

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.

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■ 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 turf-grass 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.

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-



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

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 sepa-

rate, 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



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

many golf course operators but is more difficult for lawn care operators to follow in urban areas.

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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*