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How to Make a Pressure-Rinse Nozzle for Cleaning Pesticide Containers¹

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For most pesticide products, the label directions for disposal require the user to thoroughly rinse the pesticide container before disposing of it. Container rinsing saves money, avoids legal problems, helps to protect ground water, and allows you to legally handle empty pesticide containers in the same way as any other kind of solid waste (normal trash). Almost all plastic pesticide containers can be recycled -- if they have been properly rinsed.

Newly-emptied pesticide containers can be properly rinsed by using either of two methods: triple-rinsing or pressure rinsing. Both methods produce clean containers -- if done properly. As you might expect, there are pros and cons to each method. For example, pressure-rinsing takes less time but requires special equipment; whereas, triple rinsing doesn't require special equipment -- but takes considerably more time to do.

Pressure-rinsing pesticide containers requires the use of a pressure-rinse nozzle. Basically, pressure-rinse nozzles consist of a nozzle tip joined to a valved handle that can attach to a standard garden hose. Several different styles of pressure-rinse nozzle are available commercially from various vendors -- the

"average" price is about \$20 per nozzle. Alternatively, using tools typically found in most on-farm repair shops, it is possible to make an inexpensive pressure-rinse nozzle from materials on hand (or easily obtained).

EQUIPMENT AND MATERIALS NEEDED

Tools:

- Pipe Vise (or equivalent)
- Arc Welder (or Oxy/Acetylene Torch)
- Electric Drill
- 1/8" Drill Bit
- Center Punch
- Ball Peen Hammer
- Bench Grinder
- Hacksaw

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- Tape Measure (or Ruler)

Safety Equipment:

- Leather Gloves
- Shop Goggles (Clear Lens)
- Welder's Helmet (#10 Lens for Arc Welding)
OR Welder's Goggles (#5 Lens for
Brazing/Gas)

Materials:

- (1) Pipe Nipple, 3/8" Dia. (steel, 4 inches long)
- (1) Bolt, 1/4"-20 (steel, 1.5 inches long)

PROCEDURE

Before operating any power tool, always check to see that the tool is in serviceable condition. Follow the tool manufacturer's guidelines for safe tool operation. The equipment that you use for welding determines the kind of eye protection needed. Be certain that the eye protection used is dark enough to fully shield your eyes from dangerous radiation. If you intend to use either ARC (or MIG) welding equipment, be sure to wear a welder's HELMET fitted with at least a SHADE 10 EYEGLASS. For gas welding (or brazing), be sure your eye protection (GOGGLES or HELMET) contains at least SHADE 5 lenses. Failure to use the correct eye protection when welding can cause permanent eye damage.

MAKING A NOZZLE TIP

Pressure-rinse nozzles work by puncturing the wall of a pesticide container and injecting several jets of water (through lateral holes) into the container's interior. To do this, the nozzle tip must be sharp, hollow and have small, lateral, holes (see Figure 1).

Begin making the nozzle tip by putting the 3/8" nipple into the vise and clamping it tightly. Use the hacksaw to cut off the threaded portion from one end of the nipple. The piece of pipe remaining in the vise should be at least 3 inches long, and will have 3/8" NPT (male) thread remaining on one end. Leave the cut pipe clamped in the vise.

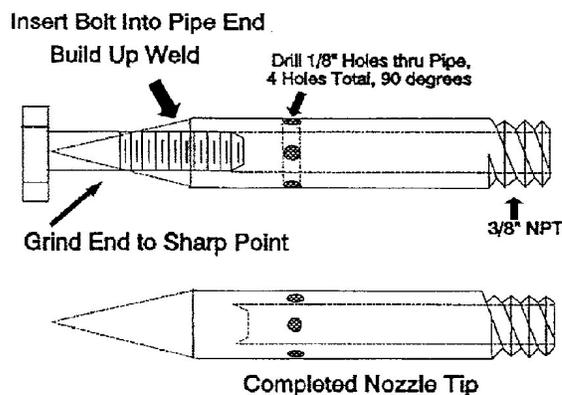


Figure 1.

Insert the 1/4-20 bolt into the cut end of the 3/8" pipe until about 3/8" of the bolt's thread is inside the pipe. More than half of the bolt's thread should still be visible (see Figure 1).

Tack-weld the bolt to the end of the pipe and check the results for proper alignment -- dress the bolt's alignment with light hammer blows, if needed. There-after, fully weld the bolt to the pipe by laying a bead all the way around the bolt. Make sure the weld penetrates both the bolt and pipe. Close any pinholes formed during welding.

After the bolt has been fully joined to the pipe, at least two more beads of weld should be added. The purpose of the additional weld is to build up metal in the region where the bolt joins the pipe. This is because the bolt's shaft will ultimately become the nozzle's point, and enough metal has to be present to later grind a smoothly tapered tip (see Figure 1).

Use the hacksaw to cut the head off of the bolt. From the threaded end, measure 2 inches along the pipe and center punch a drill start. Drill a 1/8" diameter hole completely through the pipe. Withdraw the drill bit, loosen the vise and rotate the pipe 90 degrees. Reclamp the work and repeat the measurement, center punching and drilling. The result should be four holes in the pipe wall, with each hole positioned at a 90 degree interval around the pipe's diameter.

Remove the workpiece from the vise, and grind the shaft of the bolt and the welded areas that join the bolt to the pipe until the workpiece has a tapering point (see Figure 1) that is sharp enough to puncture the wall of a plastic pesticide container.

Your pressure rinse nozzle tip is now complete.

Virtually all commercially available pressure-rinse nozzles are designed for use with a standard garden hose. Similarly, your nozzle tip can be easily joined to standard plumbing fittings via the 1/4" NPT thread.

When choosing plumbing parts to couple the nozzle tip to a hose, be sure to include an ON/OFF valve between the nozzle tip and the hose end coupling. A water control valve AT THE NOZZLE TIP is an important safety feature for pressure rinsing pesticide containers (being able to control water flow at the nozzle reduces the likelihood of being accidentally splashed with pesticide container rinsate). **Before pressure-rinsing any pesticide container, ALWAYS READ THE PESTICIDE LABEL and WEAR ALL OF THE PERSONAL PROTECTIVE EQUIPMENT (such as goggles, aprons, gloves, etc.) INDICATED BY THE LABEL DIRECTIONS FOR USE.**

ACKNOWLEDGEMENTS

The nozzle tip described and illustrated in this factsheet is an adaptation of the nozzle tip designed by M. H. Willicutt, Agricultural Engineer, Mississippi Cooperative Extension Service. Feb. 1991.