



**CRA DRY PRODUCT  
TERMINAL AND WASH GUIDELINES**

2014

**Corn Refiners Association**

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June 2014

# Corn Refiners Association

## Dry Product Terminal and Wash Guidelines

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### **INTRODUCTION**

The CRA Dry Product Terminal and Wash Guidelines were developed by a committee of CRA members comprised of representatives from the industry.

This document has been prepared to provide general, voluntary guidelines to manufacturers, suppliers, and terminals of manufactured non-packaged, bulk, dry products, as well as food/feed grade products, other products used in food contact applications, and industrial use products. This guidance document has been prepared in order to provide best practices and minimum quality guidelines for the handling, storage, transporting, receiving, testing, and system maintenance of dry products derived from corn refining. This document may also help achieve compliance with certain aspects of applicable regulatory standards such as Good Manufacturing Practices (GMP), customer requirements, and industry standards. It is based on current U.S. FDA regulatory guidance as of the date of the document. Changes to regulations, such as under the Food Safety Modernization Act (FSMA), may need to be taken into account as new regulations are developed.

Personal safety must be stressed when performing the tasks included in these guidelines. Adequate fall protection should be used when inspecting railcars/tanks, and the Occupational Safety and Health Administration (OSHA) lockout/tagout procedures should be used when cleaning pumps and automatic valves, and inspecting holding vessels, air and steam systems. Personal protective equipment (PPE) including safety glasses, helmets, safety shoes, respirators, and gloves shall be used when appropriate according to company policy.

### **Section 1 Facility Requirements and Practices**

#### **1.1 Good Manufacturing Practices**

The facility shall be in compliance with Good Manufacturing Practices (GMP) documented in 21 CFR 110, or as modified under the FSMA, and customer requirements. It is recognized that human food and animal feed requirements may differ, in accordance with FDA guidance, and the recommendations herein should be interpreted accordingly. Additionally, the facility shall be in compliance with all other applicable laws and regulations governing operations for dry terminal storage and transfer of products. Insuring compliance is the responsibility of the facility management and designated responsible parties.

##### **1.1.1 Basic Principles**

Appropriate quality operations shall be employed to ensure that food meets all applicable regulatory requirements and is suitable for human consumption, and that food-packaging materials are safe and suitable for their intended use.

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- a. Documented GMP's, Hazard Analysis and Critical Control Point (HACCP) measures and a Food Safety Plan as required under FSMA shall be present. The implementation of these programs is shown by monitoring and verifying practices and documentation.
- b. All food processing equipment shall be designed, installed, operated and maintained in such a condition to minimize spills or leaks and to prevent contamination.
- c. All food processing equipment shall be utilized under such conditions and controls necessary to minimize microbiological growth and introduction of contaminants in the product. Equipment shall be maintained in good working order and be subject to a regular inspection and maintenance program. Stored product requires monitoring for such physical factors as age, temperature, humidity, deterioration, etc.
- d. Facility buildings and site shall be of suitable design, construction and size to facilitate maintenance and sanitary operations.
- e. Industrial non-food contact products shall be handled using separate systems from food grade products.

### **1.1.2 Personal Hygiene Program**

Employees should maintain good standards of personal hygiene at all times.

Employees working under conditions where they are likely to contact food, food ingredients, food packaging materials and food equipment shall observe the following rules:

- a. Perform proper hand washing by thoroughly washing (using warm water and liquid soap) and drying (using disposable towels or air) hands regularly. This includes when returning to work, after using the restroom, after eating, etc.
- b. Wear clean clothes, shirts without pockets and buttons, and, where practicable, protective food handling gloves.
- c. Use a hair net or cap at all times where product is exposed, and a beard net as necessary.
- d. Cover cuts or sores with clean waterproof dressings.
- e. Do not wear jewelry, watches, false nails or other items that might fall into food.
- f. Do not cough or sneeze over food.
- g. Do not smoke in or near food handling areas.
- h. Any person who, by medical examination or supervisory observation, is shown to have, or appears to have, an illness, open lesion, including boils, sores, or infected wounds, or any other abnormal source of microbial contamination by which there is a reasonable possibility of food, food-contact surfaces, or food-

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packaging materials becoming contaminated, may be excluded from any operations which may be expected to result in such contamination until the condition is corrected. Personnel shall be instructed to report such health conditions to their supervisors. For example, individuals with communicable diseases, such as swine flu, hepatitis, MRSA infections, etc., should communicate this fact to their supervisor and an assessment made of work suitability in the employee's assigned area. Reassignment may be necessary.

### **1.1.3 Cleaning Schedule**

The facility shall have a Master Sanitation Schedule (MSS) that is documented and complies with the GMP regulations in 21 CFR 110 or updated parts thereof. The schedule should contain details on specific cleaning tasks and frequencies. Tasks shall be documented when completed by dates and initials. The cleaning schedule will ensure that the facility is consistently maintained in a clean condition.

### **1.1.4 Security**

The security of the facility is of extreme importance to prevent intentional contamination of food products. Every employee is a part of the local security team, and it is important that they understand the specific security measures. The facility should have a security policy that includes:

- a. Completion of a site security and vulnerability risk assessment, which includes identifying credible security threats, risks and hazards, and developing measures to reduce risks where reasonable and appropriate. Facilities should consider whether fence enclosure or other barriers to entry are appropriate as part of their food safety plan.
- b. At the start of each business day an inspection of the facility should be conducted to make sure that a breach of security has not occurred. Inspection should be documented.
- c. Positive identification and recognition system is in place for all employees and contractors.
- d. Visitors shall sign in and out at the reception office before they are allowed outside the office area and shall be accompanied by an employee.
- e. All access points such as gates and buildings shall be locked when personnel are not in the immediate area (immediate area would be defined as within eyesight of company personnel within the same area) or when the area is not in use by personnel.
- f. All trailers, railcars and storage tanks shall have tamper evident seals on them at all times. Vessels received without seals must be inspected and food safety risks assessed according to the local food

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safety plan prior to unloading or loading. Exceptions include activities where:

- 1) vessels are within secured or supervised areas for washing, or loading.
- 2) empty vessels that have been returned unsealed that are awaiting inspection and cleaning. Unsealed, empty vessels should be assessed for risk.

### **1.1.5 Product Traceability/Recall**

The facility shall have product traceability and a recall program for incoming and outgoing shipments.

- a. Traceability of all products is accomplished through the vessel number, ship date, Bill of Lading (BOL) and lot number, if applicable. The shipping records and log sheets are references that support the traceability.
- b. The recall program shall provide a prompt response and action for determining if a recall or withdrawal is necessary. The recall program shall coordinate all activities with customers, distributors, regulatory Agencies as necessary, and transfer stations, and shall implement the recall from start to final disposition of the product, including corrective action. A specific person is to be identified as the responsible person for Reportable Food Registry filings.
- c. A practice recall exercise shall be conducted yearly. The results shall be documented and filed.
- d. The facility shall have an Emergency Action Plan that includes an emergency contact list.

### **1.1.6 Glass, Brittle Plastic, Metal and Wood Program**

The facility shall have a glass, brittle plastic, metal (i.e. brittle and hard plastics, or small metal wires from cleaning brushes) and wood program. This program shall include guidelines for prevention of these items in food handling areas. An inventory of these items shall be maintained and an audit of these items shall be performed documenting condition.

The facility should inspect and document compliance with the glass program at a pre-determined frequency in key areas where glass could enter the trailer or railcar during washing, loading or unloading of product.

### **1.1.7 Preventative Maintenance Program**

All equipment and utensils shall be adequately maintained according to GMP regulations given in 21 CFR 110. The facility shall have a physical



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inventory of equipment. The equipment shall be monitored when operating. A preventative maintenance program shall be in place and documented for equipment. The program schedule shall contain details on specific maintenance tasks and frequencies. Tasks shall be documented when completed by dates and initials.

### **1.1.8 Pest Control Program**

There shall be an effective, preventative and documented Pest Control program at the facility. The Pest control program must meet requirements in 21 CFR 110.

Pests, including but not limited to birds, rodents and insects, shall not be allowed in any area of the food plant. Facilities should be designed, constructed, and maintained to prevent pest entry and to eliminate harborage areas. Cleaning practices should eliminate potential food attractions or supplies for pests. Pest control practices, such as rodent traps, pesticides and other approved pest control methods should be utilized by qualified pest control contractors or qualified in-house employees.

## **1.2 GMP Auditing Guidelines**

The facility should have an internal audit process where GMPs and the facility conditions are reviewed and documented at least monthly. The audit should include documentation of comments. There should be a documented corrective action program to address any findings. Items reviewed during the audit should include:

### **1.2.1 Grounds**

- a. No standing water present.
- b. No weeds or overgrown vegetation near buildings.
- c. The grounds shall be paved and maintained to prevent pest harborage by controlling tall grass and weeds. The roads and surrounding property should be paved or constructed to eliminate dust and standing water
- d. Roadways, yards and traffic areas are maintained to control dust and other potential contaminants.
- e. Storm drains are open and clean.
- f. Rodent burrows and runs, and any conditions attracting rodents or other pests in interior and exterior areas of the facility are promptly eliminated when discovered except where impractical or not allowed (i.e. endangered species).

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### **1.2.2 Buildings**

- a. No holes are present in siding to allow pest entry.
- b. Walls are free of cobwebs, dust and dirt.
- c. Doors are self-closing and weather-stripping is in good condition and effectively applied.
- d. Adequate lighting is in place throughout the building with proper glass protection.
- e. Floors are in good condition with no standing water and no product spills.
- f. Roof leaks are promptly identified and repaired.
- g. All painted surfaces in Food Areas including structural beams, supports and other structural systems are maintained to avoid chipping, peeling or flaking paint.
- h. Fixtures, ducts and pipes are maintained to prevent drips or condensation from contacting foods, raw materials or food contact surfaces.
- i. Where floor drains are present, these shall be inspected and cleaned/sanitized on a regular basis.

### **1.2.3 Equipment**

- a. Pipes, tanks, pumps or other equipment are maintained to prevent leaks. Guidelines for choosing appropriate equipment for transfer and contact with food product are in place. A Management of Change process is used to assure proper inputs to choice of materials for construction.
- b. All safety equipment is in place and in good working order.
- c. Equipment insulation is clean.
- d. Hoses are clean, capped and stored off the ground if not in use. Sealing of stored hoses is recommended.
- e. All equipment is properly maintained and follows a Preventative Maintenance (PM) schedule.
- f. Hand washing stations should be in close proximity to food handling areas.
- g. Greases, hydraulic fluids and other chemicals potentially in contact with food should be of food grade quality and approved for the use.

### **1.3 Hazard Analysis and Critical Control Points (HACCP)**

Through the use of HACCP, significant food safety hazards (example: biological, chemical, physical, and allergen) are identified and critical control points in the dry product transfer process are established, as necessary. This should include the process of identifying the hazards, establishing controls for

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the identified hazards to prevent risk, monitoring the controls and periodically verifying that the system works in an effort to minimize or eliminate all identified hazards. A risk assessment for industrial products is recommended. The HACCP program should be reviewed periodically and when changes to the dry product transfer system are made.

### **1.4 Training**

Training shall emphasize to all employees that they are handling food grade products. The training process shall include familiarization with the Transfer/transload Station operational procedures. Training should be completed, retention tested for, and documented by all employees, management and contractors. This training is applicable for all employees engaged in working with our products. Training should be ongoing, which includes periodic reviews with employees. Training should include but not be limited to:

1. Equipment and Operational Requirements and Procedures for Vessel Wash Station
2. Facility, Equipment and Operational Procedures for a Transfer/Transload Station
3. HACCP Training
4. GMP Practices
5. Food Security Awareness
6. Master Sanitation Schedule and Procedures
7. Maintenance Schedule and Procedure
8. Quality Checks as Appropriate
9. Railcar receiving
10. Railcar Unloading Procedures
11. Trailer Washing and Sanitizing Procedures and Documentation
12. Trailer Loading Procedures
13. Internal Audit, Testing and Inspection Procedures when applicable
14. Safety Training, including but not limited to
  - a. Lockout/Tagout
  - b. Confined Space Entry
  - c. Working at Heights
  - d. Noise abatement
  - e. PPE
  - f. Other OSHA and Company defined safety programs

### **1.5 Wash Facility Considerations**

The facility must have dedicated physical areas that only wash vessels which carry food grade materials. All pumps, tanks and lines must be arranged to prevent cross contamination with other wash systems.

Cleaning areas should respect requirements for specific products, and procedures should be developed accordingly. Water is to be avoided in dry

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product loading areas and the facility should have a clear definition of dry versus wet portions of the process. Cleaning and sanitizing chemicals used on food product contact surfaces are to be FDA approved, while industrial product cleaning areas are recommended to use FDA approved chemicals. However, cross contact is to be prevented, including in chemical storage areas.

The facility may consist of railcar and vessel unloading and loading, with or without a wash facility. The facility may have portable equipment or be set up with fixed pumps, lines, storage tanks and food safety controls. The grounds of the facility should be in compliance with GMP regulations given in 21 CFR 110 and customer requirements. Exterior and interior drains shall provide adequate drainage to discharge water to the sewer without backup and to prevent standing water. Drains should be cleaned periodically to avoid off-odors. EPA waste water discharge permits are to be in place where required by EPA and local regulation.

### **1.6 Potable Water Supply**

Plumbing shall be of adequate size and design to provide sufficient quantities of water to all points within the terminal. The water system for the facility should have a filter capable of removing sediment from the incoming city water. There shall be adequate back flow prevention devices in place.

Water must meet EPA requirements for potable water. A water analysis report should be available at least yearly to document that the water meets EPA requirements for chemicals, pesticides, heavy metals, etc.

Municipal water shall be sampled at least annually from within the terminal and a microbiological analysis conducted. Well water, if in use, shall be tested at least quarterly. The microbiological analysis shall include appropriate tests for the cleaning purpose, to be determined by Quality Management, usually including total plate count, and coliform counts. The microbiological test results shall meet current U.S. Environmental Protection Agency regulatory standards for potable water.

### **1.7 Boilers**

Boiler treatment chemicals shall be approved for food contact use. The certificate for FDA or USDA approval of each boiler treatment chemical shall be kept on file along with the Safety Data Sheet (SDS) of each chemical. Written boiler start-up and shutdown instructions shall be present and follow boiler manufacturer instructions. Boiler maintenance log sheets and service reports shall be kept on file.

Boilers should be tested for capability of heating water for a sufficient time to assure an adequate cleaning for trailers and for cleaning trailers in rapid

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succession. A recording device, wash chart or equivalent should be included at the inlet or outlet of the vessels to prove that adequate temperatures were reached and held in the wash process. Each wash chart should be labeled with date and the vessel number of each vessel washed to enable proof of compliance to requirements.

### **1.8 Tanks, Silos, Tank Accessories, and Holding Vessels**

#### **1.8.1 Tank Design and Construction**

- a. Tanks shall be of a design to permit adequate product flow and to prevent dead zones and be constructed with materials suitable for the product type. The interior of dry product tanks should be smooth to prevent product build up and any microbiological growth. Vertical tanks shall have a sloped bottom. Horizontal tanks shall be adequately pitched to prevent dead zones. All welding shall be done by certified welders. It is recommended that the interior welds shall be polished with no snags or pits. All slag and waste shall be removed. All tanks and lines shall be inspected after any repair and prior to placing into service as covered by the maintenance policy.
- b. It is recommended that tanks be equipped with devices to help product flow, such as vibratory devices, etc.
- c. Gaskets shall be white and made with approved food contact materials, such as Ethylene Propylene Diene Monomer (EPDM), Teflon, Viton, nitrile, Neoprene or other FDA or equivalent approved material. A manway shall be located on the tank to allow for ease of inspecting headspace and cleaning the tank. Proper safety procedures shall be followed at all times when accessing manways.
- d. Tanks should be designed so that representative product samples can be collected in a sanitary manner.

#### **1.8.2 Tank Air Systems**

- a. To control condensation and microbiological growth, a steady air flow can be maintained across the surface of the tank. Any airflow in a dry product tank should not introduce humidity into the product tank.  
The system shall be properly designed and maintained to prevent foreign material from entering the process, which includes proper air filters. A 0.5 micron air filter is recommended.
- b. All systems should be maintained in accordance with manufacturers' recommendations.

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### 1.9 Pipes and Fittings

The piping materials of construction used for dry products shall be of suitable materials appropriate for the use. This can include 304, 304L or 316 stainless steel and aluminum. Welds shall follow welding guidelines. There should be separate piping with no interconnections or cross connections for each product type. If manifolds are used, a risk assessment is to be done to assess safety conditions of cross contamination.

1. The pipes and lines shall not have any dead-legs in order to minimize product hang-up. Dead legs are considered piping segments that are continuously exposed to the process but without normal flow or provision for flow, including lines closed by flanges, welded caps or other fittings.
2. Piping for the tank inlet shall be large enough for desired flow rates for filling. Tank discharge piping shall be large enough for process demand and to maintain adequate flows. Other elements that shall be considered in the size of the piping are temperature, flowability, pipe length, flow meters and elbows. Bends in piping are assessed for product hang-up and abrasion.
3. Piping flow speed shall be assessed, to assure that the use of screening devices, magnets and metal detectors is effective.
4. Acceptable gasket materials for piping include Teflon, EPDM, nitrile, Viton white food grade and Neoprene or approved material. Use only white and food grade materials. The hose and tubing couplings/fittings shall be constructed of compatible material.

### 1.10 Blowers and Filters

1. A facility may use its own blower or a blower located on a trailer or tractor to transfer product. Food grade practices will be followed at all times.
2. All products that are transferred shall be blown through a filter or suitable foreign material protection equipment prior to going to a customer. All filters shall be inspected after each load, or as appropriate and controllable, and determined by the HACCP Plan. These filters can be stainless steel, y-strainers, or filter material, and size should conform to specifications in the HACCP plan.
3. Blowers and filters are to be made of materials which insure the integrity of the construction, and these materials shall be acceptable for food contact. If using a blower on a trailer, it should have an inline filter. The filter should be placed after the railcar or storage tank and before entering the trailer. This filter must be checked before each use and documented.
4. Assure that blowers have proper seals between the compression gear chambers to prevent oil contamination of the product.

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### **1.11 Product Protection Devices**

1. Dry product handling systems should be designed to detect and prevent any extraneous material from being in the final product vessel. The product protection devices can include screens, magnets and metal detectors. This equipment should be located as close to the loading vessel as possible and located after any moving equipment.
2. Screens should be sized to remove extraneous material from the product and should be based on the product and product flow. Screens should be on a scheduled inspection and maintenance schedule. The system should be designed so that any rejected material can be inspected.
3. Magnets should be designed so that all product flow comes in contact with the device. The system should be designed so any residual material captured by the magnet can be inspected. The magnets should also be on a calibration schedule to evaluate pull strength.
4. Metal detectors should be tested on a frequent schedule to assure that specific sizes of metal are detected and rejected. The metal detectors should be on a calibration schedule.

### **1.12 Documentation**

Procedures shall be documented. Procedures shall have a unique procedure number and have a revision date. All required tasks shall be documented by the date of completion and be initialed by the employee performing the task, at a minimum.

### **1.13 Sealing**

The facility shall have a documented program for use and requirements regarding cable seals. The cable sealing program shall guarantee that the bins/silos, trailers, and railcars are sealed with tamper-evident cable seals when applicable. The inventory of seals shall be controlled and tracked. Cut seals will be destroyed or disposed of in a controlled and proper way. All inlets and outlets shall have a seal. When sealing, insure the cable is snug and no slack is present in the hasp.

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## Section 2 Railcar Handling

### 2.1 Equipment

#### 2.1.1 Materials of Construction, Design

Railcars are to be made of steel with bottom hatches and a dome hatch.

#### 2.1.2 Liners and Compressed Air

Cars are to be lined with food contact approved linings. Compressed air shall be of a quality permissible to be incorporated into a food product. Dry compressed air shall be filtered through a coalescing filter to remove oil (food grade), followed by a 0.2 or less micron filter to remove microorganisms.

### 2.2 Car Inspection

Each railcar will be inspected for external integrity and product identification prior to unloading. All railroad handling safety procedures and fall protection systems must be used when inspecting rail cars, dome lids and other items from heights. The following are recommendations, but company procedures should be followed and local conditions should be considered. Proper rail yard safety practices are to be observed at all times.

1. Confirm that the railcar hand break has been set, the wheels are chocked and a warning signal flag is placed at nearest rail switch.
2. Inspect car for damage and leakage. Contact the delivering railroad if the tank car exhibits evidence of damage or leakage.
3. Confirm that all product access points are cable sealed; record seal numbers and verify against incoming railcar paperwork. The railcar dome lids (sometimes up to 8) can be opened once the external inspection and seal verification has been conducted.
4. Check for the presence of any off-odors, mold, etc., at time of transfer.
5. Cars failing inspection are to be returned to the supplier and may need to be repaired and/or washed prior to returning to service.
6. Samples may be taken for retain. These samples will be maintained for a length of time based on the product type.

### 2.3 Unloading

All railcar safety procedures are to be followed at all times. Consult company safety officer and procedure manuals in case of questions or concerns. After the railcar has been inspected, including cross checking of seal numbers and railcar number with the information on the Bill of Lading or railcar shipment notice, the railcar can be offloaded. All seal information is to be recorded when seal is cut.



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1. Any open railcars containing a food-grade product not being unloaded immediately shall be resealed. All reapplied seals shall be recorded in the appropriate location as defined by the procedures. Under no circumstances will a vessel be left un-sealed when operators are not on duty in the immediate area.
2. Personnel will be present or within surveillance distance at all times during unloading and while car is open.
3. Facilities handling industrial products that do not have sufficient security (i.e., open to pedestrian and vehicle traffic, lack adequate fencing and lighting) shall have all unattended vessels (rail cars, dry bulk trailers, etc.) tamper-evident sealed at all times whether they are empty or full.
4. Dry bulk hopper cars that are not pneumatically unloaded shall have hatch protection. Do not crack or vent a railcar hatch without a screen or cap (e.g. like a large hairnet). When unloading a hopper car by gravity, a transition piece should be between the hopper and unload chute. This piece should be designed to prevent product leakage and spillage.
5. Mechanical unload systems typically consist of bucket elevators and screw conveyors. This systems should be maintained to prevent introduction of foreign material into the product handling system.
6. Dry bulk hopper cars equipped with pneumatic conveying systems for dry bulk products shall have their conveying air filtered with appropriate, food-grade, approved filter media.
7. Unload fittings and screens for railcars should be inspected each time they enter the facility and should be cleaned according to a set frequency. If inspection shows inadequate cleanliness for a food product, the car should be pushed by and cleaned prior to being un/re-loaded. All hose connections must be capped or off the ground during the unloading process.
8. A product screen is recommended when unloading from a railcar to a storage tank/silo. Appropriate size screen for the particle size of the product should be determined, documented and maintained for all dry products or as requested by the customer.
9. The same size screen must be used when trans-loading food-grade products from a hopper car to a dry bulk trailer; this is recommended when trans-loading industrial grade products. For industrial starch, a screen appropriate for particle size of finished product is recommended.
10. Upon completion of railcar unloading, disconnect hose from car and apply appropriate caps and plugs.
11. Remove any fittings applied to car, and securely close all hatches.
12. Apply tamper-evident seals to rail car at top and bottom as required. For dry bulk hopper cars, it is recommended to apply seals one opposite each hatch hinge and to all product access points. In all cases seal numbers shall be recorded.

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### **2.4 Returning Empty Railcar**

The following steps shall be undertaken after completely unloading a railcar.

1. Verify car is empty by opening the dome hatch (use Fall Protection).
2. Close, bolt down and seal the dome cover. Reattach and seal the vent cap, and other places for entry needing a seal, if applicable.
3. Close hand valve on main outlet and insure all other valves and entry points are closed and sealed .
4. Disconnect railcar unloading hose from bottom outlet fitting.
5. Remove railcar fitting, reattach bottom flange plate and seal with cable seal. Record seal numbers and provide seal numbers to destination of empty railcar.
6. Advise the railroad when car is ready for return.

## **Section 3 Trailer & Vessel Washing (Fall Protection and Lockout/Tagout should be used when applicable)**

### **3.1 Trailer Washing for Vessels Holding Human Food**

#### **3.1.1 Pre-Wash Inspection**

- a. The wash operator must inspect the prior Bill of Lading for the vessel being washed to ensure the previous product handled is on the customer acceptable prior product list. This list includes food grade corn, barley, rice, and oat flours; corn grits; corn meal (not gluten meal); corn starch; quick and rolled oats; sugar (sucrose); and tapioca starch. It is recommended that trailers carrying sucrose be dedicated to sucrose. Vessels carrying industrial, non-food grade products must not be used for food or food contact use without being thoroughly cleaned and passivated to insure no cross contamination.
- b. Exterior of trailers and vessels must be inspected to assure all applicable food safety requirements are met including condition and ability to properly seal when applicable.
- c. The interior of the vessel must be inspected prior to the start of the cleaning process. The interior should be inspected for foreign material, glass, debris, evidence of mold, off-odor, old product. If anything unusual is found, the vessel should not be washed until a risk assessment is done. The person requesting the wash should be contacted immediately and a risk assessment performed. Trailer contents should be drained and disposed of according to applicable regulations.

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### 3.2 Washing

#### 3.2.1 Wash Station

Only approved food grade and EPA permitted wash stations are to be used. The frequency of trailer washes can be determined based on product attributes and customer requirements.

#### 3.2.2 Interior Wash (when necessary), Hatches and Gaskets

- a. The interior of dry trailers must have a cold wash until the product is removed, followed by a hot wash at the minimum frequency dictated by the product transported. (The wash station will be notified if a Kosher wash is required). Sanitation is also required when switching from one approved prior commodity to another, when excessive buildup of product occurs, when deviations to the sealing policy occur, or when a cleanliness issue is discovered during the trailer inspection process.
- b. Adequate records of the wash must be kept for a period of time consistent with company policy. These records include the wash tickets, wash temperature recording or temperature monitoring charts, and Bills of Lading with prior commodity.
- c. Trailers vary in design. Consequently, these recommendations cannot cover all types of equipment, and proper procedures are to be considered for the equipment presented for washing. All dome lids, fittings, unload product tubes and product hoses must have a sanitizing wash with every interior cleaning. Note: chlorine sanitizers are to be avoided for use on aluminum surfaces. Wash spinners should be visually inspected prior to each use and changed out as necessary.
- d. Regularly required PMs should be conducted and recorded. Wash spinners should be designed to ensure all surfaces are cleaned (minimum twice) during the wash cycle, with enough flow to ensure surfaces are adequately cleaned. The trailer should be inspected to verify compliance to “Pneumatic Trailer Specifications” for gasket/seal/trailer requirements per company policy. Gaskets and seals should be sealable and in good condition. A defective trailer should not be washed. It may be necessary to move a trailer aside until a decision can be made on the need for repairs.
- e. Clean all hatches and manways. With the dome lids closed, rinse off areas around dome lids. In a well-lit location inspect the interior of the trailer **without breaking the plane\*** (for safety reasons) using a shatter resistant light capable of illuminating all interior recesses for foreign material, glass, debris, evidence of mold, off-odor, or old product (that appears as abnormal). If glass or any other unsafe material is found, contact the wash bay manager for further

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instructions. Disposition of the trailer will depend on what is inside the trailer.

**\*Breaking the plane means that one must not pass through the point where the inside and outside of the hatchway meet. One must stay completely outside the hatchway.**

- f. Remove gaskets from manway covers (if gaskets are not permanently attached to the cover). Follow sanitizing requirements in section (i) below. If not removable, gaskets should be washed with hot water and sprayed with a 100 to 200 ppm chlorine solution. (Note: Do not go over 200 ppm chlorine solution, as this is the maximum allowable level of chlorine allowed for the purpose of sanitation. Also note that chlorine is not compatible with aluminum.
- g. Open hopper valves and rinse out any product from inside the trailer with filtered water. Wash out hoses and all internal areas of the trailer with filtered (<5micron) water to assure proper product removal.
- h. After the trailer is clean of product, wash with hot, >195 °F filtered (<5 micron) water. The temperature of the water going into the trailer hatches must be greater than 180 °F for 15 continuous minutes for each hatch where the spinner is introduced. A minimum of 2 hoppers must see the hot wash water through the spinner: one hatch in the first half and one in the back half of the trailer. Hatches not in use should be closed during the washing process. Do not use any chemical soaps or sanitizers inside the trailer. Do not enter the trailer after cleaning.
- i. Trailers used for dry products are generally made out of aluminum and will not hold the wash temperature of greater than 195 °F for 10 continuous minutes. A continuous hot water wash with incoming water of 180 °F for 15 continuous minutes can be sufficient, but a water temperature of 195 F is recommended. The hot water from the trailer can be used to wash the product hoses. The interior of the product hoses must be in contact with the trailer wash water for the entire duration of the trailer's interior wash. A separate sink should be provided for washing and sanitizing all gaskets, caps, valves and fittings with  $\geq 180$  °F water. If chlorine sanitizing solutions are considered, they must not be used on aluminum parts, as chlorine discolors the aluminum. Other validated cleaning methods may be employed.

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### 3.2.3 Drying Trailer, Caps and Gaskets:

- a. A program should be in place to assess cleanliness either at the wash station or the product preloading location.
- b. Sanitary wash systems that have an air dryer shall have a 0.5 micron (maximum) air filter element.
- c. This air drying system shall be inspected at least annually to ensure proper operation. Dry interior and product unload tubes with filtered air (pre-filter and HEPA filter or 5 micron filter preferred) or with shatter proof heat lamp. Be cognizant of potential cross contamination when determining drying methods. Inspect the interior of the trailer post wash for moisture, foreign material, glass, debris, evidence of mold, off-odor, or old product. Use of an inspection light is required. The inspection light shall have adequate protection to further protect against potential product contamination. **Do not break the plane** (defined in 3.2.2(e)). If glass or any other unsafe/unacceptable material is found in the trailer, do not load and contact the wash bay manager for further actions needed. Disposition of the trailer will depend on what is inside the trailer.

### 3.2.4 Sealing the Washed Trailer

Replace caps on hoses and other outlets. Do not touch the inside of caps or hose ends while handling. Where possible, all hoses should be capped. Either the hose ends or the hose tube ends should be sealed on each end. Hose ends that are exposed and not enclosed must be covered with a clean plastic bag that is kept in place with a secure fastener or similar type equipment. Capping is preferred. Hoses enclosed in a hose tube can be covered with a plastic bag. Assure clean, damage free gaskets are placed on all manways and product hoses.

- a. Seal manways and record all seal numbers on the wash ticket. Be sure to seal cleanout ports, blow down line, and unload product tube segments and record all seal numbers on the wash ticket.
- b. It is recommended that the dome lid be sealed at two points 180 degrees apart. All extra couplings, fittings, etc., on the trailer must be stored in a sanitary condition preferably in a sealed enclosure.
- c. Record cleaning information on a numbered wash ticket. Copies of all documents must be kept on file for inspection. A recording of the wash time and temperature must be kept on file for each truck washed. Give a copy of the wash ticket to the driver to present to the loader at time of inspection.

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To verify cleanliness, ATP swabs or wash discharge samples may be taken for microbiological analysis. These ATP (adenosine triphosphate) swabs should be used as an indicator and teaching aid. If done at the wash station, the trailer can be re-washed. If performed at a different load-out facility, ATP swabs are performed on a certain percentage of trailers, and need to be used for training the wash station employees. If possible, the trailer should be re-washed, but this is up to the determination of quality/food safety personnel.

### 3.2.5 Wash Verification

- a. On all trailers, wash bay attendants are to inspect trailers.
- b. Validation checks for individual products will vary and proper checks should be conducted in consultation with the vessel owner. Where appropriate, swabs can be taken or other suitable methods used on a pre-set frequency to validate wash adequacy. Cleanliness and adequacy of wash encompasses more than just microbiological (food safety) control.
- c. It is recommended that on a daily basis, a different employee, lead person, assistant manager or manager trained in the wash procedure verify that proper pre- and post-inspection procedures are being followed. At least one trailer wash should be checked per day. This verification will be done only during the times a second trained employee is at the facility. If the procedure is not followed correctly, required corrective action must be addressed with the employee.
- d. The driver must present a copy of the wash ticket with documented prior commodity to the loader before loading. Personnel must assure that all access points are sealed, the seal numbers match the paperwork, that all product hoses are clean and dry and that the date of the trailer wash is not expired (based on the recommended wash frequency). If the trailer has been in service after the initial wash and is in compliance with the minimum frequency requirements for dry trailer sanitation, the seal numbers can be documented on the current Bill of Lading.
- e. The driver must keep copies of their paperwork for presentation to the customer, one for the plant and one for verification.

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### **Section 4 Trailer Loading**

#### **4.1 Pre-Load Inspection**

The loader is responsible for verifying that all vessels are suitable for loading. This includes all customer supplied vessels and/or customer arranged pickups. Security seals shall be present and applied properly on all openings, cabinet doors and hose tubes of the trailer upon arrival. The seal numbers shall be confirmed against the wash ticket. The interior of the tanker shall be inspected prior to loading. Vessels that do not pass an inspection shall not be loaded.

#### **4.2 Loading**

1. All products shall be loaded according to supplier or customer specification. There must be screen protection (or dome adapter with a filter vent) around the dome loading spout (or over the entire open hatch). Samples shall be taken during or after trailer loading. A retain sample must be taken which is representative of the product from every trailer loaded and be kept a minimum of 6 months or per company policy. The retain sample should be visually inspected for appearance and be tested, as needed, to assure the product matches the Bill of Lading and meets product requirements. Clean, sanitized, sampling devices are to be used in order to avoid contamination and generation of false positive microbial analyses.
2. If the trailer does not pass inspection or the product does not meet specification, it should not be shipped. The retain sample shall be appropriately labeled to allow traceability. All access points, including hose tubes and blowers shall be sealed with identifiable, tamper evident cable seals. The seal numbers shall be recorded on the Bill of Lading.

#### **4.3 Shipping Documentation**

The Bill of Lading, Certificate of Analysis and trailer wash certificate shall be sent with outgoing shipments and should comply with regulatory requirements and conform to specific customer requirements. Tanker wash certificates, if not required by the customer for every load, need to be available upon request.

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### **Section 5 Dry Animal Feed Ingredients and Industrials:**

The following pertains to large animal feed materials. Under the FSMA regulation, pet food has more stringent safety requirements and should be handled accordingly.

#### **5.1 Product types**

Feed products trailers typically are not washed after each load. However, products may have differing requirements, depending on end use. Pet food destined product should consider employing washing requirements in view that pet food may be required to follow human food requirements for compliance with regulations. Industrial and large animal feed trailers generally require only periodic washing. Customers may also have requirements for washing frequency. FDA Guidelines do not exist for safely returning any trailer or railcar contaminated with prohibited commodities or specified risk materials back into food/feed grade status. These vessels must be set aside and the company's food/feed safety officer consulted.

#### **5.2 Inspection**

All trailers shall be inspected for residual material, glass, metal or other deleterious matter and compliance with requirements verified. Check to be sure the previous commodity was not on the "not approved" prior load list. Those carrying loads on the not approved list should be handled according to company policy for return to service or be rejected. Consult with company food/feed safety expert. Trailers carrying specified risk material of animal origin are to be rejected. Trailers likely to be contaminated by pathogenic microorganisms are to be cleaned, conversion washed and sanitized. Ordinary sweeping may be sufficient to remove loose debris and residual approved product. Attention should be paid to the integrity of gaskets, hatches and entrance points. Condensation is to be removed.

#### **5.3 Washing**

Wash procedures are to be followed according to the human food wash procedures in the previous sections as appropriate. In some cases, seals may not be applicable, for example when tarps are used to cover the tops of trucks. Where application of seals adequately insures the integrity of the trailer, they



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shall be applied and recorded. Wash station personnel shall inspect trailers after washing to insure no glass, metal, or residual contamination remains.

### **5.4 Good Transportation Practices**

It is the responsibility of the carrier and/or trailer owner to maintain a trailer in a condition that is fit for the purpose of transporting the respective animal feed or industrial product.

### **5.5 Feed/Industrial Loading**

#### **5.5.1 Pre-Load Inspection**

- a) The loader is responsible for verifying that all trailers are suitable for loading. Questions about cleanliness of trailers will be handled on a case by case basis and discussed with the company food/feed safety official. This includes all customer supplied trailers and /or customer arranged pick-ups. Security seals shall be applied as appropriate on all openings, cabinet doors, and hose tubes upon arrival.
- b) For tarped trailers, a seal does not prevent tampering, and extra care should be taken during inspections of these vessels. Seal numbers and other identification shall be confirmed against the wash ticket or originator of trailer. The interior of the trailer shall be inspected prior to loading. Trailers that do not pass an inspection shall not be loaded.

#### **5.5.2 Loading**

- a) All products shall be loaded according to supplier or customer specification. Samples may be taken during or after trailer loading. A retain sample must be taken which is representative of the product from every trailer loaded for food contact products. This may be accomplished by general sampling from the day's production during which the trailer was loaded. The retain sample shall be appropriately labeled to allow traceability.
- b) All access points, including hose tubes and blowers shall be sealed with identifiable cable seals. Seal numbers shall be recorded on the Bill of Lading.

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### **5.5.3 Shipping Documentation**

The Bill of Lading, Certificate of Analysis, and trailer wash certificate, if appropriate, and a Safety Data Sheet (optional for feed; required for industrial) shall be sent with outgoing shipments. These should comply with regulatory requirements and conform to specific customer requirements.

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