Operation Clean Sweep®

Manual

Plastics | SA

PLASTICS INDUSTRY ASSOCIATION

American Chemistry Council

SASOL

TABLE OF CONTENTS

Introduction 3

Plastic Pellets, Flakes and Powder in the Environment 4

The Value of Operation Clean Sweep (OCS) 5

Implementing OCS: Five Basic Steps for Management 6

Conducting a Site Audit 7

Designing a Training Program 8

Employee Participation and Accountability 9

Worksite Setup

- Facilities 10
- Containment Systems 11
- Employee Equipment 12

Prevention, Containment and Clean-up Procedures

- Bulk Transport 13
- Loading 13
- Unloading 14-15
- Packaging 16-18
- Other Transport Vehicle Concerns 19
- Marine Transport 20
- Waste Recycling and Disposal 21

Minimise Generation and Release of Plastic Dust and Powder

- Minimize the Generation of Plastic Dust 23
- Minimize the Release of Plastic Dust to Powder 23
- Capture and Containment of Plastic Dust 24
- Dispose of Dust 24

Take the Pledge for your Company 25

- Company pledge to prevent resin pellet loss 26

Operation Clean Sweep Supporters: South Africa 27

INTRODUCTION

How to use this manual?

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.

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 their company's specific goals. None of the guidelines are intended as a mandate.

There are many ways to work toward zero pellet, flake and powder loss.

The Operation Clean Sweep® materials are designed to provide maximum utility for all types of plastic handling and transporting operations.

Operation Clean Sweep® is trademarked by SPI

Copyright

All companies that produce, process or handle plastic pellets may use the OCS material for the purpose of being a good environmental steward by working to contain and prevent the discharge of pellets.

The OCS logo and name are copyrighted. These materials are intended for use within an individual company or facility. These materials may be shared with other individuals or companies with the intention of improving pellets retention.

No Operation Clean Sweep® materials may be copied for sale or any other use beyond the specified use of improving a containment of plastic pellets. Unauthorised use will be subject to fines and other penalties.

Acknowledgements

Plastics|SA wishes to thank the Plastics Division of The American Chemistry Council (ACC) and The Plastics Industry Association (formerly SPI, The Society of the Plastics Industry) for allowing the use and translation of Operation Clean Sweep (OCS) original manual.

Plastics|SA would also like to thank Sasol for their support of Operation Clean Sweep and for assisting in the development of this programme.

Information

Plastics|SA represents all sectors of the South African Plastics Industry including; polymer producers and importers, converters, machine suppliers, fabricators and recyclers.

Together with our associations, we play an active role in the growth and development of the SA industry and strive to address plastics related issues, influence role-players and make plastics the material of choice

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.**

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 plastics 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 business performance.

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

THE VALUE OF OPERATION CLEAN SWEEP

Operation Clean Sweep can help strengthen your company's:

- sustainability initiatives;
- contribution to preserving water quality and wildlife;
- safety/housekeeping programme;
- employees' safety;
- operational efficiency;
- financial bottom line;
- and reputation in the community

Operation Clean Sweep® (OCS), a product stewardship programme of Plastics|SA.

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.
- Spilled pellets, flakes and powder can eventually end up in our waterways and the ocean. Whether they're handled in an inland plant or a coastal 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 polymer producer, distributor and processor's help to get results.

Please visit https://www.plasticsinfo.co.za/sustainability/projects/#operation-clean-sweep

IMPLEMENTING OPERATION CLEAN SWEEP®:
FIVE BASIC STEPS FOR MANAGEMENT

1 Commit to making "zero pellet loss" a priority

- Sign the "Pledge to Prevent Resin Pellet Loss".

2 Assess your company's situation and needs

- Comply with all environmental 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,
- 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,
- Seek employee feedback on your programme,
- Use workplace reminders such as stickers, posters, etc.

5 Follow up and enforce procedures

- Conduct routine inspections of the facility grounds (production areas, storage areas, sampling zones, driveways, parking lots, drainage areas, etc.),
- Continuously look for ways to improve the programme.

When management cares, employees will, too.

CONDUCTING A SITE AUDIT

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

1. **Check 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.**

For the site audit, customise the checklist to suit your facility. Add any missing operations.

(Checklist proposals included on https://www.plasticsinfo.co.za/sustainability/projects)

DESIGNING A TRAINING PROGRAM

Designing a training programme can be structured into five steps:

1. Needs assessment

- Conduct a site audit 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 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 design and develop 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, clean-up and disposal.

- **Establish written procedures.**
- **Make certain the procedures are easily available.**
- **Conduct regular employee training and awareness campaigns on the Operation Clean Sweep program.**

Be alert!
For each identified spill, ensure that employees:
- Take ownership by taking the pledge.
- Immediately clean up the spill.
- Recycle or dispose of loose pellets, flakes and powder properly.

- **Explain the impact of pellet, flake and powder loss on the environment and the company.**
- **Make spill prevention, clean-up 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 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 clean-up 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.

WORKSITE SETUP

FACILITIES

Ensure your worksite is properly set up to prevent loss and assist clean-up.

Take the following steps wherever possible and practical:

- **To pave or not to pave — that is the question**
  - A paved area facilitates clean-up, 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.
  - Choose the solution that is best for your facility.
- **Pave loading/unloading areas where unavoidable spills occur to facilitate clean-up**
  - 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 clean-up.
- **For clean-up 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 significant problem.

- **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.**
  - All vendors should follow “no loss to the environment” procedures.
- **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 defence against accidental pellet, flake and powder 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, 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 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 prevent storm drain contamination, employ dry clean-up methods whenever possible. Dry clean-up procedures also prevent pellets, flakes and powder from being further contaminated by compounds in the storm water.

Anticipate Rain and Floods

- 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:

- 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,
- Forklift clean-up kit.
- Assure that employees have ready access to the proper clean-up equipment at all locations where spills might occur

Slips and Falls

Slips and falls are the number one cause of plastics industry accidents.
A clean work area reduces the risk

No Blowing in the Wind!

"Blowing" too frequently moves the debris to another area rather than contains it. It also uses large amounts of energy.
Using compressed air to remove pellets from an inaccessible zone must be completed by a clean-up.

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 best practices for each handling step.

Making employees aware of and holding them accountable for these prevention, containment, clean-up and disposal procedures, is the way to zero pellet, flake and powder loss.

BULK TRANSPORT

Tank railcar and truck cleaning, loading, storage and unloading present special resin handling challenges

Cleaning Empty Tank Railcars 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 correctly.

LOADING

Top Loading

- 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.
- Position the filler pipe the closest possible to the manhole to minimize the drop height.
- Use devices avoiding over-filling: chronometer, volumetric dosing valves, etc.

Sealing Loading Railcars/Lorries

- 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.
- 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).

Hierarchy of clean-up methods:
1 Vacuum it.
2 Sweep it.
3 Wash it down (only with appropriate containment systems in place).
4 Blow it (only as a last option).

The "Usual Suspects"
Open valves, outlet caps and top hatches are frequent causes of material spills.
Make sure to close off all pellets "escape routes" once the truck is unloaded.

UNLOADING

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 the loading and unloading areas.
- Have a catch pan or trap ready to catch pellets.

- Immediately clean up and properly dispose of any spilled pellets.
- A swell of pellets 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.

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.

Be Vigilant

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

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.

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.

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.
- Otherwise, dispose of packaging correctly.

Bulk Boxes or Octobins

- Use bulk boxes or Octobins 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.

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 clean-up.

Institute handling procedures that minimize puncture of bags and boxes with forklift tines.

Repair or replace punctured packages and clean-up 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 Clean-up 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 Clean-up Kit

1.Broom; 2. Long-Handled Dust Pan; 3. Repair Tape; 4. 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.

OTHER TRANSPORT VEHICLE CONCERNS

Container Trucks

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 Truck - Repairs

- Work in a paved area to facilitate containment and clean-up.
- 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.

BULK STORAGE

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 clean-up 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.

WASTE RECYCLING AND DISPOSAL

Ensure pellets are properly disposed of to avoid contaminating the environment

Storage of waste pellets

- 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.
- Use properly labelled containers.
- 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.

Preferred disposal methods are

- Recycle or resell waste pellets.
- Energy recovery through incineration in appropriate efficient incinerators or use as alternative fuel.
- Prevent waste pellets going to landfills.

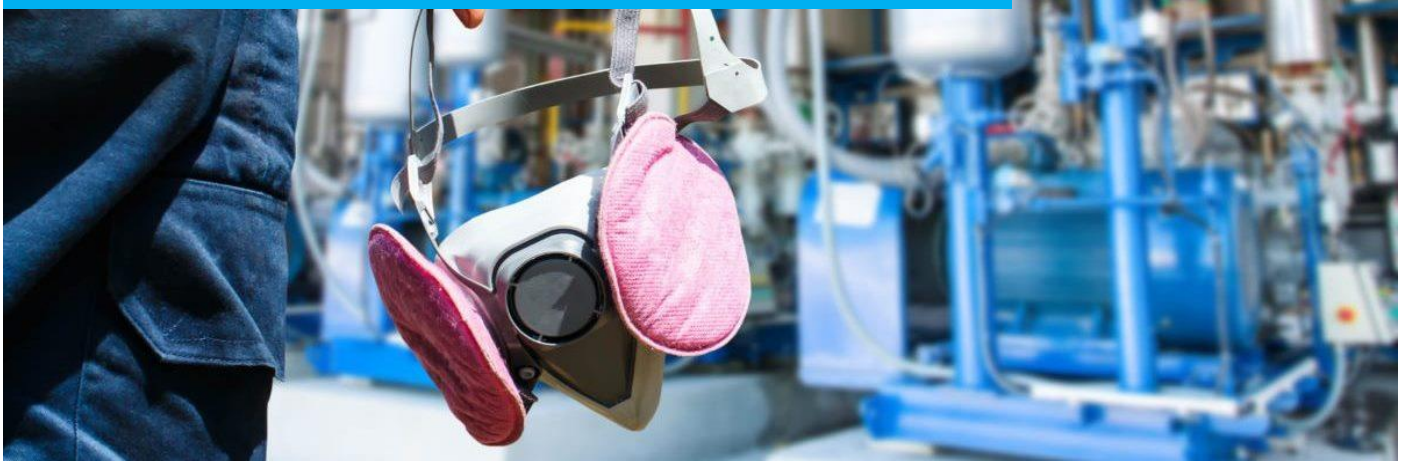
Requirements to Waste Disposal Companies

- Include pellet retention capabilities and practices in criteria for selecting waste disposal companies.
- Stress the need for "zero pellet loss" procedures.
- Inspect and confirm proper handling and storage procedures of these service providers.

Preferred Disposal Methods

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

MINIMIZE GENERATION AND RELEASE OF PLASTIC DUST AND POWDER



This part specifically focuses on methods to help minimise 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 resin.

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, keep cutting equipment in good condition with sharp blades;
- Design conveying systems to treat the plastic gently and avoid plastic fracture.
  - Limit the conveying air speed /pressure,
  - Avoid impacts, in piping, with hard surfaces / diameter restriction / dents or between pellets, for example :
    - by using self-centering drawstrings or long sweep elbows (likely to reduce frictions between pellets),
    - or by avoiding 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;
- 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;
- Promote employee awareness of training and reminders regarding the need to prevent dust/powder from escaping into the environment.

CAPTURE AND CONTAINMENT OF PLASTIC DUST

Plastic dust creation can be minimized but not eliminated entirely.

However, 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:

- 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.

About Plastic Dust

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 implement the recommendations of the Operation Clean Sweep®, please fill and sign the "Pledge to Prevent Resin Pellet Loss", and send a copy to Plastics|SA:

E-mail: enquiries@plasticssa.co.za

The pledge must be signed by an official company representative.

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® (https://www.plasticsinfo.co.za/sustainability/projects/#operation-clean-sweep) web page.

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

COMPANY PLEDGE TO PREVENT RESIN PELLET LOSS

Our company recognises the importance of preventing the loss of resin pellets into the environment and is committed to implementing the Operation Clean Sweep® programme.

We will be an OCS Programme Partner, strive towards "Zero Pellet Loss" and make changes to:

1. Improve our worksite(s) set-up to prevent and address spills,
2. Create and publish internal procedures to achieve «zero pellet loss» goals,
3. Provide employee training and accountability for spill prevention, containment, clean-up and disposal,
4. Audit our performance regularly,
5. Comply with all applicable local and national regulations governing pellet containment,
6. Encourage our partners (contractors, transporters, etc.) to pursue the same objectives.

Company Name:
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Address: .....

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City: .....

Post Code: |__|__|__|__|__|

Country: .....

Company / Site Manager

Name and Title: .....

Email Address: .....

Phone: .....

(Company Stamp)

Date: .....

Signature: .....

SOUTH AFRICA: SUPPORTERS

PLASTIC RECYCLING ORGANISATIONS

RAW MATERIAL SUPPLIERS

PLASTIC CONVERTERS

PLASTIC RECYCLERS