



Responsible Packaging Management

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INTRODUCTION

RESPONSIBLE PACKAGING MANAGEMENT

During the past quarter century, the industrial packaging community in North America has undergone a quiet revolution. Regulatory agencies no longer determine the exact manner in which packagings are designed and constructed and, as a result, packaging options have expanded significantly. In addition, industry has become increasingly concerned about the environmental and energy impacts of the packaging they use, as well as the manner in which empty packaging is managed.

The reasons underlying these changes include: 1) regulatory initiatives from the U.S. Department of Transportation (DOT), 2) ongoing efforts to harmonize international hazardous materials packaging regulations, 3) corporate concerns about the environmental risks associated with improper handling of hazardous materials and wastes, 4) an increasing reliance on “life-cycle analysis” in the design of materials distribution systems, and 5) greater understanding of the environmental and energy benefits associated with *reusable* packaging, particularly with regard to positive “greenhouse gas” reduction benefits.

In 1990, the U.S. Department of Transportation put into place new rules that effectively eliminated a decades-old system of packaging regulation – one based upon detailed design specifications. The new regulations were constructed around a packaging’s ability to pass specific performance tests under laboratory conditions. The changes brought about by performance-oriented packaging standards revolutionized the industrial packaging business by encouraging innovation in both packaging design and materials use.

During this same period, corporations were coming to grips with expensive environmental liabilities created by past improper disposition of chemical wastes. In addition, state and federal environmental agencies began to encourage corporations to

reduce waste through innovative pollution prevention programs. Many of these programs encouraged the use of “life-cycle analysis” to measure and assess the environmental impacts of packaging selection. More recently, companies have come to recognize that reusing industrial containers saves greenhouse gases.

RIPA’s *Responsible Packaging Management* (RPM) creates uniform operating principals for the reusable industrial packaging community, and helps industrial packaging users address the economic, environmental, legal and regulatory concerns associated with industrial packaging use and reuse. Many elements of RPM have been incorporated into codes of management practices, such as the American Chemistry Council’s *Responsible Care*.® program.

Since the management of “industrial packaging”¹ is an important aspect of most corporate “good citizen” programs, all forms of industrial packaging are being continuously reviewed by users concerned about environmental and energy impacts. Environmental damage resulting from improper disposal of used packaging - often including their residues - is not tolerated. Packaging users increasingly recognize the beneficial aspects of reuse, and ensure that *reusable* packagings are purchased.

Used industrial packagings – which today include a wide range of steel, plastic and fiber drums, as well as “intermediate bulk containers” (IBCs) - have two environmentally acceptable fates: 1) to be reconditioned or repaired and reused as packaging, or 2) to be processed for scrap recycling. In both cases, all residues of prior contents must be removed, neutralized, and disposed in compliance with applicable federal, state and local requirements. Fortunately, the reusable industrial packaging community has the equipment and the know-how to accomplish both tasks. Using RIPA’s *Responsible Packaging Management* guidelines, packaging providers and users can work in tandem to ensure the availability of quality packagings that are affordable, safe, reusable, and in full compliance with today’s strict safety and environmental standards.

¹ ASTM defines the term “industrial packaging” as follows: “A packaging used for the transportation or storage of commodities, the contents of which are not meant for retail sale without being repackaged.”

Using RIPA's *Responsible Packaging Management* program, packaging users can maximize the value of their empty packagings, ensure regulatory compliance, and minimize potential liability. *Responsible Packaging Management* incorporates new approaches to long-standing concerns surrounding the management of used packaging, and it meets the challenge of today's heightened standards for safety and packaging stewardship.

RIPA's *Responsible Packaging Management (RPM)* program has several key elements:

- Selection of Packaging
- Empty Packaging Certification
- Empty Packaging Management
- Reconditioners – Codes of Operating Practice

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

Selection of Packaging

Responsible Packaging Management begins with the selection by the filler of the proper industrial packaging for the job. Fillers 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 influence initial packaging selection exerts upon options for the management of empty packaging. Reconditioners and dealers can provide useful, practical information to assist buyers in selecting packagings that retain value and, thus, invite more options for management after use.

Empty Packaging Certification

Certification of empty packaging status is an indispensable, core requirement of *Responsible Packaging Management*. Certification is essential to insure regulatory compliance and to prevent assumption of unwanted liability. It also minimizes waste of valuable raw material.

Empty Packaging Management

The process of empty packaging management begins when the packaging's status changes from full to empty. Persons responsible for empty packaging management have several crucial responsibilities including proper emptying, maintenance of labels, proper preparation for shipment, control procedures, and selection of a qualified reconditioner or dealer to accept the empty packaging.

Reconditioners – Codes of Operating Practice

Responsible Packaging Management ends with a review of the reconditioning plant where used packagings are cleaned and then either reconditioned for reuse or recycled as scrap. Several areas of plant operations should be reviewed to confirm compliance with the RPM Codes of Operating Practice. Buyers of reconditioned packagings intended for shipping hazardous materials also should review plant operations for compliance with U.S. Department of Transportation requirements, as well as requirements of other regulatory agencies.

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. For safety and security purposes, adequate lading protection must be ensured by the shipper. Therefore, the filled packaging must be capable of withstanding the rigors of the anticipated transportation environment, including handling and storage.

A packaging's higher durability can enhance "after-market" value and desirability for reuse. Packaging purchasers should be familiar with features that influence a used packaging's value, including materials of construction, material thickness, and non-standard features.

Suggestions for Simplifying Purchasing Decisions

The after-market value of packagings conforming to recommendations outlined below is likely to be higher than would otherwise be the case. This is due to the fact that the packagings will conform to industry recommendations for marking, manner of construction and U.S. DOT requirements for material thickness (steel and plastic drums). Conformance will reduce sorting and storage problems for reconditioners, and will ensure that packagings can be remanufactured, reprocessed or reconditioned in a manner that makes them acceptable for resale to a wider market. As an added benefit for emptiers, since conforming packagings are likely to be more desirable to reconditioners, difficulties associated with the collection of small quantities of empty packagings will likely be reduced.

Improving the Value of Empty Industrial Packaging

When developing the performance specifications for packaging(s), buyers should be cognizant of the fact that their customers are the ones who must find outlets for the empty packaging. In some cases, the customer may be another part of the same company.

The rule of thumb is that the more “standard” a packaging is, the more value it has in the after-market. Elimination of unnecessary non-standard features (e.g., unnecessary linings or side bungs) may have two beneficial effects: the original packaging may be less costly; and, the after-market value of the packaging for the customer may be greater. The after-market use of industrial packaging is becoming increasingly important to packaging users. Companies that participate in nationally recognized environmental programs, (e.g., EPA’s WasteWise), are able to count their use of *reusable* packaging towards their stated waste reduction goals. Other firms count the savings in energy and emissions that are realized by the use of reusable packaging. (RIPA’s study and report, “*Life Cycle Inventory for Single Trip and Multi Trip Steel Drum Systems*”, quantifies some of these savings; Franklin Associates, Prairie Village, KS January 1999. Contact RIPA or see the report at: www.reusablepackaging.org).

Following is a step-by-step description of the packaging selection process, as well as suggestions intended to make ordering industrial packaging easier while enhancing the value of the used package.

PACKAGING SELECTION

Determine the following from the U.S. Hazardous Materials Table at 49 CFR 172.101 :

- Proper Shipping Name _____
 - Hazard Class and Division _____
 - UN Identification Number _____
 - Packing Group (PG) I, II or III (Corresponds to X, Y, or Z marked on packaging) _____
- Also must know:
- Vapor Pressure (liquids) _____
 - Specific Gravity (liquids) _____, or
 - Gross Mass (solids) _____

Packaging Features/Fittings

A. Steel Drums – 55-Gallon Closed Head

1. 2" and 3/4" bungs in top head _____ (standard) _____
2. Other location (e.g., side bungs?) _____
3. Type of bung (e.g., steel or plastic?) _____
4. Are cap seals needed? Yes No

B. Steel Drums – 55-Gallon Open Head

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

C. Steel Drum Lining

1. Is a lining needed? Yes No Type of lining:
 - Phenolic _____
 - Phenolic epoxy _____
 - Epoxy phenolic _____
 - Other – specify: _____

D. Non-Standard Features for Steel Drums

- Agitator Yes No
- Removable Plastic Liner Yes No
- Non-standard dimensions (Describe) _____

E. Plastic Drum – 55-Gallon Closed Head

1. 2" and 3/4" bungs in top head _____ (Standard) _____
2. Style of closure system (e.g., NPT or buttress threads) _____
3. Are cap seals needed? Yes No

D. Plastic Drum – 55-Gallon Open Head

1. Ring: bolt-lock or lever-lock _____
2. Are bungs needed? Yes No
 - If yes, 2" x 3/4" bungs in top head; 2" bung on sidewall (only if required)
 - If yes, style of closure system (e.g. NPT or buttress) _____
3. Are cap seals needed? Yes No


F. Intermediate Bulk Container (IBC)

1. Design type (e.g., all plastic, stainless steel, or composite) _____
2. Capacity (in gallons) _____
3. Pallet (e.g., wood, steel, plastic) _____
4. Discharge valve type (e.g., ball, butterfly) _____
5. Pressure relief device? Yes No

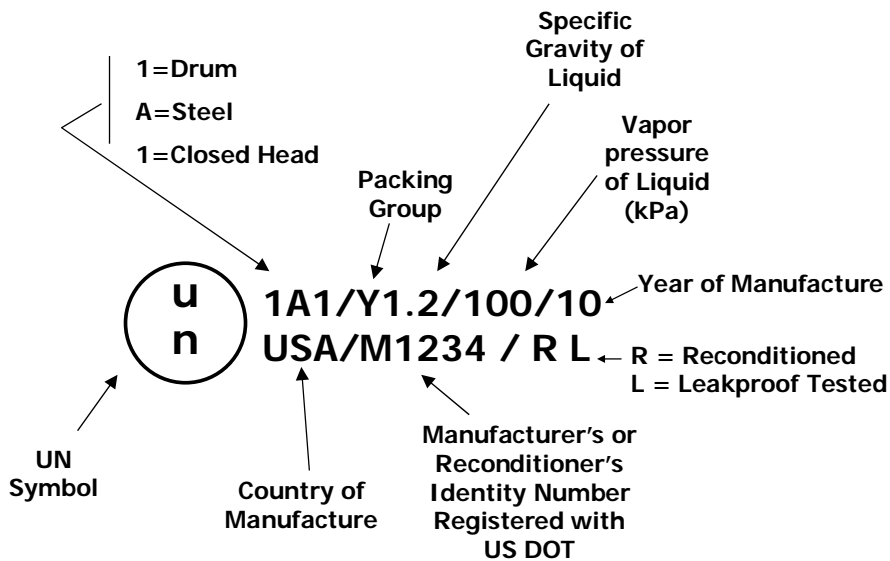
Selecting Appropriate Performance Marks

The U.S. Department of Transportation (DOT) requires all industrial packagings used for the transportation of hazardous materials (aka dangerous goods) to bear “UN performance marks”. A performance mark must be plainly visible to users and inspectors. These marks indicate that the packaging “design type” is capable of passing the following tests: drop, leakproofness, hydrostatic pressure, and stacking. The marks indicate the levels of performance to which the packaging design has been tested and certified.

Following is a description of the performance marks and their proper sequence, that must be applied to non-bulk industrial packaging (e.g., steel, plastic or fiber drums):

- a. The UN symbol 
- b. A three-part code indicating the type of packaging, material of construction, and further specifics. (Example: “1A1” indicates Drum/ Steel/ Closed Head.)
- c. A code indicating the hazard level for which the packaging has been tested. The letters X, Y, or Z (X being highest hazard class) correspond to a hazardous material’s “Packing Group” I, II, or III (I being the highest).
- d. A mark indicating either the maximum “specific gravity” (density relative to water) of the liquid to be carried (e.g., “1.4”), or a mark indicating the maximum gross mass of the package with solid contents, in kilograms (e.g., “400”).
- e. A mark indicating either the internal vapor pressure the packaging is capable of containing in kilopascals (e.g., “100”), or an “S” indicating that solids will be carried.
- f. An abbreviation of the country in which the testing and marking took place.
- g. The name and address, or registered symbol of the reconditioner or manufacturer (registered symbols in the U.S. are typically referred to as “M” numbers or “R” numbers e.g., M1234).
- h. For reconditioned packagings, an “R” and, for drums that have been leakproofness tested, an “L”.

Example Markings (Reconditioned Drum for Liquids)



Note: The UN Recommendations on the Transport of Dangerous Goods Model Regulations and most nations' regulations require that the "First Line" mark (e.g., UN1A1/Y1.2/100/10) plus nominal metal thickness in millimeters must be embossed permanently on the bottom of steel drums over 100 liters capacity. These marks are known in the drum industry as the "birth certificate" because they indicate the original performance capability of the drum as new. The top or side must be affixed with a complete UN mark that is "durable" (e.g. an adhesive label).

Example Marking (Composite IBC for Liquids - Primary Mark)

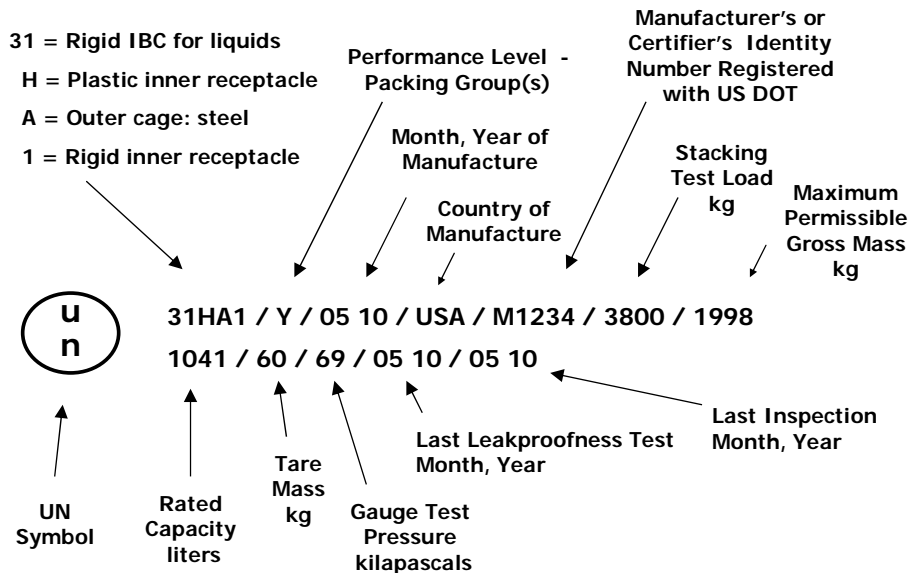
 31HA1 / Y / 05 10 / USA / M1234 / 3800 kg / 1998 kg

Note: The mark 31HA1 describes a composite IBC (i.e., plastic bottle in a steel “cage”) intended for liquids. The design is certified to the Packing Group II level (i.e., “Y”), was made in May, 2010, in the U.S. The IBC was made by a registered manufacturer with the DOT identification “M1234”, who tested and certified the IBC to a stacking test load of 3800 kilograms, and a maximum permissible gross mass of 1,998 kilograms.

DOT requires rigid and composite IBCs to bear additional, secondary markings indicating the following:

- a. Rated capacity in liters of water at 20° Celsius
- b. Tare mass in kilograms
- c. Gauge test pressure in kPa (composite IBCs only)
- d. Date of last leakproofness test (month and year)
- e. Date of last inspection (month and year)

Example Complete Mark (Composite IBC for Liquids)



Note: For composite IBCs, the inner bottle must be marked with at least the IBC design type code, the symbol of the manufacturer, the date of manufacture, and the country authorizing the mark. Example: 31HA1/05 10/USA

A Word About Minimum Thickness Requirements for Reuse

DOT prescribes minimum thicknesses for certain non-bulk and intermediate bulk industrial packagings that are reused for transporting hazardous materials. The agency has established a system of marking packagings using “nominal thickness” marks which can be linked to *actual* steel thicknesses by using the appropriate international standard (i.e., ISO 3574 – 1986). Steel 55-gallon (220L) drums must be at least 0.92 millimeters thick throughout, or have actual minimum side wall and head thicknesses of 0.82 and 1.11mm, respectively. Steel drums that do not meet these actual minimum thickness requirements may not be reconditioned to transport DOT-regulated hazardous materials. To promote reuse and prevent empty drum disposition problems, RIPA recommends that users order 55-gallon steel drums which meet or exceed the DOT actual minimum thickness requirements.

A 55-gallon plastic drum must be at least 2.2 mm thick throughout, and should bear a minimum thickness mark of “2.2.” Importantly, due to the performance and construction characteristics of plastic drums, virtually all U.S. manufacturers produce 55-gallon plastic drums that meet the DOT thickness for reuse in shipping hazmats.

Metal IBCs must meet specific wall thickness requirements for initial use and subsequent reuse. The formula describing the thickness standard may be found in section 178.705 of 49 CFR (Code of Federal Regulations). Rigid plastic IBCs and the inner plastic bottles of composite IBCs do not have minimum thickness requirements for reuse in hazmat service.

CHAPTER 2

EMPTY PACKAGING CERTIFICATION

Empty Packaging Certification is at the heart of *Responsible Packaging Management*. It is a concept created and strongly supported by members of the Reusable Industrial Packaging Association.

“Empty Packaging Certification” is a written document, executed by the packaging emptier and the selected reconditioner or dealer. It confirms that the packagings being transferred are actually empty, in accordance with EPA requirements, and that they have been properly prepared for transportation (49 CFR 173.29). Some companies execute these documents on an annual basis, but most reconditioners print the certification on their receiving tickets so that the certificate is signed every time empty packagings are offered to a reconditioner. (See Appendices 8 and 9.)

Why 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 (RCRA); and, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), better known as “Superfund”.

Empty Packaging Certification is also a legal business record. It documents the fact that the packagings transferred to a reconditioner or dealer were empty and, therefore, not subject to the complex and expensive EPA Hazardous Waste Regulations created by RCRA.

Empty packagings – whether reconditioned for reuse or recycled for scrap – 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 has an extremely valuable side benefit - the reduction of wasted 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 device. Employees who are responsible for certification usually work with other environmentally sensitive aspects of company operations. The obligation to certify empty packaging status is a constant reminder of the need to comply with strict environmental regulations covering the management of hazardous materials and their packagings.

CHAPTER 3

EMPTY PACKAGING MANAGEMENT

An empty packaging that previously held a U.S. DOT-regulated hazardous material must be handled properly or it will be a safety and environmental liability for both the emptier and the original shipper. Strict liability standards arising from environmental laws and regulations, corporate operating standards, as well as issues related to transportation safety, make empty packaging management a serious matter. Shippers and emptiers should take appropriate steps to ensure that empty industrial packagings are handled properly. Shippers should assure that firms to which product is shipped have clear procedures in place for handling empty packagings. Emptiers should review their own plant operations and empty packaging management practices to reduce potential liabilities.

Proper Emptying

Proper emptying of every packaging is the most important aspect of in-plant *Responsible Packaging Management*. This activity affects costs, regulatory compliance, and legal liability.

- **Costs – Residues of costly materials left in packagings represent lost profits.** Even packagings that appear empty can contain a gallon or more of product. This is valuable material that has been paid for but may be discarded unused. It has been estimated that inadequate emptying of industrial packagings may cost American industry as much as 1 billion every year.
- **Regulatory Compliance – For many chemical products, only those packagings meeting the U.S. EPA “empty” definition (40 CFR 261.7) escape classification as hazardous wastes.** Used packagings that are hazardous wastes incur staggering costs for proper disposal. Container reconditioners can manage empty containers

- Legal Liability for Environmental Damage – Persons arranging for disposition of packagings with unused, removable contents may be considered to have “arranged for disposal or treatment...of hazardous wastes,” or to have engaged in “abandonment or discard” of unclean packagings. Both of these terms are from the federal CERCLA law (“Superfund”) and both activities incur strict, retroactive, joint and several liability for any subsequent contamination and environmental response costs. Persons emptying containers should empty thoroughly and should proffer the container to professional reconditioners. In this manner, potential cleanup liabilities are minimized.
- 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 product. Packagings containing residue of hazardous materials that are crushed or shredded without first being cleaned must be “overpacked” in DOT-authorized hazardous materials containers. Additionally, they must be offered for shipment with proper shipping papers, performance marks, and hazard labels. Failure to meet these regulations can result in high penalties. Rather than risk penalties, RPM recommends contacting professional reconditioners who will transport containers in full compliance with DOT hazmat rules.

EPA Empty Container Rule

Emptying personnel and their supervisors should know and understand the details of the EPA “empty container” definition. This rule, which appears in full in Appendix 6, applies separate emptiness criteria to drums and intermediate bulk packagings (IBCs).

The EPA empty container rule may be found at 40 CFR §261.7.

With regard to drums, EPA states that if any hazardous material remains in a drum after emptying, that container 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 the capacity) of residue is left in the drum.

The rule was promulgated under the U.S. waste management law (RCRA). Containers that meet this emptiness standard are often described as “RCRA Empty”. Many companies mistakenly believe this rule expressly allows up to one inch of residue in *all* empty drums, and even more in an empty IBC. In fact, the rule is often referred to as the “one-inch rule.” Emptiers must understand that the EPA empty container rule consists of two provisions which must be read *together*. The first standard emptiers must meet is the removal of all flowable contents using methods commonly employed to empty the container (e.g., pouring, pumping, etc.). If, however, the contents are viscous or otherwise difficult to remove, EPA allows an inch of residue to remain in drums after appropriate efforts have been taken to remove the contents. Since many packagings are used for flowable products, the standard for empty, and the term reconditioners prefer, is “drip-dry”.

With regard to IBCs (and all other packagings larger than 119 gallons), 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 composite units), this means that very little residue (less than a gallon) may be left in the packaging.

The California Empty Container Rule

Companies doing business in California should be aware that the state has adopted more stringent regulations for empty packagings. The relevant provisions of the California empty packaging regulation (Title 22 CCR 66730 et seq.) are summarized below.

California requires emptiers to comply with the federal empty container definition in all cases, taking care to ensure that the packagings have been emptied as much as possible

“using methods commonly employed to remove waste or material from packagings.” In addition, if the contents are pourable, the emptier must 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 (e.g., tilted, inverted, etc.) and dripping has ceased....” If the waste or material is not pourable, the generator must have emptied the packaging or inner liner “...until no visible material remains in the packaging or inner liner which can be removed by scraping, chipping, etc.”

Preparing Empty Packagings For Shipment to Reconditioners or Dealers

Maintain Labels and Marks

Before transporting empty packagings to a reconditioner or dealer, emptiers should be certain that such packagings meet EPA’s empty container criteria, as well as all applicable DOT regulations. Labels and marks – especially the precautionary information – must be retained on any packaging formerly containing hazardous materials (49 CFR 173.29). Labels and marks are needed to communicate to all custodians of empty packagings important safety information until the packagings are cleaned and recertified by reconditioning or processed for scrap recycling.

Closures

Proper reinsertion and closure of plugs, valves, covers, locking rings, etc. is extremely important for several reasons. First, this practice is required by DOT regulation (49 CFR 173.29). Second, and more importantly, packagings with improperly seated closures may leak residue during loading and unloading or while in transportation. A leak in transportation could expose drivers, clean-up personnel and the public to hazardous materials. Since liability for improper preparation of hazardous materials packagings rests with the emptier, the costs of environmental remediation and worker compensation would likely be borne by the emptier as well.

Control Procedures

Empty packagings should not be fully or partially refilled with products different from the original lading. Such packagings would contain a material that is no longer

accurately described by the label. Moreover consolidating and mixing residues can create serious safety hazards endangering worker health and safety. Shipment of such a packaging – even to a reconditioner – may violate DOT regulations and expose transportation workers to unforeseen hazards. A packaging whose contents had been mixed or refilled with another material should be triple rinsed thoroughly prior to sending to a reconditioner.

All empty hazardous materials packagings should be accounted for and kept in a secure area prior to shipment. All packagings should be sent to a qualified reconditioner or dealer; the liability exposure associated with giving empty packagings away to the community or employees exceeds the goodwill benefit. Never allow anyone to cut into a closed drum that previously held (or may have held) a chemical material. Vapors can ignite, causing an explosion.

Empty Packaging Management Check List

RIPA has created an *Empty Packaging Management Check List* to help employers train their employees who are responsible for this important activity, and to ensure that basic 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.

Empty Packaging Management Check List

- Are the original labels and marks retained on empty packagings legible? Yes No
- Is there a policy to prevent empty packagings from being filled with other materials? Yes No
- If no, are all empty packagings completely cleaned and purged (e.g. triple rinsed)? Yes No
- Is there a quality control system to ensure that all packagings meet the EPA definition of “empty packagings”? Yes No
- Do employees in emptying operations understand that the term “one–inch rule” applies only to viscous, non–flowable products, and that since the majority of loadings are flowable, an empty packagings should be “drip–dry”? Yes No
- Is there a quality control system to prepare empty packagings properly for shipment? Yes No
- Are packagings handled, emptied and stored to minimize damage and deterioration? Yes No
- Are all closures tightly reinstalled on empty packagings? Yes No
- Are covers and rings reinstalled on open head drums? Yes No
- Are empty packagings maintained in a secure area, inaccessible to the public? Yes No
- Is there a policy to prevent uncleaned packagings from being “donated” to employees or local charities? Yes No
- Is there a policy governing the destination of empty packagings? Yes No
- Is an empty packaging certification form signed and sent with each shipment of packagings? Yes No
- If “No”, does the facility have in place another means of guaranteeing that all empty packagings shipped to a dealer or reconditioner are RCRA-empty? Yes No
- If packagings are shipped to a permitted Hazardous Waste Treatment, Storage and Disposal Facility, is a properly completed EPA manifest used? Yes No
- Does the company have a procedure to select a qualified distributor or reconditioner to receive empty packaging? Yes No
- If the plant has had trouble getting empty packagings picked-up, have packaging selection criteria been reviewed such that reusable packagings are procured in the first place? Yes No

APPENDIX 1

RIPA Code of Operating Practice

Reconditioning and Remanufacturing Steel Drums for Use in Transporting Hazardous Materials

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

- Adhere to RIPA's Code of Operating Practice for Steel Drums.
- Recognize and respond to community concerns about packaging disposal and the operations of packaging reconditioning facilities.
- Produce packagings that are effective in safely containing all appropriate materials in transportation.
- Make health, safety and environmental considerations a priority in our planning for all existing and new processes.
- Counsel packaging users on the safe use, transportation, emptying, reuse, and recycling of packagings.
- Operate our plants in a manner that protects the environment and the health and safety of our employees and the public.
- Work with others to resolve problems created by past packaging disposal practices.
- Participate with government and others in creating responsible laws, regulations, and standards to safeguard the community, workplace and environment.
- Promote the principles and practices of *Responsible Packaging Management* by sharing our experiences and offering assistance to others who produce, use, transport, and/or dispose of 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.

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. That is, 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, including cleaning to original materials of construction, 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.

2.1 A business that properly reconditions steel drums for use in transporting hazardous materials possesses the necessary equipment, and processes drums in accordance with all of the provisions described in this Code of Operating Practice. A drum reconditioning firm shall be registered and licensed by appropriate government authorities and shall mark reconditioned packagings with the firm's identification or registered symbol as its certification of the packaging's performance capability.

2.2 The reconditioning firm must maintain a documented quality control program.

2.3 The reconditioning firm shall provide for plant reviews during normal operating hours by emptiers or customers.

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

3.0 **Steel drum reconditioning, general.**

3.1 *Transportation of drums containing residues.* Drums that have been used for the transportation of hazardous materials that have not been cleaned and purged of all hazards must be transported with all closures in place, and with all original hazard markings and labels legible.

3.2 *Acceptance of steel drums containing residues; "empty" steel drums.* No drums may be accepted that are not empty, unless the reconditioning firm holds permits issued by appropriate environmental authorities to receive and process hazardous wastes. The federal standard states that drums must be as empty as possible using practices commonly employed to remove materials from drums, including pouring, pumping, and aspirating. In addition, no more than 2.5 cm (1 inch) of residual non-flowable material may remain in the bottom of the drum. If more material may be poured out of the drum, then the drum is not empty. If everything is poured out, but more than 2.5 centimeters (1 inch) remain on the bottom, the drum 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 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 reconditioners may not accept drums that do not comply with the state's empty packaging rule (22 CCR 66261.7).

3.3 *Empty drum certification.* Every person providing drums containing any residues to a reconditioning firm, regardless of prior contents, shall sign an "Empty Drum Certification" on each occasion that drums are offered, verifying that the drums are empty and prepared in accordance with the explanation of that term in 3.1 and 3.2, above.

3.4 *Rejection of drums that are not empty.* Drums containing residues of prior contents, that are to be loaded on the reconditioning firm's trucks by the reconditioning firm's employees, shall be rejected if they appear to be unduly heavy because of the unintended retention of product. Drums brought to the reconditioning firm's plant, or loaded onto the reconditioning firm's vehicle by the emptier's employees, shall be rejected at the reconditioning firm if, upon inspection, they are found to be not empty. Rejected drums shall be returned to the emptier as unused product and the emptier shall be advised of the reason for the rejection.

3.5 *Inspection of incoming drums.* The reconditioning firm must inspect each raw 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 unreconditionable and therefore must be prepared for scrap in accordance with 3.9, below.

3.6 *Reconditioning Closed Head Steel Drums*

3.6.1 All former contents and any corrosion must be removed. The interior is typically treated for corrosion resistance (rust inhibitor rinse). Controls must be established to prevent condensation.

3.6.2 An internal visual inspection must be performed. If any of the prior contents remain after performance of the reconditioning process, or if rust is evident, the drum must be rejected or be subjected to further processing.

3.6.3 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.

3.6.4 The drum exterior shall be chemically cleaned, mechanically brushed, and/or abrasive - blasted to remove labels, coatings, and corrosion. The exterior surface shall be properly prepared for painting.

3.6.5 The cleaned drum must be leakproofness tested, typically by complete immersion in water and application of an internal air pressure of at least 20 kPa (3 psi) for Packing Group II and III drums and 30 kPa (4 psi) for Packing Group I drums, for at least 5 seconds. Alternative test methods of equal or greater sensitivity may be used subject to approval from U.S. DOT. Drums found to be leaking must be rejected or repaired by welding or brazing.

3.6.6 Before painting, drums must be inspected for deterioration and drums having visible pitting, significant reduction in parent metal thickness from rust, corrosion, or other material defects, or which have not been returned to original shape and contour, must be rejected for hazardous materials service.

3.6.7 All closures must be removed, cleaned, and reinserted with effective, clean gaskets. Bungs and flanges must show no damaged threads and must ensure a leakproof seal.

3.6.8 The drum must be painted with a new exterior coating to provide a protective and decorative finish.

3.6.9 The completed drum must be marked with the reconditioning firm's name and address or registered symbol (e.g., "M 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. If the original manufacturer's durable full UN marking has been removed in the reconditioning process, it must be replaced by the reconditioner before the drum may be used again to transport hazardous materials. The reconditioner's replacement mark may show a performance level lower than that originally marked by the drum manufacturer, but in no case may a reconditioner mark a higher performance level than was embossed on the bottom of the drum. The reconditioning firm's identity and "R" marking is a certification that the drum meets its marked performance rating, is capable of passing the design type qualification tests and meets this Code of Operating Practice.

3.7 Reconditioning open head steel drums

3.7.1 Open head drums and closed head drums from which the top heads have been removed must be cleaned thoroughly. All former contents and corrosion must be removed. If the top head is removed by cutting or unrolling, the side wall must be curled or beaded to accept an open head cover.

3.7.2 When thermal processing is utilized, drums with covers removed must be conveyed through a drum reclamation furnace which subjects both the interior and the exterior of the drum to temperatures sufficient to prepare the drum for abrasive cleaning (e.g. shot blast). The charred material and former linings and coating, as well as rust, must be removed through abrasive blasting on the interior and exterior, reducing the drum to bare metal.

3.7.3 Where necessary, the contour of the drum must be mechanically restored. Chimes must be mechanically straightened to reform and reseal them. Drums must be expanded or re-rolled to restore original shape and contour.

3.7.4 When required by applicable regulations, each open head drum, except its removable head and adjacent bead area, must be leak tested by complete immersion in water and application of an internal air pressure of at least 20 kPa (3 psi) for Packing Group II and III drums and 30 kPa (4 psi) for Packing Group I drums, for at least 5 seconds. Alternative test methods of equal sensitivity may be used subject to approval from U.S. DOT. Drums found to be leaking must be rejected or repaired by welding or brazing.

3.7.5 Drums must be inspected for deterioration and those having visible pitting, significant reduction in metal thickness from rust or corrosion, other material defects, or which have not been returned to original shape and contour, must be rejected for hazardous materials service.

3.7.6. All closures must be removed, cleaned, and reinserted with effective, clean gaskets. Bungs and flanges must show no damaged threads and must ensure a leakproof seal.

3.7.7 The closing rings must be reformed and cleaned, or replaced.

3.7.8 The drum must be painted with a new exterior coating to provide a protective and decorative finish. The interior coating or treatment (the lining), if required by the customer, must be applied and cured in accordance with the lining manufacturer's specifications.

3.7.9 The completed drum must be marked on the top or side with the "First Line" UN mark: the reconditioning firm's name and address or registered symbol (e.g. "M Number"), the last two digits of the year of testing, the nation in which the reconditioning was performed (USA), the letter "R" for reconditioned, and the letter "L" for drums that have been successfully leakproofness tested. If the original manufacturer's durable full UN marking has been removed in the reconditioning process, it must be replaced by the reconditioner before the drum may be used again to transport hazardous materials. The reconditioner's replacement mark may show a performance level below than that originally marked by the drum manufacturer, but in no case may a reconditioner mark a higher performance level than was embossed on the bottom of the drum. The reconditioning firm's identity marking constitutes a certification that the drum meets its marked performance rating, is capable of passing the design type qualification tests and meets this Code of Operating Practice.

3.8 *Remanufactured drums.* Steel drum remanufacturing is: 1) The conversion of a drum into a UN type; 2) The conversion of drum meeting one UN type to another type, or 3) the replacement of integral structural components. All requirements applicable to the manufacture of new drums apply to these drums.

3.9 *Rejected drums.* Drums that have been rejected during the inspection process and which 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 agent, or must be thermally neutralized in a drum reclamation furnace, thereby removing all foreign matter,

prior residues, labels and decorative coatings. Typically, drums are then mechanically or hydraulically crushed or shredded.

4.0 Environmental and employee protection.

4.1 Storage of drums containing residues. Unreconditioned 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 obviously unfit for reconditioning should be rejected immediately and should be prepared for scrap in accordance with this Code and applicable regulations. Destructive corrosion of drum inventory from atmospheric and ground moisture must be avoided.

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

4.3 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.

4.4 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 (PPE). Additionally, the firm must have in place a written program of Hazard Communication for employees, including federally mandated access to Material Safety Data Sheets (MSDS's).

4.5 Employee Training. The U.S. Department of Transportation (DOT) requires employees whose jobs have a connection to hazardous materials transportation to be trained about the recognition, regulation and proper handling of these materials. Training is required at different levels depending on an employee's level of involvement with actual hazmat loadings or packagings. "General awareness" training applies to all hazmat

employees, including those working in administrative positions (i.e., the front office). More in-depth “function specific” training is required for employees with tasks that put them into direct contact with hazmat loadings, packagings and/or residues. For instance, those employees tasked with testing packagings should be trained in all procedures for conducting the tests correctly and recording the test results in a comprehensive test report. Refresher training is required every 3 years. All new hazmat employees must receive training within 90 days. Training can be conducted by other employees and need not be out-sourced. A record of each training session must be dated, signed and filed for each employee. DOT inspectors typically ask to see these records, so they should be readily available for inspection by agency officials. As part of *Responsible Packaging Management*, RIPA makes available to its member companies a comprehensive training slide show designed specifically for the reconditioning industry. Updates are made as necessary. The training module is offered in both English and Spanish. Reconditioners and packaging dealers should make certain to highlight their training program with customers as well as regulators.

4.6 *Company vehicles and drivers.* The reconditioning firm shall employ drivers to operate company vehicles in compliance with standards of the Federal Motor Carrier Safety Administration. These standards address the qualification of drivers, including provisions relating to alcohol or other substance abuse. Company vehicles shall be maintained in safe operating condition.

4.7 *Fire Safety.* All practical precautions against fires must 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 and to facilitate employee evacuation in emergencies.

5.0 Public statements and advertising

5.1 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.

5.2 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 2

RIPA Code of Operating Practice

Reconditioning and Remanufacturing Plastic Drums

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

- Adhere to RIPA's Code of Operating Practice for Plastic Drums.
- Recognize and respond to community concerns about packaging disposal and the operations of packaging reconditioning facilities.
- Produce packagings that are effective in safely containing all appropriate materials in transportation.
- Make health, safety and environmental considerations a priority in our planning for all existing and new processes.
- Counsel packaging users on the safe use, transportation, emptying, reuse, and recycling of packagings.
- Operate our plants in a manner that protects the environment and the health and safety of our employees and the public.
- Work with others to resolve problems created by past packaging disposal practices.
- Participate with government and others in creating responsible laws, regulations, and standards to safeguard the community, workplace and environment.
- Promote the principles and practices of *Responsible Packaging Management* by sharing our experiences and offering assistance to others who produce, use, transport, and/or dispose of 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.

1.0 Basic recommendation.

Plastic drums used for the transportation of hazardous materials that are remarked, 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. That is, 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, including cleaning to original materials of construction, 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.

2.1 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. A plastic drum reconditioning firm shall be registered and licensed by appropriate government authorities and shall mark reconditioned packagings with the firm's identification or registered symbols as its certification of the packaging's performance capability.

2.2 The reconditioning firm must maintain a documented quality control program.

2.3 The reconditioning firm shall provide for plant reviews during normal operating hours by emptiers or customers.

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

3.0 Incoming empty drum requirements.

3.1 *Transportation of plastic drums containing residues.* Drums that have been used for the transportation of hazardous materials that have not been cleaned and purged of all hazards must be transported with all closures in place, with all original hazard markings and labels legible.

3.2 *Acceptance of plastic drums containing residues; "empty" plastic drums.* No drums may be accepted that are not empty, unless the reconditioning firm holds permits issued by appropriate environmental authorities to receive and process hazardous wastes. The federal standard states that drums must be as empty as possible using practices commonly employed to remove materials from drums, including pouring, pumping and aspirating. In addition, no more than 2.5 cm (1 inch) of residual non-flowable material may remain in the bottom of the drum. If more material may be poured out of the drum, then it is not empty. If everything is poured out, but more than 2.5 centimeters (1 inch) remain on the bottom, the drum 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 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. Plastic drums permanently marked "poison" may only be offered for additional use in transporting hazardous wastes or hazardous materials in Hazard Class 6.1.

3.3 *Empty plastic drum certification.* Every person providing drums containing any residues to a reconditioning firm, regardless of prior contents, shall sign an "Empty Drum Certification" on each occasion that drums are offered, verifying that the drums are empty in accordance with the explanation of those terms in 3.1 and 3.2, above.

3.4 *Rejection of plastic drums that are not empty.* Drums containing residues of prior contents, that are to be loaded on the reconditioning firm's trucks by the reconditioning firm's employees, shall be rejected if they appear to be unduly heavy because of the unintended retention of product. Drums brought to the reconditioning firm's plant, or loaded on the reconditioning firm's vehicle by the emptier's employees, shall be rejected at the reconditioning firm, if, upon internal inspection, they are found to be not empty. Rejected drums shall be returned to the emptier as unused product and the emptier shall be advised of the reason for the rejection.

3.5 *Inspection of incoming plastic drums.* The reconditioning firm must 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 unreconditionable and, therefore, must be prepared for scrap in accordance with 7.0 below.

4.0 Reconditioning closed head plastic drums.

4.1 All prior contents must be removed. Minimal absorption in the drum of prior contents is acceptable if such residue does not affect the structural integrity of the drum, or cause unsafe incompatibility problems with future contents.

4.2. The exterior of the drum must be cleaned to the original materials of construction, removing labels, adhesives and coatings. Surface treatments may be utilized to improve external appearance.

4.3 After cleaning, an internal and external inspection of the drum must be conducted. If any of the prior contents remain, except as noted in 4.1, the drum must be rejected or subjected to further processing. The drum must be inspected for flange damage, permanent discoloration, excessive odors, 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 The thoroughly cleaned drum must be leakproofness tested by either a “wet” or “dry” method. The “wet” method requires complete immersion in water and application of an internal air pressure of at least 20 kPa (3 psi) for Packing Group II or III materials, or 30 kPa (4 psi) for Packing Group I materials, for at least 5 seconds. The “dry” method requires the application of the same levels of air pressure or vacuum for at least 5 seconds by a device which accurately measures pressure retention or vacuum decay. DOT-approved alternative tests of similar sensitivity may be used. Drums found to be leaking must be rejected.

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

4.6 The completed drum must be marked with the reconditioning firm's name and address or registered symbol (e.g. identification number), 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. If the original manufacturer's durable full UN marking has been removed in the reconditioning process, it must be replaced by the reconditioner before the drum may be used again to transport hazardous materials. The reconditioner's replacement mark may show a performance level below that originally marked by the drum manufacturer, but in no case may a reconditioner mark a higher performance level than was embossed on the bottom of the drum. The reconditioning firm's identity and “R” marking constitutes a certification that the drum meets its marked performance rating, is capable of passing the design type qualification tests, and meets this *Code of Operating Practice*.

5.0 Reconditioning open head plastic drums.

5.1 Open head drums and covers, must be cleaned thoroughly. All prior contents must be removed. Minimal absorption in the drum of prior contents is acceptable if such residue does not affect the structural integrity of the drum or cause unsafe incompatibility problems with future contents.

5.2 The exterior of the drum must be cleaned to the original materials of construction, removing labels, adhesives and coatings. Surface treatments may be utilized to improve external appearance.

5.3 After cleaning, an internal and external inspection of the drum and drum cover must be conducted. If any of the prior contents remain, except as noted in 5.1, the drum must be rejected or subjected to further processing. The drum and cover must be inspected for permanent discoloration, excessive odors, stress cracking, and surface damage that reduces the structural integrity of the drum. Drums and covers that show evidence of these problems must be rejected. Drums that show evidence of significant shrinkage must be restored to their original shape and contour, or rejected.

5.4 Nearly all reconditioned open-head plastic drums are used to ship solids and, thus, do not require a leakproofness test. When required by applicable regulations, any open head drum intended for liquids, except its removable head, must be leak tested by either a “wet” or “dry” leakproofness test. Drums must receive an internal test of at least 20 kPa (3 psi) for Packing Group II and III materials, or 30 kPa (4 psi) for Packing Group I materials for at least 5 seconds. DOT-approved alternate tests of similar sensitivity may be used. Drums found to be leaking must be rejected or repaired.

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

5.6 The closing rings must be replaced, if necessary or cleaned, and reinstalled.

5.7 The completed drum must be marked on the top or side with the “First Line UN Mark: the reconditioning firm's name and address or registered symbol (identification number), the last two digits of the year of testing, the nation in which the reconditioning was performed (USA), the letter "R" and the letter "L" for drums that have been successfully leakproofness tested. If the original manufacturer’s durable full UN marking has been removed in the reconditioning process, it must be replaced by the reconditioner

before the drum may be used again to transport hazardous materials. The reconditioner's replacement mark may show a performance level below that originally marked by the drum manufacturer, but in no case may a reconditioner mark a higher performance level than was embossed on the bottom of the drum. The reconditioning firm's identity marking constitutes a certification that the drum meets its marked performance rating, is capable if passing the design type qualifications tests and meets and this *Code of Operating Practice*.

6.0 Converted and remanufactured plastic drums.

Drums converted from one UN design 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 plastic drums. Drums that have been rejected during the inspection process 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 agent, thereby removing all foreign matter and prior residues. Drums typically the are mechanically cut, shredded or granulated.

7.2 Granulation of plastic drums. Drums that are granulated may need to be separated according to 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 control program. Proper melt-flow rate, density, and other parameters necessary for the intended purpose will be verified.

7.3 *Disposal of off-specification material.* 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 regulations.

8.0 **Environmental and employee protection.**

8.1 *Storage of plastic drums containing residues.* Unreconditioned 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 obviously unfit for reconditioning should be rejected immediately and should be prepared for scrap in accordance with this Code and applicable regulations.

8.2 *Accumulated residues from plastic drums.* All wastes generated in 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.

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 (PPE). The firm must have in place a written program of Hazard Communication for employees, including federally mandated access to Material Safety Data Sheets (MSDS's).

8.5 *Employee Training.* The U.S. Department of Transportation (DOT) requires employees whose jobs have a connection to hazardous materials transportation to be trained about the recognition, regulation and proper handling of these materials. Training is required at different levels depending on an employee's level of involvement with actual hazmat loadings or packagings. "General awareness" training applies to all hazmat

employees, including those working in administrative positions (i.e., the front office). More in-depth “function specific” training is required for employees with tasks that put them into direct contact with hazmat loadings, packagings and/or residues. For instance, those employees tasked with testing packagings should be trained in all procedures for conducting the tests correctly and recording the test results in a comprehensive test report. Refresher training is required every 3 years. All new hazmat employees must receive training within 90 days. Training can be conducted by other employees and need not be out-sourced. A record of each training session must be dated, signed and filed for each employee. DOT inspectors typically ask to see these records, so they should be readily available for inspection by agency officials. As part of *Responsible Packaging Management*, RIPA makes available to its member companies a comprehensive training slide show designed specifically for the reconditioning industry. Updates are made as necessary. The training module is offered in both English and Spanish. Reconditioners and packaging dealers should make certain to highlight their training program with customers as well as regulators.

8.6 *Company vehicles and drivers.* The reconditioning firm shall employ drivers to operate company vehicles 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.* All practical precautions against fires must 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 and to facilitate employee evacuation in emergencies.

9.0 **Public statements and advertising**

9.1 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 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

Reprocessing Intermediate Bulk Containers (IBCs)

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

- Adhere to RIPA's Code of Operating Practice for Intermediate Bulk Containers (IBC).
- Recognize and respond to community concerns about industrial packaging disposal and the operations of industrial packaging reprocessing facilities.
- Produce industrial packagings that are effective in safely containing all appropriate materials in transportation.
- Make health, safety and environmental considerations a priority in our planning for all existing and new processes.
- Counsel packaging users on the safe manufacture, use, transportation, emptying, reuse, and recycling of industrial packagings.
- Operate our plants in a manner that protects the environment and the health and safety of our employees and the public.
- Work with others to resolve problems created by past industrial packaging disposal practices.
- Participate with government and others in creating responsible laws, regulations, and standards to safeguard the community, workplace, and environment.
- Promote the principles and practices of Responsible Packaging Management by sharing our experiences and offering assistance to others who produce, use, transport, and/or dispose of 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.

1.0 Basic recommendation.

Intermediate Bulk Containers (IBCs) used for the transportation of hazardous materials that are remarked, mechanically altered, or that must be mechanically processed in any way to be able to pass the design-type tests 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. 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.

2.0 IBC reprocessing firm.

2.1 General. A business that properly reprocesses IBCs for use in transporting hazardous materials is one that possesses the necessary equipment, and reprocesses IBCs in accordance with all of the provisions described in this Code of Operating Practice.

Where required, an IBC reprocessing firm shall be registered or licensed by appropriate government authorities and shall mark reprocessed IBCs with the firm's name and address or registered symbol (identification number) as its certification that the IBC meets its marked performance capability, is capable of passing the design type tests, and meets this Code of Operating Practice.

2.2 Quality control. The reprocessing firm must maintain a documented quality control program.

2.3 Open door policy. The reprocessing firm shall encourage plant reviews during normal operating hours by emptiers or customers.

2.4 *Compliance.* In addition to meeting the details of this Code of Operating Practice, the reprocessing firm should be in compliance with all federal, national, provincial and local government regulations pertaining to health safety, and environmental protection.

3.0 **Incoming empty IBC requirements.**

3.1 *Transportation of Intermediate Bulk Containers containing residues.* IBCs that have been used for the transportation of hazardous materials that have not been cleaned and purged of any potential hazard must be transported with all closures, and service and structural equipment in place, with all original hazard markings and labels legible.

3.2 *Acceptance of Intermediate Bulk Containers containing residues; "empty" IBCs.* No IBC that previously contained hazardous material may be accepted that is not empty, unless the reprocessing firm holds permits issued by appropriate environmental authorities to receive and process hazardous wastes. "Empty" means that the IBC complies with the California "drip dry" or U.S. EPA empty container standard. The U.S. 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 1-inch or 0.3 percent by weight of the total capacity of the IBC may remain in the bottom of the IBC. 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 and composite IBCs that previously contained "poison" may only be offered for additional use in transporting hazardous materials in Hazard Class 6.1, or hazardous wastes.

3.3 *Empty Intermediate Bulk Container certification.* Every person providing IBCs containing any residues to a reprocessing firm, regardless of prior contents, shall sign an "Empty IBC Certification" on each occasion that IBCs are offered, verifying that the IBCs are empty in accordance with the explanation of the term in 3.1 and 3.2, above.

3.4 *Rejection of Intermediate Bulk Containers that are not empty.* IBCs containing residues of prior contents, that are to be loaded on the reprocessing firm's trucks by that firm's employees, shall be rejected if they contain excessive amounts of retained product. IBCs brought to the reprocessing firm's plant, or loaded on the reprocessing firm's vehicle by the emptier's employees, shall be rejected at the reprocessing firm if, upon internal inspection, they are found to be not empty. Rejected IBCs shall be returned to the emptier as containing unused product and the emptier shall be advised of the reason for the rejection.

3.5 *Inspection of incoming Intermediate Bulk Containers.* The reprocessing firm must inspect each IBC when it is unloaded from the transport vehicle. 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.

4.0 IBC reprocessing – general requirements.

4.1 *General IBC requirements.* All prior contents must be removed. Minimal absorption in a rigid plastic or the bottle of a composite IBC of prior contents is acceptable if such residue does not affect the structural integrity of the IBC, or cause unsafe incompatibility problems with future contents.

4.2. *Exterior cleaning.* The exterior of the IBC, including pallets and cages, must be cleaned of all residues and contamination. Unless required for reuse programs, labels must be removed along with adhesives and coatings. Surface treatments may be applied to improve external appearance.

4.3 *Inspection.* After cleaning, an internal and external inspection of the IBC must be conducted. If any of the prior contents remain, except as noted in 4.1, the IBC must be rejected, repaired or subjected to further processing. The exterior of the IBC and its associated components must be inspected for damage that would significantly weaken the IBC such as, stress cracking and surface damage that reduces the structural integrity of the unit. Units also should be inspected for permanent discoloration and excessive odors.

4.4 *Equipment.* All service and structural equipment must be cleaned and reinstalled, or replaced, if necessary. Filling, discharge, pressure relief and venting devices must show no damage and must ensure a leaktight seal.

4.5 *Marking.* Reprocessed IBCs must be marked with the symbol of the country in which the reprocessing was carried out, the reprocessor's identification number or registered symbol and, if "repaired" (as described in 6.0 below), the last two digits of the year of testing. The reprocessing firm's identity marking constitutes a certification that the IBC meets its marked performance rating, is capable of passing the design type tests, and meets this Code of Operating Practice.

5.0 Routine maintenance of IBCs.

5.1 *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 (e.g., fasteners, stabilizers) that does not directly perform a containment or discharge pressure retention function. For example, IBC legs and lifting attachments may be straightened.

5.2 *Leaktightness verified.* The leaktightness of a routinely maintained IBC must be verified if body closures or service equipment have been removed or replaced. Checking for "leak tightness" can be done visually and need not require internal pressurization.

5.3 *Marking routinely maintained IBCs.* The person performing routine maintenance on IBCs shall durably mark the IBC near the manufacturer's 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.

6.0 IBC repair.

6.1 *Repair of IBCs.* Metal, rigid plastic and composite IBCs that have been damaged by impact or otherwise show evidence of reduced strength (e.g., corroded metal, embrittled

plastic), may be repaired for reuse. Repaired IBCs must conform to the original design type and be able to withstand the design type tests. The bodies of rigid plastic IBCs and the inner receptacle 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 receptacle that conforms to the original manufacturer’s specification. Replacement receptacles (“bottles”) must be (as of 2011) of the same type and from the same manufacturer as the original receptacle. Replacement bottles from other than the same manufacturer (OEM) trigger requirements for IBC remanufacturing , e.g., full design type testing and certification (see 5.0 above).

6.3 Leakproofness testing of repaired IBCs. After repair, all IBCs intended to contain liquids or solids for filling and discharge under pressure shall be leakproofness tested in accordance with 49 CFR 178.813 unless a new inner receptacle that has been leakproofness tested by the seller is used.

6.4 Marking repaired IBCs. The person who tests and inspects an IBC that has been repaired shall durably mark the IBC to show the country in which the tests and inspections were carried out, the name or the registered symbol of the company responsible for the repair, and the month and year of the leakproofness tests and inspections.

6.5 Recordkeeping for repair activity. A test report shall be created for all IBCs that have been successfully repaired and leakproofness tested. The IBC owner shall retain the test report until the date of the next repair, or 2.5 years, whichever comes first.

7.0 IBC remanufacturing.

7.1 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.

7.2 *Testing remanufactured IBCs.* All applicable design type tests (i.e., bottom lift, stacking, leakproofness, hydrostatic pressure, vibration and drop) shall be performed successfully on each new IBC design type.

7.3 *Test reports.* A test report must be prepared for each design type tested and certified for 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.

7.4 *Periodic retests.* A manufacturer or remanufacturer of an IBC must retest and re-certify each active design type at least once every 12 months.

8.0 Periodic inspections.

8.1 *General.* A leakproofness test must be performed every 2.5 years on all IBCs intended to contain liquids or solids loaded or discharged under pressure, starting from the date of manufacture or the most recent repair. In addition, an external inspection of the IBC must be performed to ensure the IBC is properly marked, service and structural equipment is sound and functioning, and the IBC is generally safe for use in the storage and transportation of hazardous materials. Missing or damaged marks must be restored.

IBCs must be inspected internally every 5 years for any defects which could render the unit unsafe in transportation. Metal IBCs must be checked to ensure that the unit continues to meet minimum wall thickness.

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 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 IBC rejection.

9.1 Rejected Intermediate Bulk Containers.

IBCs that have been rejected during the inspection process and cannot be repaired for hazardous materials service are to be cleaned and directed to non-hazardous material service or prepared for scrap. When preparing IBCs for scrap, the interior and exterior must be cleaned using an effective cleaning agent, thereby removing all foreign matter, prior residues, labels and decorative coatings, and the IBC then must be mechanically prepared for scrap.

9.2 Granulation of plastic IBCs or the plastic inner receptacles of composite IBCs. IBCs that are granulated may need to be separated according to color, with consideration given to prior contents. Granulated material that is tainted (e.g., with paint, odor) should be packaged separately. Material intended for recycling should be handled in accordance with a written quality assurance program. Recyclers will verify the proper melt-flow rate, density and other parameters necessary for the intended purpose will be verified. Material that fails any test should be rejected.

9.3 Disposal of off-specification material. Granulated 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 regulations.

10.0 Environmental and employee protection

10.1 Storage of IBCs containing residues. Unreprocessed 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 obviously unfit for reprocessing should be rejected immediately and should be prepared for scrap in accordance with the preceding paragraphs.

10.2 Accumulated residues from IBCs. All wastes generated in the reprocessing process must be managed in full compliance with applicable regulations governing such wastes.

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 that geographical area. Offensive 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 Material Safety Data Sheets (MSDS's).

10.5 *Employee Training.* The U.S. Department of Transportation (DOT) requires employees whose jobs have a connection to hazardous materials transportation to be trained about the recognition, regulation and proper handling of these materials. Training is required at different levels depending on an employee's level of involvement with actual hazmat loadings or packagings. "General awareness" training applies to all hazmat employees, including those working in administrative positions (i.e., the front office). More in-depth "function specific" training is required for employees with tasks that put them into direct contact with hazmat loadings, packagings and/or residues. For instance, those employees tasked with testing packagings should be trained in all procedures for conducting the tests correctly and recording the test results in a comprehensive test report. Refresher training is required every 3 years. All new hazmat employees must receive training within 90 days. Training can be conducted by other employees and need not be out-sourced. A record of each training session must be dated, signed and filed for each employee. DOT inspectors typically ask to see these records, so they should be readily available for inspection by agency officials. As part of *Responsible Packaging Management*, RIPA makes available to its member companies a comprehensive training slide show designed specifically for the reconditioning industry. Updates are made as necessary. The training module is offered in both English and Spanish. Reconditioners

and packaging dealers should make certain to highlight their training program with customers as well as regulators.

10.6 *Company vehicles and drivers.* The reprocessing firm shall employ drivers to operate company vehicles in compliance with standards of the U.S. Federal Motor Carrier Safety Administration. 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.

10.7 *Fire safety.* All practical precautions against fires must 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 and to facilitate employee evacuation in emergencies.

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.* 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 and Reconditioning of Fiber Drums

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

- Adhere to RIPA's Code of Operating Practice for Fiber Drums.
- Recognize and respond to community concerns about packaging disposal and the operations of packaging reconditioning facilities.
- Produce packagings that are effective in safely containing all appropriate materials in transportation.
- Make health, safety, and environmental considerations a priority in our planning for all existing and new processes.
- Counsel packaging users on the safe use, transportation, emptying, reuse, and recycling of packagings.
- Operate our plants in a manner that protects the environment and the health and safety of our employees and the public.
- Work with others to resolve problems created by past packaging disposal practices.
- Participate with government and others in creating responsible laws, regulations, and standards to safeguard the community, workplace, and environment.
- Promote the principles and practices of Responsible Packaging Management by sharing our experiences and offering assistance to others who produce, use, transport, and/or dispose of 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.

1.0 Basic recommendation.

Packaging that is 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. That is, 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. This is to assure that any reference to reconditioning provides the user of a drum with total packaging integrity.

2.0 Reconditioning firm.

2.1 A business that properly reconditions fiber drums is one that possesses the necessary equipment and processes drums in accordance with all of the provisions described in this Code of Operating Practice. Where required, a drum reconditioning firm shall be registered or licensed by appropriate government authorities and shall mark reconditioned packagings with the firm's identification as its certification of regulatory compliance.

2.2 The reconditioning firm must maintain a documented quality control program.

2.3 The reconditioning firm shall encourage plant reviews during normal operating hours by any emptier or customer.

2.4 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.

3.0 Preparation and acceptance of empty drums.

3.1 *Transportation of drums containing residues.* Drums that have been used for the transportation of hazardous materials that have not been completely cleaned and purged

of all hazards must be transported with all closures in place, with all original hazard markings and labels legible.

3.2 Acceptance of drums containing residues; "empty" fiber drums. No drums may be accepted that are not empty, unless the reconditioning firm holds permits issued by appropriate environmental authorities to receive and process hazardous wastes. "Empty" means that the drum must be as empty as possible using practices commonly employed to remove materials from drums, including pouring, pumping, and aspirating. In addition, no more than 2.5 cm (1 inch) of residual material may remain in the bottom of the drum. If more material may be poured out of the drum, then it is not empty. If everything is poured out, but *more* than 2.5 centimeters (1 inch) remain on the bottom, the drum 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 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 reconditioners may not accept drums that do not comply with the state empty packaging rule (22 CCR 66261.7).

3.3 Empty drum certification. Every person providing to a reconditioning firm drums containing any residues, regardless of prior contents, shall sign an "Empty Drum Certification" on each occasion that drums are offered, verifying that the drums are empty in accordance with the explanation of that term in 3.2, above.

3.4 Rejection of drums that are not empty. Drums containing residues of prior contents that are to be loaded on the reconditioning firm's trucks by the reconditioning firm's employees, shall be rejected if they appear to be unduly heavy because of the unintended retention of product. Drums brought to the reconditioning firm's plant, or loaded on the reconditioning firm's vehicle by the emptier's employees, shall be rejected at the reconditioning firm, if, upon internal inspection, they are found to be not empty. Rejected drums shall be returned to the emptier as product and the emptier shall be advised of the reason for the rejection.

3.5 *Inspection of incoming drums.* The reconditioning firm must inspect each “raw” 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 unreconditionable and, therefore, must be prepared for scrap, incineration or recycling

4.0 **Fiber drum reconditioning.**

4.1 *Reconditioning fiber drums.* The reconditioning firm must inspect incoming drums, their covers, gaskets, and rings. Any bags or liners that may be present shall be removed. The interior and removable parts should be cleaned by washing, wiping, blowing with pressurized air, or another process that assures cleanliness. The interior and exterior of the drum is inspected after cleaning. The drum shall be de-identified as to its previous lading. Labels may be painted over to de-identify. For labels that are removed, caution is to be taken to avoid removal of fiber plies. The drum shall be re-assembled and inspected when fully closed. If intended for hazmat service, a durable UN mark must be applied.

4.2 *Marking reconditioned drums.* Completed drums intended for use of hazardous materials must be marked with the reconditioning firm's identification number or registered symbol, and the year of testing. Drums marked in accordance with the U.S. standards must include the nation in which the reconditioning was performed, the letter "R", and the letter "L" for drums that have been successfully leakproofness tested. If the original manufacturer's durable full UN marking has been removed in the reconditioning process, it must be replaced by the reconditioner before the drum may be used again to transport hazardous materials. The reconditioner's replacement mark may show a performance level below that originally marked by the drum manufacturer, but in no case may a reconditioner mark a higher performance level unless the drum is “remanufactured” in accordance with 4.3 below. The reconditioning firm's identity and “R” marking is a certification that the drum meets all applicable regulations and this Code of Operating Practice.

4.3 *Remanufactured drums.* Drums converted from DOT specification drums into UN drums, from one UN type to another type, or which have had integral structural components replaced, are remanufactured drums. All requirements applicable to the manufacturer of new drums apply to these drums, including full design type testing.

4.4 *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 non-hazardous material service or prepared for scrap or incineration. When preparing drums for scrap or incineration, the drum interior and exterior must be cleaned, removing all foreign matter, prior residues, labels and closures, and then disposed of properly.

5.0 **Environmental and employee protection.**

5.1 *Storage of drums containing residues.* Unreconditioned 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 obviously unfit for reconditioning should be rejected and should be prepared for scrap in accordance with Section 4.4. of this Code. Damage of drum inventory from atmospheric and ground moisture must be avoided.

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

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. Offensive emissions 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 drums, must be reduced to the extent practicable. At a minimum, this necessitates the reconditioning firm providing and requiring where necessary 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 *Material Safety Data Sheets (MSDSs)* in the event an employee is stricken by exposure to a chemical or other material.

5.5 Employee Training. The U.S. Department of Transportation (DOT) requires employees whose jobs have a connection to hazardous materials transportation to be trained about the recognition, regulation and proper handling of these materials. Training is required at different levels depending on an employee's level of involvement with actual hazmat loadings or packagings. "General awareness" training applies to all hazmat employees, including those working in administrative positions (i.e., the front office). More in-depth "function specific" training is required for employees with tasks that put them into direct contact with hazmat loadings, packagings and/or residues. For instance, those employees tasked with testing packagings should be trained in all procedures for conducting the tests correctly and recording the test results in a comprehensive test report. Refresher training is required every 3 years. All new hazmat employees must receive training within 90 days. Training can be conducted by other employees and need not be out-sourced. A record of each training session must be dated, signed and filed for each employee. DOT inspectors typically ask to see these records, so they should be readily available for inspection by agency officials. As part of *Responsible Packaging Management*, RIPA makes available to its member companies a comprehensive training slide show designed specifically for the reconditioning industry. Updates are made as necessary. The training module is offered in both English and Spanish. Reconditioners and packaging dealers should make certain to highlight their training program with customers as well as regulators.

5.6 Company vehicles and drivers. The reconditioning firm shall employ drivers to operate company vehicles in compliance with standards of the Federal Motor Carrier Safety Administration (or other applicable, national regulatory body). The firm shall adhere to rules on the qualification of drivers, including provisions relating to alcohol or other substance abuse. Company vehicles shall be maintained in safe operating condition.

5.7 Fire Safety. All practical precautions against fires must 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 and to facilitate employee evacuation in emergencies.

6.0 Public statements and advertising.

6.1 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.

6.2 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 5

MEMORANDUM

To: Files

From: Larry Bierlein, RIPA General Counsel

Re: RIPA Advisory on Empty Industrial Packaging Management

The emptier of any drum or other industrial packaging has certain responsibilities with respect to the residues that continue to adhere to that packaging. ASTM defines an industrial packaging as “a package used for the transportation or storage of commodities, the contents of which are not meant for retail sale without being repackaged.”

Transportation regulations. An industrial packaging that held a U.S. DOT-regulated hazardous material, then is empty, and now holds only the residue of that material, still must be shipped as if it were full of its original contents. See 49 CFR 173.29. This means that it must be closed, with all closures tightly in place. If the lid is gone or removed, or the closures are missing or loose, the DOT regulations are not being met.

All marks and labels originally required when the packaging was full, are still required when it is shipped with residual contents.

Some relief from DOT shipping papers is granted in 173.29(c)(2), but only for non-bulk packaging “when collected and transported by a contract or private carrier for reconditioning, remanufacture or reuse.” Empty non-bulk industrial packaging being discarded or scrapped is not being shipped for reconditioning, remanufacture, or reuse, and therefore must be accompanied by certified shipping documents indicating the hazard of the residue. They may include the words “RESIDUE: LAST CONTAINED ____” in association with the shipping description. Shipping papers also are required if the means of shipping is via common carrier.

Placarding of the vehicle is not required for empty non-bulk packaging, but it is required for intermediate and bulk packagings that continue to hold residue of a hazardous material.

It is important to recognize that the DOT regulations apply regardless of relief from regulation that might be granted by another agency. As discussed below, for example, an EPA-empty packaging is not regulated by EPA, but that exception is immaterial to DOT. As long as hazardous material residue remains, empty industrial packagings must meet the DOT rules.

DOT is concerned about the hazards of the residue if it were unintentionally released during loading, unloading, transport, or storage incident to transportation. Their concern is not abated if the industrial packaging is cut, torn, or crushed. In fact, it is enhanced because of the greater likelihood of the residue injuring transportation personnel when released from a defective packaging. DOT has said, “crushed steel drums which have not been cleaned and purged of all hazardous material residue must be packed in authorized packagings, and marked and labeled as required when the drums previously contained a greater amount of the hazardous material.” In other words, uncleaned crushed industrial packagings with hazardous material residues must be overpacked, and the overpack must meet all the DOT regulations applicable to shipment of the residue.

Hazardous waste regulation. U.S. EPA initiated hazardous waste regulations under the Resource Conservation & Recovery Act (RCRA), in 1980. At that time, they indicated that the RCRA controls, such as manifesting and facility permitting, would not be required if all that is handled are “empty” packagings. In a definition adopted in response to RIPA’s petition for rulemaking, 40 CFR 261.7 defines when a packaging is considered empty. For non-bulk packagings such as drums, the packagings first must be empty as completely as possible using common emptying practices. In no case may the residue constitute no more than one inch or 3% of the original capacity of the packaging. EPA makes it clear that the 1-inch maximum is meant for hard-to-remove residues such as tar.

In the industry, the term “drip dry” is used as shorthand to describe a properly empty non-bulk packaging.

Intermediate bulk and bulk industrial packagings are subject to the same EPA rule, but the authorized allowable volume of residue is only 1-inch or 0.3% of the capacity of the packaging in these larger sizes.

If the packaging is *not* empty by these criteria, then the contents are an EPA-regulated hazardous waste. The packaging emptier is the generator of that waste, who must have his own EPA identification number, must consign the load to an EPA or State-permitted hazardous waste treatment, storage, or disposal facility, and must utilize the services of an EPA or State-registered hazardous waste transporter.

To facilitate the handling of empty packagings in the reconditioning industry, RIPA created the empty packaging certification form used by members, in which the emptier of the industrial packaging must certify that both the DOT and EPA RCRA requirements are met when the empty packaging is offered for transport.

Disposal liability. EPA also administers Superfund, sometimes called CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act). Under this law, people who arrange for the disposal of hazardous substances may be held jointly and severally liable for the clean up of any site where those substances are released to the environment. Under 42 U.S. Code 9601(22), “the term ‘release’ means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (*including the abandonment or discarding of barrels, packagings, and other closed receptacles containing any hazardous substance or pollutant or contaminant*). . . .” (Italics added.)

At least one case has held that the processing of scrap materials constitutes “disposal” under CERCLA. The empty packaging rule under RCRA has no meaning under CERCLA, just as it has no meaning under DOT. If any residue in an empty industrial

packaging meets the definition of a hazardous substance, then the emptier of that packaging can be held liable for the clean up of any portion or all of a site at which that residue is released, including a scrap yard.

For this reason, prudent operators of scrap facilities will not accept uncleaned industrial packagings. In addition to the environmental consequences of release of the residues, the employees in the scrap yard may be exposed to hazardous chemicals and vapors in violation of the Occupational Safety and Health Act (OSHA). Recognizing, this, the association of the scrap industry and the predecessor of RIPA established a joint recommendation that all materials to be scrapped first would be cleaned using an effective cleaning agent and purged of all foreign matter and prior residues, or would be thermally neutralized in a drum reclamation furnace for the same purpose.

In 1999, Congress passed the Superfund Recycling Equity Act, which included an amendment exempting scrap processors from cleanup liability when they send lightly contaminated “recyclable material” to downstream customers, including steel mills, who must meet very specific operating criteria. This new law has a provision that excludes any industrial shipping packaging, whether intact or not, having a capacity from 30-3000 liters (i.e., 8-800 gallons), from the definition of “recyclable material.” This means that any industrial packaging such as steel or plastic drum, whether whole, shredded, or crushed, that is sent to a scrap yard or steel mill with residue in or on the packaging or its parts, will expose *both* the generator and the recipient of it to full Superfund cleanup liability.

Disposal facilities such as landfills also do not want empty industrial packaging. Specific operating rules in landfills prohibit such waste disposal, because ultimately the packaging will corrode and collapse, disturbing the stability of the site.

Conclusion. Hazardous residues in empty industrial packagings pose threats to employees, the public, and the environment, and for this reason agencies like DOT and EPA under Superfund continue to regulate such industrial packagings almost to the same

extent as if those packagings were full of their original contents. The emptier of any industrial packaging must recognize his responsibility to act properly, and the massive potential liabilities for his failure to act properly. These responsibilities and liabilities extend long after the empty packaging leaves the emptier's premises.

APPENDIX 6

EPA Empty Container Rule

Re: Empty Containers to be excluded from regulation by U.S. EPA as hazardous waste.

40 CFR Sec. 261.7 Residues of hazardous waste in empty containers.

(a)(1) Any hazardous waste remaining in either (i) an empty container or (ii) an inner liner removed from an empty container, as defined in paragraph (b) of this section, is not subject to regulation under parts 261 through 265, or part 268, 270 or 124 of this chapter or to the notification requirements of section 3010 of RCRA.

(2) Any hazardous waste in either (i) a container that is not empty or (ii) an inner liner removed from a container that is not empty, as defined in paragraph (b) of this section, is subject to regulation under parts 261 through 265, and parts 268, 270 and 124 of this chapter and to the notification requirements of section 3010 of RCRA.

(b)(1) A container or an inner liner removed from a container that has held any hazardous waste, except a waste that is a compressed gas or that is identified as an acute hazardous waste listed in Secs. 261.31, 261.32, or 261.33(e) of this chapter is empty if:

(i) All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, e.g., pouring, pumping, and aspirating, and

(ii) No more than 2.5 centimeters (one inch) of residue remain on the bottom of the container or inner liner, or

(iii)(A) No more than 3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 110 gallons in size, or

(B) No more than 0.3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 110 gallons in size.

(2) A container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric.

(3) A container or an inner liner removed from a container that has held an acute hazardous waste listed in Secs. 261.31, 261.32, or 261.33(e) is empty if:

(i) The container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate;

(ii) The container or inner liner has been cleaned by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equivalent removal; or

(iii) In the case of a container, the inner liner that prevented contact of the commercial chemical product or manufacturing chemical intermediate with the container, has been removed.

APPENDIX 7

EPA Explanation of the Empty Container Rule (47 Fed. Reg. 36092, 36093)

[A]pparently many individuals are reading the "and" at the end of paragraph §261.7(b)(1)(i) as "or" and therefore believe that the practice of leaving one inch of residue in a container qualifies the container as being empty, whether or not the container has been empty of all of its contents by methods commonly employed to remove materials from that type of container, as specified in §261.7(b)(1)(i). EPA emphatically states that this is not the case. When the two paragraphs §261.7(b)(1)(i) and (ii) are properly read together, it should be clear that one inch of waste material is an overriding constraint and may remain in an empty container only if it *cannot be removed* by no [sic] normal means. The rationale for this provision is that there are certain tars and other extremely viscous materials that will remain in the container even after the container is empty by normal means. Rather than requiring the complete removal of these materials by extraordinary means, EPA is allowing up to an inch of such material to remain in a container. On the other hand, if extraordinary means are necessary to remove the waste to lower the contents of the container down to a depth of one inch, then they must be employed.

APPENDIX 8

EMPTY DRUM CERTIFICATION

I hereby certify that these drums are “empty” as that term is defined in U.S. Environmental Protection Agency regulations, 40 CFR 261.7*, and that they have been properly prepared for transportation under the regulations of the U.S. Department of Transportation, 49 CFR 173.29.**

Date: _____ Signature: _____

* For most residues, EPA’s rule 40 CFR 261.7 says: “A packaging...is empty if:

All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of packaging, e.g., pouring, pumping, and aspirating, *and*

No more than 2.5 centimeters (one inch) of residue remain on the bottom of the packaging...”

For residues of “P-list” products specifically listed by name in 40 CFR 261.33 (e), EPA says the packaging is empty only “if the packaging...has been triple-rinsed using a solvent capable of removing “the product, or has been cleaned by another method shown to achieve equivalent removal.”

**DOT’s 49 CFR 173.29 says that all openings on the empty packaging must be closed, and that all markings and labels must be in place as if the drum were full of its original contents. Residues of hazardous materials in empty packagings are still considered hazardous by DOT; however, non-bulk packagings (e.g. drums) may be transported without shipping papers and vehicle placards if shipped to a reconditioner. Only under narrow and rigorous standards (49 CFR 173.29) would empty packagings be purged of any potential hazard and, thus, be fully exempt from DOT regulation as hazardous materials.

APPENDIX 9

EMPTY IBC CERTIFICATION

I hereby certify that these intermediate bulk packagings (IBCs) are “empty” as that term is defined in Environmental Protection Agency regulations, 40 CFR 261.7*, and that they have been properly prepared for transportation under the regulations of the U.S. Department of Transportation, 49 CFR 173.29.**

Date: _____ Signature: _____

*For most residues, EPA’s rule 40 CFR 261.7 says: “A packaging...is empty if:

- (i) All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of packaging, e.g., pouring, pumping, and aspirating, *and*
- (ii) No more than 2.5 centimeters (one inch) of residue remain on the bottom of the packaging... or,
 - A)
 - B) No more than 0.3 percent by weight of the total capacity of the packaging remains in the packaging or inner liner if the packaging is greater than 110 gallons in size.

For residues of “P-list” products specifically listed by name in 40 CFR 261.33 (e), EPA says the packaging is empty only “if the packaging...has been triple-rinsed using a solvent capable of removing “the product, or has been cleaned by another method shown to achieve equivalent removal.”

**DOT’s 49 CFR 173.29 says that all openings on the empty packaging must be closed, and that all markings and labels must be in place as if the packaging were full of its original contents. Note: Residues of hazardous materials in empty packagings are still considered hazardous by DOT. Only under narrow and rigorous standards (49 CFR 173.29) would empty packagings be purged of any potential hazard and, thus, be fully exempt from regulation as hazardous materials.