

Responsible Packaging Management 2023



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INTRODUCTION

Responsible Packaging Management: A Process

In this section, the term “reconditioner” refers to steel, plastic and fiber drum reconditioning firms as well as IBC reprocessors. The term “residue” refers to residues of regulated hazardous materials.

RIPA's *Responsible Packaging Management* (RPM) program has the following elements:

- Selection and ordering
- Empty packaging management
- Empty packaging certification
- Management check list
- Reconditioner facility compliance

Each of these elements is integrated into the RPM program and all have been designed to be used together. The following is a brief description of each program element.

Selection and ordering

Responsible Packaging Management begins with selection by the shipper of the proper industrial packaging for the job. Purchasers must have knowledge of the properties of the material to be shipped, the length of the journey, the mode of transportation and the type of handling expected. Essential is recognition of the fact that a company's original selection requirements have a substantial impact upon post-emptying management, including reuse and disposition options. RIPA members can provide useful information to assist buyers in selecting packagings that are sustainable, retain value when emptied and may be reused in a wide range of service options.

Empty packaging management – No More Direct to Scrap

The process of empty packaging disposition begins when the packaging's status changes from full to emptied. Persons responsible for managing emptied industrial packagings that previously contained a hazardous material are responsible for ensuring the package has been properly emptied, the original labels are visible, that all closures are in place and securely closed and that appropriate quality assurance procedures are in place, and a qualified reconditioner or dealer has been hired to accept the emptied packaging.

Corporate environmental managers and legal advisors have an affirmative responsibility to oversee the empty container management practices of their company. Empty containers with residues of regulated products should never be sent to a scrap yard unless all such containers have been triple rinsed in accordance with EPA requirements in 40 CFR 261.7(b)(3). Since few if any companies are capable of cleaning empty residue containers at their various production sites, the practice of crushing or shredding residue containers exposes the company to a range of serious legal liabilities enforced by the U.S. Environmental Protection Agency and the U.S. Department of Transportation. More information on this issue, including an explanation of a company's legal responsibilities for the management of empty residue containers, sample corporate policies and related materials can be found [here](#).

Empty packaging certification

When empty packagings are sent to a reconditioner, certification by the owner that the packaging meets EPA empty container rules is essential to ensure regulatory compliance and to prevent assumption of unwanted liability. It also minimizes waste of valuable raw material. RPM contains sample certification forms and electronic versions can be found [here](#).

Reconditioning plant compliance

Companies that empty packagings should conduct a review of the reconditioning plant(s) where their empty packagings are sent for cleaning and reconditioning. The review should confirm that the plant complies with the RPM Codes of Operating Practice, applicable U.S. Department of Transportation regulations, and applicable regulations developed by other regulatory agencies, such as OSHA and EPA.

Summary

By using RIPA's *Responsible Packaging Management* program, packaging purchasers and emptiers can maximize the market value of their used packagings, ensure regulatory compliance and minimize potential liability. *Responsible Packaging Management* outlines beneficial approaches to long-standing concerns surrounding the disposition of used packaging, and it attempts to meet the challenge of today's heightened standards for safety, sustainability and empty packaging stewardship.

RIPA CODES OF OPERATING PRACTICE

Guiding Principles

As a member of the Reusable Industrial Packaging Association (RIPA) this company is committed to support the continuing effort to improve the reusable industrial packaging reconditioning industry's responsible performance of its role in environmental sustainability, the Circular Economy, waste reduction, packaging reuse, recycling and responsible packaging management. We pledge to manage our business according to the following guiding principles. We:

- Adhere to RIPA's Codes of Operating Practice for industrial containers.
- Recognize and respond to community concerns about packaging management and the operations of reprocessing facilities.
- Produce industrial packagings that are effective in safely transporting and storing all appropriate materials.
- Make health, safety, sustainability and environmental issues a priority in our planning for all existing and new processes.
- Counsel users of our packagings on the safe use, transportation, emptying, and management of reusable industrial packagings.
- Operate our plants in a manner that protects the environment and the health and safety of our employees and the public.
- Participate with governments and others in creating responsible laws, regulations, and standards to safeguard the community, workplace, and environment.
- Agree, regardless of our corporate location, to comply with the laws of the United States, including but not limited to laws related to antitrust and unfair competition, trademark and intellectual property rights, and contractual obligations.
- Promote the principles and practices of Responsible Packaging Management by sharing our experiences and offering assistance to others who produce, use, reuse, transport, scrap or dispose of reusable industrial packagings.
- Foster the integrity and reputation of the industry by refraining from publishing knowingly false, misleading, or commercially disparaging statements or advertisements about our products and services, or the products and services of competitors.
- Conduct our business in accordance with all applicable U.S. federal and State laws and regulations.

CHAPTER 1

SELECTING QUALITY REUSABLE INDUSTRIAL PACKAGINGS

Selecting the right industrial packagings for your company's needs requires a thorough understanding of the product(s) to be shipped as well as knowledge of applicable regulations and shipping mode requirements. Product shippers are responsible for selecting appropriate packagings that are properly marked and can withstand the rigors of the anticipated transportation environment, including handling and storage.

Packaging purchasers should be familiar with features that influence a used packaging's value, including materials of construction, material thickness and non-standard features, such as side-bungs. For example, a packaging's higher durability can enhance its "after-market" value and suitability for reuse. Durable packagings that can be reused multiple times before being recycled are environmentally friendly because each reuse saves carbon emissions.

Simplify Your Purchasing Decisions

Packagings that conform to industry specifications for marking, manner of construction, U.S. DOT requirements for material thickness (e.g. steel and plastic drums) generally have a greater after-market value than non-conforming packagings. This is because conforming packagings reduce sorting problems for reconditioners, are easier to clean and recondition, and can be more easily resold to a wider market.

Improving the Value of Empty Industrial Packaging

When selecting performance specifications for industrial packagings — new or reconditioned — buyers should be cognizant of the fact that their customers are the ones who will be responsible for finding outlets for the packages after they have been emptied.

This is why using a "standard" packaging where feasible is so important. Eliminating unnecessary non-standard features (e.g. linings or side bungs) has several beneficial effects: The packaging may be less costly to purchase, and the after-market value of the packaging will likely be higher because reconditioners can re-sell the container in a greater number of markets.

Saving Carbon – Be Part of the Circular Economy

As companies look for ways to save on carbon emissions (CO₂e), packaging reuse becomes a goal that is not just good for the environment, it helps companies attain their sustainability goals. Thanks to work done by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) purchasers of reusable packagings have the capability to calculate and report carbon emissions they have saved through the purchase of a reconditioned packaging. The mechanism — referred to as Scope 3 emissions — is part of the "GHG Protocol," which is a globally recognized framework for managing GHG emissions from private and public sector operations.

Industrial packagings are included in Scope 3 of The Protocol's Corporate Accounting and Reporting Standard. [This standard](#) provides an accounting platform for corporate and city GHG programs throughout the world to report their GHG emission status. When calculated in an appropriate manner, these carbon savings may be used as carbon "off-sets" to reduce the total carbon footprint of a packaging purchaser. These "off-sets" play an important role in advancing a company or governmental entity towards its goal of achieving net-zero carbon emissions.

PACKAGING SELECTION WORKSHEET

GENERAL

Determine (from hazardous materials table: 49 CFR 172.101):

- i. Proper Shipping Name _____
- ii. Hazard Class and Division _____
- iii. UN Identification Number _____
- iv. Packing Group (PG) I, II or III (X, Y, or Z marked on packaging) _____

This requires knowledge of:

- i. Vapor pressure (liquids) _____
- ii. Specific gravity (liquids) _____
- iii. Gross mass (solids) _____

STEEL DRUMS

Fittings

A. 55-Gallon Tight Head

- i. 2" and 3/4" bungs in top head _____
- ii. Other location (e.g., side bungs) _____
- iii. Type of bung (e.g., steel or plastic) _____
- iv. Are cap seals needed? Yes No

B. 55-Gallon Open Head

- i. Ring: (e.g. bolt-lock or lever-lock) _____
- ii. Gasket type/style (e.g., round or square) _____
- iii. Are bungs needed? Yes No
 - If yes, 2" x 3/4" bungs in top head; 2" bung on sidewall (only if required)
- iv. Are cap seals needed? Yes No

PACKAGING SELECTION WORKSHEET

Linings

- i. Is a lining needed? Yes No

Type of lining:

- High epoxy Phenolic epoxy Phenolic

Other – specify: _____

Non-Standard Features

- i. Agitator Yes No
- ii. Non-standard dimensions (Describe) _____
- iii. Removable Plastic Liner (type) _____

PLASTIC DRUMS

55-Gallon Tight Head

- i. 2" x 2" bungs in top head Yes No
- ii. Style of closure system (e.g., NPT) _____

55-Gallon Open Head

- i. Ring: bolt-lock or lever-lock _____
- ii. Are bungs needed? Yes No
- If yes, 2" x ¾" bungs in top head; 2" bung on sidewall (only if required)
- If yes, style of closure system _____
- iii. Are cap seals needed? Yes No

INTERMEDIATE BULK CONTAINERS

1. Style (i.e., all plastic, stainless steel, or "composite" _____
(i.e., steel cage and plastic inner bottle)
2. Capacity (in gallons) _____
3. Pallet (e.g., wood, steel, plastic, composite) _____
4. Discharge valve type (e.g., ball, butterfly, etc.) _____
5. Pressure relief device? Yes No
6. Proper UN marks on exterior and bottle? Yes No

CHAPTER 2

NO MORE DIRECT-TO-SCRAP / EMPTY PACKAGING CERTIFICATION

No More Direct-to-Scrap

The thousands of companies that regularly purchase products shipped in steel drums, plastic drums, or intermediate bulk containers, may not realize that a significant percentage of these containers carry chemicals and other materials regulated by the U.S. Environmental Protection Agency and/or the U.S. Department of Transportation. After using the material in these containers for production purposes, a small amount of residue inevitably remains in the container.

Often, company managers do not understand that even small amounts of regulated residues must be managed in accordance with federal environmental and transportation laws. This means that residue containers may not be crushed or shredded and sent directly to scrap processing facilities. In fact, the act of sending whole, crushed or shredded residue containers directly to scrap processing facilities may expose the company to serious legal liability for failing to comply with the Resource Conservation and Recovery Act (RCRA), the Hazardous Materials Transportation Act (HMTA) and the Comprehensive Environmental Response, Compensation and Liability Act (“Superfund”). [Go [here](#) for a full discussion of applicable laws.]

The best way to be sure your company is handling emptied residue containers safely is to work with a member of the Reusable Industrial Packaging Association. RIPA members comply with strict Codes of Practice that ensure your empty containers are properly transported, cleaned, reconditioned and, where feasible, reused. Containers that are no longer able to be safely reused are cleaned and scrapped in strict accordance with all applicable laws and regulations. Copies of the RIPA Codes of Practice are reproduced herein in Appendices 1-4. For a list of RIPA members, go [here](#).

Empty Packaging Certification

Empty packaging certification is at the heart of Responsible Packaging Management. Created by the members of the Reusable Industrial Packaging Association, the “Empty Packaging Certification” form is executed by the packaging emptier and provided to the selected reconditioner or dealer. It confirms that the packagings being transferred are empty in accordance with EPA requirements (40 CFR 261.7) and have been properly prepared for transportation in accordance with DOT requirements (49 CFR 173.29).

Some companies execute these documents on an annual basis, but many reconditioners and dealers print the certification on shipping documents or receiving tickets so that the certificate is signed every time empty packagings are offered to a reconditioner. RIPA recommends that every shipment of empty containers be accompanied by a signed “Empty Packaging Certification” form to be sure that there is no uncertainty on the part of the offeror of his/her responsibilities under the law.

Why Empty Packaging Certification is Important

Certification is vital because it is a packaging user's principal guarantee of compliance with the Hazardous Materials Transportation Act and two of the nation's most important environmental laws: The Resource Conservation and Recovery Act; and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) – best known as “Superfund.”

Empty Packaging Certification also establishes a legal business record. It documents the fact that the packagings transferred to a reconditioner or dealer were RCRA-empty and, therefore, not subject to the complex requirements in EPA's hazardous waste transportation regulations.

Empty packagings often have economic value. By offering packagings to a reconditioner and documenting this fact, emptiers are certifying that they are not engaged in the “abandonment or discard” of an unclean packaging, nor have they “arranged for disposal or treatment...of hazardous substances.” Either of these activities would establish strict joint and several liability under Superfund.

Empty packaging certification reminds plant managers not to waste valuable virgin product. A diligent program to ensure proper emptying of all packagings will lower costs by maximizing raw material utilization.

Certification is also a helpful employee training tool. Employees who are responsible for packaging certification are trained to understand the laws that impact this part of the business. They generally are working around environmentally sensitive areas and know that exposure to chemicals and fumes from improperly closed and prepared containers – even after emptying – should be avoided. The obligation to certify the status of emptied packagings is a constant reminder to comply with environmental and worker health and safety requirements.

A short video on empty container management and a link to a sample empty container certification form can be found [here](#).

CHAPTER 3

EMPTY PACKAGING MANAGEMENT

An empty packaging that previously held a DOT- or EPA-regulated material must be handled properly, or it will be a safety and environmental liability for the emptier. Strict liability standards arising from federal and state environmental laws and regulations, corporate operating standards and federal transportation safety regulations, make empty packaging management serious business.

Proper Emptying

Proper emptying of every package is the most important aspect of in-plant Responsible Packaging Management. This activity impacts plant operating costs and will directly affect a company's future legal liabilities and environmental profile.

- **Cost reduction.** Residues of costly materials left in packagings represent lost profit. Plant managers should be aware of this fact and implement quality assurance practices that ensure every container is emptied as fully as possible.
- **Regulatory compliance.** For many chemical products, only those packagings meeting the U.S. EPA “empty container rule” (40 CFR 261.7) escape classification as hazardous wastes. It is illegal to ship residue containers with even small amounts of hazardous waste—even those that meet the RCRA-emptiness standard — directly to a scrap yard. However, it is legal to ship RCRA—empty containers to a reconditioner. Container reconditioning facilities can clean, test and prepare empty packagings for reuse. If a packaging is found unfit for reuse, the cleaned container can be safely sent to a scrap processing facility.
- **Legal liability for environmental damage.** Companies that send residue containers to scrap or solid waste management facilities for disposition have “arranged for disposal or treatment...of hazardous wastes,” or have “abandoned or discarded unclean packagings.” Both terms come from the federal CERCLA (“Superfund”) law and both activities incur strict, retroactive, joint and several liability for any subsequent environmental damage caused by the waste in or on those packagings. Smart companies avoid these potential problems by using a qualified reconditioner to handle their residue containers.
- **Legal liability for improper transportation.** An empty industrial packaging that contains residue of a DOT regulated hazardous material must be closed, marked and labeled as if it were still full of the product. Residue packagings that are crushed or shredded without first being cleaned must be “overpacked” in a properly marked DOT-authorized container. Additionally, they must be offered for shipment with proper shipping papers, performance marks and hazard labels. Failure to meet these DOT requirements (See 49 CFR Parts 100-199), can result in extensive and costly penalties, and even criminal liability.

EPA empty container rule. Personnel responsible for emptying industrial packagings and their supervisors should have a full understanding of the EPA “empty container” rule. Importantly, the rule applies separate emptiness criteria to drums and intermediate bulk containers. [Go [here](#) for a full discussion of this issue.]

Briefly, with regard to drums, EPA states that if any hazardous material remains in a drum after emptying, that drum will be considered hazardous waste unless the emptier removes all the material from the drum “using the practices commonly employed to remove materials from that type of container, e.g. pouring, pumping, and aspirating” and, with regard to viscous materials, no more than one inch (or 3% of capacity) of residue remains in the drum.

For IBCs (and all other packagings larger than 119 gallons capacity), EPA defines “empty” to mean that no more than 0.3% of the total capacity of the container remains in the packaging or inner liner after emptying. For the most commonly used IBCs (e.g. 275-gallon capacity units) this means that less than one gallon of material may remain inside after emptying.

California empty container rule. Companies doing business in California should be aware that the state has adopted more stringent empty container regulations than the rest of the country. California requires emptiers to ensure that all packagings have been emptied as fully as possible “using methods commonly employed to remove waste or material from packagings.” Further, if the contents of a packaging are pourable the emptier must continue to empty the packaging “until no flow of waste or material can be poured from the packaging... when the packaging or inner liner is held in any orientation...and dripping has ceased.” [See Title 22 CCR 66261.7 et seq. [here](#).]

Empty packaging management check list. RIPA has developed an Empty Packaging Management Check List (below) to help employers train their employees who are responsible for this important activity, and to ensure that basic quality assurance practices are in place to reduce potential liability exposure.

Empty Packaging Management Check List

RIPA has created this *Empty Packaging Management Check List* to help employers train their employees who are responsible for this important activity and to ensure that good management practices are in place to reduce liability exposure. RIPA encourages employers to incorporate this check list in their various training programs as a means of assuring regulatory compliance and improving their company's sustainability profile.

1. Are the original shipping labels and markings retained on emptied packagings? Yes No
2. Is there a quality assurance (QA) system in place to prevent emptied packagings from being filled with other materials? Yes No
 - i. If no, are all emptied packagings cleaned and purged? Yes No
3. Is there a policy or QA system in place to ensure employees are trained to know that all packagings must meet the EPA definition of "empty packagings," (40 CFR 261.7)? Yes No
4. Do employees in emptying operations understand that empty packagings that previously held liquid ladings should be "drip-dry?" Yes No
5. Is there a policy or QA system in place to prepare emptied packagings properly for shipment? Yes No
 - i. Are all closures tightly replaced on emptied packagings? Yes No
 - ii. Are covers and rings replaced on open head drums? Yes No
 - iii. Are emptied packagings maintained in a secure area? Yes No
 - iv. Are empty packagings handled and stored so as to minimize damage and deterioration?
 Yes No
6. Is there a policy or QA system in place to prevent uncleaned empty packagings from being "donated" to employees or local charities? Yes No
7. Is there a policy or QA system in place regarding the selection of qualified distributors or reconditioners to receive emptied packagings? Yes No
 - i. If no, does the policy or QA system governing container disposition contain one or more of the following environmentally sound practices?
 - (a) return packagings to the original shipper Yes No
 - (b) ship packagings to a licensed hazardous waste disposal facility Yes No
8. If packagings are shipped to a permitted Hazardous Waste Treatment, Storage and Disposal Facility, is a properly completed EPA manifest used (40 CFR 262.60)? Yes No
9. Is an emptied packaging certification form signed and sent with each shipment of packagings going to a dealer or a reconditioner? Yes No
 - i. If no, does the facility have in place another means of guaranteeing that all emptied packagings shipped to a dealer or reconditioner are RCRA-empty? Yes No

APPENDIX 1

Code of Operating Practice: Reconditioning and Remanufacturing Steel Drums

1.0 BASIC RECOMMENDATION

Packaging that is reformed, de-dented, remarked, repainted, or mechanically altered, or that must be mechanically processed in any way to be able to meet the design-type tests, may not be reused without first being reconditioned. Performance of any step of the reconditioning process should be accompanied by performance of all reconditioning steps. If any element of reconditioning is done (e.g., cleaning, changing non-integral gaskets) then the entire reconditioning process should be completed in accordance with this Code and applicable requirements in the Hazardous Materials Regulations (49 CFR Parts 173.28 and 173.29). This is to assure that any reference to reconditioning provides the filler of a drum with total packaging integrity.

2.0 STEEL DRUM RECONDITIONING FIRM

2.1 **Equipment.** Businesses that properly recondition steel drums for use in transporting hazardous materials must possess and be capable of operating the necessary equipment to process drums in accordance with all the provisions described in this Code of Operating Practice.

2.2 **DOT registration.** Steel drum reconditioners shall be registered with the U.S. Department of Transportation (i.e. possess a “M” number or both an “M” and “R” number). They must mark reconditioned steel drums with the firm’s identification (e.g., name and address) as its certification of regulatory compliance and the packaging’s performance integrity.

2.3 **Regulatory compliance.** Steel drum reconditioners shall be in compliance with all federal, national, provincial and local government regulations pertaining to safety and health, and environmental protection.

2.4 **Quality assurance.** The firm must maintain a documented quality assurance (QA) program. RIPA makes available to all members a sample QA program that members may utilize in developing such programs.

2.5 **Customer visits.** The reconditioner shall encourage plant reviews during normal operating hours by any emptier or customer.

3.0 INCOMING EMPTY STEEL DRUM REQUIREMENTS

3.1 **Transportation of empty steel drums containing residues.** Steel drums that have been used for the transportation of hazardous materials but have not been cleaned and purged of all hazards in accordance with DOT requirements (49 CFR 173.29) must be transported with all closures in place, and with all original hazard markings and labels legible.

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3.2 Acceptance of steel drums containing residues; “empty” steel drums. No steel drum that previously contained hazardous material may be accepted by a reconditioner unless it is legally empty. “Empty” means that the steel drums meet EPA emptiness requirements (See 40 CFR 261.7) or complies with the California “drip dry” standard. The EPA empty container standard (“RCRA Empty”) states that steel drums must be as empty as possible using practices commonly employed to remove materials from drums, including pouring, pumping and aspiration. In addition, no more than 2.5 cm (~one inch) of residual viscous material may remain in the bottom of the drum. If more residual hazardous material than this remains in the drums, then the drums are not empty. If the residual material is listed by EPA in 40 CFR 261.33(e) as a “P-listed” acute hazardous waste, the drum is not deemed empty unless it has been triple-rinsed using an effective solvent or has been cleaned by a method shown to achieve equivalent removal.

California steel drum reconditioners may only accept steel drums that comply with the state’s empty packaging rule (22 CCR 66261.7).

3.3 Empty drum certification. Every person providing drums containing any hazardous residues to a reconditioning firm shall be asked to sign an “Empty Drum Certification” verifying that the drums are empty in accordance with the explanation of that term in 3.2, above. The empty drum certification form shall be signed on each trip unless alternate contractual or electronic methods of complying with this certification procedure are used. A sample empty container certification form can be accessed [here](#).

3.4 Inspection of incoming steel drums. The reconditioning firm shall inspect each drum when it is unloaded from transportation equipment. All drums must be inspected to make certain they are empty, to determine the original specification of the drum, and to determine whether the drum is damaged or not able to be reconditioned. Drums that cannot be reconditioned for reuse must be prepared for scrap in accordance with 9.0 below.

3.5 Rejection of drums that are not empty. If, when evaluating the status of incoming drums containing residues, the reconditioner determines they contain excessive amounts of retained product, they must be rejected and managed in accordance with 3.6 below.

3.6 Management of rejected non-empty drums. Drums that are determined to be not in compliance with RCRA emptiness requirements (see 3.2 above) during the on-site unloading process shall be tightly closed, separated from other incoming drums and marked or labeled in a manner clearly indicating they are being rejected, and returned to the generator as unused product. Drums that are not immediately returned to the generator must be segregated and held in a designated location with controlled access. The generator/emptier should be notified of the situation and the rejected drums shall be returned to the emptier as unused product as soon as possible. The generator/emptier shall be asked to provide appropriate return shipping information for the rejected drum, including a bill of lading, and the generator/emptier shall be responsible for making all appropriate shipping and transportation arrangements in full compliance with DOT regulations.

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4.0 STEEL DRUM RECONDITIONING – CLOSED HEAD DRUMS

4.1 **Cleaning.** The exterior of each steel drum shall be chemically cleaned, mechanically brushed, and/or abrasively blasted to remove labels, coatings, corrosion or other surface materials. External coatings and labels must be sufficiently removed to expose any metal deterioration that adversely affects transportation safety. All former contents and any visible corrosion must be removed. The interior is typically treated for corrosion resistance (rust inhibitor rinse). Controls must be established to prevent the formation of interior condensation.

4.2 **Inspection.** After cleaning and before painting, a visual inspection of the steel drum must be conducted to find visible pitting, rust that might reduce metal thickness, or other material defects. If the drum does not conform to applicable quality standards, it must be rejected for use with hazardous materials.

4.3 **Processing.** Where necessary, chimes must be mechanically straightened to reform and reseal them. Drums in need of de-denting shall be subjected to internal pressure sufficient to restore original shape and contour.

4.4 **Closure cleaning and inspection.** All closures must be cleaned, and reinserted with effective, clean gaskets. Bungs and flanges must show no damaged threads and must ensure a leakproofness seal. Damaged bungs and flanges should be replaced.

4.6 **Leakproofness testing.** The drum must be leakproofness tested by water immersion and application of an internal air pressure of at least 20 kPa (3 psi) for Packing Group II and III drums and 30 kPa for Packing Group 1 drums. Alternative approved methods for leakproofness testing may be used, including pressure differential and helium, and are found in Appendix B to Part 178 of 49 CFR. Drums that fail the leakproofness test must be rejected for use in hazardous materials transportation.

4.7 **Exterior coating.** The exterior of the drum must be painted with a new coating to provide a protective and decorative finish.

4.8 **Marking.** The fully reconditioned drum must be marked with the reconditioning firm's name and address or registered symbol (e.g. "M" or "R" number), the year of testing (last two digits), the symbol of the nation in which the reconditioning was performed, the letter "R" for reconditioned, and the letter "L" for drums that have been successfully leakproofness tested. The reconditioner's replacement mark may show a performance level lower than that originally marked by the manufacturer; however, the reconditioner may not apply a higher performance mark that was embossed on the bottom of the drum.

Sample mark (for liquids): UN/1A1/Y1.4/250

USA/MXXXX/22 RL

4.9 **Scrap preparation.** Drums that have been rejected for reuse and which cannot be repaired for hazardous materials service are to be cleaned and directed to non-hazardous materials service or prepared for scrap. When preparing drums for scrap, the interior and exterior of the drum must be cleaned using an effective cleaning agent or thermally neutralized in a drum reclamation furnace. These drums should then be directed to a scrap processing facility.

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5.0 STEEL DRUM RECONDITIONING – OPEN HEAD DRUMS

5.1 **Cleaning.** Open head drums and closed head drums from which the top heads have been removed (see remanufacturing) must be cleaned thoroughly. All former contents and any visible rust or corrosion must be removed.

5.2 **Thermal processing.** When thermal processing is utilized, drums with covers removed must be conveyed through a drum reclamation furnace which subjects both the interior and exterior of the drum to temperatures sufficient to prepare the drum for abrasive cleaning (e.g. shot blasting). The charred material and former linings and coatings, as well as rust, are sufficiently removed in this process to prepare the drum for further processing. External coatings and labels must be sufficiently removed to expose any metal deterioration that adversely affects transportation safety.

5.3 **Inspection.** After cleaning and before painting, a visual inspection of the steel drum must be conducted to find visible pitting, rust that might reduce metal thickness, or other material defects. If the drum does not conform to applicable quality standards, it must be rejected for use with hazardous materials.

5.4 **Mechanical processing.** Where necessary, chimes must be mechanically straightened to reform and reseal them. Drums must be expanded or re-rolled to restore it to the original shape and contour. If the top head is removed by cutting or unrolling, the side wall must be curled or beaded to accept a cover.

5.5 **Leakproofness testing.** If the cleaned drum is intended for use in hazardous materials transportation, it must be leakproofness tested by water immersion without the head, applying an internal air pressure of at least 20 kPa (3 psi) for Packing Group II and III drums and 30 kPa for Packing Group 1 drums, for at least 5 seconds. Alternative approved leakproofness testing methods may be used, including pressure differential and helium testing, and are found in Appendix B to Part 178 of 49 CFR.

5.6 **Closures.** All closures must be removed, cleaned, and reinserted with effective, clean gaskets. Bungs and flanges must show no damaged threads and must ensure a leakproofness seal. The closing rings must be reformed and cleaned or replaced.

5.7 **Coatings.** The exterior of the drum must be painted with a new coating to provide a protective and decorative finish. The interior coating or treatment (e.g. lining) — if used — must be applied and cured in accordance with the lining manufacturer's specifications.

5.8 **Marking.** The fully reconditioned drum intended for use with hazardous materials must be marked with the reconditioning firm's name and address or registered symbol (e.g. "M" or "R" number), the year of testing (last two digits), the symbol of the nation in which the reconditioning was performed, the letter "R" for reconditioned, and the letter "L" for drums that have been successfully leakproofness tested. The reconditioner's replacement mark may show a performance level lower than that originally marked by the manufacturer; however, the reconditioner may not apply a higher performance mark than that embossed on the bottom of the drum.

Sample mark (for liquids): UN/1A2/Y1.2/150

USA/MXXXX/22 RL

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7.3 Wastewater and air emissions. Discharges of wastewater from the reconditioning plant to the environment or to the sewer system, and emissions to the atmosphere, must meet applicable water and air pollution regulations for the jurisdiction in which the plant is located. Odors must be minimized whether subject to government controls or not.

7.4 Employee protection. Exposure of employees to any chemicals in the workplace, including the contents of incoming drums must be reduced to the extent practicable. At a minimum, this necessitates that the reconditioning firm provide and require the use of effective personal protective equipment for all employees. The firm must have in place a program of Hazard Communication for employees, including federally mandated access to Safety Data Sheets (SDS's). Employees must have unencumbered access to SDS's such as a workplace phone and fax to receive an SDS from a 24/7 SDS provider. Exposure to extreme heat should be addressed with measures such as readily available drinking water, ventilation and shade.

7.5 Training. Employees engaged in reconditioning activities must be trained in the proper performance of their jobs, including DOT general awareness and function specific activities, as appropriate. Under DOT regulations, all new employees meeting the DOT definition of "hazmat employee" must be trained within 90 days of employment and all such employees must receive DOT refresher training every three years thereafter. Despite DOT's 90-day allowance, however, new employers should not be exposed to hazardous materials residue drums until the employees are properly trained for their positions. Employees must be made aware of the hazards of the process chemicals to which they are exposed and of the importance of compliance with this Code and all applicable government regulations. Copies of current HazMat Employee Training Certificates for each trainee must be maintained onsite by the employer for at least 3 years.

7.6 Company owned vehicles and drivers. Reconditioning firms that directly employ their own drivers and which operate their own trucks should ensure that both drivers and trucks are operated in compliance with standards of the U.S. Federal Motor Carrier Safety Administration, including the qualification of drivers, driver's hours of service, safe loading and operation of trucks and testing for alcohol or other controlled substance abuse. Company-owned trucks shall be maintained in safe operating condition.

7.7 Fire safety and Site Security. Practical precautions against fires should be implemented, including having adequate fire extinguishing capability, contingency planning, effective coordination with local emergency response authorities, and good housekeeping to minimize opportunities for ignition. A facility-wide emergency response plan for fire or security breach (e.g., an intruder) should be created and rehearsed periodically.

APPENDIX 1

8.0 PUBLIC STATEMENTS AND ADVERTISING

8.1 *Foster integrity.* Each RIPA member shall foster the integrity and reputation of the industrial packaging industry generally and the RIPA membership specifically by refraining from publishing knowingly false, misleading or commercially disparaging statements or advertisements.

8.2 *Public statements and advertising.* A members' public statements and advertisements shall not knowingly misrepresent fact or law or create a negative impression or expectation about competitive products and services unless such statement or advertisement is based upon facts which are amendable to independent measurement and verification.

APPENDIX 2

Code of Operating Practice: Reconditioning and Remanufacturing Plastic Drums

1.0 BASIC RECOMMENDATION

Plastic drums used for the transportation of hazardous materials that are re-marked, mechanically altered, or that must be mechanically processed in any way to be able to meet the design-type tests, may not be reused without first being reconditioned. Performance of any step of the reconditioning process should be accompanied by performance of all applicable reconditioning steps. That is, if any element of reconditioning is done (e.g., cleaning,) then the entire reconditioning process should be completed in accordance with this Code, including replacement of gaskets, inspection for quality and testing for leaks. This is to assure that any reference to reconditioning provides the filler of a drum with total packaging integrity.

2.0 RECONDITIONING FIRM – GENERAL REQUIREMENTS

2.1 **Equipment.** A business that properly reconditions plastic drums for use in transporting hazardous materials is one that possesses the necessary equipment and processes drums in accordance with all of the provisions described of this Code of Operating Practice.

2.2 **DOT registration.** Plastic drum reconditioning firms shall be registered with the U.S. Department of Transportation (“M” or “R” number) and, if applicable, be licensed by appropriate government authorities. The firm shall mark reconditioned plastic drums with the firm’s identification as its certification of regulatory compliance.

2.3 **QA program.** The reconditioning firm must maintain a documented quality assurance program.

2.4 **Plant visits.** The reconditioning firm shall encourage plant reviews during normal operating hours by any emptier or customer.

2.5 **Regulatory compliance.** In addition to meeting the details of this Code of Operating Practice, the reconditioning firm should be in compliance with all applicable government regulations pertaining to safety and health, and environmental protection.

APPENDIX 2

3.0 INCOMING EMPTY PLASTIC DRUM REQUIREMENTS

3.1 **Transportation of empty plastic drums containing residues.** Plastic drums that have been used for the transportation of hazardous materials but have not been cleaned and purged of all hazards in accordance with DOT requirements (49 CFR 173.29) must be transported with all closures in place, and with all original hazard markings and labels legible.

3.2 **Acceptance of plastic drums containing residues; “empty” plastic drums.** No plastic drum that previously contained hazardous material may be accepted by a reconditioner unless it is legally empty. “Empty” means that the drums meet EPA emptiness requirements (See 40 CFR 261.7) or complies with the California “drip dry” standard. The EPA empty container standard (“RCRA Empty”) states that drums must be as empty as possible using practices commonly employed to remove materials from drums, including pouring, pumping and aspiration. In addition, no more than 2.5 cm (~one inch) of residual viscous material may remain in the bottom of the drum. If more residual hazardous material than this remains in the drums, then the drums are not empty. If the residual material is listed by EPA in 40 CFR 261.33(e) as a “P-listed” acute hazardous waste, the drum is not deemed empty unless it has been triple-rinsed using an effective solvent or has been cleaned by a method shown to achieve equivalent removal.

California plastic drum reconditioners may only accept plastic drums that comply with the state’s empty packaging rule (22 CCR 66261.7).

3.3 **Empty drum certification.** Every person providing drums containing any hazardous residues to a reconditioning firm shall be asked to sign an “Empty Drum Certification” verifying that the drums are empty in accordance with the explanation of that term in 3.2, above. The empty drum certification form shall be signed on each trip unless alternate contractual or electronic methods of complying with this certification procedure are used. A sample empty container certification form can be accessed [here](#).

3.4 **Inspection of incoming plastic drums.** The reconditioning firm shall inspect each drum when it is unloaded from transportation equipment. All drums must be inspected to make certain they are empty, to determine the original specification of the drum, and to determine whether the drum is damaged or not able to be reconditioned. Drums that cannot be reconditioned for reuse must be prepared for scrap in accordance with 9.0 below.

3.5 **Rejection of drums that are not empty.** If, when evaluating the status of incoming drums containing residues, the reconditioner determines they contain excessive amounts of retained product, they must be rejected and managed in accordance with 3.6 below.

APPENDIX 2

3.6 Management of rejected non-empty drums. Drums that are determined to be not in compliance with RCRA emptiness requirements (see 3.2 above) during the on-site unloading process shall be tightly closed, separated from other incoming drums and marked or labeled in a manner clearly indicating they are being rejected, and returned to the generator as unused product. Drums that are not immediately returned to the generator must be segregated and held in a designated location with controlled access. The generator/emptier should be notified of the situation and the rejected drums shall be returned to the emptier as unused product as soon as possible. The generator/emptier shall be asked to provide appropriate return shipping information for the rejected drum, including a bill of lading, and the generator/emptier shall be responsible for making all appropriate shipping and transportation arrangements in full compliance with DOT regulations.

4.0 CLOSED HEAD DRUM PROCESSING

4.1 Removal of contents. The drum must be cleaned to remove former contents.

4.2. Cleaning. The exterior of the drum must be cleaned to substantially remove labels, adhesives and surface coatings. Surface treatments may be utilized to improve external appearance.

4.3 Inspection. After cleaning, an internal and external inspection of the drum must be conducted. If any of the prior contents remain, the drum must be rejected or subjected to further processing. The drum must be inspected for flange damage, stress cracking, and surface damage that reduces the structural integrity of the drum. Drums that show evidence of these problems should be rejected.

4.4 Leakproofness testing. The drum must be leakproofness tested by water immersion and application of an internal air pressure of at least 20 kPa (3 psi) for Packing Group II and III drums and 30 kPa for Packing Group 1 drums, for at least 5 seconds. Alternative approved methods for leakproofness testing may be used, including pressure differential and helium, and are found in Appendix B to Part 178 of 49 CFR. Drums that fail the leakproofness test must be rejected for use in hazardous materials transportation.

4.5 Closures. All closures must be removed, cleaned and replaced if necessary, or reinserted with suitable new gaskets. Closures and flanges must show no damaged threads and must ensure a leakproof seal.

4.6 Marking. The completed drum must be marked with the reconditioning firm's identification number or registered symbol, the last two digits of the year of testing, the symbol of the nation in which the reconditioning was performed, the letter "R", and the letter "L" for drums that have been successfully leakproofness tested. The reconditioning firm's identity marking constitutes a certification that the drum meets all applicable regulations and this Code of Operating Practice.

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5.0 OPEN HEAD DRUM PROCESSING

5.1 **Cleaning.** The interior and exterior of open head drums and covers, and closed head drums from which the top heads have been removed, must be cleaned thoroughly. All prior contents must be removed.

5.3 **Label and coating removal.** See 4.2 above.

5.4 **Inspection.** See 4.2 above.

5.5 **Closures and rings.** All closures must be removed, cleaned, and replaced if necessary, or reinserted with suitable new gaskets. Closures and flanges must show no damaged threads and must ensure a leakproof seal. The closing rings must be reformed and, if necessary, cleaned, painted or replaced.

5.6 **Marking.** The completed drum must be marked with the reconditioning firm's identification number or registered symbol, the last two digits of the year of testing, the nation in which the reconditioning was performed, the letter "R" and the letter "L" for drums that have been successfully leakproofness tested. The reconditioning firm's identity marking constitutes a certification that the drum meets all applicable regulations and this Code of Operating Practice.

6.0 CONVERTED AND REMANUFACTURED DRUMS

Drums converted from one UN type to another UN type (e.g., 1H1 to 1H2); or which undergo the replacement of integral structural components are remanufactured drums. All requirements applicable to the manufacturer of new drums of that specification apply to these drums.

7.0 DRUM REJECTION

7.1 **Rejected drums.** Drums that have been rejected during the inspection processes and cannot be repaired for hazardous materials service are to be cleaned and directed to nonhazardous material service or prepared for scrap. When preparing drums for scrap, the drum interior and exterior must be cleaned using an effective cleaning method.

7.2 **Granulation of plastic drums.** Drums that are granulated may need to be separated according to manufacturer and color, with consideration given to prior contents. Material that is contaminated (e.g., paint, odor) should be packaged separately. Material intended for recycling should be handled in accordance with a written quality assurance program. Each batch should be verified to ensure it has the proper melt-flow rate, density, and other factors necessary for the intended purpose. Material that fails any test should be rejected.

7.3 **Disposal of off-specification plastic material.** Plastic material that cannot be sold to an end user for any reason should be disposed of in compliance with all applicable federal, State and local laws and regulations.

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8.0 ENVIRONMENTAL AND EMPLOYEE PROTECTION

8.1 **Storage of plastic drums containing residues.** Un-reconditioned plastic drums must be stored with all closures in place and must be inspected periodically to assure no residual contents are leaking. All drums that are deemed unfit for reconditioning should be cleaned and prepared for scrap in accordance with this Code.

8.2 **Accumulated residues from plastic drums.** All wastes generated during the reconditioning process must be managed in full compliance with applicable regulations governing such wastes.

8.3 **Wastewater and air emissions.** Discharges of wastewater from the reconditioning plant to the environment or to the sewer system, and emissions to the atmosphere, must meet applicable water and air pollution regulations for that geographical area. Offensive emissions (odors) must be minimized whether subject to government controls or not.

8.4 **Employee protection.** Exposure of employees to any chemicals in the workplace, including the contents of incoming drums, must be reduced to the extent practicable. At a minimum, this necessitates the reconditioning firm providing and requiring the use of effective personal protective equipment. The firm must have in place a program of Hazard Communication for employees, including federally mandated access to Safety Data Sheets (SDS's).

8.5 **Training.** Employees must be trained in the proper performance of their jobs, including DOT general awareness and function specific activities, as appropriate. All new employees meeting the DOT definition of "hazmat employee" must be trained within 90 days of employment. All employees must receive DOT training every three years thereafter. Employees must be made aware of the hazards of the process chemicals to which they are exposed and of the importance of compliance with this Code and all government regulations.

8.6 **Company vehicles and drivers.** Reconditioning firms who employ drivers to operate company vehicles, shall do so in compliance with standards of the Federal Motor Carrier Safety Administration (or other national, regulatory body). The firm shall adhere to rules on the qualification of drivers, including provisions relating to alcohol or other substance testing. Company vehicles shall be maintained in safe operating condition.

8.7 **Fire Safety.** Practical precautions against fires should be implemented, including having adequate fire extinguishing capability, contingency planning, effective coordination with local emergency response authorities, and good housekeeping to minimize opportunities for ignition. A facility-wide emergency response plan for fire or security breach (e.g., an intruder) should be created and rehearsed periodically.

APPENDIX 2

9.0 PUBLIC STATEMENTS AND ADVERTISING

9.1 ***Foster integrity.*** Each RIPA member shall foster the integrity and reputation of the packaging industry generally and the RIPA membership specifically by refraining from publishing knowingly false, misleading or commercially disparaging statements or advertisements.

9.2 ***Public statements.*** Member's public statements and advertisements shall not knowingly misrepresent fact or law or create a negative impression or expectation about competitive products and services unless such statement or advertisement is based upon facts which are amenable to independent measurement and verification.

APPENDIX 3

Code of Operating Practice: Reconditioning Fiber Drums

1.0 BASIC RECOMMENDATION

Fiber drums intended for use in transporting hazardous materials that are mechanically processed or altered in any way to be capable of passing applicable design type tests, may not be reused without first being reconditioned. Performance of any step of the reconditioning process should be accompanied by performance of all reconditioning steps. If any element of reconditioning is done (e.g., cleaning,) then the entire reconditioning process should be completed in accordance with this Code and applicable requirements in the Hazardous Materials Regulations (49 CFR Parts 100 to 199). This is to assure that any reference to reconditioning provides the filler of a drum with total packaging integrity.

2.0 FIBER DRUM RECONDITIONING FIRM

2.1 **Equipment.** Businesses that properly reconditions fiber drums for use in transporting hazardous materials must possess and be capable of operating the necessary equipment to process fiber drums in accordance with all the provisions described of this Code of Operating Practice.

2.2 **DOT registration.** Fiber drum reconditioners shall be registered with the U.S. Department of Transportation (e.g. possess a “M” number or both and “M” and “R” number) and be licensed by appropriate government authorities if required. They shall mark reconditioned fiber drums with the firm’s identification as its certification of regulatory compliance and the packaging’s performance integrity.

2.3 **Regulatory compliance.** Fiber drum reconditioners shall comply with all federal, national, provincial and local government regulations pertaining to safety and health, and environmental protection.

2.4 **Quality assurance.** The firm must maintain a documented quality assurance (QA) program.

2.5 **Customer visits.** The reconditioner shall encourage plant reviews during normal operating hours by their customers and approved guests.

3.0 INCOMING EMPTY FIBER DRUM REQUIREMENTS

3.1 **Transportation of empty fiber drums containing residues.** Fiber drums that have been used for the transportation of hazardous materials but have not been cleaned and purged of all hazards in accordance with DOT requirements (49 CFR 173.29) must be transported with all closures in place, and with all original hazard markings and labels legible.

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3.2 Acceptance of fiber drums containing residues; “empty” fiber drums. No fiber drum that previously contained hazardous material may be accepted by a reconditioner unless it is legally empty. “Empty” means that the fiber drum meets EPA emptiness requirements (See 40 CFR 261.7) or complies with the California “drip dry” standard. The EPA empty container standard states that fiber drums must be as empty as possible using practices commonly employed to remove materials from drums, including pouring, pumping and aspiration. In addition, no more than 2.5 cm (~one inch) of residual non-flowable material may remain in the bottom of the drum. If more residual hazardous material than this remains in the drums, then the drums are not empty. If the residual material is listed by EPA in 40 CFR 261.33(e) as a “P-listed” acute hazardous waste, the drum is not deemed empty unless it has been triple-rinsed using an effective solvent or has been cleaned by a method shown to achieve equivalent removal. Fiber drums permanently marked “poison” may only be offered for additional use in transporting hazardous wastes or hazardous materials in Hazard Class 6.1.

California fiber drum reconditioners may only accept fiber drums that comply with the state’s empty packaging rule (22 CCR 66261.7).

3.3 Empty fiber drum certification. Every person providing drums containing any hazardous residues to a reconditioning firm shall be asked to sign an “Empty Drum Certification” verifying that the drums are empty in accordance with the explanation of that term in 3.2, above. The empty drum certification form shall be signed on each trip unless alternate contractual or electronic methods of complying with this certification procedure are used. A sample empty container certification form can be accessed [here](#).

3.4 Inspection of incoming fiber drums. The reconditioning firm shall inspect each drum when it is unloaded from transportation equipment. All drums must be inspected to make certain they are empty, to determine the original specification of the drum, and to determine whether the drum is damaged or not able to be reconditioned. Drums that cannot be reconditioned for reuse must be prepared for scrap in accordance with 4.5 below.

3.5 Rejection of fiber drums that are not empty. If, when evaluating the status of incoming drums containing residues, the reconditioner determines they contain excessive amounts of retained product, they must be rejected and managed in accordance with 3.6 below.

3.6 Management of rejected non-empty fiber drums. Drums that are determined to be not in compliance with RCRA emptiness requirements (see 3.2 above) during the on-site unloading process shall be properly closed, separated from other incoming drums and marked in a manner that clearly indicates they are being rejected. Drums that are not immediately returned to the generator must be segregated and held in a designated location with controlled access. The generator/emptier should be notified of the situation and the rejected drums shall be returned to the emptier as product as soon as possible. The generator/emptier shall be asked to provide appropriate return shipping information for the rejected drums, including a bill of lading, and the generator/emptier shall be responsible for making all appropriate shipping and transportation arrangements in full compliance with DOT regulations.

APPENDIX 3

5.0 ENVIRONMENTAL AND EMPLOYEE PROTECTION

5.1 **Storage of fiber drums containing residues.** Un-reconditioned fiber drums must be stored with all closures in place and must be inspected periodically to assure no residual contents are leaking. All drums that are deemed unfit for reconditioning should be cleaned and prepared for scrap in accordance with this Code. Damage of drum inventory from atmospheric and ground moisture must be avoided.

5.2 **Managing residues from fiber drums.** All residues generated during reconditioning activities must be managed in full compliance with applicable regulations governing such residues.

5.3 **Wastewater and air emissions.** Discharges of wastewater from the reconditioning plant to the environment or to the sewer system, and emissions to the atmosphere, must meet applicable water and air pollution regulations for that geographical area. Odors must be minimized whether subject to government controls or not.

5.4 **Employee protection.** Exposure of employees to any chemicals in the workplace, including the contents of incoming fiber drums, must be reduced to the extent practicable. At a minimum, this necessitates that the reconditioning firm provide and require the use of effective personal protective equipment for all employees. The firm must have in place a program of Hazard Communication for employees, including federally mandated access to Safety Data Sheets (SDS's).

5.5 **Employee training.** Employees engaged in reconditioning activities must be trained in the proper performance of their jobs, including DOT general awareness and function specific activities, as appropriate. Under DOT regulations, all new employees meeting the DOT definition of "hazmat employee" must be trained within 90 days of employment and all such employees must receive DOT training every three years thereafter. Despite DOT's 90-day allowance, however, new employers should not be exposed to hazardous materials residue drums until the employees are properly trained for their positions. Employees must be made aware of the hazards of the process chemicals to which they are exposed and of the importance of compliance with this Code and all applicable government regulations. RIPA provides members with a compliant training program, in both English and Spanish, which may be ordered here.

5.6 **Company owned vehicles and drivers.** Reconditioning firms that directly employ their own drivers and which operate their own trucks should ensure that both drivers and trucks are operated in compliance with standards of the U.S. Federal Motor Carrier Safety Administration, including the qualification of drivers, driver's hours of service, safe loading and operation of trucks and testing for alcohol or other controlled substance abuse. Company-owned trucks shall be maintained in safe operating condition.

5.7 **Fire safety.** Practical precautions against fires should be implemented, including having adequate fire extinguishing capability, contingency planning, effective coordination with local emergency response authorities, and good housekeeping to minimize opportunities for ignition. A facility-wide emergency response plan for fire or security breach (e.g., an intruder) should be created and rehearsed periodically.

APPENDIX 3

6.0 PUBLIC STATEMENTS AND ADVERTISING

6.1 ***Foster integrity.*** Each RIPA member shall foster the integrity and reputation of the industrial packaging industry generally and the RIPA membership specifically by refraining from publishing knowingly false, misleading or commercially disparaging statements or advertisements.

6.2 ***Public statements and advertising.*** A members' public statements and advertisements shall not knowingly misrepresent fact or law or create a negative impression or expectation about competitive products and services unless such statement or advertisement is based upon facts which are amendable to independent measurement and verification.

APPENDIX 4

Code of Operating Practice: Reprocessing Intermediate Bulk Containers (IBCs)

For purposes of this Code, the term “reprocessing” refers to IBC “repair”, “routine maintenance” and “remanufacture”; the term “reprocessor” refers to companies engaged in IBC “reprocessing” operations; the term “hazardous materials” refers to DOT or EPA regulated hazardous materials; and, the term “residue” refers to residues of regulated hazardous materials.

1.0 BASIC RECOMMENDATION

When used for the transportation of hazardous materials intermediate bulk containers (IBCs) may not be reused without first being remanufactured, repaired, or routinely maintained (per 49 CFR 180.350-352). Performance of any step of these processes should be accompanied by performance of all associated steps. For example, if any element of repair is done (e.g., replacement of the rigid inner receptacle of a composite IBC), then the entire repair process should be completed in accordance with this Code. This is to assure that any reference to remanufacturing, repair, or routine maintenance provides the filler of an IBC with total packaging integrity.

2.0 IBC REPROCESSING FIRM – GENERAL REQUIREMENTS

2.1 **Equipment.** IBC reprocessors must possess and be capable of operating the necessary equipment to reprocess IBCs in accordance with all of the provisions described in this Code of Operating Practice.

2.2 **IBC reprocessors shall be registered with the U.S. Department of Transportation** (e.g. hold an “M” or “R” number) or licensed by appropriate government authorities as might be required. They shall mark reprocessed IBCs with the firm’s identification (such as an “M” number) as its certification of a packaging’s performance capabilities.

2.3 **Regulatory compliance.** IBC reprocessors shall comply with all federal, national, provincial and local government regulations pertaining to safety and health, and environmental protection.

2.4 **QA program.** The reprocessing firm must maintain a documented quality assurance (QA) program. RIPA makes available to all members a sample QA program that members may utilize in developing such programs.

2.5 **Plant visits.** The reprocessing firm shall encourage plant reviews during normal operating hours by any customer.

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3.0 INCOMING EMPTY IBC REQUIREMENTS

3.1 **Transportation of IBCs containing residues.** IBCs that have been used for the transportation of hazardous materials but have not been cleaned in accordance with DOT requirements (49 CFR 173.29) must be transported with all closures, service and structural equipment in place, with all original hazard markings and labels legible. Trucks used to transport IBCs containing residues must be properly placarded. IBC emptiers are required to ensure that the transport vehicle is properly placarded.

3.2 **Acceptance of IBCs containing residues; “empty” IBCs.** No IBC that previously contained hazardous material may be accepted that is not legally empty, unless the reprocessing firm hold permits issued by appropriate environmental authorities to receive and process hazardous wastes. “Empty” means that the IBC meets EPA or DOT emptiness requirements (See 40 CFR 261.7 or 49 CFR 173.29, respectively) or complies with the California “drip dry” standard. The EPA empty container standard states that IBCs must be as empty as possible using practices commonly employed to remove materials from IBCs, including pouring, pumping and aspiration. In addition, no more than 0.3 percent by weight of the total capacity of the IBC may remain in the IBC inner receptacle (e.g. about 0.8 gallon for an IBC with a 275-gallon capacity). If more residual hazardous material than this remains in the IBC, the IBC is not empty. If the residual material is listed by EPA in 40 CFR 261.33(e) as a “P-listed” acute hazardous waste, the IBC is not deemed empty unless it has been triple-rinsed using an effective solvent, or has been cleaned by a method shown to achieve equivalent removal. Rigid plastic (all poly) and composite IBCs that previously contained “poison” may only be offered for additional use in transporting toxic materials in Class 6.1, or hazardous wastes.

California IBC reprocessors may only accept IBCs that comply with the state’s empty packaging rule (22 CCR 66261.7).

3.3 **Empty IBC certification.** Every person providing IBCs containing any hazardous residues to an IBC reprocessing firm shall be asked to sign an “Empty IBC Certification” verifying that the IBCs are empty in accordance with the explanation of that term in 3.2, above. The empty IBC certification form shall be signed on each trip unless alternate contractual or electronic methods of complying with this certification procedure are used.

3.4 **Inspection of incoming Intermediate Bulk Containers.** The reprocessor shall inspect each IBC when it is unloaded from the truck. All IBCs must be inspected to make certain they are empty, to determine the original specification of the IBC, and to determine whether the IBC is damaged or not able to be reprocessed and therefore must be prepared for scrap in accordance with 9.0 below.

3.5 **Rejection of IBCs that are not empty.** If, when evaluating the status of incoming IBCs containing residues, the IBC reprocessor determines they contain excessive amounts of retained product, they must be rejected and managed in accordance with 3.6 below.

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3.6 Management of rejected non-empty IBCs on-site. IBCs that are determined to be not in compliance with RCRA emptiness requirements (see 3.2 above) during the on-site unloading process shall be separated from other incoming IBCs and labeled in a manner clearly indicating they are being rejected and returned to the generator as unused product. Such IBCs must be segregated and held in a designated location with controlled access. The emptier should be immediately notified of the situation and the rejected IBCs shall be returned to the emptier as unused product as soon as possible. The emptier shall be asked to provide appropriate return shipping information for the rejected IBC, including a bill of lading, and the emptier shall be responsible for making all appropriate shipping and transportation arrangements in full compliance with DOT regulations.

4.0 IBC REPROCESSING – GENERAL REQUIREMENTS

4.1 Cleaning. The interior and exterior of the IBC, including pallet, cage and label plates, must be cleaned in accordance with applicable regulatory requirements. Surface treatments may be applied to improve external appearance.

4.2 Inspection. After cleaning, an internal and external inspection of the completed IBC must be conducted. If the IBC does not conform to applicable quality standards, the IBC must be rejected. The exterior of the IBC and its associated components, including the inner receptacle, must be inspected for damage that could significantly weaken the IBC such as stress cracking, broken welds and other surface damage that clearly reduces the structural integrity of the unit. Minor dents or creases in the exterior cage, pallet or inner receptacle that do not negatively affect transportation safety are permitted.

4.3 Refurbishment. All service and structural equipment must be cleaned and, if necessary, reinstalled or replaced. Filling, discharge, pressure relief valves and venting devices must show no damage and must ensure a leak-tight seal, as appropriate.

4.4 Marking. Reprocessed IBCs must be marked in accordance with DOT requirements. (See “Selecting Appropriate DOT Performance Markings”.) The reprocessing firm’s identity marking constitutes a certification that the IBC meets its marked performance rating and is capable of passing the applicable design type tests.

5.0 IBC REMANUFACTURING.

5.1 Definition. IBCs that are produced as a UN type from a non-UN type, or that are converted from one UN design type to another UN design type, are remanufactured IBCs. All remanufactured IBCs are subject to the same regulatory requirements, including markings, as newly manufactured IBCs.

5.2 Design type testing of remanufactured IBCs. All applicable design type tests (i.e., bottom lift, stacking, leak-proofness, hydraulic pressure and drop) shall be performed initially and annually thereafter as long as the design is sold.

5.3 Test reports. A test report must be prepared for each design type intended for use with hazardous materials. The test report must be signed and retained by the tester and a copy of the signed report shall be maintained at each facility at which the IBC design type is remanufactured for a period of not less than 2.5 years.

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5.4 *Production inspection and testing.* IBC remanufacturers must ensure each IBC is inspected as part of the production process. Prior to insertion in an outer cage, new inner receptacles must be inspected visually to confirm they conform to the appropriate design types and are capable of withstanding design type tests. Inner receptacles that have been leakproofness tested by the original manufacturer are not required to be leakproofness tested a second time by the reprocessor if the remanufacturer is “Party To” Special Permit DOT-SP 16323 or holds another appropriate DOT authorization. Remanufacturers without such documentation must leakproofness test new inner receptacles prior to use.

5.5 *Marking remanufactured IBCs.* A remanufactured IBC must be marked in the same manner as a new IBC. See 49 CFR 178.703. If the remanufacturer’s mark does not identify the company performing the remanufacturing operation, the remanufacturer should apply a mark near the certification mark indicating the company name or “M” number.

5.6 Recordkeeping. Companies performing remanufacturing operations must maintain a record of tests and/or inspection activities. Such records should include, at a minimum, a log of daily production and the number of tested IBCs that pass and fail production tests. The IBC owner shall retain the reports until the date of the next repair, or 2.5 years, whichever comes first.

6.0 IBC REPAIR

6.1 *General.* Metal, rigid plastic (all-poly) and composite IBCs that have been damaged by impact or otherwise show evidence of reduced strength may be repaired for reuse. Repaired IBCs must conform to the original design type and be capable of withstanding the design type tests. The bodies of rigid plastic (all poly) IBCs, and the inner receptacles of composite IBCs, may not be repaired.

6.2 *Replacement of inner receptacles.* The term “repair” includes the replacement of the rigid inner receptacle of a composite IBC with another inner receptacle that conforms to the original manufacturer’s specification. The use of replacement inner receptacles that do not conform to the original manufacturer’s specification trigger requirements for IBC remanufacturing (see 5.0 above).

6.3 *Production testing and inspection of repaired IBCs.* Each IBC that is repaired must be inspected as part of the production process. Prior to insertion in an outer cage, new inner receptacles must be inspected visually to confirm they conform to the appropriate design types and are capable of withstanding design type tests. Inner receptacles that have been leakproofness tested by the original manufacturer are not required to be leakproofness tested a second time by the reprocessor if the reprocessor is a party to SP 16323 or holds another appropriate DOT authorization. Reprocessors without such documentation must leakproofness test new inner receptacles prior to use.

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6.4 Marking repaired IBCs. IBCs that are repaired shall retain the original “full” mark. If that mark has been destroyed or rendered illegible, it shall be restored by the person performing the repair. In addition, repaired IBCs shall be marked durably, near the UN mark, with the country in which the tests and inspections were carried out, the name or the registered symbol of the company responsible for the repair (e.g. “M” number) , and the month and year of required tests and inspections: Inner receptacles that have been leakproofness tested by the original manufacturer are not required to be leakproofness tested a second time by the reprocessor if the reprocessor is a “Party To” DOT-SP 16323 or holds another appropriate DOT authorization. Reprocessors without such documentation must leakproofness test inner receptacles prior to use.

6.5 Recordkeeping. Companies performing repair operations must maintain a record of tests and/or inspection activities. Such records should include, at a minimum, a log of daily production and the number of tested IBCs that pass and fail production tests. The IBC owner shall retain the records until the date of the next repair, or 2.5 years, whichever comes first.

7.0 IBC ROUTINE MAINTENANCE

7.1 General. Routine maintenance of IBCs includes cleaning, removal and reinstallation or replacement of body closures (including gaskets), or of service equipment (e.g., filling and discharge valves, pressure relief devices). Routine maintenance also includes restoration of structural equipment that does not directly perform a containment or discharge pressure retention function. For example, IBC legs and lifting attachments may be straightened.

7.2 Leaktightness verified. The “leaktightness” of a routinely maintained IBC must be verified, particularly if body closures and/or service equipment have been removed or replaced. Checking for “leaktightness” can be done in a variety of ways. The company should have a written procedure for leaktightness testing and employees that perform this activity should be function-specific trained on the method.

7.3 Marking routinely maintained IBCs. The person performing routine maintenance on IBCs shall durably mark the IBC near the manufacturer’s UN design type mark to show the country in which the maintenance activity took place, and the name or the authorized symbol of the person performing such maintenance (e.g., USA/Mxxxx)

7.4 Recordkeeping. DOT does not require companies performing routine maintenance operations to maintain a record of tests and/or inspection activities. However, RIPA recommends that as part of a company Quality Assurance Plan, records of daily production be maintained. The IBC owner shall retain the records for at least one year.

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8.0 PERIODIC INSPECTIONS

8.1 **General.** Each IBC intended to contain liquids or solids loaded or discharged under pressure must be tested and inspected every 2.5 years, starting from the date of manufacture or repair. Requirements include performance of a leakproofness test, an external visual inspection (bottle outside the cage) sufficient to ensure the IBC is properly marked, service and structural equipment is sound and functioning, the IBC is capable of withstanding applicable design type tests and that there are no defects that would render it unsafe for use.

IBCs must be inspected internally and externally every 5 years for any defects which could render the unit unsafe in transportation. In addition, UN metal IBCs used for hazardous materials must be checked every five years to ensure that the unit continues to meet DOT minimum wall thickness requirements. (DOT 57 IBCs are exempt from wall thickness requirements.)

8.2 **Periodic inspection marking requirements.** Following a periodic inspection and retest, the person performing the inspection and retest must ensure that all required marks are on the IBC, and shall include in the full durable UN mark, the date (month and year) of the inspection and retest.

8.3 **Recordkeeping.** A record of periodic inspections, including tester's name, location, design type and results, must be kept for at least 2.5 years or until periodic inspection and retest is performed again.

9.0 IBCS UNFIT FOR REUSE

9.1 **Unfit IBCs.** IBCs that have been deemed unfit for hazardous materials reuse during the inspection process are to be cleaned and directed to non-hazardous material service or prepared for scrap. The interior and exterior of the IBC, including pallet, cage and label plates, must be cleaned in accordance with applicable regulatory requirements. The IBC must then be mechanically prepared for scrap.

9.2 **Preparation of non-reusable rigid plastic (all-poly) IBCs or inner receptacles of composite IBCs.** Plastic materials derived from non-reusable rigid plastic (all-poly) IBCs or the inner receptacles of composite IBCs should be prepared in accordance with purchaser specifications. Examples of such specifications are cut and sized plastic sheets, shredding or granulation. Material intended for this purpose should be handled in accordance with a written quality assurance program. Off-specification plastic material should be handled in accordance with 9.3 below.

9.3 **Disposal of off-specification plastics material.** Plastics material which cannot be sold to an end user for any reason should be disposed of in compliance with all applicable federal, State and local laws and regulations.

10.0 ENVIRONMENTAL AND EMPLOYEE PROTECTION

10.1 **Storage of IBCs containing residues.** Un-reprocessed IBCs must be stored with all closures in place and must be inspected periodically to assure no residual contents are leaking. All IBCs that are deemed unfit for re-processing should be cleaned and prepared for scrap in accordance with the Section 9.0 of this Code.

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10.2 **Managing residues from IBCs.** All residues generated during reprocessing activities must be managed in full compliance with applicable regulations governing the disposition of such residues.

10.3 **Wastewater and air emissions.** Discharges of wastewater from the reprocessing plant to the environment or to the sewer system, and emissions to the atmosphere, must meet applicable water and air pollution regulations for the jurisdiction in which the plant is located. Odors must be minimized whether subject to government controls or not.

10.4 **Employee protection.** Exposure of employees to any chemicals in the workplace, including the contents of incoming IBCs, must be reduced to the extent practicable. At a minimum, this necessitates the reprocessing firm providing and requiring the use of effective personal protective equipment. The firm must have in place a program of Hazard Communication for employees, including federally mandated access to Safety Data Sheets (SDS's).

10.5 **Training.** Employees engaged in reprocessing activities must be trained in the proper performance of their jobs, including DOT general awareness and function specific activities, as appropriate. Under DOT regulations, all new employees meeting the DOT definition of "hazmat employee" must be trained within 90 days of employment and all such employees must receive DOT training every three years thereafter. Despite DOT's 90-day allowance, however, new employers should not be exposed to hazardous materials IBCs until the employees are properly trained for their positions. Employees must be made aware of the hazards of the process chemicals to which they are exposed and of the importance of compliance with this Code and all government regulations.

10.6 **Company owned vehicles and drivers.** Reprocessing firms that directly employ their own drivers and operate their own trucks should ensure that both drivers and trucks are operated in compliance with standards of the U.S. Federal Motor Carrier Safety Administration, including the qualification of drivers, driver's hours of service, safe loading and operation of trucks and testing for alcohol or other controlled substance abuse. Company-owned trucks shall be maintained in safe operating condition.

10.7 **Fire safety.** Practical precautions against fires should be implemented, including having adequate fire extinguishing capability, contingency planning, effective coordination with local emergency response authorities, and good housekeeping to minimize opportunities for ignition. A facility-wide emergency response plan for fire or security breach (e.g., an intruder) should be created and rehearsed periodically.

11.0 PUBLIC STATEMENTS AND ADVERTISING

11.1 **Foster integrity.** Each RIPA member shall foster the integrity and reputation of the industrial packaging industry generally and the RIPA membership specifically by refraining from publishing knowingly false, misleading or commercially disparaging statements or advertisements.

11.2 **Public statements and advertising.** A members' public statements and advertisements shall not knowingly misrepresent fact or law or create a negative impression or expectation about competitive products and services unless such statement or advertisement is based upon facts which are amendable to independent measurement and verification.