

**ANSI/ASABE S596 FEB2006**  
**Recycling Plastic Containers from Pesticides and**  
**Pesticide-Related Products**



American Society of  
Agricultural and Biological Engineers

**S**  
**T**  
**A**  
**N**  
**D**  
**A**  
**R**  
**D**

ASABE is a professional and technical organization, of members worldwide, who are dedicated to advancement of engineering applicable to agricultural, food, and biological systems. ASABE Standards are consensus documents developed and adopted by the American Society of Agricultural and Biological Engineers to meet standardization needs within the scope of the Society; principally agricultural field equipment, farmstead equipment, structures, soil and water resource management, turf and landscape equipment, forest engineering, food and process engineering, electric power applications, plant and animal environment, and waste management.

**NOTE:** ASABE Standards, Engineering Practices, and Data are informational and advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. The ASABE assumes no responsibility for results attributable to the application of ASABE Standards, Engineering Practices, and Data. Conformity does not ensure compliance with applicable ordinances, laws and regulations. Prospective users are responsible for protecting themselves against liability for infringement of patents.

ASABE Standards, Engineering Practices, and Data initially approved prior to the society name change in July of 2005 are designated as 'ASAE', regardless of the revision approval date. Newly developed Standards, Engineering Practices and Data approved after July of 2005 are designated as 'ASABE'.

Standards designated as 'ANSI' are American National Standards as are all ISO adoptions published by ASABE. Adoption as an American National Standard requires verification by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by ASABE.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

**CAUTION NOTICE:** ASABE and ANSI standards may be revised or withdrawn at any time. Additionally, procedures of ASABE require that action be taken periodically to reaffirm, revise, or withdraw each standard.

Copyright American Society of Agricultural and Biological Engineers. All rights reserved.

ASABE, 2950 Niles Road, St. Joseph, MI 49085-9659, USA ph. 269-429-0300, fax 269-429-3852, [hq@asabe.org](mailto:hq@asabe.org)

# Recycling Plastic Containers from Pesticides and Pesticide-Related Products

Developed by ASABE with the cooperation of CropLife America and the Ag Container Recycling Council. Approved by the ASABE SE Division and adopted by ASABE February 2006; approved as an American National Standard April 2006.

Keywords: Containers, Definitions, Pesticides, Plastic, Recycling, Safety, Storage, Surfactants

## 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 Fig. 1.

**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

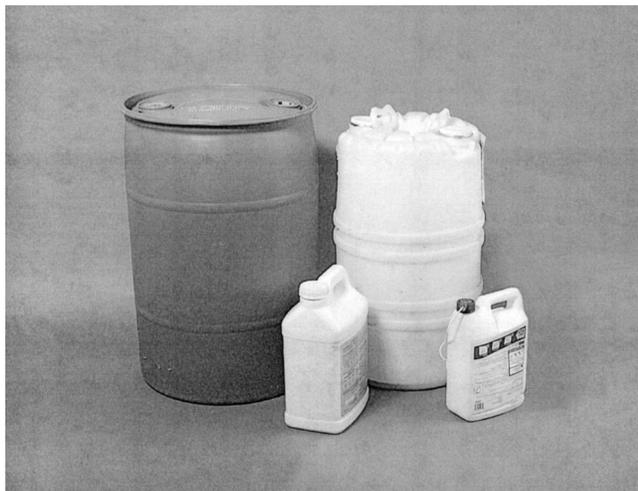


Figure 1 – Typical HDPE Containers

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/cm<sup>3</sup> and 0.955 g/cm<sup>3</sup>.

**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 Fig. 2.

**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 Fig. 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).



Figure 2 – Examples of Pressure Nozzles and a Punctured Container

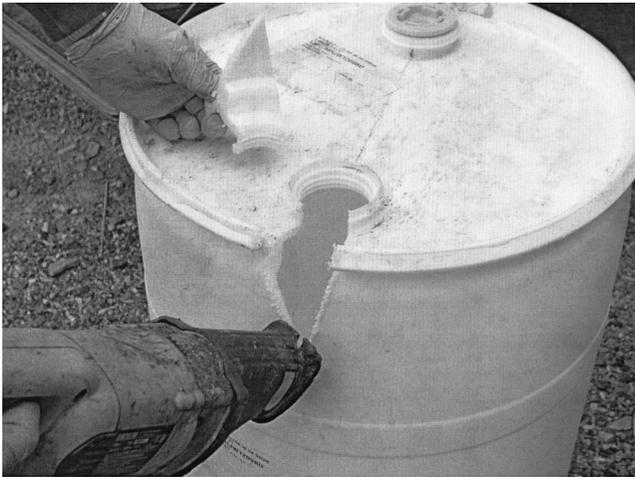


Figure 3 – Wedge Cut into a Drum

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 Fig. 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.



**HDPE**

Figure 4 – Society of the Plastics Industry Resin Identification Code for HDPE

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 Fig. 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.

6.2 Containers shall be non-refillable and made from HDPE. Some HDPE containers have a thin barrier of other co-manufactured material

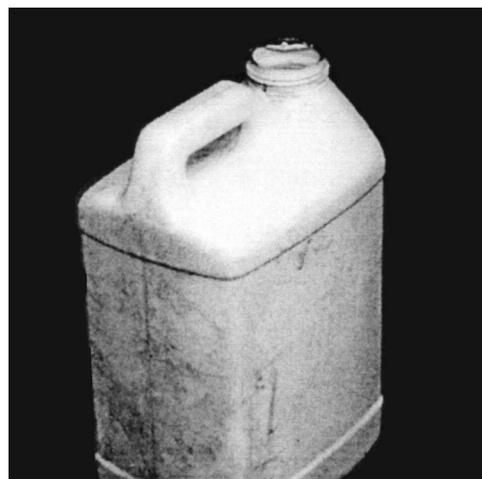


Figure 5 – Container with Dried Formulation that is Visible and Dislodgeable Residue. This Container is Unacceptable for Recycling. NOTE: To view a more accurate color rendition of Figure 5, a color photo of is available at <http://www.asabe.org/standards/images/S596images.html>

that is acceptable. HDPE containers will be embossed with recycling symbol #2, which is shown in Fig. 4.

**6.3** The capacity of the container shall be 212 L (56 gal) or less.

**6.4** The containers shall not have caps or other non-HDPE parts, such as metal handles, seals (typically foil and/or paper) and rubber linings, attached. (See Sections 5.2 and 5.3.)

**6.5** Labels and booklets shall be removed from containers. (See Section 5.4.)

**6.6** The container shall be empty, properly rinsed, and fully drained as required in Section 4.

**6.7** All parts of the container shall be free of visible and dislodgeable residue.

**6.7.1** The inside and outside of the container shall be inspected to assure that all surfaces are free of visible and dislodgeable residue. In particular, the pour spout, spout threads and container wall surrounding the spout shall be checked. (See Fig. 5 for an example of a container with visible and dislodgeable residue that is unacceptable for recycling.)

**6.7.2** Some pesticides discolor plastic with a penetrating stain. Stained containers are acceptable provided that no material can be smeared or removed when touched by a protective-gloved hand. (See Fig. 6 for an example of a stained container that is acceptable for recycling.)

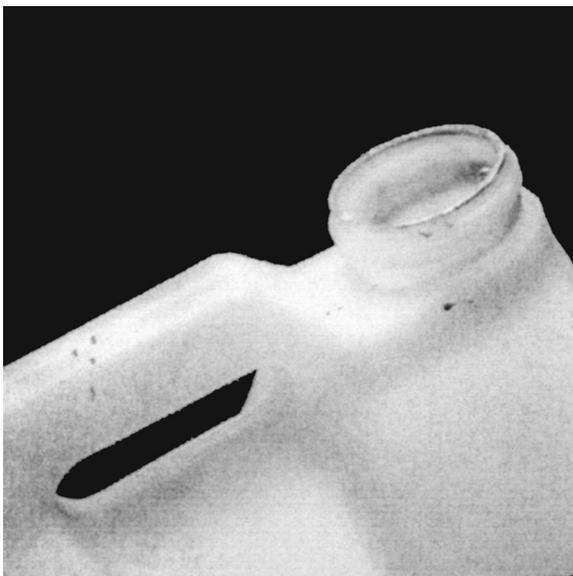
**6.8** Records shall be maintained to identify the site where the containers were inspected, the name and affiliation of the container inspector, and the date of inspection and to include a certification that the containers were inspected. The records shall be maintained for a minimum of 3 years from the date of inspection. See the example Inspection Certificate in Fig. 8 in normative Annex A.

## 7 Rejecting unacceptable containers.

**7.1** This Section provides procedures for properly handling and managing containers that are unacceptable for recycling.

**7.2** Containers that do not meet the cleanliness standards in paragraphs 6.6 and 6.7 shall be rejected.

**7.3** Proper management of rejected containers shall remain the responsibility of the person bringing in the containers and offering them for recycling.



**Figure 6 – Container That is Stained But Has No Visible and Dislodgeable Residue. This Container is Acceptable for Recycling. NOTE: To view a more accurate color rendition of Figure 6, a color photo of is available at <http://www.asabe.org/standards/images/S596images.html>**

**7.4** Rejected containers may be properly rinsed, cleaned, prepared and presented again for acceptance.

**7.5** Rejected containers shall be handled and processed with adequate precautions and in accordance with all applicable federal, state and local laws and regulations to prevent any potential risk to human health and the environment. (See informative Annex B, Commentary.)

## 8 Collecting containers and managing collection sites.

**8.1** Containers shall be inspected according to Section 6 prior to accepting the containers at the collection site.

**8.2** Containers shall be stored such that they remain clean and fully drained. (See informative Annex B, Commentary.)

**8.3** The collection site shall be in compliance with all federal, state and local laws.

**8.4** Container collection sites shall maintain the appropriate level of cleanliness before, during and after containers are collected. All materials that are at the collection site but not processed for volume reduction shall be collected from the site at the completion of work. Final management or disposal of these materials shall be in accordance with local, state and federal requirements. These materials may include closures (including caps, bungs and lids), handles, labels, inserts or cartons; waste generated by the volume reduction activities; trash (coffee cups, food wrappers, etc.); spills (oil, gasoline, plastic flakes, etc.); and other debris.

## 9 Volume reduction of containers.

**9.1** Empty containers occupy a lot of space. The efficient packaging, transportation, and management of containers are facilitated by first reducing the volume of the containers. This section describes procedures for volume reduction and standards for volume reduction sites.

**9.2** All containers shall be properly rinsed, prepared and inspected according to Sections 4, 5, and 6 before volume reduction.

**9.3** Volume reduction includes but is not limited to granulation, baling, and shredding. Attempting to reduce container volume by driving heavy equipment over containers is ineffective and potentially unsafe.

**9.4** Plastic should be dry at the end of the volume reduction process. Climate variations may require additional processing or storage steps to achieve this goal.

**9.5** Volume reduction processes that are conducted repetitively at the same site shall be conducted on an impervious surface and protected from contamination, such as sand, gravel, dust, and moisture. This



**Figure 7 – Field drain pipe.**

specification is intended to keep the plastic dry and clean and to minimize any potential contamination of the volume reduction site.

**9.6** The volume reduction site shall assure containment of the plastic.

**9.7** Previous and current activities conducted at volume reduction sites shall not contaminate the plastic in such a way as to render it unacceptable for recycling. (See informative Annex B, Commentary.)

**9.8** Volume reduction of the plastic shall be conducted so as to not adversely affect current or future activities at the site.

**9.9** Containers should be segregated into the following HDPE categories before volume reduction:

**9.9.1** Blow-mold grade or fractional melt HDPE, which includes but is not limited to bottles, jugs and tight head drums with capacities up to and including 212 L (56 gal).

**9.9.2** High molecular weight HDPE, which includes but is not limited to tight head drums with capacities greater than 19 L (5 gal) and less than 212 L (56 gal).

**9.9.3** Injection grade HDPE, which includes but is not limited to open head pails or drums with capacities less than 212 L (56 gal) (i.e., injection-molded pails or drums).

**9.10** Reduced-volume plastic may be packaged in shipping containers as defined in paragraph 2.9. Shipping containers shall be free of contamination that would render the plastic unacceptable for recycling.

**9.11** Shipping containers or units (such as bales) shall be marked to identify the contents as HDPE from pesticide and pesticide-related product containers. Referring to a code from a log or record is acceptable.

**9.12** Reduced-volume plastic shall be labeled in a way that the HDPE category (if applicable) and collection site can be identified.

**9.13** The entity that authorizes volume reduction shall ensure that the plastic is delivered to a manufacturer of end-use products that are acceptable according to the criteria in Section 14.

**9.14** The entity that authorizes volume reduction shall complete the applicable parts of a form similar to the example Recycling/Shipping Certificate for Volume Reduction in Fig. 9 in normative Annex A and shall ensure that the form is delivered to a storage, processing, or end-use manufacturing facility or a broker. The Recycling/Shipping Certificate for Volume Reduction shall include the shipping container or unit numbers that were shipped, the destination of the plastic, and a certification that the plastic was shipped to that location.

**9.15** Records shall be maintained to identify the plastic as plastic from pesticide and pesticide-related product containers, and to identify the HDPE category (if applicable), collection site location/address, date of volume reduction, estimated weight, and the manufacturer of the end-use product. The records shall be kept for a minimum of 3 years from the date of volume reduction. See the example Volume Reduction Form in Fig. 10 in normative Annex A.

## **10 Transportation of containers or plastic.**

**10.1** The procedures described in this Section ensure that rinsed containers and reduced-volume plastic are transported in good condition (dry and clean) to proper locations.

**10.2** Containers or plastic shall be transported directly to a volume reduction site, storage site, processing site, or an end-use product manufacturer that meets the conditions in this Standard.

**10.3** Containers and plastic shall be kept dry and contained in the vehicle during transportation.

**10.4** Dry, visually clean shipping containers shall be used to transport plastic.

**10.5** Each shipping container shall be clearly identified as containing HDPE from pesticide and pesticide-related product containers.

**10.6** Records shall be maintained to identify the plastic with the transportation starting point, shipping company, destination, and net

weight. The records shall be retained for a minimum of 3 years from the date of delivery to the destination. See the example Transportation Form in Fig. 11 in normative Annex A.

## **11 Storage of plastic.**

**11.1** Plastic shall be stored under conditions that maintain its quality and cleanliness, as described in this section.

**11.2** Previous and current activities conducted at plastic storage sites shall not contaminate the plastic in such a way as to render it unacceptable for recycling. (See informative Annex B, Commentary.)

**11.3** The plastic shall be stored so as to not adversely affect current or future activities at the site.

**11.4** Storage shall be in compliance with federal, state and local regulations.

**11.5** A storage facility shall be designed to keep the plastic dry and to protect the plastic from contamination such as sand, gravel, dirt and moisture.

**11.6** To allow circulation of air during storage, a separation shall be maintained between the shipping container and the floor.

## **12 Processing the plastic.**

**12.1** Plastic shall be processed in accordance with this section to ensure that it remains uncontaminated and to maintain cleanliness at processing sites.

**12.2** Previous and current activities conducted at plastic processing sites shall not contaminate the plastic in such a way as to render it unacceptable for recycling. (See informative Annex B, Commentary.)

**12.3** The plastic shall be processed so as to not adversely affect current or future activities at the site.

**12.4** Processing activities shall be in compliance with federal, state and local regulations.

**12.5** Waste generated during processing activities may have an adverse impact on the material being processed, the environmental health of the site, and on the community at large. Best efforts should be made to minimize the amount of waste generated while processing the plastic. Waste minimization plans and activities should include efforts to minimize the volume of water used during processing.

**12.6** Records shall be maintained to identify the plastic with the processing site location/address, date of processing, and type of processing. The records shall be retained for a minimum of 3 years from the date of processing. See the example Plastic Processing Form in Fig. 12 in normative Annex A.

## **13 Manufacturing end-use products.**

**13.1** End-use products shall be manufactured in accordance with this Section to restrict the use of the plastic for manufacturing acceptable end-use products, to ensure that manufacturing does not contaminate the plastic, and to maintain cleanliness at manufacturing sites.

**13.2** Previous and current activities conducted at end-use product manufacturing sites from the plastic shall not contaminate the plastic in such a way as to render it unacceptable for use. (See informative Annex B, Commentary.)

**13.3** End-use products shall be manufactured from the plastic so as to not adversely affect current or future activities at the site.

**13.4** End-use product manufacturing activities shall be in compliance with federal, state and local regulations.

**13.5** The end-use product manufacturer shall only use the plastic for the manufacture of products that are acceptable according to the criteria in Section 14.

**13.6** The end-use product manufacturer shall complete the applicable parts of a form similar to the example Recycling/Shipping Certificate for Volume Reduction in Fig. 9 in normative Annex A and shall ensure that

a copy of the completed form is delivered to the volume reducer. The Recycling/Shipping Certificate for Volume Reduction shall include the name and location of the end-use product manufacturer, the end-use product that was manufactured, and a certification that the plastic was only used to manufacture the acceptable end-use product identified on the form.

**13.7** Records shall be maintained to identify the plastic with the end-use product manufacturing site location/address, date of manufacture and the end-use product manufactured. The records shall be retained for a minimum of 3 years from the date of manufacture. See the example End-Use Product Manufacturing Form in Fig. 13 in normative Annex A.

**14 Determining acceptable end-use products.**

**14.1** Acceptable end-use products shall be determined such that they will have no unreasonable adverse effect on the environment, people handling the plastic, or users of the end-use products manufactured from the recycled plastic.

**14.2** Products with frequent human exposure, such as food or beverage containers, toys, playground equipment and similar products are not acceptable end-use products.

**14.3** Acceptable end-use products include marine pilings, bridge pilings, field drain pipe, fence posts, construction site mats, speed bumps, parking stops, hazardous waste drums, scaffold nailing strips, commercial truck sub-floor support members, and commercial truck/manure spreader decker boards. (See Fig. 7, field drain pipe, which is an acceptable end-use product.)

**14.4** Other acceptable end-use products shall be identified by conducting a risk assessment that accounts for the following factors:

**14.4.1** Physical, chemical and toxicological properties of pesticides and pesticide-related products.

**14.4.2** The probable concentration of pesticides and pesticide-related products in or on the surface of the end-use product.

**14.4.3** The general characteristics of the end-use product, including the potential human and environmental exposure.

**14.5** To the extent possible, the inputs to the risk assessment for determining acceptable end-use products should be based on statistically valid sampling and analytical data.

**Annex A**  
(normative)

**Example Recordkeeping Forms**

Annex A includes full-sized and reproducible versions of the example forms cited in the Standard. The following table identifies the form title, the paragraph(s) of the Standard that refers to the form, and the figure number in Annex A.

Form Title	Paragraph in the Standard that Cites Form	Figure Number in Annex A
Container Inspection Certificate	6.8	8
Recycling/Shipping Certificate for Volume Reduction	9.14, 13.6	9
Volume Reduction Form	9.15	10
Transportation Form	10.6	11
Plastic Processing Form	12.6	12
End-use Product Manufacturing Form	13.7	13

## Figure 8 – Example Inspection Certificate

ANSI/ASABE S596 FEB2006: Recycling Plastic Containers from Pesticides and Pesticide-Related Products

### Container Inspection

#### Site Information:

Description or Address: \_\_\_\_\_  
County: \_\_\_\_\_ Town/City: \_\_\_\_\_ State: \_\_\_\_\_  
Site Contact: \_\_\_\_\_ Phone: \_\_\_\_\_

#### Container Inspector:

Name: \_\_\_\_\_  
Affiliation: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Authorized by: \_\_\_\_\_

#### Work Description:

Date: \_\_\_\_\_  
Approximate weight/number of containers inspected: \_\_\_\_\_  
Comments (if any): \_\_\_\_\_

### Certification

As a participant in a pesticide container recycling program, I, \_\_\_\_\_ (print), hereby certify that the containers at this site were inspected on the date indicated below. Based on a visual examination, the accepted containers were judged to be: (1) appropriate for this ANSI/ASABE S596 FEB2006 pesticide container recycling program; (2) properly rinsed; and (3) properly prepared in accordance with ANSI/ASABE S596 FEB2006, Recycling Plastic Containers from Pesticides and Pesticide-Related Products.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_  
Authorized Personnel Signature

*Note: This form should be filled out by a person who inspects plastic pesticide and pesticide-related product containers.*

## Figure 9 – Example Recycling/Shipping Certificate for Volume Reduction

ANSI/ASABE S596 FEB2006: Recycling Plastic Containers from Pesticides and Pesticide-Related Products

*This section to be filled in by the Volume Reducer:*

Company/Organization Name: \_\_\_\_\_

Shipping Container or Unit Numbers (Lots) that were shipped: \_\_\_\_\_

Net Weight of Shipped Plastic (lbs): \_\_\_\_\_

(shipped to) Name and Location of Storage, Processing or End-Use Product Manufacturing Facility or Broker: \_\_\_\_\_

Description of Plastic (HDPE Category, if applicable): \_\_\_\_\_

Other Comments (if any): \_\_\_\_\_

I, \_\_\_\_\_, of \_\_\_\_\_, hereby certify that the above  
(Agent of Volume Reducer) (Company/Organization Name)

plastic from pesticide and pesticide-related product containers was shipped to \_\_\_\_\_ on  
(Date) (Name of Storage, Processing or End-Use Product Manufacturing Facility or Broker)

Signature: \_\_\_\_\_

-----  
*This section to be filled in by End-Use Product Manufacturing Company. If shipped to Broker, Broker assumes responsibility for assuring appropriate destination for plastic from pesticide containers reclaimed in accordance with ANSI/ASABE S596 FEB2006.*

I, \_\_\_\_\_ of \_\_\_\_\_ at the location identified as  
(Name of company representative) (Name of end-use product manufacturing company)

\_\_\_\_\_ in \_\_\_\_\_, \_\_\_\_\_,  
(Site name) (City) (State)

hereby certify that:

Plastic recovered in accordance with ANSI/ASABE S596 FEB2006, Recycling Plastic Containers from Pesticides and Pesticide-Related Products, shall only be utilized to manufacture acceptable end-use product(s) specified below, and that the manufacture and distribution shall conform to ANSI/ASABE S596 FEB2006.

Product(s): \_\_\_\_\_

Signature: \_\_\_\_\_  
(Authorized Agent)









---

## Annex B (informative) Commentary

Annex B provides additional information and explanation about several paragraphs in the Standard that could be open to interpretation. The paragraphs discussed below set performance standards that inherently include flexibility to account for personal judgment and experience, differences in climate and a variety of activities or situations that may occur at the facilities. The descriptions below are intended to reflect the experience and collective wisdom regarding pesticide container recycling that was represented on the committee that developed this Standard.

**6.1 Inspecting containers:** Section 6.1 specifies that “An inspection shall be conducted on containers to ensure that they are clean, properly prepared and included in the scope of the recycling program.” This requirement is intended to provide flexibility during the inspection process and is not intended to mandate that all containers must be individually inspected. The inspector can rely on past experiences with the person providing the containers, his/her best judgment, inspecting a randomly selected sample of containers, certification of cleanliness and appropriateness from the person providing the containers, or other options to determine the degree necessary to ensure that the containers meet the standard of being clean, properly prepared and included in the scope of the recycling program.

**7.5 Handling rejected containers:** Section 7.5 states that “Rejected containers shall be handled and recycled or disposed of with adequate precautions.” Similar to Section 6.1, this provides the people at the container collection site with flexibility to use their best judgment in handling rejected containers. If there is a small amount of dried residue in the container that can be easily removed and collected for proper disposal, a collection site worker may choose to hand that container back to the person who provided it but continue inspecting the other containers. If the first group of containers taken from a load is consistently dirty, a collection site worker may choose to reject the whole shipment.

**8.2 Storing containers at collection sites:** Section 8.2 states that containers shall be stored in a way that they remain clean and fully drained. This is intended to prevent containers from becoming dirty, blowing around and being rained upon. The specific practices needed to accomplish this vary according to the climate – what works in the Southwest (storing the containers outside in a vessel that prevents them from blowing around) may not work in a rainier part of the country.

**9.7, 11.2, 12.2 and 13.2 Other activities at facilities:** If other activities occur at these sites, the plastic should be properly segregated or separated and other appropriate precautions taken to prevent the other activities from contaminating the plastic.

---

## Annex C (informative) Bibliography

The following documents are cited as reference sources used in the development of this Standard:

- 1 Ag Container Recycling Council**, *Inspection Checklist*.
- 2 Ag Container Recycling Council**, *The Recycle Option*.
- 3 Ag Container Recycling Council**, *Technical Committee Review Process (Form 1)*.
- 4 Ag Container Recycling Council**, *Technical Committee Site Review and Approval Form*.
- 5 Ag Container Recycling Council**, web site, <http://www.acrecycle.org>.

**6 Hutton, Steven A. and Scott W. Allison**, *Using Statistics and a Computer-Based Risk Assessment Model to Evaluate Use Options for Recycled Plastic*, Presentation at the National Pesticide Stewardship Alliance Conference, 2000.

**7 Society of the Plastics Industry**, *SPI Material Container Coding System*, web site: <http://www.plasticsindustry.org/outreach/recycling/residcodes.htm>.

**8 Society of the Plastics Industry**, *SPI Resin Identification Code Guide to Correct Use*, web site: <http://www.plasticsindustry.org/outreach/recycling/2124.htm>.

**9 University of Nebraska-Lincoln**, *Rinsing and Recycling Pesticide Containers*.

**10 University of Nebraska-Lincoln**, web site, <http://pested.unl.edu/recyguide.htm>.