COPING WITH ISSUES '94 COVERSTORY

Pesticide containment and storage

The government is issuing stricter and stricter guidelines for pesticide handling and storage. Here are steps LCOs can take to assure compliance.

by Kirk A. Hurto, Ph.D.
TruGreen/ChemLawn

■ When designing pesticide storage and mixing/loading areas, special consideration must be given to site development and local and state building codes. Although facility designs used in agriculture will work, professional lawn care operators need to consider modification and additional design factors.

Design considerations—Your turfgrass facility should have separate storage areas for pesticides, fertilizers and seed. Pesticides for ornamentals or total vegetation management should also be stored away from other fertilizers and chemicals.

For golf courses, consider this model built by Rick Tegtmeier (see sidebar).

Service trucks and other spray equipment should be filled in a warehouse with sealed floors that are diked and sloped toward a recycle sump located in the mixing/loading area.

Fertilizer storage requirements for a lawn care operator will vary with the size of the operation and its proximity to suppliers.

Typically, larger lawn care operations need 2500- to 10,000-gallon fertilizer storage tanks. Smaller lawn care operations may store dry fertilizers in separate unheated, storage buildings and transport product as needed to the mixing/loading area.

Many states require secondary containment around bulk fertilizer storage tanks. This is usually achieved with "elephant rings," diking or curbing to separate fertilizer storage areas from pesticide storage areas.

Granular fertilizer should be stored on pallets, on pallet racks where space is limited. Pesticides should be stored in secure areas in the warehouse.

Fill staging area—The fill staging area should be located over a sloped, concrete floor that drains into a recycle system sump.

The fill area for larger operations must have high capacity, metered water-pumping capability. Water supply lines must be separated from fill lines to avoid contamination. A fixed air gap or appropriate backflow prevention device is usually required by local and/or state codes.

Pesticides are loaded in several ways, depending on the size of the operation, product formulation and handling traits, and/or handling requirements specified on the product's label.

Recent changes to pesticide label requirements will accelerate the conversion to closed delivery systems or promote products packaged in container-less water-soluble packets.

The fill staging area must have good illumination and non-porous mixing tables. Using chemical eductor systems and container rinsing devices can reduce pesticide residue in the fill area and employee exposure to materials. The area should also have a designated space for maintaining pesticide use log sheets and storing safety equipment, pesticide labels and MSD sheets.

Mixing and loading—Procedures used to fill lawn service vehicles may differ because of the volume of product used and the number of vehicles involved.

Most lawn care operations are designed as a drive-through with either overhead fill booms to add water and fertilizer solutions to the spray tank, or a series of cam-lock hose fittings to transfer product mixtures directly into the spray tank under pressure.

Many operations use a chemical eductor system to reduce applicator exposure to concentrates and to allow products to be dispensed at waist height.

Fewer injuries occur where chemical eductors are installed. Chemical eductor systems require a venturi pump, properly sized for the water flow rates and water volume required. Eductor systems mix products better, which reduces incompati-

bility between pesticides or pesticides and fertilizer solutions.

Smaller lawn care operations may not require as much automation, but the fill area design still must reduce worker exposure while mixing and loading pesticides.

Recycling systems—Recycling systems allow products to be contained and reused if inadvertently released while filling vehicles. They can also collect rinsates from washing operations.

Traditionally, recycled water is used as a substitute for 10-20% of the fresh water needed for loading operations.

Recycled water generated from mixing/loading pads should not be used in filling pesticides used on trees and shrubs. This will reduce risk of ornamental plant damage. Where applicators are involved in industrial weed control, fill staging areas should be separated from both lawn and tree/shrub fill areas.

It is recommended to wash service vehicles over the recycle pad using high-pressure low-volume power washers and low foaming truck soaps. Also, where possible, washing vehicles where pesticide residues are not a factor should be separate, to reduce pesticide rinsate water requiring disposal.

Washing operations to remove road film should be distinguished from operations to remove spray residues from the same vehicle if they are not performed over the containment pad. Besides reducing rinsate water disposal problems, there is less accumulation of sludge in the recycle sump.

You should routinely clean sludge from the sump. If it has an agitation system to resuspend colloidal matter, residue accumulation is manageable. In some states, the sludge—if properly dried—is considered non-hazardous solid waste. However, in other states, it is assumed to be a hazardous solid waste (under RCRA's TC Rule) until tested.

EPA guidelines recommend disposing of solid waste from recycle system sumps on sites where the pesticides contained in the residue are approved for use. These are reasonable for agricultural purposes, and many golf course operators but is more difficult for lawn care operators to follow in urban areas.

—Re-written from proceedings of the Pesticide and Fertilizer Containment Symposium in St. Louis, February, 1994. Used with permission of Dr. Hurto and MidWest Plan Service. For a copy of "Designing Facilities for Pesticide and Fertilizer Containment," phone (800) 562-3618. Request publication MWPS-37.

Shelved control products are safe, secure and easy to inventory.

BUY OR BUILD: question of time vs. money

■ Different superintendents, blessed with different budgets, invariably pick different ways to meet pesticide storage requirements.

Rick Tegtmeier, superintendent at Elmcrest Country Club, Cedar Rapids, Iowa, built his pesticide storage building a few years ago. He had his reasons, as he explained to the club's greens committee:

1) Employee safety. "The area where we had stored products had shelves adjacent to the mowers. People passed them every day, and chemicals were being knocked off shelves. It was unsafe."

2) To reduce environmental exposure. "Whenever we had a spill, there was no way to contain it. It always seemed like you could smell chemicals (in other places)."

3) "Fire department officials warned us they would not be able to enter the old building with chemicals inside."

4) Better inventory control.

Tegtmeier and his crew built a 10-by-6-by-9-foot building at a cost of $11,500.

The building has vinyl siding, six inches of insulation and a steel door. Footings are 48 inches deep.

The floor is six inches thick, and the inside dike is one foot wide by 10 inches deep; 30 percent of the room's liquid content would be contained in a worst-case spill.

A concrete ramp allows for easier loading and unloading.

Ventilators run across the top, and it has a gabled, asphalt shingle roof. Tegtmeier says good flow-through ventilation is the most important feature. Vents were placed near ceiling height for best hot air flow, and so that fresh air is unobstructed by containers or pallets. An electric vent switch is turned on before anyone enters the building.

Tegtmeier says he would do some things differently if he could. He'd make the building larger—10-by-20 feet—with two doors, and a ramp on the inside as well.

Steve Cook of Wakonda Club in Des Moines, Iowa, took over a few months after the club had bought a pre-fabricated building. He sees these advantages to buying a ready-made storage facility:

1) Time savings. Installation took only two hours.

2) Already approved to meet all building codes.

3) Can place anywhere there is a flat surface, even on gravel.

4) One-year warranty.

5) Easy to modify, add-on.

Cook says the 16-by-10-foot building at Wakonda cost $14,500 three years ago. Total cost, with labor, concrete pad and transportation, was $17,000. He says $20,000 is a realistic figure for anyone looking for a similar building today.

The versatility feature may come in handy soon. Cook says storage needs have already outgrown the building.

—Terry McIver

COPING WITH ISSUES '94

What you should know about hazardous waste

■ If your company routinely uses pesticides, you should be familiar with the amendments to the Resource Conservation and Recovery Act (RCRA) that govern the handling, transportation and disposal of hazardous waste generated by Small Quantity Generators (SQGs).

Disobeying RCRA can result in penalties up to $25,000 *per day* per violation.

Defining it—A waste is considered hazardous if it has one of the following characteristics: ignitability, corrosivity, reactivity or toxicity, or if it is listed in the Code of Federal Regulations.

The EPA says that pesticides include such specific wastes as:

- unusable or unidentifiable materials;
- rinse water used to clean pesticide application equipment;
- containers that hold (or held) pesticides, unless such vessels have been cleaned in accordance with regulations or label instructions; and/or
- soil or other material contaminated from pesticide spills.

Equipment which is being repaired or refurbished can also generate hazardous wastes, such as cleaning solvents, engine degreasers, carburetor cleaners, rust removers, used lead acid batteries, and paint thinners.

The EPA also says that the dilutents used with pesticides give them hazardous waste characteristics.

You are one—You are a SQG, according to RCRA, if you generate between 220 and 2,200 lbs. of hazardous waste per month. Included are rinsate water, the weights of containers, and all solvents. Not included are empty containers, wastewater that has been legally discharged into a publicly-owned treatment facility, and lead acid batteries that are being recycled or reclaimed.

Those who generate *less* than 220 lbs. of hazardous waste a month must follow other provisions of RCRA:

- they must know exactly which of their wastes are hazardous;
- they must never accumulate more than 2,200 lbs. of such wastes on any one site at any one time; and
- they must dispose of all such waste in a manner which is approved by the state. (Check this carefully, because different states have enacted different rules.)

More yet—Other terms of the act specifically state that a hazardous waste generating company must:

- obtain an EPA Identification Number;
- identify which hazardous waste it generates; and
- never accumulate such waste on its site for more than 180 days (or 270 days if it must be transported more than 200 miles).

Wastes must be transported only by firms which have EPA Identification Numbers, comply with U.S. Department of Transportation rules for shipping hazardous wastes and all rules relating to hazardous waste containers, labeling and safety.

Copies of all records must be retained for a minimum of three years.

The EPA also has the power—granted it through the Superfund law—to make waste generators pay part of the clean-up for environmental problems at hazardous waste disposal sites.

What to do—You can reduce risks and liabilities which can be incurred under RCRA and the Superfund law in five simple ways:

1) Estimate all job needs accurately so that you will not have chemical products left over after completing a specific assignment.

2) Never mix hazardous wastes, which can increase the total amount and make recycling difficult or impossible.

3) Recycle hazardous wastes whenever possible.

4) Document everything, and keep the records.

5) Watch that your disposal facility(ies) personnel follow all regulations.

—The author of this article, Bess Ritter May, is a freelance writer based in Philadelphia. She is a frequent contributor to LM.

More information

■ Want more information concerning hazardous waste laws in the green industry?

Call the EPA for these free booklets: "Does Your Business Produce Hazardous Wastes?" and "Understanding the Small Quantity Generator Hazardous Waste Rules." You can also obtain a list of hazardous wastes through the EPA.

The EPA's phone number: **(800) 424-9346.**

—B.R.M.

COPING WITH ISSUES '94

Community relations rescue sinking maintenance budgets

Your publicly-funded landscape management budget can be spared the wrath of state and city number-crunchers.

by Bob Milano
University of California, Davis

■ Many public sector services throughout this country have felt the impact of a wild and unpredictable budget axe swinging in all directions.

In response, we've had to focus on strategies to deal with the damage. But have we focused on the correct strategies and made the right choices?

We've adapted quickly to the budget reductions by decreasing service levels, cutting capital programs, deferring hiring, scaling back equipment replacement and eliminating administrative overhead. In our haste to meet the pressing, operational demands to care for the landscape, did we many times fail to consider our responsibilities to our customer, the community?

Now is the most important time to keep in touch with customers. We have a responsibility

- to increase awareness about the importance of the resources we manage;
- to expand our efforts to educate, inform and reach out to our communities; and
- to provide accurate information about the service we provide and the resources we manage.

If we do our job well, I believe our budget levels can be maintained—even expanded—through vocal public support and recognition for our programs.

The big picture—As we all evaluate our priorities for the demands of each day, we should strive to remain aware of the critical, yet rarely pressing, requirements of good community relations.

In most public sector facilities, budgeting is determined by an elected board or appointed committee that is held accountable by the community at large. With this in mind, you easily can see why community relations are an important and critical element of any public sector landscape program.

In most instances, I would suggest that those of us managing public facilities have three broad areas of responsibility:

- maintenance;
- capital improvements; and
- community relations.

All three are extremely important. But are enough resources being allocated toward the community relations component in your program?

Community relations include all of the daily interactions between maintenance workers and facility users as well as more formal events such as new park dedications with the city council.

The performance of your organization can be relayed effectively to your governing body through staff reports and briefings. But input from your customers and the community in general, good or bad, is frequently regarded most highly by the decision makers.

Before venturing out with any new public relations programs, you should clearly explain to your staff why community relations are important and why it is necessary to allocate resources toward the effort. Encourage everyone to interact with the community and answer questions about the work they are doing or projects under way.

Personnel must understand that they are a vital part of the community relations program, and that the type of one-to-one grassroots public relations they can provide can be the most effective and long lasting.

Reaching out—The next step includes reaching out to the community that you serve. You might break your customers into three groups and target specific outreach and education efforts toward each.

1) Direct facility users such as organized soccer, baseball and softball leagues, swim teams and garden clubs have a high stake in your operation and should be targeted first. You might meet with the leaders of these groups on a regular basis to discuss service needs and educate them about various issues.

Let them know that you care about their needs and are willing to work with them to accomplish their goals. Solicit their support. Welcome their volunteer efforts and contributions and their willingness to marshall support for the facilities.

2) Affiliated parties, such as those that may live next to a busy park, or parents whose children go to school at your facility, could be targeted. Outreach and education about your services and programs could be included as part of larger newsletters or articles in the local newspaper, for example.

Get involved. Here, a representative from UC Davis and nearby communities plant trees in a cooperative effort.

3) The general community should be targeted with well publicized programs, events and accomplishments. Local papers, posters in visible locations and mailers could be used to distribute educational and outreach information. Not only will these efforts reach the entire community, but they will lend recognition and credibility to your program in the eyes of the budgetary decision makers.

An effective, broad-range outreach program also will validate the importance of your services and increase the enthusiasm of both the staff involved in the programs and of your key supporters.

Act now!—Start today with a new attitude and commitment toward community relations. Encourage interaction with the public. Promote volunteerism and help coordinate volunteer activities to accomplish clearly-defined goals. Involve facility users in decisions.

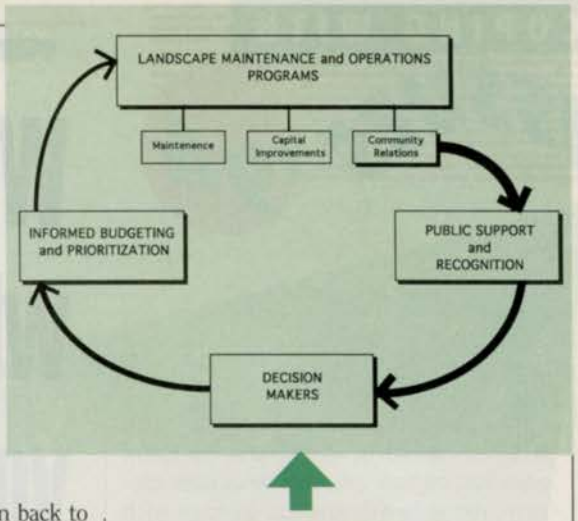
Be visible, with speeches at local schools and community service clubs, or sponsor tree plantings.

Keep news of your company out there, with a calendar of events and progress reports on special projects. Publicize your successes through local newspapers, radio and TV stations.

If we believe in the work we do, we need to come out of the woods and into the clearing to educate and inform our clients so they can then make informed decisions.

If we are successful, we can turn back to the community and ask for their assistance by putting down the budget axe.

—The author is grounds operations manager for the University of California, Davis, physical plant, and a past board member of the National Sports Turf Managers Association.



When community relations works, you get support from the public decision makers. Explain the need for continued landscape management programs.

COPING WITH ISSUES '94

Beware public perceptions

by James E. Guyette

■ How pesticide applications are perceived by the public is an issue that should be be addressed daily, says Dr. Bill Pound, turfgrass research associate at Ohio State University.

Fears can be abated and clients better served by taking more care in avoiding high drift situations, Pound says.

"As we get into lower-volume applications, drift becomes more of a concern," reports Pound, who conducted a seminar sponsored by the Associated Green Industries of Northeastern Ohio.

When smaller chemical tanks are carried onto properties, there's a tendency to increase the sprayer pressure to compensate, notes Pound. This sends out smaller droplets that are oh-so-eager to blow into unwanted areas. A 2 gal./1000 sq.ft. mixing ratio that includes larger droplet sizes will help reduce the risks.

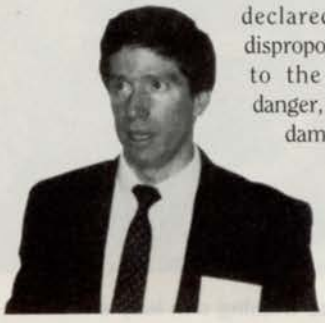
In addition to needlessly alarming and offending your customers' neighbors in a rift over drift, haphazard spray patterns will invite horticultural problems down the road that may remain hard to detect.

"Drift injury is not always described as death to the plants," Pound explains. A once-viable shrub or flower that presents puzzling aspects of illness can in reality be a victim of a previous encounter with just a slight amount of drift.

"This is injury without actually hitting the plants," says Pound. The problem is aggravated when turf managers treat during hot weather or high winds. Always check droplet size. If a drift dilemma develops, stop treatment that day.

"If we get into any media hype for 1994, it will be related to exposure," he says. A prime target could be phenoxies, especially 2,4-D. "Phenoxies are phenoxies to people who don't know better. The president will come after something to appease the environmentalists—and everyone's heard of 2,4-D."

Pound remembers the Alar alarm. "They were tough on apples, and they can be tough on us," Pound warns. The core of the concerns was later declared to be disproportionate to the actual danger, but the damage was done.



Pound: 2,4-D a potential community relations problem.

"It's a sitting duck," Pound says of 2,4-D. "At this point the research is inconclusive and the homeowner doesn't know what to think," he notes.

While research points out that 2,4-D is not an especially persistent material in turf, the issue of long-term exposure lingers. "That's what they're trying to decipher right now," Pound reports.

Another potential perception problem can be brought about by the use of glyphosate when spot treating for weeds. Television commercials have been targeted at homeowners, and they are encouraged to get out on the lawn and start squirting away.

"It will control that broadleaf weed, but you will have a brown spot," he cautions. "We don't need Roundup to spot treat for broadleaf weeds—we have the phenoxies for that," Pound points out.

And for all the public concerns over pesticides, Pound ponders, there's still an ongoing consumer reluctance to opt exclusively for organics. "Usually they're priced a lot more expensively," he observes. "The organic fertilizers are still on peoples' minds," he notes, but "they try the organic program and they get broadleaf weeds."

—James E. Guyette was managing editor of Lawn Care Industry *magazine. He is now a freelance writer based in South Euclid, Ohio.*

COPING WITH ISSUES '94

What to tell customers when they ask, 'Are your pesticides safe?'

■ When customers, who observe our use of pesticides on their property, voice their concern about environmental damage with questions like these, be prepared with reassuring answers:

Customer: Are your pesticides safe? Have they been tested against hazards to humans?

You: Yes and yes. All pesticides used in and around the home must comply with the testing requirements of the U.S. Environmental Protection Agency, and the EPA constantly checks new products. You should also know that most lawn care pesticides are used extensively on food crops.

Customer: Do the pesticides you use contain cancer-causing chemicals?

You: The EPA has no data proving that any currently-used lawn care pesticide is a human carcinogen. All such chemicals are evaluated in life-time feeding studies of rats and mice. They are fed the maximum tolerated dose which often equates to millions of times greater exposure than any human would experience in a lifetime.

Customer: My children and pets play on the lawn you are treating. Is this safe?

You: Absolutely, because

1) There is no scientific evidence that adverse effects occur with occasional exposure to residues of dilute applications of any pesticide I use. This is less than one percent.

2) Most lawns require only three applications of pesticides yearly, at the very maximum.

3) But to be absolutely safe, be sure that all treated areas are dry before you allow children, or anyone else, to use them.

Customer: In addition to controlling insects, are there any advantages to using pesticides on my lawn?

You: Definitely. Turf care chemicals improve the beauty of the landscape, control soil erosion, keep mud and dirt out of buildings, absorb noise and air pollutants, and cool the neighborhood. They also provide a safer playing surface for children.

Customer: Do you rely solely on chemicals to protect lawns?

You: No. The primary component of lawn care is proper fertilization. This helps the turf resist weeds, insects and diseases. Any chemicals I use are selected for special problems, and I usually prefer spot treatments.

Training pesticide workers

A quality pesticide safety program will probably represent a significant expense for your company.

COPING WITH ISSUES '94

■ A veritable plethora of laws and regulations control the purchase, transportation, storage, application and disposal of pesticides.

Sometimes it seems as though new requirements are imposed almost daily. In addition, sweeping changes in EPA worker safety standards and in applicator certification laws are on the horizon.

As an employer, you have several good reasons to teach your employees how to handle pesticides properly:

1) It helps develop work habits that will result in a safer work environment. Reducing work-related illness, injuries and accidents will probably increase productivity and possibly lower insurance rates.

In-house training can help ensure compliance with legal mandates and company policy.

2) It helps prevent the waste of costly pesticides and can even reduce the amount of time required to apply them. Properly applied pesticides are less apt to cause unwanted damage. Correct rates and application techniques also improve pesticide effectiveness.

3) It helps avoid pesticide injury and damage lawsuits resulting from accidents, misapplications or carelessness—lawsuits that often result in huge monetary settlements.

4) It helps protect the environment. When pesticides drift off target or are acci-

continued on page 18

TRAINING *from page 16*

dentally spilled or intentionally dumped, serious damage—such as groundwater contamination—can occur.

5) It puts you in compliance with government regulations. The EPA, for instance, requires commercial users of restricted-use pesticides to be certified applicators or to work under the supervision of a certified applicator.

Recent worker right-to-know laws mandate that all employers inform their workers about potential health hazards and how to avoid exposure to hazardous substances—including pesticides—in the workplace.

The scope of training—Most people require training before safely handling pesticides. The applicator must understand:

- how to operate application equipment,
- how to properly mix the chemicals and dispose of the excess,
- how to apply the chemicals,
- how to avoid hazards, and
- how to respond to accidents.

Two types of training are available: in-house training and outside training, which can include continuing education provided by professional organizations and cooperative extension services.

In-house training is conducted by you or someone in your company. The objective is to ensure compliance with legal mandates or with company policy.

Employees who apply, or supervise the application of, restricted-use pesticides probably passed their state certification examinations by participating in *outside training* sessions or through self-study programs.

Your state cooperative extension service may produce some training aids. University libraries, state and federal regulatory agencies, pesticide manufacturers, trade organizations and worker's compensation insurance companies are other sources for current pesticide safety information. In most cases, you will need to adapt this information to fit your specific situation.

A quality pesticide safety training program will probably represent a significant expense for your company.

You must compensate the instructor, and you must release your employees from the regular duties but still pay them for the time spent in training. You must allow certified applicators to attend off-site continuing education courses, with pay, to retain their certification. And, unfortunately, there is little chance that your company will be able to totally recover these costs through lower insurance premiums or increased productivity.

However, adequately trained employees may be able to eliminate or significantly reduce injuries, damage and liability by preventing accidents or by responding appropriately when an accident occurs. Therefore, training provides a form of insurance against injury, damage or liability.

Key tips—Your program's success depends on a variety of factors.

- The instructor must be comfortable with the subject and must enthusiastically convey the importance of the information to your employees. The teaching staff will need adequate resources to develop and present an effective training program.
- Training will be easier if you divide the subject matter into small segments that can be covered in a short period. Thirty minutes is reasonable.
- Hold the training session where there will be no interruptions or distractions. You must convey to your employees that pesticide safety training is important.
- Whenever possible, use hands-on training. Allow your employees to see, hear and touch.

For example, hand an employee a pesticide container and ask him to point out the signal word or other significant label information. Ask employees to put on protective clothing to demonstrate their use. Let them practice cleaning up a simulated pesticide spill.

- Employees will learn more and enjoy the training if they interact with the instructor and with each other. Encourage them to ask questions, provide information or discuss reasons for doing something a certain way.
- Prepare an agenda and stick to it. Keep the discussion on track within the scope of the immediate session. If other points come up, schedule time during another session to discuss them.
- Add variety to your training sessions. Sometimes a video (see last month's issue), followed by a discussion, provides a lot of useful information or serves as an overview. (Don't substitute videos for other types of training.)
- Hold some sessions in actual work areas near the pesticide application equipment. Conduct the class in the pesticide storage area when teaching how to store pesticides or how to clean up a spill. When discussing pesticide application, take employees outside among the plants and let them see how pressure changes affect coverage, drift and spray patterns. Use plain or colored water during your demonstrations, but make sure employees using the equipment are wearing the appropriate protective clothing.

—This material is excerpted from an article that appeared in the December, 1991 issue of the Georgia Green Industry Association's newsletter.

LANGUAGE BARRIERS

■ One of the greatest barriers to a successful and effective pesticide safety training program is coping with employees who do not understand. This problem can stem from varying educational levels, language barriers, poor reading abilities or differing attention spans.

Language is the predominant factor. Some workers are not fluent enough in English to understand verbal instructions or written materials. Conversely, the instructor may not be fluent enough in the employees' native language to effectively discuss pesticide safety.

You may have to be innovative to ensure that your employees understand the material being taught. Non-written methods and materials, such as simple drawings or cartoons depicting people performing tasks correctly or incorrectly, may be very useful. You can show these drawings to open up a discussion about what is happening and what the outcome would be.

For example, you could use a drawing to teach employees not to put pesticides into food containers. Ask them to describe what the person in the drawing is doing and why he would be doing this. Then ask them to list the possible dangers of this practice and why it should be avoided.

Such a discussion could reveal why people become injured or poisoned by pesticides, what types of symptoms to look for, what kinds of first aid treatments to use and how to avoid pesticide exposure.