



Abrasive Blasting Program

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1. PURPOSE

To establish a safety program, for Abrasive Blasting work at Mosaic facilities, to protect the safety and health of employees and contractors.

2. SCOPE


The Abrasive Blasting Program covers all Mosaic employees and contractors performing abrasive blasting on Mosaic Fertilizer LLC Phosphates Business Unit facilities.

3. DEFINITIONS

- 3.1 Blasting Cabinets - A blasting enclosure is operated from outside using openings in the enclosure and is too small to admit an operator.
- 3.2 Blasting Room – A permanently placed blasting enclosure, which is large enough to accommodate one or more blasting operators.
- 3.3 Safe Work Permit – Required when abrasive blasting generates sparks sufficient to ignite a flammable/combustible in Open Air Blasting.

4. OPEN AIR ABRASIVE BLASTING

- 4.1 Silica sand is not to be used as an abrasive blasting agent where personnel not involved in the blasting work are within 25 feet or 25 feet plus 2-times the height of work and can be affected by the abrasive or dust from sandblasting. Silica sand is permitted for abrasive blasting in remote areas and where there is controlled traffic and exposure.
- 4.2 Combustible abrasives such as walnut or pecan shells shall not be used in confined areas, locations without adequate ventilation or near heat or flames sources. The blasting nozzle and work to be blasted must be grounded.
- 4.3 Abrasive blasting shall not be conducted on equipment containing flammable liquid or gas unless approved by one of the Senior Safety Managers.
- 4.4 Blasting nozzles shall be equipped with an operating valve (pneumatic or electric) which must be held open manually and close immediately upon release of hand pressure (i.e. dead man switch). The automatic cutoff must be positioned on the hose as close to the nozzle as possible.


 **Warning:** A ball-and-chain or bat-and-chain may not be used.

- 4.5 Employees in the immediate vicinity or downwind of sandblasting operations shall wear safety goggles and respiratory protection specified in the Respiratory Protection Program, or shall vacate the area.
- 4.6 Designated work zones will be isolated by using signs, barricades or a Watchman to warn employees of abrasive blasting operations.
- 4.7 All abrasive blasting shall be from a safe and stable work surface or platform. Blasting from ladders or any other moveable surface is a last resort option that may be used after having evaluated all other alternatives (such as aerial lifts, scaffolding, etc.) however, before use it requires approval from both the Maintenance Manager and a Safety Specialist.
- 4.8 When blasting from an Aerial Lift, the blaster shall refer to and comply with the Aerial Lifts Program.
- 4.9 The relief valves on the abrasive blasting pressure pots shall be tested daily and recorded on the Abrasive Blasting Equipment Daily Inspection Form (Appendix A).
- 4.10 Relief valves shall be vented to a safe location.
- 4.11 A safety chain shall be used to secure lids on abrasive pots.
- 4.12 Abrasive blasting hose shall be secured in such a manner to prevent uncoupling.
- 4.13 The calibration of the CO monitor shall be completed monthly by Electrical or Instrument (E&I) or trained employees and confirmed prior to use daily.
- 4.14 Suitable air-purifying beds and filters must be used in the supply lines to ensure delivery of a continuous flow of Grade D breathing air to the respirator user per the Respiratory Protection Program.
- 4.15 Air compressors must be located so that the air intake component is not drawing from areas that contain:
 - 4.15.1 Combustion exhaust from vehicles or the compressor itself.
 - 4.15.2 Plant process exhaust.
 - 4.15.3 Contaminated air from hazardous work areas.
- 4.16 Abrasive Blasting on lead containing surfaces shall comply with the requirements of EHSS-Phos Lead Containing Materials Program and EHSS-Phos Industrial Hygiene Program.
- 4.17 A Safe Work Permit is required for all blasting jobs. Reference EHSS-Phos Hazardous Work-Safe Work Permit Program for more information on permit requirements.

5. ABRASIVE BLASTING ENCLOSURES

- 5.1 The use of silica sand or combustible abrasives such as walnut or pecan shells in blasting enclosures is prohibited.
- 5.2 Abrasive Blasting Enclosures shall be visually inspected prior to each use.
- 5.3 Ventilation systems shall be equipped with a conspicuously located static pressure gauge with the safe operating range marked. The system must be inspected and repairs made when a whenever the guage indicates it is no longer in the safe operating range.
- 5.4 Ventilation systems shall meet the requirements found in ANSI Z9.4-2011, Abrasive Blasting Operations.
- 5.5 Blast nozzles shall be turned off and the ventilation system shall remain on while enclosure doors are operated.
- 5.6 Blast enclosure doors shall be flanged and tight fitting. Intake air openings shall be baffled.
- 5.7 Enclosure or ventilation system dust leaks shall be repaired as soon as possible.
- 5.8 An abrasive separator equipped with a local exhaust system is required for abrasive recirculating systems.
- 5.9 Dust collectors are required and arranged so that accumulated dust can be emptied and removed without contamination of other work areas.
- 5.10 Toxic surface coatings such as lead, asbestos, etc., shall not be blasted in enclosures.
- 5.11 Flammable or Combustible contaminants must be removed from materials before they can be abrasively blasted.
- 5.12 Enclosures shall be cleaned regularly. Fine dust shall be controlled to minimize dispersion.
- 5.13 Blast-cleaning nozzles shall be designed to be held open manually and closed immediately upon release of hand pressure (pneumatic or electric i.e. dead man switch). A support shall be provided on which the nozzle may be mounted when its not in use.
- 5.14 Safety glass protected by screening shall be used in observation windows.
- 5.15 Blasting Cabinet gloves shall be inspected before each use for leaks.
- 5.16 Operations in Blasting Rooms shall meet the requirements for Abrasive Blasting Enclosures and Open Air Abrasive Blasting.
- 5.17 Abrasive blasting respirators shall not be removed until Blasting Rooms have been exited.

6. PERSONNAL PROTECTIVE EQUIPMENT

- 6.1 PPE for Abrassive Blasting shall be worn at all times while operating and are as follows:
 - 6.1.1 Respirator/Head/Face Protection
 - a. An air-supplied blasting hood shall be worn while sandblasting. The hood and breathing air shall conform to the requirements found in the Respiratory Protection Program. In addition, all breathing air lines shall be equipped with a carbon monoxide (CO) monitor.
 **Warning:** Blasting is prohibited if the monitor is not present or not in proper working condition.
 - 6.1.2 Hearing Protection
 - a. Appropriate hearing protection, based on the job and the blasting equipment.
 - 6.1.3 Gloves and Clothing
 - a. All exposed areas of skin shall be covered with protective clothing materials while conducting abrasive blasting operations.
 - b. Protective gloves and clothing material shall be appropriate to the type of blasting media and equipment being used.



6.1.4 Boots

- a. Appropriate foot protection for the job, the blasting equipment/media, and that meets the Mosaic PPE requirements shall be worn at all times.

7. PERSONAL HYGIENE

- 7.1 Good personal hygiene practices shall be observed to limit exposure to abrasive blasting contaminants which include:
 - 7.1.1 Washing hands and face prior to eating, drinking, using tobacco products, or applying cosmetics.
 - 7.1.2 Wearing disposable clothing and changing in to clean clothing before leaving the worksite when abrasive blasting involves contaminants such as Lead, Cadmium and Hexavalent Chromium.
 - 7.1.3 Parking cars where they will not be contaminated with abrasive blasting dust.

8. TRAINING

- 8.1 Training shall be provided to blasters and pot tenders.
- 8.2 The training shall cover PPE, CO monitor, respiratory protection, and hearing protection during blasting, equipment functioning, hand signals, and safe work practices.
- 8.3 The training will be conducted every three years or when an employee is assigned to blaster operations.
- 8.4 Retraining - an employee shall receive additional training (or retraining) if any of the following conditions exist:
 - 8.4.1 Program requirements change
 - 8.4.2 Changes in the workplace render previous training obsolete
 - 8.4.3 Inadequacies in the employee's knowledge is of concern

9. INSPECTIONS

- 9.1 Inspections shall be conducted as follows:
 - 9.1.1 Daily prior-to-use inspection of blasting equipment other than blasting cabinets by the blaster. (Appendix A)
 - 9.1.2 Monthly calibration of CO monitors by trained personnel.
 - 9.1.3 Quarterly inspections of blasting enclosures by the blaster. (Appendix B)
 - 9.1.4 Air compressors that supply breathing air shall be inspected annually by maintenance.
- 9.2 Appendix C- Abrasive Blasting In Process Check(IPC) shall be integrated into the site's monthly audit/IPC/Inspections process.

10. PROGRAM REVIEW

- 10.1 Program review for abrasive blasting shall be completed every seven (7) years or as required.

11. CONTRACTORS

- 11.1 All contractors and temporary employees must adhere to the same safety and health policies/programs required for Mosaic employees.

12. APPENDICES

- 12.1 Appendix A - Abrasive Blasting Equipment Daily Inspection Form
- 12.2 Appendix B - Abrasive Blasting Enclosure Quarterly Inspection Form
- 12.3 Appendix C- Abrasive In Process Check Form



13. REFERENCES

- 13.1 ANSI Z9.4 – 2011 Abrasive Blasting Operations
- 13.2 OSHA Regulations – 1910.94
- 13.3 OSHA Regulations – 1910.244(b)

14. REVISION LOG

| Revision Log | | | | |
|-----------------|---|--|-------------------|------------------|
| <u>Rev. No.</u> | <u>Requested By</u> | <u>Approved By</u> | <u>Revised By</u> | <u>Rev. Date</u> |
| 0 | Initial Issue | Safety Advisory Panel | Task Team | 7/8/99 |
| 1 | Add enclosure inspections | Safety Advisory Panel | R. Collins | 4/10/01 |
| 2 | M. Miller – modify cal. of CO monitor to E&I or trained employees; updated policy review & training frequencies | Safety Advisory Panel | D. Allen | 5/12/03 |
| 3 | Logo Change | Safety and Health | J. Marshall | 12/4/06 |
| 4 | Minor editing to standardize format | D. Allen | D. Allen | 5/14/07 |
| | Reformat to ISO | | D, Allen | 5/31/2011 |
| 5 | Review program for regulatory revisions. | K. Corley; HSS approval in LiveLink | K. Corley | 3/12/2012 |
| 6 | Program Revision | HSS approval in Livelink | A. Willard | 10/3/17 |
| 7 | Results of an RCA | H&S approval via Content Server | PMO | 8/12/2022 |

Contact the Subject Matter Expert for additional information on this program.