesticide use to a minimum.

Clients appreciate and often are willing to pay a premium for programs managed by trained and skilled IPM professionals. Pest managers are beginning to endorse IPM programs that use pesticides only when absolutely necessary. Pest managers recognize that better trained, more observant, highly skilled technicians are their key to providing top quality, successful IPM services.

Dr. Al Fournier



Inspection is the core of every IPM program.

Education has become a high priority for practitioners who must inspect a property, diagnose problems, and offer customers a plan including short- and long-term solutions that may or may not include pesticides. Successful IPM programs require ongoing customer communication and education. Most nonchemical tactics are successful only with the client's cooperation and assistance. Without your customers as *partners* in pest management, your IPM programs will fail, at which point pesticides may be the only alternative. The practitioner/client *partnership* affords you the opportunity to build a stronger, more loyal relationship with your customer.

Loyal customers are more likely to bring any dissatisfaction to your attention and give you the opportunity to make it right, instead of remaining silent and hiring a new pest management service. This presents yet another educational opportunity. And loyal, satisfied customers are the best advertisements you can have.

IPM Concepts

- Some people want “no pests” but also want to limit or eliminate pesticide use.
- IPM is “in” and routine pesticide applications are “out.”
- Pesticides provide benefits but carry some risks.
- Risk is determined by the toxicity of the product and the amount or extent of exposure.
- Select the least hazardous product from those available.
- Minimize exposure by managing how, where, and when a pesticide is applied.
- IPM professionals are knowledgeable on pests and pesticides as well as nontoxic control methods.
- Communicating with clients is critical to the success of IPM programs.
- IPM brings professionalism to the industry and revenue to the companies that market it.

Testimonial

Prior to opening a branch in Indianapolis, we interviewed several of the clients that were requesting our services and asked them what it was that they were not satisfied with, given their present options. One of our first Indianapolis clients put it best when he said, "Your organization has reinvented service. Your effort to give feedback and availability to follow-up and review are second to none." Throughout your publication much emphasis is put on the customer/service provider relationship, especially where it applies to communication. The IPM program offers an excellent platform for not only "doing the right thing" but also elevating the communication/feedback opportunities. Many companies look at this time as too much "non-billable" time, when in reality it is simply time that the client knows is available if needed and not necessarily an agonizing regular occurrence. This level of service and availability undoubtedly is worth more!

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I'm
helpin' my dad
help the Bug Man!

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