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Recycling Plastic Containers from Pesticides and Pesticide-Related Products



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Recycling Plastic Containers from Pesticides and Pesticide-Related Products

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1 Purpose and scope

1.1 This Standard specifies management practices for effectiveness and safety in the handling, cleaning and recycling of used non-refillable, high density polyethylene (HDPE) containers embossed with recycling symbol #2 up to 212 L (56 gal) that originally held pesticides and pesticide-related products (defined in paragraph 2.6) labeled for agriculture, forestry, professional specialty pesticide (defined in paragraph 2.8) use, and structural pest control. Containers that originally held antimicrobial products that are subject to a tolerance or that require an exemption from a tolerance are within the scope of this Standard. Containers that originally held other antimicrobial products, veterinary products, consumer products, or consumer home and garden products are outside the scope of this Standard. Examples of HDPE containers covered by this Standard are shown in Figure 1.

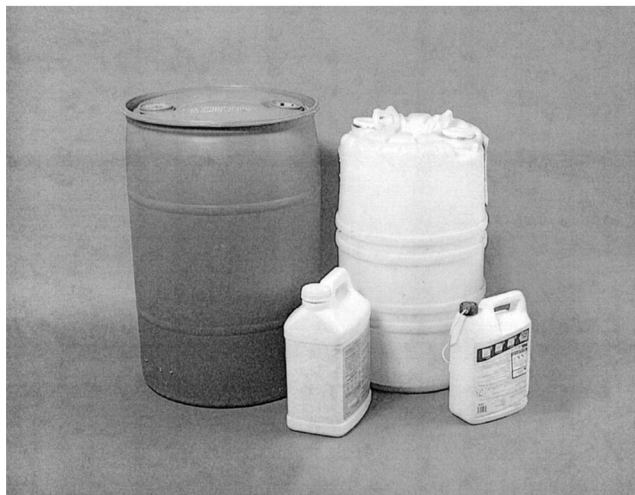


Figure 1 – Typical HDPE containers

1.2 This Standard is intended to assist applicators of pesticides and pesticide-related products labeled for the uses listed in paragraph 1.1; recycling organizations; sites and facilities where containers are collected; entities that collect and granulate or otherwise reduce the volume of containers; plastic processors; manufacturers of end-use products; users of end-use products manufactured from recycled plastic; regulatory agencies; and chemical manufacturers and distributors.

1.3 This Standard specifies procedures and criteria for rinsing, preparing, inspecting and collecting containers; rejection criteria for unacceptable containers; volume reduction of, storing, and processing the plastic; transporting

containers and plastic; manufacturing end-use products; determining acceptable end-use products; and recordkeeping. These procedures and criteria are intended to ensure that the plastic will be handled and utilized to manufacture appropriate end-use products as described in Section 14 in such a way that the plastic will have no unreasonable adverse effect on the environment, people handling the plastic, or users of end-use products manufactured from recycled plastic.

1.4 The specifications in this Standard do not replace, modify, or override regulations of appropriate jurisdictions.

1.5 Recordkeeping requirements are described in Sections 6, 9, 10, 12, and 13. These records shall be maintained to verify that procedures described in this Standard have been followed, to verify that the plastic is only used to manufacture acceptable end-use products, and to facilitate tracing recycled plastic back to its source. The information required shall be recorded on forms similar to the example forms provided in Figures 8-13 in normative Annex A.

2 Definitions

2.1 agricultural crop production: crop production at farms, forests, nurseries and greenhouses.

2.2 dry plastic: reduced-volume plastic that does not leave a moisture residue on an absorbent material (such as paper or corrugated cardboard).

2.3 fully drained container: a container that has been allowed to drain for 30 seconds after the flow is down to a drip.

2.4 HDPE: high-density polyethylene (see paragraph 9.9).

2.4.1 blow-mold grade or fractional melt HDPE: HDPE that has a melt index value between 0 and 1.

2.4.2 high molecular weight HDPE: HDPE with a molecular weight numbering in the millions.

2.4.3 injection grade HDPE: HDPE with a melt index value between 6 and 8 and a density of between 0.950 g/cm³ and 0.955 g/cm³.

2.5 open head drum: drum with a removable head (top).

2.6 pesticide-related products: For the purposes of this Standard, pesticide-related products are adjuvants that are added to a pesticide spray mix.

2.7 processing plastic: the intermediate steps of handling plastic between volume reduction and end-use product manufacturing other than storage and transportation. Processing plastic includes, but is not limited to, washing, drying, and regrinding the plastic.

2.8 professional specialty pesticides: registered pesticides used by professional end users in turf, ornamental, pest control, aquatic and terrestrial vegetation management and other non-food/fiber applications.

2.9 shipping containers: gaylord boxes, flexible intermediate bulk containers, super-sacs or other vessels used to collect, transport and/or store reduced-volume plastic.

2.10 tight head drum: drum with a non-removable head (top).

3 General safety requirements

3.1 Each of the processes in this Standard shall be performed in a manner that avoids an unhealthy or unsafe work environment, injuries to persons, damage to property and pollution.

3.2 Appropriate personal protective equipment (PPE) shall be used for each process.

3.2.1 For container rinsing, the required PPE is specified on the pesticide label under the directions for use.

3.2.2 When handling containers after they are rinsed, PPE should include, at a minimum, protective eyewear, chemical-resistant gloves and a chemical-resistant apron.

3.2.3 For transportation, storage, processing, and manufacturing end-use products, handlers shall follow relevant workplace safety regulations.

3.3 To minimize any potential risk to human health and the environment, non-refillable pesticide containers that are included in this Standard shall not be reused as containers.

4 Rinsing containers

4.1 Containers shall be emptied of pesticides or pesticide-related products and rinsed as described in this section before they can be recycled.

4.2 Each container shall be triple rinsed or pressure rinsed according to the instructions on its label.

4.3 If the label does not include rinsing instructions or does not define the specific steps of the process (e.g. "Triple rinse or equivalent"), the container shall be rinsed according to paragraphs 4.4, 4.5, 4.6 or 4.7.

4.4 Pressure rinsing containers other than drums.

4.4.1 Empty contents of the container by turning the container so that any product trapped in the handle is allowed to flow out. Once flow is down to a drip, allow the container to drain for an additional 30 seconds.

4.4.2 Immediately begin rinsing procedures or the product may become difficult to remove.

4.4.3 The pressure nozzle shall be connected to a clean water source with a pressure of at least 276 kPa (40 psi). Examples of pressure nozzles are shown in Figure 2.



Figure 2 – Examples of pressure nozzles and a punctured container

- 4.4.4** Hold the container so the rinsate drains into the spray mix or an appropriately labeled container.
- 4.4.5** Use the pressure nozzle according to the manufacturer's instructions.
- 4.4.6** Turn the pressure nozzle inside the container to assure good coverage of all sides including the handle.
- 4.4.7** Rinse for at least 30 seconds.
- 4.4.8** Rinse cap into an appropriately labeled container and dispose of the cap as solid waste. Do not re-attach cap to container.
- 4.4.9** Carefully rinse any formulation from the outside of the container.
- 4.4.10** Inspect the container to ensure that all visible and dislodgeable residue has been removed.
- 4.4.11** If any visible and dislodgeable residue is still in or on the container, repeat the process until that residue has been removed.
- 4.4.12** Containers should be punctured so they cannot be reused as containers or should otherwise be rendered unusable. A punctured container is shown in Figure 2.
- 4.4.13** Replace any guards/covers on the rinsing apparatus.
- 4.4.14** Containers shall be fully drained before they are offered for recycling.
- 4.5** Triple rinsing containers other than drums.
- 4.5.1** Empty contents of the container by turning the container so that any product trapped in the handle is allowed to flow out. Once flow is down to a drip, allow the container to drain for an additional 30 seconds.
- 4.5.2** Immediately begin rinsing procedures or the product may become difficult to remove.
- 4.5.3** Fill the empty container 1/4 full of clean water.
- 4.5.4** Securely replace the cap on the container. With the container opening facing left, shake the container left to right over a distance of 10 to 15 cm (4 to 6 in.). Shake the container a minimum of two times per second for 30 seconds.
- 4.5.5** Drain rinse water into the spray mix or an appropriately labeled container.
- 4.5.6** Fill the empty container 1/4 full of clean water a second time.
- 4.5.7** Securely recap the container. With the opening of the container pointed towards the ground, shake the container as described in paragraph 4.5.4. Then drain the rinse water into the spray mix or an appropriately labeled container.
- 4.5.8** Fill the empty container 1/4 full once more with clean water.
- 4.5.9** Securely recap the container. With the container in the normal, upright position, shake the container as described in paragraph 4.5.4. Then drain the rinse water into the spray mix or an appropriately labeled container.
- 4.5.10** Rinse cap into an appropriately labeled container and dispose of the cap as solid waste. Do not re-attach cap to container.
- 4.5.11** Carefully rinse any formulation from the outside of the container.
- 4.5.12** Inspect the container to ensure that all visible and dislodgeable residue has been removed.

4.5.13 If any visible and dislodgeable residue is still in or on the container, repeat the process until that residue has been removed.

4.5.14 Containers should be punctured so they cannot be reused as containers or should otherwise be rendered unusable.

4.5.15 Containers shall be fully drained before they are offered for recycling.

4.6 Pressure rinsing drums.

4.6.1 Empty drum to the lowest possible level.

4.6.2 Immediately begin rinsing procedures or the product may become difficult to remove.

4.6.3 The pressure nozzle shall be connected to a clean water source with a pressure of at least 276 kPa (40 psi).

4.6.4 Insert the pressure rinse nozzle into the drum. This may require drilling a hole into the bottom of the drum for an entry point or cutting a wedge in the drum to drain the rinsate. (See Figure 3, Wedge cut into a drum.)

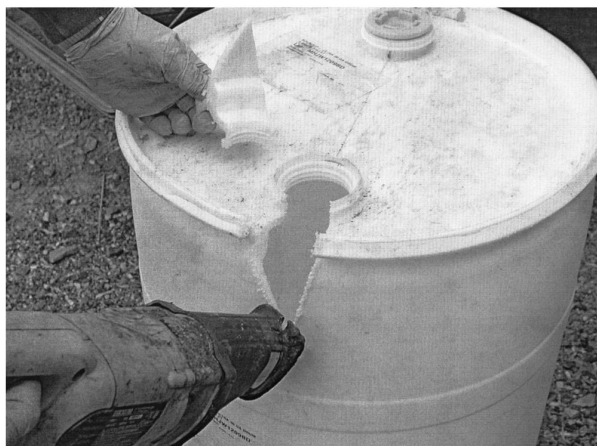


Figure 3 – Wedge cut into a drum

4.6.5 Rotate the pressure nozzle inside the drum to rinse all sides.

4.6.6 Rinse drum for at least 30 seconds or until rinsate runs completely clear, whichever is longer.

4.6.7 Rinse bung into an appropriately labeled container and dispose of the bung as solid waste.

4.6.8 Carefully rinse any formulation from the outside of the drum.

4.6.9 Inspect the drum to ensure that all visible and dislodgeable residue has been removed.

4.6.10 If any visible and dislodgeable residue is still in or on the drum, repeat the process until that residue has been removed.

4.6.11 Drums should be punctured so they cannot be reused as containers or should otherwise be rendered unusable.

4.6.12 Replace any guards/covers on the rinsing apparatus.

4.6.13 Drums shall be fully drained before they are offered for recycling.

4.7 Triple rinsing drums.

- 4.7.1 Empty drum to the lowest possible level.
- 4.7.2 Immediately begin rinsing procedures or the product may become difficult to remove.
- 4.7.3 Fill drum with water to 1/4 of capacity. Replace bungs.
- 4.7.4 Tip drum onto its side and roll it back and forth for 30 seconds, ensuring at least one complete revolution.
- 4.7.5 Stand the drum on its end, and tip it back and forth several times to rinse the corners.
- 4.7.6 Turn the drum onto its other end, and tip it back and forth several times to rinse the corners.
- 4.7.7 Carefully empty the rinsate into the spray mix or an appropriately labeled container.
- 4.7.8 Repeat steps 4.7.3 through 4.7.7 two more times.
- 4.7.9 Rinse bung into an appropriately labeled container and dispose of the bung as solid waste.
- 4.7.10 Carefully rinse any formulation from the outside of the drum.
- 4.7.11 Inspect the drum to ensure that all visible and dislodgeable residue has been removed.
- 4.7.12 If any visible and dislodgeable residue is still in or on the drum, repeat the process until that residue has been removed.
- 4.7.13 Drain all rinse water into the spray mix or an appropriately labeled container. This may require drilling a hole or cutting a wedge into the bottom of the drum to completely drain the rinsate. (See Figure 3, Wedge cut into a drum.)
- 4.7.14 Drums should be punctured so they cannot be reused as containers or should otherwise be rendered unusable.
- 4.7.15 Drums shall be fully drained before they are offered for recycling.

5 Removing non-HDPE components from containers

- 5.1 Non-HDPE components attached to containers cannot be recycled and shall be removed from the containers as described in this section before the containers can be recycled.
- 5.2 All non-HDPE components shall be removed from containers and disposed of as solid waste. Examples of non-HDPE components include, but are not limited to, caps, handles made of metal or different plastic, foil seals and rubber linings.
- 5.3 Caps shall not be put back on rinsed containers.
- 5.4 Sleeves, labels and booklets shall be removed from the containers unless local authorities require that labels remain affixed. Glued on labels may remain on the container.

6 Inspecting containers

- 6.1 An inspection shall be conducted on containers to ensure that they are clean, properly prepared, and included in the scope of the recycling program (see informative Annex B, Commentary.) Containers shall meet all specifications in this section.