

Returnable, Refillable Herbicide Containers Increase Applicator Safety And Productivity

When it comes time for roadside herbicide applications, there isn't much that Darrell Bower doesn't like about refillable and returnable containers to store and transport the chemicals.

Bower, transportation roadside development manager for the Salem District of the Virginia Department of Transportation (VDOT), recently completed a two-year pilot program evaluating returnable/refillable herbicide containers. "I can't say enough about the program because it increases applicator productivity, cuts inventory costs and eliminates container disposal costs; but, most importantly, it creates a safer work environment for my men," says Bower. "All of these benefits are extremely important to our operations."



Bower has 30 years of experience in vegetation control. He supervises an annual budget of \$1.5 million for seeding, brush control and tree trimming for an area covering 12 counties, 1,500 miles of secondary roads and 900 miles of primary roads.

Since implementing the program, which uses Vanquish® postemergence herbicide from Sandoz Agro, Inc., Bower estimates that he has seen applicator productivity increase an average of 1½ hours each day. "When you figure that a man can cover an acre during that time, that's an additional 20 acres a month, per man," adds Bower.

Even though the returnable container program has helped Bower cut

operating costs by 30 percent, safety, and not costs, were the overriding factor in implementing the program.

"This is a closed-loop system, which means that my applicators never come in direct contact with the herbicides," said Bower.

The Returnable Container Concept

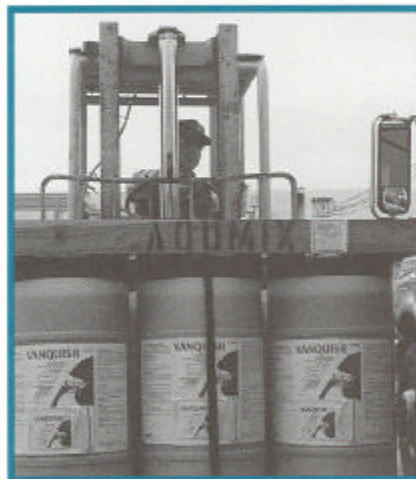
Dave Schoonover, president, Aquimix®, Inc., located in Cloverdale, Virginia, says, "The container management concept was developed in response to the growing needs of the non-crop industry to reduce or eliminate landfill container disposal. The system that we developed is similar to what the beverage industry implemented 30 years ago with returnable/refillable bottles."

Thirty years ago, the beverage industry established regional bottling facilities to manage the distribution of various products. "We are using the same successful approach to the non-crop pesticide industry," adds Schoonover.

Advantages of the system are closed system transfers, on-time inventory and eliminating triple rinsing. Aquimix receives chemicals from the manufacturer in bulk, and packages the chemicals in a drum designed specifically for this purpose. The drum is an Aqupac 15®. The packaged material is distributed through companies such as CWC Chemical and Timberland Enterprises.

The cycle starts at Aquimix where the company packages herbicides to meet customer requirements. The entire process takes place in the company's 12,000-square foot facility.

"It's a complete fluid handling/management system because it also allows users to track herbicide use from cradle to grave," adds Schoonover.



Schoonover had special containers designed to replace the industry-standard short and wide containers with tall, slender ones to simplify shipping and handling. "The containers were designed so that you don't have to bend over to pick them up, which reduces problems associated with handling most containers," says Schoonover.

Each container is stamped with a bar code for tracking before being packaged on a pallet for shipment. Each container is also sealed with a tamper-evident seal to ensure purity. From there, the pallet is shipped to the customer.

"A customer can restock his inventory by just calling a toll-free number," says Schoonover. "And, the bar code system lets us immediately identify a container's status during a cycle. Containers are dedicated to one and only one product, eliminating the potential of cross contamination."

Bower and the VDOT use a tank-mix of Vanquish with Garlon 3A®. "Vanquish provides a broad spectrum of weed control, including broadleaf weeds, which are a big problem for us. Plus, it's a great tank-mix partner with Garlon, and it does a better job for a lower cost per acre," adds Bower. "The returnable containers really solidified the use of Vanquish for our vegetation management program."

Increased applicator safety

With the new, closed-loop system, applicators do not come in direct contact with the herbicides during tank-mixing or tank-refilling procedures. As a result, tank-refilling and container cleaning is greatly simplified and safer.

To refill the injection tank, two applicators carry a 15-gallon container by the handles to the side of the truck, hook up an electric pump and wait for the tank to empty itself. A 12-volt portable pump, powered by the truck's electrical system, transfers herbicides from the reusable containers to the tanks — without coming in contact with human skin.

In the past, chemical containers would have to be passed from the ground to the truck bed where the herbicides were poured into the tank. "It placed a strain on the crews' backs, and, they risked splashing it on themselves and the trucks," according to Bower. Then, the herbicide containers needed to be disposed of properly.

"What took 45 minutes previously now only takes 15 minutes, giving our applicators another 30 minutes a day in the field," said Bower. "Considering that we lose money when chemicals are not hitting the ground, this is a huge time- and money-saving device."

With the new closed system, applicators also don't have to worry about properly cleaning the herbicide containers. EPA requires triple rinsing of herbicide storage containers before disposal. "Our men used to have to wear special protective clothing in order to clean packages that contained herbicides," said Bower. "Even with the clothing, there was always a health concern.



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In addition, our crews had to set aside the last hour of each day to properly clean the used containers."

As a result of the new system, Bower has seen morale rise on his crews. They now focus on what they were trained to do — selectively apply herbicides.

Applicator Richard Bitts says, "I would much rather be applying herbicides than breaking boxes and cleaning tanks. I was trained to apply herbicides, not break boxes."

Applicator certification

To ensure proper handling and safety procedures for his employees, all of Bower's applicators are required to be certified annually by the department. "Training is essential because the herbicides are chemicals, and my personnel need to know and understand the proper handling," said Bower.

Applicators can achieve one of six levels of certification. Training is conducted December through March when snow covers most of the ground and herbicide application is not feasible.

The training typically involves one, 8-hour day during which industry experts, manufacturer representatives, academic representatives from Virginia Tech and the Department's own staff, including Bower, teach the applicators about proper chemical usage. The training sessions cover species identification, safety, proper herbicide handling, spill response and application.

The applicators receive training on species identification for selective application. "We use selective application to help control costs," said Bower.

"Because we invest a tremendous amount of time and money training our applicators, it is important that they spend their time spraying once the spraying season starts," said Bower. "The returnable container program makes sure that our applicators are using the tax payer's money wisely."

Additional cost savings

Costs saved extend beyond just labor. The District leases its equipment

from the VDOT's Equipment Division. Each applicator crew is comprised of one applicator truck and two shadow trucks, with a minimum of four people at a cost of \$125/hour for equipment and labor. "My savings are magnified when the cost of equipment is figured into the equation," said Bower.

The program costs more initially, but it is good for employee morale because they concentrate on the tasks they are trained for and enjoy doing.

Because Aquimix utilizes a just-in-time philosophy, the company can ship full containers within 24 hours. Bower only keeps needed inventory for a two-week supply, greatly reducing storage requirements and liability.

Since implementing the new system, the inventory turnover rate has risen from 2.75 to 4.75, exceeding the Department's goal of 3.0.

"In the past, we would order enough supplies to last between six to nine months, which would just sit in our warehouse. Now with on-hand inventory, we have almost overnight stocking ability," said Bower.

To receive more herbicides, Bower calls a toll-free number, and the pallet of empty containers is shipped back to Aquimix for refilling. It typically takes just two days from when the order is placed to when Bower receives the refilled containers.

The cost of enrolling in the program is slightly higher. However, the savings realized more than offset the additional cost of the program, according to Bower.

The program has also benefited CWC's sales of Vanquish, which have risen by 5,000 gallons in 1995 since the program was started three years ago.

A combination of increased employee safety, higher applicator productivity and lower costs has helped the Salem District of the VDOT implement a program that utilizes returnable herbicide containers in its vegetation management control program. Based on Bower's success with the system, other districts within the VDOT will be incorporating the returnable containers into their own vegetation management program.