

Practical guidelines for cleaning and winterizing your truck-mounted, ATV, or backpack sprayers.



Cleaning and Winterizing Your Herbicide Sprayer

Proper cleaning and winterization of herbicide application equipment is important to ensure safe storage over the winter. Spending a little extra time in the fall will save you time and money next spray season!

Some herbicides are more difficult to remove from spray tanks than others. These herbicides often have very low use rates, or may adhere to residues of other chemicals in the sprayer. In some cases, additives such as crop oils or nitrogen solutions act to release herbicide residues remaining in spray equipment.

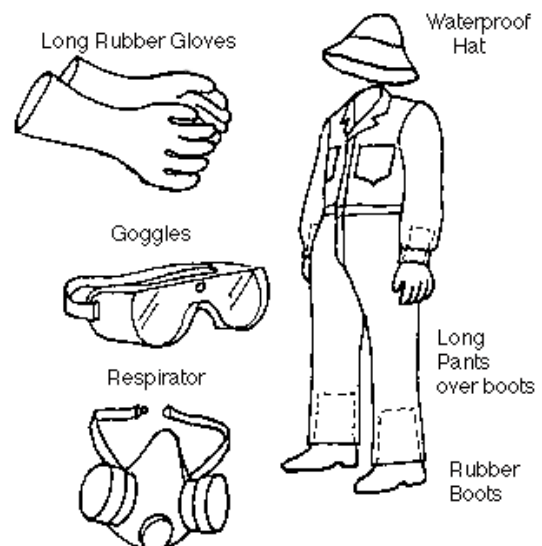
There are numerous recommendations for removing specific herbicides from herbicide application equipment. **Always consult and follow cleaning directions included on herbicide labels.**

Cleaning Herbicide Application Equipment for End of Season (or when needed)

PERSONAL AND ENVIRONMENTAL SAFETY

When cleaning herbicide-contaminated equipment, wear the same personal protective equipment (PPE) that the labeling requires for making applications, plus a chemical-resistant apron or other appropriate protective equipment. Also wear eye protection, even if not required by the label directions.

Solutions rinsed/drained from spray equipment, or rinsates, contain herbicide residues. Select a location to clean equipment where any spilled rinsate will not contaminate water supplies, streams, crops or other plants and where puddles will not be accessible to humans, pets, livestock, or wildlife. If a facility to catch and/or contain the rinsate is not available, spray the rinse water or the cleaning solution on a site and in a manner consistent with the label use of the herbicide.



A STANDARD PROCEDURE FOR CLEANING SPRAY TANKS

1ST RINSE

- Drain and collect herbicide solution that may remain in the tank. Add one-half tank of fresh water and flush tanks, lines, booms, and nozzles for 10 minutes using a combination of agitation and spraying. Collect rinsate sprayed through the booms in a containment facility or spray on a site for which the herbicide is labeled.

2ND RINSE

- Fill the tank with clean water, add recommended cleaner (detergent, ammonia or commercial tank cleaner), and re-circulate for 15 minutes. Operate the spray booms long enough to ensure that all nozzles and boom lines are filled with the cleaning solution. Let the solution stand in the system for several hours, preferably overnight. Agitate and spray the solution onto sites for which the herbicide is labeled or collect the solution in a containment facility.

3RD AND 4TH RINSE

- Drain (or spray as described above) the cleaning solution from the tank, rinse with clean water, and spray rinsate through boom. Repeat steps 2 through 4 for difficult to remove herbicides.

FOLLOWING THE 4TH RINSE

- Remove all filters, nozzles, nozzle screens, and pipe end caps and inspect to be sure they are clean. If not, soak in a cleaning solution and use a soft brush to scrub away any build up. Rinse with clean water and reinstall all filters, screens and nozzles; and lubricate o-rings with vegetable oil.

Types of Cleaners

Detergents, ammonia or approved commercial tank cleaners are required to remove many herbicides from spray equipment.

- **Dry-formulated household detergent** mixed with water can adequately remove some herbicides (Table).
- **Ammonia** increases the pH of the solution, which increases solubility of some herbicides and the potential to remove them from the spray tank.
- **Commercial tank cleaners** are recommended for some oil- and water-soluble herbicides. These cleaners generally raise the pH of the solution and act as detergents.

Table. Recommended Cleaning Agents on Labels of Commonly Used Herbicides

Some labels only recommend rinsing with water; however, adding a detergent such as dry-formulated household laundry detergent is a good idea.

Herbicide	Cleaning Agents <i>(consult labels for specific directions)</i>	
	Detergent	Household ammonia (3% active ¹)
Chaparral™		1%
Crossbow®	✓	
Curtail®		1%
dicamba		1%
ForeFront® R&P		1%
Garlon® 3A	✓	
Garlon® 4 Ultra	✓	
Grazon® P+D		1%
MCPA amine		1%
MCPA ester	1% kerosene or diesel ² followed by 1% ammonia	
Milestone®		1%
Opensight®		1%
PastureGard®		1%
Remedy® Ultra	✓	
Accord XRT II® or Rodeo®	✓	
Transline®		1%
Tordon® 22K		1%
2,4-D amine		1%
2,4-D ester	1% kerosene or diesel ² followed by 1% ammonia	

¹A 1% solution is equal to 1 quart of ammonia in 25 gallons of water.

²Use kerosene or fuel oil solution to remove oil-based herbicide formulations such as 2,4-D ester. Follow with a second rinse of 1% household ammonia. Mix 1.5 cups kerosene + 1 TBS powdered detergent + 4 oz of washing soda (sal soda is a hydrated sodium carbonate used as a general cleanser) with 2.5 gallons of water and add to tank.

Winterizing the Sprayer

MAIN SYSTEM-TANK AND PUMPS

Be sure to clean equipment as described above prior to winterizing.

1. Add automotive antifreeze to the empty tank.

- Use about a 50% solution, or a dilution with water that will provide maximum protection for storage conditions (see guidelines on antifreeze container).
- Automotive antifreeze is recommended for winterizing sprayers because it is less corrosive to spray equipment pumps and seals than RV antifreeze. However, automotive antifreeze is toxic and must be collected for reuse or disposed of properly. RV antifreeze is non-toxic and may be sprayed on the ground.

2. Turn all boom sections OFF, but leave the master spray switch ON; turn the pump ON.

- If you are winterizing backpack sprayers, you can pump the antifreeze solution through the entire system including the nozzle, but be sure to collect resulting spray in a container for re-use or proper disposal if you use automotive antifreeze.

3. Run the mixture through the entire system making sure that all accessories and necessary components have been thoroughly exposed to the cleaning solution.

- For truck-mounted or ATV sprayers, do not run automotive antifreeze through the boom, as this will run antifreeze onto the ground. (unless proper facilities exist for the capture and disposal of the automotive antifreeze mixture)

4. Make sure to drain all accessory tanks and lines.

- In most cases, antifreeze solution can be collected and reused for at least two years prior to proper disposal.

5. Use compressed air to blow out any liquid from solution lines.

- For backpack sprayers, drain the tank as thoroughly as possible.

6. Open, drain, and clean mixing chambers.

SPRAY BOOM

1. Remove the boom feed hoses from the boom section valves.
2. Using compressed air to thoroughly flush each boom section through the feeder hose and out the nozzles until dry.
3. Remove the nozzle tube end plugs and continue to blow out any water from the boom.
4. Remove and clean out any boom section filters.
5. Remove metal screens or fittings and store the parts in vegetable oil over the winter. This prevents rust pitting if the parts are not completely dry.
6. Ensure that your boom is free of water, lubricate any o-rings with vegetable oil, and re-install non-metal components.
7. Remove all gauges and store indoors in an upright position to prevent freezing.
8. Use lithium grease on solenoid switches and relays to prevent rust and sticky valves over the winter. (Note: Solenoids valves on spray equipment have stainless steel plungers that are exposed to the spray solution. Antifreeze will corrode the plunger and it will stick if not lubricated in the off-season.)

REMINDER

This is a good time to apply any touch up paint and inspect sprayer for damage. Replace worn-out, deteriorated, or broken parts.

References

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