

Handling of Used Agricultural Chemical Containers

*Adam Speir, Ag Pollution Prevention Specialist
Biological & Agricultural Engineering*

The use of plastic containers for agricultural chemicals is a necessary and important part of everyday agricultural production. However, disposing of these containers is not as straightforward as their initial purchase. This guide is meant to help Georgia's farmers recycle more of their chemical containers by informing them of recycling opportunities and describing practices that will leave the containers properly cleaned and stored for recycling.

Disposal Options — Farmers have limited options for disposing of chemical containers.

Prohibited Practices

Open Burning — It is against state law to openly burn chemical containers. This presents a personal and environmental health risk due to dangerous compounds that can be released during combustion. These compounds and particulates can be inhaled or settle on nearby water sources and crops (Figure 1).



Figure 1. Open burning of chemical containers is illegal in Georgia and is a risk to personal and environmental health. *Photo courtesy Lois Levitan, Cornell University*

On-Farm Burying — Farmers might also think of burying their containers. **Burying chemical containers is also illegal in Georgia** and can result in liability issues if property ownership ever changes. There is also a risk of chemicals leaking from buried containers into the water table.

Accepted Practices

Landfilling — Farmers may be able to dispose of **triple-rinsed or pressure-rinsed** chemical containers in approved landfills. The ability to landfill, the number of containers that can be disposed of and the tipping fee depend upon location. Contact your local landfill to determine this information.

Recycling — Although recycling of plastics used in agriculture is very difficult in general, ag chemical containers have the unique distinction of having an existing free, national recycling system. This program was established in 1992 by the Ag Container Recycling Council (ACRC), a non-profit organization funded by various ag industry groups. ACRC funds several contractors across the country to recycle properly cleaned chemical containers.



Figure 2. Recycling contractors funded through the ACRC can make individual farm visits if enough containers have been collected. *Photo courtesy USAg Recycling.*

Georgia and the rest of the Southeast are serviced by USAg Recycling, which has a warehouse facility in Tifton, Ga. (<http://www.usagrecycling.com>). The contractor recycles containers by bringing in a mobile grinding unit that shreds the containers. The contractor then bags the shredded containers and removes them from the collection site. Several collection options are provided by USAg Recycling, including regional collection centers and both public and private collection. Individual farm collections may be possible for large ag producers. In order for any collection to be worth the contractor's travel time, a large number of containers (e.g., peanut, pecan or cotton wagon load) should be collected prior to contacting the recycler (Figure 2). If you're interested in

scheduling a larger public event or establishing a permanent collection site in your county, you should contact USAg Recycling at 1-800-654-3145 as well as your local UGA county Extension agent and any relevant local waste/recycling authority.

Proper Cleaning for Recycling

In order for a recycler to accept your containers, you should follow these guidelines (These guidelines are for ACRC contractors; other rules may apply for other recyclers):

Containers — Containers must be **non-refillable (i.e., punctured)** and made from **high-density polyethylene (HDPE)**. Some HDPE containers have a thin barrier of other co-manufactured material that is acceptable. Containers will be embossed with recycling symbol #2, and sometimes symbol #7.

Use — The container must have originally held an EPA registered pesticide labeled for agriculture, forestry, vegetative management, specialty pest control OR a non-EPA registered crop protection adjuvant, crop oil or surfactant. **Containers that originally held veterinary products, consumer products or home and garden pesticides are not accepted by USAg Recycling or any other ACRC contractors.**

Professional Use — The contents of each container must have been used by a farmer, commercial applicator or a person under the direct supervision of a farmer or commercial applicator.

Sizes — Containers are accepted from the smallest sizes up to 55 gallons in capacity. **For sizes greater than 55 gallons in capacity, contact the collection site or ACRC contractor.**

Non-Acceptable Parts — Caps and other non-HDPE parts, such as metal handles and rubber linings, cannot be recycled. Clean and discard these parts as normal solid waste. **Never put a cap back on a rinsed container.**

Stains — Certain products discolor plastic with a penetrating stain. The stained containers are **acceptable** provided that no material can be smeared or removed when touched by a rubber glove (Figures 4 and 5).

Labels — Check with your local authority and follow their guidelines for label removal. Labels and booklets do interfere with the recycling process; however, some inspection authorities prefer that labels remain on containers so that any residues can be identified.

Proper Rinsing — All containers should be pressure-rinsed or triple rinsed. **Rinsing should take place immediately after use.** Rinsate should be dumped into the spray tank for proper use. Rinsing immediately after use prevents materials from drying, which may make containers more difficult to clean, and also prevents a buildup of dirty containers

that will require more time to clean at a later date. Proper cleaning is required by law for recycling. Only dry, empty, properly rinsed containers are accepted at collection sites (Figure 6).

Pressure-Rinsing Technique

1. Empty container contents into the spray tank, turning the container so that any product trapped in the handle can flow out. Once the flow slows down to a drip, allow the container to drain for an additional 30 seconds.
2. Immediately begin rinsing procedures or the product may become difficult to remove.
3. Hold the container so the opening can drain into the spray tank.
4. Force the tip of the pressure nozzle through the lower portion of the side closest to the handle (Figure 3).
5. Connect the nozzle to a clean water source with at least 40 psi. Turn the nozzle inside the container to ensure good coverage of all sides, including the handle.
6. Rinse for at least 30 seconds.
7. Drain all rinse water into the spray tank.



Figure 3. Tools can be purchased that will puncture and rinse chemical containers. Qwik-Rinse and Jet Rinse are two brand names. Photo courtesy Quik-Rinse, Inc.

Triple-Rinsing Technique








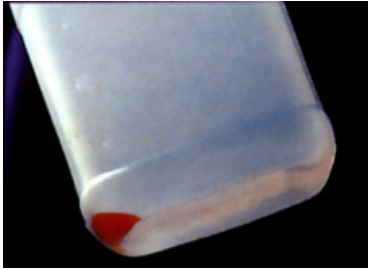
1. Empty container contents into the spray tank, turning the container so that any product trapped in the handle can flow out. Once flow slows down to a drip, allow the container to drain for an additional 30 seconds.
2. Immediately begin rinsing procedures or the product may become difficult to remove.
3. Fill the empty container 1/4 full of clean water.
4. Replace the cap on the container. With the container opening facing left, shake the container left to right over a distance of 4 to 6 inches. Shake the container about twice per second for 30 seconds.
5. Drain the rinse water into the spray tank as previously described.
6. Fill the empty container 1/4 full of clean water a second time.
7. Recap the container. With the opening of the container pointed towards the ground, shake the container as previously described. Then drain the rinse water into the spray tank.
8. Finally, fill the empty container 1/4 full once more with clean water.

9. Recap the container. With the container in the normal, upright position, shake the container as previously described.
10. Pour the rinse water into the spray tank. Carefully rinse and spray residue from the outside of the container.

Inspection — Immediately after rinsing, look inside the container and make sure all of the formulation has been rinsed out. Also inspect the outside of the container; particularly check that the pour spout, the spout threads and the container

wall surrounding the spout are free of formulation residues that flake, smear or come off on a glove when touched. **Containers that have dried formulation in or on them cannot be processed** (Figures 7, 8 and 9).

Dry — Acceptable containers are dry. **Store cleaned, dry containers in an enclosed building, trailer or in plastic bags.** The recycler will not accept a container that has liquid in it (Figures 10 and 11) *Photos courtesy USAg Recycling.*

Acceptable	Unacceptable
 <p>Figure 4. Stained but acceptable.</p>	 <p>Figure 5. Stained but unacceptable.</p>
 <p>Figure 6. Thread and lip are clean.</p>	 <p>Figure 7. Dried formulation on thread and lip.</p>
 <p>Figure 8. Inside of bottom is rinsed clean.</p>	 <p>Figure 9. Bottom is caked with formulation.</p>
 <p>Figure 10. Inside of container is dry.</p>	 <p>Figure 11. Liquid is present inside container.</p>

There are very few options for recycling plastics used in agriculture. One notable exception is the recycling of ag chemical containers. Although farmers may feel it is easier to openly burn, bury or landfill chemical containers, recycling is a legal and free option that reduces risk to the environment and personal health and reduces inputs to landfills while “closing the loop” on plastic lifecycles. Following the guidelines in this publication should make it easier for farmers to recycle HDPE chemical containers.

Contact Information:			
Name	Information	Address	Phone/Website
AgP2 (Ag Pollution Prevention)	Information on best management practices for agricultural efficiency.	UGA Dept. of Biological and Agricultural Engineering Driftmier Engineering Center Athens, GA 30602	706-542-3086 www.agp2.org
USAg Recycling	Recycling contractor for ACRC in the Southeast.	USAg Recycling 18330 Penick Rd. Waller, TX 77484	800-654-3145 www.usagrecycling.com
Georgia Dept. of Agriculture	Information regarding pesticide and other chemical regulations for the state of Georgia.	Pesticide Division 19 Martin Luther King Jr. Dr., SE Atlanta, GA	404-656-9373 www.agr.georgia.gov
UGA County Extension	Information for farmers on container recycling.	Local County Extension Office	800-ASK-UGA1 www.ugaextension.com

*Information in this publication has been collected from the
Ag Container Recycling Council, USAg Recycling and Georgia Department of Agriculture.*

*The mention of any brand names does not indicate promotion of these products by the
University of Georgia or the College of Agricultural and Environmental Sciences.*



Circular 986 / June 2010

The University of Georgia and Ft. Valley State University, the U.S. Department of Agriculture and counties of the state cooperating. Cooperative Extension, the University of Georgia College of Agricultural and Environmental Sciences, offers educational programs, assistance and materials to all people without regard to race, color, national origin, age, gender or disability.

An Equal Opportunity Employer/Affirmative Action Organization Committed to a Diverse Work Force