



# PROGRAM MANUAL

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## Acknowledgments

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## Information

Questions about or suggestions to improve the OCS program or materials may be submitted to [ocs@plasticsindustry.org](mailto:ocs@plasticsindustry.org) or (202) 974-5200.

# Contents

Introduction	1
Plastic Pellets, Flakes and Powder in the Environment	2
Value	3
Implementation	5
Conduct a Site Audit	6
Worksite Setup	7
Designing a Training Program	10
Employee Participation and Accountability	11
Prevention, Containment, and Cleanup Procedures	12
Pellet, Flake and Powder Transportation and Packaging	13
Spills and Packaging	15
Other Transport Vehicle Concerns	18
Marine Transport	18
Waste Recycling and Disposal	19
Dust and Powder	20
Checklist	24

# Introduction

The Operation Clean Sweep® (OCS) program and manual contain guidelines to help plastics industry operations managers reduce the accidental loss of pellets, flakes and powder from the processing facility into the environment. Globally, abatement of pellet, flake and powder loss has been included in the [“Declaration of Solutions for Marine Litter”](#) to help industry’s role in addressing marine litter. We encourage companies to join other similar companies globally by signing the Declaration and by adopting the OCS program.

There are many ways to work toward zero pellet, flake and powder loss. The following guidance provides examples for users to consider as they establish management practices appropriate for their conditions and operations.

The OCS materials are designed to provide maximum utility for all types of plastic handling and transporting operations. The online checklists have been created to facilitate customization for your company. For example, each checklist may incorporate a unique company logo and specific process steps may be added or removed to reflect those involved in a particular operation. These enhancements will make it easy to create and copy forms that have the greatest value for your company.

# Plastic Pellets, Flakes and Powder in the Environment

## PELLET, FLAKE AND POWDER LOSS— ITS IMPACT AND ITS MANAGEMENT

In recent years and with increasing frequency, researchers have reported that seabirds, turtles and fish are ingesting a wide variety of plastic items, including pellets, flakes and powder that could affect their ability to breathe, swallow or digest foods properly. Most of these plastics are used in consumer products (e.g., bottles, caps, containers) that have been carelessly discarded. Some of this litter is in the form of resin pellets, flakes and powder that enter the waste stream and can end up in the ocean and our natural environment. When these pellets, flakes and powder are accidentally eaten by wildlife, they may not pass through their digestive tracts, which could lead to malnutrition or even starvation. The impacts of ingested marine debris can be significant and warrant efforts to prevent plastic materials from entering the environment.

While consumers are responsible for the proper recycling and disposal of consumer products and packaging, the plastics industry must focus on proper containment of plastic pellets, flakes and powder. We must prevent the pellets, flakes and powder from getting into waterways that eventually lead to the sea.

All employees in every aspect of the industry must be educated on how to properly handle and dispose of plastic pellets, flakes and powder with the goal of zero pellet, flake and powder loss.

## THE OCS PROGRAM

Plastics Industry Association (PLASTICS) began an education effort in the early 1990s to reduce pellet loss by resin producers, transporters, bulk terminal operators and plastics processors. A number of public service materials under the name of Operation Clean Sweep (OCS) were developed and disseminated to companies nationwide. The message was simple: resin pellets should be contained, reclaimed and/or disposed of properly. It's now time to refocus our industry on this problem and to expand the OCS initiative to solve it.

The American Chemistry Council (ACC) and PLASTICS have worked together on a revitalized OCS program to strengthen efforts to educate and change behavior in the plastics industry with a goal of zero pellet, flake and powder loss. ACC and PLASTICS are strongly committed to this effort and are encouraging plastics companies to participate in the OCS program, which includes the practices and tools outlined in this manual. In addition, ACC and PLASTICS are encouraging companies to sign onto the Declaration for Solutions to Marine Litter, of which the OCS program is a key element. Only by working globally can industry help to affect the introduction of pellets, flakes and powder into the environment.

## HOW YOU CAN HELP

Each segment of the industry—whether resin producers, transporters, bulk terminal operators or plastics processors—has a role to play in eliminating resin pellet, flake and powder loss. It's the little things that count—a few pellets, flakes and powder here, a handful there. They all add up when you consider the thousands of facilities in the industry and the frequency with which resin pellets, flakes and powder are loaded and unloaded.

Commitment by everyone in every company, from top management to shop floor employees, is essential to eliminating pellet, flake and powder loss.

Pellet, flake and powder containment is good for the environment. It's good for business—pellet, flake and powder loss represents a source of revenue loss. And, in many jurisdictions, there are separate legal or permit requirements addressing pellet, flake and powder loss.

With your help and cooperation, we can make great strides to help our industry protect the environment. ACC and PLASTICS look forward to working with you on Operation Clean Sweep to accomplish this important goal.

## Value

### IF YOU COULD TAKE A SIMPLE STEP TO HELP STRENGTHEN YOUR COMPANY'S:

- Sustainability initiatives;
- Contribution to preserving water quality and wildlife;
- Compliance with federal and state regulations and avoidance of fines;
- Safety/housekeeping program;
- Employees' well-being;
- Operational efficiency;
- Financial bottom line; and
- Reputation in the community...

### ...WOULD YOU TAKE IT?

That step is Operation Clean Sweep (OCS), a product stewardship program of the American Chemistry Council's Plastics Division and Plastics Industry Association (PLASTICS).

**THE CAMPAIGN'S GOAL IS:** to help every plastic resin handling operation implement good housekeeping and pellet, flake and powder containment practices to work towards achieving zero pellet, flake and powder loss. OCS is being conducted in thousands of plants around the world, all adding to the effort to protect the environment.

Pellet, flake and powder loss has many negative impacts on individual companies, on the plastics industry as a whole and on the environment.

- Slips and falls are a major cause of plastics industry accidents.
- Accidents mean lost work time, higher worker compensation costs and lower employee morale.
- Violations of storm water regulations in states like California can result in civil penalties of up to \$3,000 per incident (e.g., Cal. Code. Regs. title 23 § 13385). Any person discharging unauthorized waste in violation of CWC § 13264, could be found guilty of a misdemeanor and may be fined up to \$1,000 a day.
- Spilled pellets, flakes and powder can eventually end up in our waterways and the ocean. Whether they're handled in an Iowa plant or a seaside facility, pellets, flakes and powder can be transported to storm drains that lead to rivers and then to the ocean—resulting in litter and posing a threat to marine life such as sea birds, turtles, and fish.

When the industry handles pellets, flakes and powder as responsibly as possible:

- Pellets, flakes and powder are kept out of the natural environment, including waterways and oceans;
- Companies enhance their reputations as good stewards of the environment—an increasingly important factor for attracting the investment community and high-quality employees; and
- More material stays a valuable product rather than becoming waste, improving efficiency.

OCS' ultimate goal is to help keep plastic pellets, flakes and powder out of the environment, but these efforts can also help improve relations with stakeholder groups and community organizations that expect the industry to minimize its environmental footprint.

The industry needs every processor's help to get positive results.

Please contact us with any input or questions:

PLASTICS: (202) 974-5200 or email [ocs@plasticsindustry.org](mailto:ocs@plasticsindustry.org).

# Implementation

## 1. Commit to making zero pellet, flake and powder loss a priority.

- Sign the “Pledge to Help Prevent Resin Pellet, Flake and Powder Loss.”

## 2. Assess your company’s situation and needs.

- Comply with all applicable environmental laws and regulations that address pellet, flake and powder containment.
- Conduct a site audit.
- Determine if you have appropriate facilities and equipment.
- Determine if employees have and are following appropriate procedures.
- Identify problem areas and develop new procedures to address them.
- Communicate your experiences to peers in the industry.

## 3. Make necessary upgrades in facilities and equipment as appropriate.

## 4. Raise employee awareness and create accountability.

- Establish written procedures (The procedures and checklists in this manual may need to be modified to suit your needs. They are available in the checklists section.
- Make certain the procedures are readily available to employees.
- Conduct regular employee training and awareness campaigns on OCS.
- Assign employees the responsibility to monitor and manage pellet, flake and powder containment.
- Encourage each worker to sign the employee commitment pledge.
- Solicit employee feedback on your program.
- Use workplace reminders such as stickers, posters, etc.

## 5. Follow up and enforce procedures—when management cares, employees will too.

- Conduct routine inspections of the facility grounds—production areas and parking lots, drainage areas, driveways, etc.
- Continuously look for ways to improve the program. Share helpful management practices through the OCS Website



# Conduct a Site Audit

One of the most effective ways to improve your facility's containment of pellets, flakes and powder is to identify the areas where spills and losses are most likely to or have occurred and fix them.

1. Use the site audit checklist to audit every transfer point at your site.
2. Identify the major spill areas.
3. Determine the cause of spills in each area.
4. Research/brainstorm ways to solve each problem.
5. Implement the simplest effective solution.
6. Follow up to measure success.
7. Repeat as necessary.

Most companies may not perform all of the operations on the site audit checklist. Customize the checklist to suit your facility. Add any missing operations.

# Worksite Setup

## ENSURE YOUR WORKSITE IS PROPERLY SET UP TO PREVENT LOSS AND ASSIST CLEANUP

**FACILITIES— Consider use of the following steps wherever possible and practical:**

- To pave or not to pave—that is the question
  - ▶ A paved area facilitates cleanup, but allows pellets, flakes and powder to be carried into storm drains and the environment by wind and water.
  - ▶ Unpaved areas are more difficult to clean, but pellets, flakes and powder tend to stay where they fall and can be easily recovered.

### EPA REGULATIONS

EPA regulates the discharge of storm water effluents via the National Pollutant Discharge Elimination Systems (NPDES) permitting program (40 C.F.R. §122)

**Choose the solutions that are best for your facility.**

- Pave loading/unloading areas where greatest risk of spills occur to facilitate cleanup
  - ▶ Include a slope or a berm to contain pellets, flakes and powder within paved areas.
  - ▶ Equip areas with vacuums or brooms and dust pans.
  - ▶ Cordless vacuums may be best suited for outdoor cleanup.
- For cleanup in gravel yards, consider fitting vacuums with screen or mesh on intake hoses to collect pellets, flakes and powder without disturbing gravel.
- Provide catch trays for use at all car/truck unloading valves.
- Use bulk-handling equipment that is designed to minimize pellet, flake and powder leakage.
- Install central vacuum systems where practical.
- Install connecting hoses equipped with valves that will close automatically when the connection is broken.
- Properly empty and seal bulk containers (rail or truck) prior to shipment. Loss of residual pellets, flakes and powder from unsealed “empty” bulk cars and trucks is a primary area for potential improvements.
- Place pellet, flake and powder disposal cans at rail yards for loading and unloading.
- Assure proper handling when storing and removing waste pellets, flakes and powder. Stress to vendors the value of “no loss to the environment” procedures.

### PREPARE FOR FLOODING

Make sure the containment system can handle heavy rains and flooding. The system should be capable of handling 100-year flood conditions.

- Seal expansion joints in concrete floors with a flexible material to avoid pellet, flake and powder accumulation in hard to clean spaces.
- Conduct routine inspections and maintenance of equipment used to capture and contain pellets, flakes and powder.

## CONTAINMENT SYSTEMS

- Storm drain screens are the last line of defense against accidental pellet, flake and powder release. They are often considered a # 1 priority for installation.
- Install zero loss containment systems (such as storm drain screens) wherever necessary to prevent pellets, flakes and powder from escaping plant boundaries. There are two possible containment systems that could be installed:
  - ▶ Area-specific containment systems in each pellet, flake and powder handling area. Area-specific containment systems would be the primary pellet, flake and powder containment systems and the facility-wide system would serve as a backup.
  - ▶ Facility-wide containment systems, which are effective in controlling pellet, flake and powder releases from facilities covering a large area and handling large volumes of pellets, flakes and powder.
- Place screening in all storm drains. The mesh of the screening should be smaller than the smallest pellet, flake and powder handled at the facility. Clean the storm drain screens frequently (e.g., weekly) to prevent drain clogging and overflow. Pay particular attention to cleaning screens after every rain. Two-stage screens minimize clogging problems.
- Install baffles, skirts and booms in containment ditches or ponds. Use surface skimmers or vacuum systems to remove accumulated pellets, flakes and powder.
- To help prevent storm drain contamination, employ dry cleanup methods whenever possible. Dry cleanup procedures also prevent pellets, flakes and powder from being further contaminated by compounds in the storm water.

### ANTICIPATE RAIN

Design systems to handle 100-year flood conditions.

Use a collector grate and filtered storm drain system with a screen consistent with the range of pellet, flake and powder size handled.

## EMPLOYEE EQUIPMENT—ENSURE THAT EMPLOYEES HAVE READY ACCESS TO EQUIPMENT WHERE SPILLS MAY OCCUR:

Examples may include —

- Brooms, dustpans, rakes, etc.
- Heavy-duty shop vacuums for inside use
- Portable shop vacuums for outside use
- Catch trays or tarps
- Wide-mouth sample collection jars or poly-bags
- Tape for repairing bag or box damage
- Scrap pellet containers (drums, bulk boxes, etc.)
- Procedures you expect workers to undertake and checklists to assist in follow-through ([Checklists](#) are available to customize).
- Forklift cleanup kit (see page 13)

### **SLIPS AND FALLS**

Slips and falls are the number one cause of plastics industry accidents.

### **A CLEAN WORK AREA**

A clean work area reduces slips and falls, and improves employee morale.

# Designing a Training Program

Designing a training program involves a sequence of steps that can be grouped into five phases: conducting a needs assessment, defining training objectives, detailing program specifics, implementing the training and evaluating its effectiveness.

1. **Needs assessment**—conduct a site audit (pages 8 and 29–31) and determine if employees have and are following appropriate procedures. Make needed site improvements and write/modify procedures prior to launching a training program.
2. **Instructional objectives**—identify what training is needed to help ensure procedures are being followed.
3. **Details**—determine how, who, where and when you will train. Consider the following areas: explaining the environmental impact of pellet loss, defining the role each individual plays in affecting change and ensuring knowledge of appropriate procedures.
  - Use OCS to guidelines as one of your resources in design and development of the training program and program content.
  - Select the techniques used to facilitate learning (crew meetings, handouts, video, website, etc.).
  - Select the appropriate setting for your meetings.
  - Prepare materials.
  - Identify and train the instructors
  - Create department goals.
4. **Implementation**—Schedule classes, facilities, participants and instructors, deliver materials, conduct training.
5. **Evaluation**—Determine participant reaction to the training, how much they learned and to what degree the department goals were met. Re-evaluate all procedures to assess the effectiveness of the OCS program annually.

# Employee Participation and Accountability

Ensure employees are aware of and accountable for pellet, flake and powder loss prevention, containment, cleanup and disposal. Establish written procedures. (The procedures and checklists in this manual may need to be modified to suit your needs. They are available in the [Checklists](#) section of this website).

Make certain the procedures are easily available.

Conduct regular employee training and awareness campaigns on the Operation Clean Sweep program.

- Explain the impact of pellet, flake and powder loss on the environment and the company.
- Make spill prevention, cleanup and containment a company philosophy and priority.
- Promote that philosophy daily.
- Assign specific employees the responsibility to monitor and manage pellet, flake and powder containment. If it gets assigned as a regular part of employee jobs, it gets prioritized.
- Consider hiring a full-time housekeeping/warehouse sweeper, if appropriate. Having one person assigned this job improves the efficiency of other workers.
- Stress the importance of immediate cleanup of any spills by the person associated with the spill.
- Review current procedures and identify whether there has been a history of problems in a certain area.
- Reaffirm existing, or develop new, procedures.
- Use workplace reminders such as stickers, posters, etc.
- Encourage teamwork and employee feedback.
- Conduct regular inspections of the entire facility to assure compliance with OCS principles.
- Reward and/or recognize milestones and significant achievements of the crew or crews that achieve designated goals of the pellet, flake and powder loss prevention program.

## IF SPILLS HAPPEN

Ensure that employees:

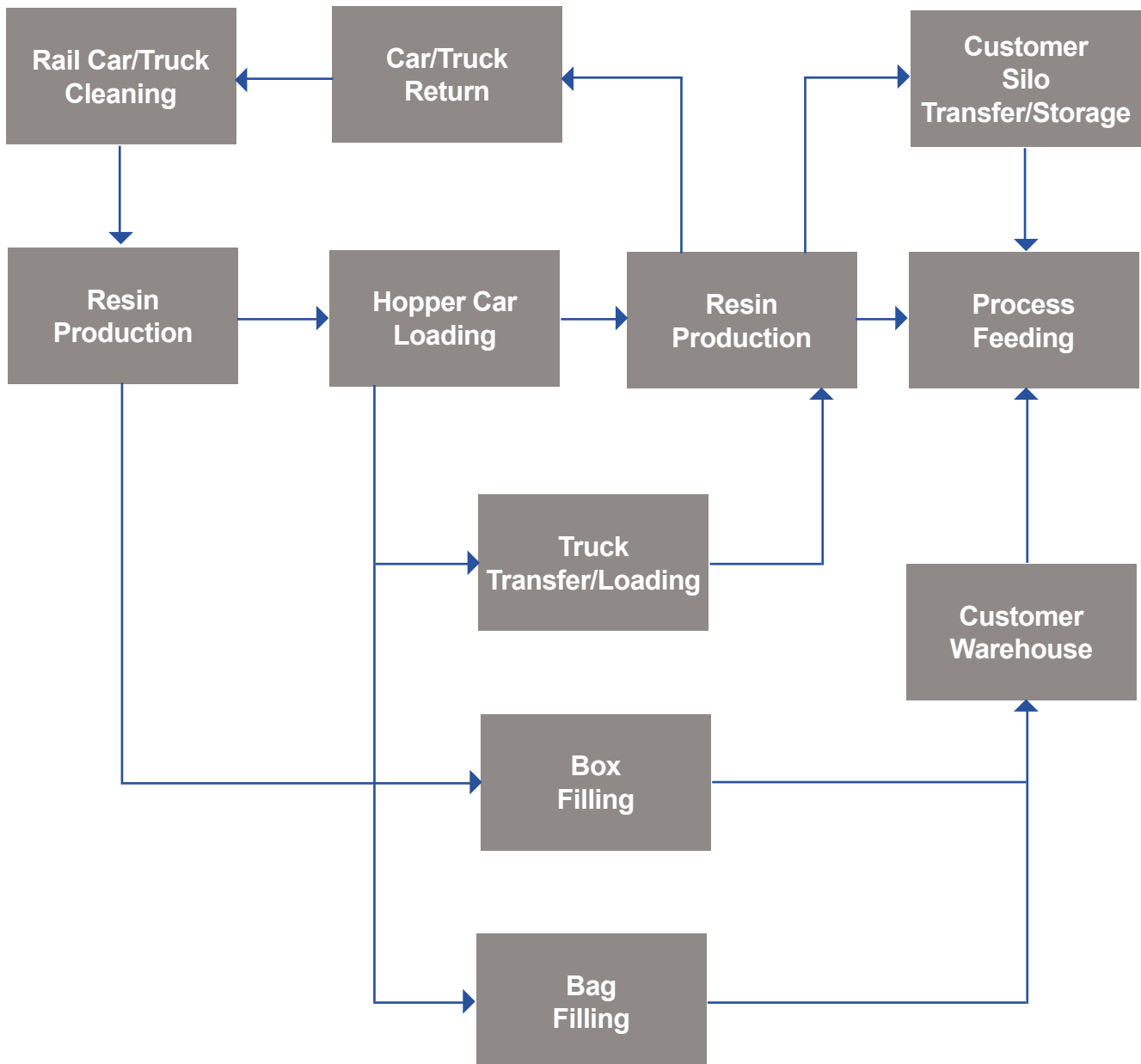
- Take ownership by taking the pledge.
- Immediately clean up the spill.
- Recycle or dispose of loose pellets, flakes and powder properly.

## ACKNOWLEDGE HARD WORK

Simple steps, like bringing in a special lunch, to acknowledge employee's hard work to prevent loss can go a long way in keeping your company's commitment front and center

# Prevention, Containment, and Cleanup Procedures

There are many steps involved in the movement of plastic pellets, flakes and powder from the resin production facility, through the distribution network, to the processor. Spills and pellet, flake and powder loss to the environment can occur at any step. The procedures in this section provide helpful practices for each handling step. Making employees aware of and holding them accountable for these prevention, containment, cleanup and disposal procedures, will support progress towards our goal of zero pellet, flake and powder loss.



# PROCEDURES: PELLET, FLAKE AND POWDER TRANSPORT AND PACKAGING

Hopper car and hopper truck cleaning, loading, storage and unloading present special resin handling challenges.

## Cleaning Empty Hopper Cars and Trucks

- Use air lance to make total pellet, flake and powder removal easier.
- Ensure hopper car and truck cleaning areas have wastewater collection and pellet, flake and powder filtration systems installed.
- Recover all pellets, flakes and powder from wash water.
- Recycle, resell or dispose of collected pellets, flakes and powder properly.

### CLEANING CARS & TRUCKS

Good housekeeping practices will support proper handling of residual materials.

## Cleaning Empty Hopper Cars and Trucks

- Operate the conveying system properly to avoid clogging and necessitating the opening of lines.
- If a line must be opened to clear blockage, anticipate the potential for pellet, flake and powder loss and always place a catch pan or tarp under the connection.
- Remove any spilled pellets, flakes and powder from the top of the car/truck before leaving the containment area—residual pellets, flakes and powder will fall to the ground as cars are moved outside the plant.

## Sealing Loading Cars/Trucks

- Close all outlet caps properly before cars/trucks are moved (and request customers to do the same when returning empties).
- Apply seals on all outlet caps (e.g., 1/8" stranded steel cable or its equivalent is common).
- Design or modify loading systems so that transfer lines can be completely emptied, with any residual resin being discharged into a container after loading is completed.



## Storing at Intermediate Sites

- Consider exposure to vandalism when selecting sites.
- Establish security procedures as necessary (e.g. fencing and lighting).
- Advise companies to report any incidents (e.g. shippers, railroads, trucking companies and processors).

## Unloading Hopper Cars and Trucks

### *Valve Opening*

- Contain possible spill during hook-up by placing a catch pan under the unloading valve before opening.
- Purge unloading tubes within containment area.
- Keep area swept up or vacuumed.
- Consider installing connecting hoses equipped with valves that will close automatically when the connection is broken. Clogged hoses, material bridging in outlets, etc., can require unloading lines to be opened, which presents the risk of spillage.
- Anticipate the potential for pellet, flake and powder loss before opening the line.
- Place pellet, flake and powder disposal cans at rail yards for loading and unloading.
- Have a catch pan or tarp ready to catch pellets, flakes and powder.
- Immediately clean up and properly dispose of any spilled pellets.
- Surges in unloading lines can cause pellets, flakes and powder to be vented into the environment. To help prevent this, install a bag house, filter bag assembly or other control device at the unloading system vent.

### **BE VIGILANT**

Pellet, flake and powder loss can occur at any stage of operations. Be vigilant to ensure that pellets, flakes and powder don't escape into the environment.

## Completing Unloading

- Ensure that the car/truck is thoroughly unloaded.
- Cycle the outlet valve while air is flowing.
- Visually confirm that each compartment is empty.
- Purge the line before disconnecting.

### **FOCUS AREAS**

Open valves, outlet caps and top hatches are frequent causes of material spills. Make sure to close off all pellet "Escape routes" once the car is unloaded.

## Sealing Valves

- Close all valves.
- Secure outlet caps and top hatches.

## Sampling

- Conduct sampling only in areas protected by containment equipment.
- Review procedures for taking samples to eliminate any possible spillage.
- Use wide-mouth containers or poly-bags for samples.
- Use a funnel collection system to effectively channel pellets, flakes and powder into containers.
- Sampling from unloading tubes:
  - ▶ Place a catch pan or heavy duty tarp under outlet before opening to catch any spills. (Several commercial devices have been developed specifically for preventing spills during sampling.)
- Sampling from top hatches:
  - ▶ Exercise extra caution to avoid spillage, which can also pose a slipping hazard.
  - ▶ Close hatches and apply cable seals to prevent access by vandals.

# PROCEDURES: SPILLS AND PACKAGING

## Spills

- Exercise caution to avoid spillage.
- Clean up any spills immediately.

## Packaging

Using the proper packaging, filling and material-handling procedures can go a long way in minimizing pellet, flake and powder loss.

## Selecting Packaging Materials

- Use packaging designed to minimize the possibility of breakage and pellet, flake and powder leakage. Use puncture-resistant shipping containers where possible.
- Consider reinforced bags, such as woven polypropylene bags, and line larger containers with puncture-resistant material.
- Minimize the use of valved bags, or seal valved bags immediately after filling.

### COLLECTING SPILLED PELLETS, FLAKES AND POWDER

Collecting spilled pellets, flakes and powder reduces contamination, permitting normal usage rather than requiring disposal.

## Bags: Filling and Handling

- Inspect all pallets for protruding nails or broken boards.
- Use bags that are not easily punctured.
- Use a heavier weight container/bag if breakage is a recurring problem.
- Move and stack bags immediately after filling to avoid seepage.
- Tape leaks or replace leaking bags.
- Regularly clean up pellets, flakes and powder spilled during the filling process. Where possible, select filling equipment designed to prevent pellet, flake and powder loss.
- Implement warehouse and handling procedures that minimize the chance of pellet, flake and powder spillage.
- Dispose of collected pellets, flakes and powder properly.

### CAUTION

Shipping bags often use a mechanical closure that does not provide a positive seal against leakage once the bag is filled.

## Bags: Emptying and Disposal

- Thoroughly empty bags.
- Collect, handle, store and transport the empty bags to avoid/contain the escape of pellets, flakes and powder.
- Recycle plastic resin bags, shrink-wrap and stretch-wrap, whenever possible. Visit [www.plasticfilmrecycling.org](http://www.plasticfilmrecycling.org) for more information.
- Dispose of packaging by incineration or in a well-managed landfill.
- Stress the need for “no loss to the environment” procedures.

## Bulk Boxes

- Tape leaks or replace leaking boxes.
- Use bulk boxes that are not easily punctured.
- Tape leaks or replace leaking boxes.
- Regularly clean up pellets, flakes and powder spilled during the filling process.
- Dispose of collected pellets, flakes and powder properly.

## Improve Palletizing Methods

- Move and stack bags immediately after filling to avoid seepage from valves.
- Stack bags on pallet in tight, interlocking patterns.
- Shrink or stretch-wrap pallet to stabilize stacks and help contain lost pellets, flakes and powder.
- Use corrugated cardboard caps on the top and bottom of pallets to minimize puncturing or tearing bags and to contain loose pellets, flakes and powder.
- Block and brace outbound loads to avoid broken bags in transit.

## Handling Materials

- Train forklift operators so they are skilled in damage prevention as well as proper cleanup.
- Institute handling procedures that minimize puncture of bags and boxes with forklift tines.
- Repair or replace punctured packages and cleanup any spills immediately to prevent loss of pellets, flakes and powder. Sealing a leak when it occurs is much easier than sweeping 100 yards of warehouse.
- Consider outfitting all forklifts with a Cleanup Kit.
- Place catch trays between the dock and trailer at shipping and receiving bays.
- Inspect pellet, flake and powder packaging before offloading, particularly pellets, flakes and powder bagged in unreinforced paper or corrugated bulk boxes. This will help prevent pellet, flake and powder release through the gap between the vehicle and the loading dock.

### CAUTION

Some loss also occurs during the filling process

### SELECT PROPER BAGS AND PELLETS, FLAKES AND POWDER

Bags typically are stacked 40 to 50 per pallet, and pallets are usually sorted at least two high. Both individual and palletized bags are subject to the rigors of warehouse movement and storage. Proper bag and pallet selection can help reduce damage.

### FORKLIFT CLEANUP KIT

- Broom
- Long-Handled Dust Pan
- Repair Tape
- Bucket for Collection/Disposal

Select these items to fit together in the bucket to the forklift using elastic cords. Situate the kit so as not to interfere with the safe operation of the forklift.

## Storage

- Consider covering all packaging resin stored outside (gaylords, supersacks, etc.) to reduce photo degradation of the containers.

# PROCEDURES: OTHER TRANSPORT VEHICLE CONCERNS

## Container Trucks

- Shipping
  - ▶ Sweep or vacuum any loose pellets, flakes and powder in the truck/container.
  - ▶ Carefully inspect empty trailers for damaged interior walls or defective floors that can tear bags. Consider refusing to use such containers or cover problem areas with corrugated liner board.
  - ▶ Block and brace outbound loads to avoid broken bags in transit.
- Receiving
  - ▶ Inspect truck and rail shipments containing palletized bags of pellets, flakes and powder and document the condition of bags and pallets received. If the shipment is significantly damaged, notify the transporter and manufacturer. Consider refusing to accept delivery.

## Hopper Cars and Trucks—Repairs

- Work in a paved area to facilitate containment and cleanup.
- Properly contain, handle or recycle small quantities of residual pellets, flakes and powder. If larger quantities are involved, contact the shipper.

## Transport Accidents

- Contact the shipper for assistance/advice if a derailment or highway accident results in a spill of resin pellets, flakes and powder.

## PROCEDURES: MARINE TRANSPORT

Marine transport of pellets, flakes and powder requires special attention due to the high potential for release into the environment. Because of the close proximity to water, loose pellets, flakes and powder in and around waterfront warehouses, docks, ocean-going containers and on ships themselves must receive extra attention.

Anyone handling pellets, flakes and powder directly or managing their shipment must be well-informed about the importance of spill prevention, the need for prompt cleanup and proper disposal practices.

- Do NOT sweep pellets, flakes and powder into the water.
- Properly contain and handle any pellets, flakes and powder from previous shipments when cleaning ship holds or ocean containers.
- Keep ocean containers in good repair—eliminate protrusions that could tear bags and boxes.
- Avoid stowing resin containers on deck. Place resin containers in ship holds.
- Do NOT jettison containers of resin.

## PROCEDURES: WASTE RECYCLING AND DISPOSAL

**Ensure pellets, flakes and powder are properly disposed of to avoid contaminating the environment.**

- Store waste pellets, flakes and powder in properly labeled containers.
  - ▶ Do not permit loose pellets, flakes and powder to accumulate on the ground or floors.
  - ▶ Install pellet-specific waste container (e.g., one or more) in each pellet-, flake- and powder-handling area.
  - ▶ Routinely check that there is adequate waste storage capacity.
- Use separate containers for recyclable and non-recyclable pellets, flakes and powder.
- Use only covered containers or vehicles without leaks.
- Inspect and confirm proper handling and storage procedures if an outside vendor is used for waste removal.
  - ▶ Stress the need for “no loss to the environment” procedures.

### PREFERRED DISPOSAL METHODS

- Recycle
- Resale
- Approved Incineration (where available)
- Controlled Landfill
- Fuel-Blending Program

- Preferred disposal methods are:
  - ▶ Recycle or resell waste pellets, flakes and powder.
  - ▶ Approved incineration of waste pellets, flakes and powder in properly licensed and operated incinerators.
  - ▶ Deposit in a controlled landfill only after confining pellets, flakes and powder in such a manner that prevents their loss due to rain, wind, flooding, etc.
  - ▶ Consider using waste pellets, flakes and powder in a fuel-blending program.
- Include pellet, flake and powder retention capabilities and practices in criteria for selecting waste disposal companies.

**FINAL STEP**

Careful disposal is the final step so pellets, flakes and powder do not affect the environment.

## PROCEDURES: DUST AND POWDER

### Methods to Help Minimize Generation and Release of Plastic Dust and Powder

This specifically focuses on methods to help minimize generation and release of plastic dust and powder. There are several approaches that can be taken. You may wish to consider whether other ways are more appropriate for your operations. Consult with the manufacturer of the resin you are handling for specific handling, containment and disposal information.

*For purposes of this discussion:*

**Plastic Dust** is particulate matter that may be formed when plastics are handled, conveyed and/or processed. One of the most common means of generation is via abrasion during the air conveying of plastic pellets and flakes. In addition to conveying, plastic dust may be generated when plastic raw materials or finished products are:

- Granulated;
- Pelletized;
- Cut;
- Machined;
- Filed; or
- Transported

**Plastic Powder** is a form of plastic raw material used in operations where a fine particle size is critical for processing. Plastic powder can escape plastic handling or processing equipment. If that occurs; handling, containment and recovery considerations are similar to plastic dust. Typically powders may escape through:

- leaks in storage silos, tanks and containers;
- leaks in pneumatic or mechanical conveyors;
- leaks in blenders or other processing equipment; or
- during loading/unloading operations or transfer operations.

## **Methods to Consider for Minimizing the Generation of Plastic Dust**

The best way to control dust is to minimize its creation in the first place. There are several approaches that can be taken to help minimize the generation of plastic dust. For example:

- When pelletizing or flaking, keep cutting equipment in good condition with sharp blades;
- Design conveying systems to treat the plastic gently and take other steps to help avoid collisions and impacts with hard surfaces and other pellets, flakes and powder, thereby avoiding plastic fracture. Methods to consider, can include, use of long sweep elbows and avoid having the plastic pass through a blower;
- Use appropriately sized granulators;
- When machining plastics, use an appropriate machine set up for the material and provide appropriate waste collection equipment;
- Store plastics and additives in appropriate containers maintained in good condition; and
- Promote awareness to employees of methods of handling and processing of the plastic to help minimize dust creation.

## **Methods to Consider for Minimizing the Release of Plastic Dust and Powder**

There are several approaches that can be taken to help minimize the release of plastic dust and powder. For example:

- Keep storage silos, tanks and containers in good condition, to help avoid holes, cracks or leaks;
- Maintain loading/unloading and transfer equipment with good seals to help avoid leaks;
- Conveying equipment should be appropriate for the task and maintained in good condition;
- Place collection trays under discharge/loading valves and connection points when making or breaking connections;
- Use processing equipment (and the equipment that feeds it) that helps minimize the release of dust/powder;
- Clean up all spills promptly; wind and traffic can quickly disperse dusts and powders;
- Encourage employees and/or contractors to look for dust/powder leaks and to correct any that occur; and
- Promote employee awareness of training and reminders regarding the need to prevent dust/powder from escaping into the environment.



## Methods to Consider for the Capture and Containment of Plastic Dust

Plastic dust creation can be minimized but not eliminated entirely. There are several approaches that can be taken to help in the capture and containment of plastic dust.<sup>1</sup> For example:

- Use properly designed and sized dust collection equipment in all operations that generate or liberate plastic dust;
- Maintain the dust collection equipment according to manufacturers' recommendations;
- Use the recommended filters for the type and amount of dust generated;
- Clean or replace filters or other collection equipment as needed;
- Promote awareness of procedures for clean-up of plastic dust spills, or plastic dust that has settled on surfaces in and around the plant;
- Promote maintenance/housekeeping procedures that minimize dust accumulation around the facility;
- Store captured plastic dust in containers that are designed to help minimize leaks;
- Promote employee awareness in procedures for handling plastic dust, including industrial hygiene considerations; and
- Comply with applicable federal, state and local regulations for containment systems.

Proper disposal of plastic dust and powder can be critical to help minimize the amount released to the environment. Choosing a disposal method involves considering the materials that constitute the dust /powder and the disposal requirements of those materials.

- Review the MSDS for each type of plastic used in the process.
- Dispose of dust or powder using a method that complies with all federal, state and local regulations and guidelines and/or applicable codes and standards.

**Disclaimer:** Methods to Help Minimize the Generation and Release of Plastic Dust and Powder is a part of The Operation Clean Sweep® (OCS) program, a joint program of the American Plastics Council and the Society for the Plastics Industry, Inc. (collectively, "OCS Sponsors"). The OCS program and manual contains guidelines to help plastics industry operations managers reduce the loss of pellets, flakes and powder to the environment. Each procedure contained herein may or may not be applicable to your specific operation. Manual users are free to implement the sections and steps that help achieve your company's specific goals. None of the guidelines are intended as a mandate. Compliance with state and local regulations are mandatory. These guidelines may help you to achieve compliance and avoid penalties. OCS Sponsors do not make any warranty or representation either express or implied, with respect to the accuracy or completeness of the information contained in this document nor do OCS Sponsors assume any liability of any kind resulting from the use or reliance upon anything contained in this document. Compliance with applicable laws and regulations remains the full responsibility of the parties to which the law or regulation applies.

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<sup>1</sup> Dust from plastics may combine with dust from other materials within the plant site. Review MSDS for information on the proper capture, containment and disposal equipment and procedures.

Any dust, no matter what the material, can be explosive if in the proper concentration in air. When handling dusts, take precautions not to aerate it and to keep ignition sources away.

# PLEDGE TO PREVENT PELLET, FLAKE AND POWDER LOSS

## Take the Pledge for Your Company

To demonstrate your commitment to a clean environment, please complete the “Pledge to Help Prevent Resin Pellet , Flake and Powder Loss” or complete and fax a copy to PLASTICS at (202) 318-7507 or email to [ocs@plasticsindustry.org](mailto:ocs@plasticsindustry.org).

The pledge must be signed by an officer of the company. In return, your company will receive a certificate suitable for display affirming your commitment to being an Operation Clean Sweep Partner.

Signing this pledge will qualify your company’s name to be added (unless otherwise specified) to the list of OCS Program Partners on the Operation Clean Sweep website. Listed partner company names may be used in publicity for the program.

## Have Your Employees Take the Pledge

- Individual personal commitment of every employee is the key to success.
- Encourage every employee to be fully engaged and committed to following the OCS principles every day.
- Having each employee sign a personal pledge found in the checklist section is an effective way to gain that commitment.

# Checklist

We have provided a number of checklists to assist you in implementing OCS. The checklists are divided into two categories: Management and Employee. The checklists have been created so they are customizable for your company. For example, you can insert your company logo and specific process steps may be added or removed to reflect those involved in a particular operation. These enhancements will make it easy to create and copy forms that have the greatest value for your company. For online checklists, visit:

[www.opcleansweep.org/Manual/Checklist.html](http://www.opcleansweep.org/Manual/Checklist.html).

## Management Checklists

- Site Audit
- Implementation & Training
- Facility Equipment
- Employee Equipment

## Employee Checklists

- Processor Operations
- Warehouse
- Car Cleaning/Loading
- Railroad
- Transloader



# Site Audit Management Checklist

Company: \_\_\_\_\_

Department: \_\_\_\_\_

**Bulk Hopper Car/Truck Unloading Area**

Spill Problem:  Yes  No

Cause of Spill: \_\_\_\_\_

Solution: \_\_\_\_\_

Implementation Date: \_\_\_\_\_

**Receiving Dock—Bags And Boxes**

Spill Problem:  Yes  No

Cause of Spill: \_\_\_\_\_

Solution: \_\_\_\_\_

Implementation Date: \_\_\_\_\_

**Silo Area**

Spill Problem:  Yes  No

Cause of Spill: \_\_\_\_\_

Solution: \_\_\_\_\_

Implementation Date: \_\_\_\_\_

**Transfer Equipment—Blower**

Spill Problem:  Yes  No

Cause of Spill: \_\_\_\_\_

Solution: \_\_\_\_\_

Implementation Date: \_\_\_\_\_

Audited By: \_\_\_\_\_

Audit Date: \_\_\_\_\_

**Transfer Equipment—Bag House**

Spill Problem:     Yes     No

Cause of Spill: \_\_\_\_\_

Solution: \_\_\_\_\_

Implementation Date: \_\_\_\_\_

**Transfer Equipment—Line Connectors**

Spill Problem:     Yes     No

Cause of Spill: \_\_\_\_\_

Solution: \_\_\_\_\_

Implementation Date: \_\_\_\_\_

**Box/Bag Handling**

Spill Problem:     Yes     No

Cause of Spill: \_\_\_\_\_

Solution: \_\_\_\_\_

Implementation Date: \_\_\_\_\_

**Blending Equipment**

Spill Problem:     Yes     No

Cause of Spill: \_\_\_\_\_

Solution: \_\_\_\_\_

Implementation Date: \_\_\_\_\_

**Processing Line—Extrusion Feed Hoppers**

Spill Problem:     Yes     No

Cause of Spill: \_\_\_\_\_

Solution: \_\_\_\_\_

Implementation Date: \_\_\_\_\_

Audited By: \_\_\_\_\_

Audit Date: \_\_\_\_\_

**Packaging Areas—Bulk Box**

Spill Problem:     Yes     No

Cause of Spill: \_\_\_\_\_

Solution: \_\_\_\_\_

Implementation Date: \_\_\_\_\_

**Packaging Areas—Bag**

Spill Problem:     Yes     No

Cause of Spill: \_\_\_\_\_

Solution: \_\_\_\_\_

Implementation Date: \_\_\_\_\_

**Warehouse/Storage**

Spill Problem:     Yes     No

Cause of Spill: \_\_\_\_\_

Solution: \_\_\_\_\_

Implementation Date: \_\_\_\_\_

**Shipping Dock**

Spill Problem:     Yes     No

Cause of Spill: \_\_\_\_\_

Solution: \_\_\_\_\_

Implementation Date: \_\_\_\_\_

Audited By: \_\_\_\_\_

Audit Date: \_\_\_\_\_



# Implementation & Training Checklist

Company: \_\_\_\_\_

Department: \_\_\_\_\_

## PROCEDURES

- Signed the "Pledge"
- Conduct site audit
- Review or create written procedures
- Assign responsibility for each crew/individual
- Put management inspection program in place
- Plan follow up and review

## TRAINING

- Crew training meetings conducted
- Shift #1 \_\_\_\_\_
- Shift #2 \_\_\_\_\_
- Shift #3 \_\_\_\_\_
- Shift #4 \_\_\_\_\_

Manager: \_\_\_\_\_

Signature/Date: \_\_\_\_\_





# Facility Equipment Checklist

Company: \_\_\_\_\_

Department: \_\_\_\_\_

## STORM DRAIN SCREENS

- Number of drains: \_\_\_\_\_
- Number of drains with screens: \_\_\_\_\_
- Target date to complete screen installation: \_\_\_\_\_
- Drain screen inspection/cleaning frequency: \_\_\_\_\_
- Screen repairs required: \_\_\_\_\_

## UNLOADING AREAS

- Paved
- Unpaved
  - Tarps/catch pans available in area
  - Disposal receptacles in area

## TRANSFER SYSTEMS

- Bag House/filters OK
- Pipe, hoses and connections leak free
- Disconnects with auto closing valves

## SWEEPINGS DISPOSAL

- Contractor agrees to "zero loss" disposal procedures
- Proper interim storage containers available

Inspected By: \_\_\_\_\_

Inspection Date: \_\_\_\_\_







# Employee Equipment Checklist

Company: \_\_\_\_\_

Department: \_\_\_\_\_

## AVAILABLE FOR USE

- Brooms
- Dust pans
- Repair tape
- Vacuum system
  - Central
  - Portable
- Catch pans
- Sample containers
- Scrap pellet, flake and powder container
- Elastic cord
- Buckets for forklift cleanup

Inspected By: \_\_\_\_\_

Inspection Date: \_\_\_\_\_





# Processor Operations Checklist

Company: \_\_\_\_\_

Department: \_\_\_\_\_

Operation: \_\_\_\_\_

Crew/Shift: \_\_\_\_\_

Inspector: \_\_\_\_\_

Date: \_\_\_\_\_

	Condition at START of Shift			Condition at END of Shift		
	Excellent	Good	Poor	Excellent	Good	Poor
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Silos</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Transfer Lines</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Bag/Box Feeding</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Dryer</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Extruder Hoppers</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Problem Areas</b>						
<b>Spill Recovered:</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No If not, why:					
<b>Sweeping Properly Disposed of:</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No If not, why:					
<b>Samples Taken:</b>	Number:					

Inspected By: \_\_\_\_\_

Inspection Date: \_\_\_\_\_





# Warehouse Checklist

Company: \_\_\_\_\_

Department: \_\_\_\_\_

Operation: \_\_\_\_\_

Crew/Shift: \_\_\_\_\_

Inspector: \_\_\_\_\_

Date: \_\_\_\_\_

## RECEIVING AREA

- Loading dock catch pans in place for receipt of container shipments
- Rail truck unloading valve catch pans in place before openings
- Samples collected in approved containers
- Container trucks cleaned after unloading
- Hopper car/truck valve covers in place before moving
  - Full walk around conducted
  - Transfer lines flushed and clean
- Dock area swept clean
- Car/Truck unloading area clean
- Raw Material Storage area clean
- Aisles in clean condition
- No leaking boxes
- No leaking bags
- Waste collection containers emptied
- Boxes cleaned and flattened
- Bags fully emptied prior to disposal
- Broken pallets repaired or replaced

Inspected By: \_\_\_\_\_

Inspection Date: \_\_\_\_\_





# Car Cleaning/Loading Checklist

Company: \_\_\_\_\_

Department: \_\_\_\_\_

Operation: \_\_\_\_\_

Crew/Shift: \_\_\_\_\_

Inspector: \_\_\_\_\_

Date: \_\_\_\_\_

## RECEIVING AREA

- Containment for wash area operational
- Compartments empty and clean
  - Air lance operational
  - Unloading outlet tubes totally clean
  - Pellet, flake and powder recovery from wash water 100%

## CAR LOADING

- No line blockages or clogging
- Catch pans in place for connections
- Transfer lines flushed after each car loading completed
- All outlets secure and sealed after filling (Seals are all 1/8 inch braided steel or stronger)
  - Top
  - Bottom
- Top of car clear before release

Inspected By: \_\_\_\_\_

Inspection Date: \_\_\_\_\_





# Railroad Checklist

Company: \_\_\_\_\_

Department: \_\_\_\_\_

Operation: \_\_\_\_\_

Crew/Shift: \_\_\_\_\_

Inspector: \_\_\_\_\_

Date: \_\_\_\_\_

## STORAGE IN TRANSIT AREAS

**Secure**

Fenced

Adequate lighting

**Regular Inspections**

Car valve covers and seals in place or shipper notified

Inspected By: \_\_\_\_\_

Inspection Date: \_\_\_\_\_





# Transloader Checklist

Company: \_\_\_\_\_

Department: \_\_\_\_\_

Operation: \_\_\_\_\_

Crew/Shift: \_\_\_\_\_

Inspector: \_\_\_\_\_

Date: \_\_\_\_\_

## RECEIVING AREA

- Wash system containment operational
- Compartments empty and clean
  - #1  #2  #3  #4
- Unloading outlet tubes totally clean

## TRANSFER (Transfer area: Gravel Asphalt)

- Car seals in place before start of transfer
- Catch pans in place prior to valve opening
- Transfer lines flushed and clean after transfer
- All outlets secure and sealed at completion and prior to moving
  - Car
    - Top
    - Bottom
  - Truck
    - Top
    - Bottom
- Spills cleaned and disposed of properly
- Samples taken without material loss
- Unloading problems experienced

Inspected By: \_\_\_\_\_

Inspection Date: \_\_\_\_\_





# Pledge to Help Prevent Resin Pellet, Flake and Powder Loss

## EMPLOYEE PLEDGE TO HELP PREVENT RESIN PELLET, FLAKE AND POWDER LOSS

I recognize our company's commitment to Operation Clean Sweep and the goal of preventing pellet, flake and powder loss into the environment. I will do my daily job in a manner that strives to:

- Prevent Pellet, Flake and Powder Loss;
- Contain Spills;
- Cleanup Swiftly and Effectively; and
- Dispose of Pellets, Flakes and Powder Appropriately

Company Name: \_\_\_\_\_

Department/Crew: \_\_\_\_\_

Employee Name: \_\_\_\_\_

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





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