



Plastic Pellet Loss Prevention



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INTRODUCTION

HOW TO USE THIS MANUAL

The Operation Clean Sweep (OCS) program and manual contains guidelines to help plastics industry operations managers reduce the loss of pellets 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 national and local regulations is mandatory. These guidelines may help you to achieve compliance and avoid penalties.

There are many ways to work towards zero pellet loss.

The OCS materials are designed to provide maximum utility for all types of plastic handling and transporting operations.

Copyright

The OCS logo and name are copyrighted. These materials are intended for use within an individual company or facility. All companies that produce process or otherwise handle plastic pellets may use the OCS materials, name and logo for the purpose of being a good environmental steward by working to contain and prevent the discharge of pellets. The materials may be freely shared with other individuals and companies with the intention of improving pellet retention. **No OCS materials may be copied for sale or any other use** beyond the specified use of improving an operation's containment of plastic pellets. Unauthorized use will be subject to fines and other penalties.

Acknowledgments

The British Plastics Federation wishes to thank The American Plastics Council (APC) and The Society of the Plastics Industry (SPI) for permission to use 'Operation Clean Sweep'.

Information

The British Plastics Federation is the leading voice for the UK Plastics Industry. With over 300 member companies.

Our membership embraces: polymer & additive producers; distributors; processors; machinery and equipment and recyclers. Information on the OCS programme can be found at www.operationcleansweep.co.uk.

PLASTIC PELLETS IN THE ENVIRONMENT

Plastic Pellet 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 that are killing them or affecting their health. Most of these plastics are used consumer products (e.g. bottles, caps, containers, etc.) that have been carelessly discarded. Some of this litter is resin pellets that entered the waste stream and the oceans. When these pellets are eaten by wildlife they cannot be passed through their digestive tracts, leading to malnutrition and starvation.

While consumers are responsible for the proper disposal of the products they use, the plastics industry must focus on proper containment of the products we use – plastic pellets, the basic raw material of our industry. We must prevent the pellets 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 with the goal of zero pellet loss.

How You Can Help

Each segment of the industry, including resin producers, transporters, bulk terminal operators and plastics processors, has a role to play in eliminating resin pellet loss. It's the little things that count. A few pellets here and a handful there all add up when you consider the thousands of facilities in the industry and the many times resin is handled.

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

Pellet containment is good for the environment. And it's good for business. With your help and cooperation, we can make great strides to help our industry protect the environment. The British Plastics Federation looks forward to working with you on Operation Clean Sweep to accomplish this important goal.

THE VALUE OF OPERATION CLEAN SWEEP

If you could take a simple step to help strengthen your company's:

- contribution to preserving water quality and wildlife;
- compliance with state regulations and avoidance of fines;
- safety/housekeeping programme;
- 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 programme of the British Plastics Federation.

The campaign's goal is: to help every plastic resin handling operation implement good housekeeping and pellet containment practices to work towards achieving zero pellet loss.

Pellet 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 time, higher worker compensation costs and lower employee morale.
- Violations of storm water regulations can result in civil penalties
- Spilled pellets eventually end up in our oceans. Whether they're handled in an inland plant or a seaside facility, pellets get into storm drains that lead to oceans — causing eyesores and a threat to marine life.

When the industry handles pellets as responsibly as possible:

- Pellets 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 becomes product rather than waste, improving efficiency.

OCS' ultimate goal is to help keep plastic pellets 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 polymer producer, distributor and processor's help to get results.

This manual and its website, www.operationcleansweep.co.uk, provide the information and resources you need to launch a new employee outreach program and build on Operation Clean Sweep.

FIVE BASIC STEPS FOR MANAGEMENT: IMPLEMENTING OPERATION CLEAN SWEEP

1. Commit to making zero pellet loss a priority.

2. Assess your company's situation and needs.

- Comply with all environmental laws and regulations that address pellet 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 needed upgrades in facilities and equipment as appropriate.

4. Raise employee awareness and create accountability.

- Establish written procedures (The procedures in this manual may be modified to suit your needs). They are available online at www.operationcleansweep.co.uk
- Make certain the procedures are readily available to employees.
- Conduct regular employee training and awareness campaigns on Operation Clean Sweep.
- Assign employees the responsibility to monitor and manage pellet containment.
- 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 best practices through the Operation Clean Sweep web site: www.operationcleansweep.co.uk

CONDUCTING A SITE AUDIT

One of the most effective ways to improve your facility's containment of pellets is to identify the areas where spills/losses occur most frequently and fix them.

- 1. Look at 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 if necessary.**

Customise your Site Audit checklist to suit your facility and add in any missing operations.

WORKSITE SET-UP

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

FACILITIES — take 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 to be carried into the environment by wind and water.
 - Unpaved areas are more difficult to clean, but pellets tend to stay where they fall and can be recovered.
 - Choose the solution that is best for your facility.
- Pave loading/unloading areas where unavoidable spills occur to facilitate cleanup
 - Include a slope or a berm to contain pellets on paved areas.
 - Equip areas with vacuums or brooms.
 - 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 without disturbing gravel.
- Provide catch trays for use at all railcar/lorry unloading valves.
- Use bulk-handling equipment that is designed to minimize pellet 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 lorry) prior to shipment. Loss of residual pellets from unsealed “empty” bulk railcars and lorries is a significant problem.

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

WORKSITE SET-UP

FACILITIES (continued) & CONTAINMENT SYSTEMS

- Place pellet disposal cans at rail yards for loading and unloading.
- Assure proper handling when storing and removing waste pellets. All vendors should follow “no loss to the environment” procedures.
- Assure proper handling when storing and removing waste pellets. All vendors should follow “no loss to the environment” procedure.
- Seal expansion joints in concrete floors with flexible material to avoid pellet accumulation in hard to clean spaces.
- Conduct routine inspections and maintenance of equipment used to capture and contain pellets.

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 size handled.

Containment Systems

- Storm drain screens are the last line of defense against accidental pellet release. They should be every facility’s number one priority for installation.
- Install zero loss containment systems (such as storm drain screens) wherever necessary to prevent pellets from escaping plant boundaries. There are two possible containment systems that could be installed:
 - **Area-specific containment systems** in each pellet handling area. Area-specific containment systems would be the primary pellet containment systems and the facility-wide system would serve as a backup.
 - **Facility-wide containment systems**, which are effective in controlling pellet releases from facilities covering a large area and handling large volumes of pellets.
- Place screening in all storm drains. The mesh of the screening should be smaller than the smallest pellet handled at the facility. Clean the storm drains 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.
- To prevent storm drain contamination, employ dry cleanup methods whenever possible. Dry cleanup procedures also prevent pellets from being further contaminated by compounds in the storm water.

WORKSITE SET-UP

EMPLOYEE EQUIPMENT - ensure that employees have ready access to:

- 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 them to undertake and checklists to assist in follow-through.
- Forklift cleanup kit (see page 17)
- Ensure that employees have ready access to the proper cleanup equipment at all locations where spills might occur.

LAST RESORT

- Using compressed air as a method of pellet cleanup is a last resort to be used under unique circumstances.
- “Blowing” frequently moves the debris to another area rather than contains it.

SLIPS AND FALLS

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

CLEAN WORK AREA

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

DESIGNING A TRAINING PROGRAMME

Designing a training programme 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 (page 7) and determine if employees have and are following appropriate procedures.
- Make needed site improvements and write/modify procedures prior to launching a training programme.

2. Instructional objectives

- Identify what training is needed to 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.
 - a. Use OCS to design and develop training programme and programme content.
 - b. Select the techniques used to facilitate learning (team meetings, handouts, video, website, etc.).
 - c. Select the appropriate setting for your meetings.
 - d. Prepare materials.
 - e. Identify and train the instructors.
 - f. 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.

EMPLOYEE PARTICIPATION AND ACCOUNTABILITY

Ensure employees are aware of and accountable for pellet loss prevention, containment, cleanup and disposal

Establish written procedures. (The procedures in this manual can be modified to suit your needs. They are available online at www.opcleansweep.org)

Make certain the procedures are easily available.

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

SPILLS WILL HAPPEN

Ensure that employees:

- Take ownership
 - Immediately clean up the spill
 - Recycle or dispose of loose pellets properly
-
- Explain the impact of pellet 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 containment. If gets assigned as a regular part of employee jobs, it gets done.
 - 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 department or team that achieves designated goals of the pellet loss prevention programme.

PREVENTION, CONTAINMENT AND CLEANUP PROCEDURES

PELLET TRANSPORT AND PACKAGING

Hopper railcar and hopper lorry cleaning, loading, storage and unloading present special resin handling challenges.

Cleaning Empty Hopper Railcars and Lorries

Ensure proper handling of residual materials

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

Top Loading Hopper Railcar and Lorries

- 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 loss and always place a catch pan or tarp under the connection.
- Remove any spilled pellets from the top of the railcar/lorry before leaving the containment area - residual pellets will fall to the ground as railcars are moved outside the plant.

Sealing Loading Railcars/Lorries

- Close all outlet caps properly before railcars/lorries are moved (and request customers to do the same when returning empties).
- Apply seals on all outlet caps.
- 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, lorry companies and processors).

PREVENTION, CONTAINMENT AND CLEANUP PROCEDURES

UNLOADING HOPPER RAILCARS AND LORRIES

Valve Opening

- Contain any 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 loss before opening the line.
- Place pellet disposal cans at rail yards for loading and unloading.
- Have a catch pan or tarp ready to catch pellets.
- Immediately clean up and properly dispose of any spilled pellets.
- Surges in unloading lines can cause pellets to be vented into the environment. To prevent this, install a bag house, filter bag assembly or other control device at the unloading system vent.

BE VIGILANT

- Pellet loss can occur at any stage of operations.
- Be vigilant to ensure that pellets don't escape into the environment

Completing Unloading

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

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 into containers.

The "Usual Suspects"

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

PREVENTION, CONTAINMENT AND CLEANUP PROCEDURES

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.

Spills

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

HIERARCHY OF CLEANUP METHODS

- Vacuum it
- Sweep it
- Wash it down (only with appropriate containment systems in place)
- Blow it (only as a last resort)

Packaging

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

Selecting Packaging Materials

- Use packaging designed to minimize the possibility of breakage and pellet leakage.
- Use puncture-resistant shipping containers where possible.
- Use 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

- Collecting spilled pellets reduces contamination, permitting normal usage rather than requiring disposal.

PREVENTION, CONTAINMENT AND CLEANUP PROCEDURES

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 spilled during the filling process. Where possible, select filling equipment designed to prevent pellet loss.
- Implement warehouse and handling procedures that minimize the chance of pellet spillage.
- Dispose of collected pellets 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.
- Recycle plastic resin bags, shrink-wrap and stretch-wrap, whenever possible
- Dispose of packaging by Energy from Waste combustion.
 - Stress the need for “no loss to the environment” procedures.

Bulk Boxes

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

CAUTION

- Some loss also occurs during the filling process.

PREVENTION, CONTAINMENT AND CLEANUP PROCEDURES

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.
- Use corrugated cardboard caps on the top and bottom of pallets to minimize puncturing or tearing bags and to contain loose pellets.
- Block and brace outbound loads to avoid broken bags in transit.

SELECT PROPER BAGS AND PALLETS

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

Handling Materials

- Forklift operators must be trained and 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. 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 packaging before offloading, particularly pellets bagged in unreinforced paper or corrugated bulk boxes. This will prevent pellet release through the gap between the vehicle and the loading dock.

Storage

- Consider covering all packaging resin stored outside (super sacks, etc.) to prevent photo degradation of the containers.

FORKLIFT CLEANUP KIT (4 ITEMS)

BROOM; LONG-HANDLED DUST PAN; REPAIR TAPE; BUCKET FOR COLLECTION/DISPOSAL

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

PREVENTION, CONTAINMENT AND CLEANUP PROCEDURES

OTHER TRANSPORT VEHICLE CONCERNS

Container Lorries

Shipping

- Sweep or vacuum any loose pellets in the lorry/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 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 Railcars and Lorries — Repairs

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

Transport Accidents

- Contact the shipper for assistance/advice if a derailment or road accident results in a spill of resin pellets.

PREVENTION, CONTAINMENT AND CLEANUP PROCEDURES

MARINE TRANSPORT

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

Anyone handling pellets 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 into the water.
- Properly contain and handle any pellets 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.
- If a container of resin is lost from a ship, perhaps due to a storm or collision, report it to the coastguard.

PREVENTION, CONTAINMENT AND CLEANUP PROCEDURES

WASTE RECYCLING AND DISPOSAL

Ensure pellets are properly disposed of to avoid contaminating the environment

Store waste pellets in properly labeled containers.

- Do not permit loose pellets to accumulate on the ground or floors.
- Install a minimum of one pellet-specific waste container in each pellet-handling area
- Routinely check that there is adequate waste storage capacity.
- Use separate containers for recyclable and non-recyclable pellets.
- 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 are:

- Recycle or resell waste pellets.
- Approved Energy from Waste combustion of waste pellets in properly licensed and operated incinerators.
- Consider using waste pellets in a fuel-blending programme.
- Include pellet retention capabilities and practices in criteria for selecting waste disposal companies.

Try and avoid landfilling

TO SUMMARISE: PREFERRED DISPOSAL METHODS

- Recycle
- Resale
- Approved Energy from Waste combustion
- Fuel- blending programme

FINAL STEP

Careful disposal is the final step to ensuring that pellets do not affect the environment

PREVENTION, CONTAINMENT AND CLEANUP PROCEDURES

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. 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.

PREVENTION, CONTAINMENT AND CLEANUP PROCEDURES

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, 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, 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 ¹.

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 regulations for containment systems.

DISPOSAL OF DUST

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 Material Safety Data Sheets (MSDS) for each type of plastic used in the process.
- Dispose of dust or powder using a method that complies with all regulations and guidelines and/or applicable codes and standards.

¹ 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.

Take the Pledge for Your Company

To demonstrate your commitment to a clean environment, please complete the “Pledge to Prevent Resin Pellet Loss” and fax a copy to the British Plastics Federation on :- 020 7457 5045.

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 Programme Partners on the Operation Clean Sweep page on the BPF website www.operationcleansweep.co.uk

Listed partner company names may be used in publicity for the programme.

Company Pledge to Prevent Resin Pellet Loss

Our company recognizes the importance of preventing the loss of resin pellets into the environment and we are committed to implementing the Operation Clean Sweep programme.

We will be an OCS Programme Partner, strive towards zero pellet loss and:
Make changes wherever possible and practical to:

- Improve our worksite set-up to prevent and address spills;
- Create and publish internal procedures to achieve zero pellet loss goals;
- Provide employee training and accountability for spill prevention, containment, cleanup and disposal;
- Audit our performance regularly; and
- Comply with all applicable national and local regulations governing pellet containment.

Company Name : _____

Address : _____

Address : _____

Address : _____

Company Officer - Name and Title:

Signature: _____

Date: _____

Email Address: _____

Phone: _____

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