Safety Policy and Procedure

Policy Number: 002

Authorized By: The Cianbro Companies

Title: Abrasive Blasting Operations Program

Effective Date: 03/01/75

Page 1 of 5

1 Status

1.1 Update of existing policy, effective 03/07/11.

2 Purpose

2.1 Provide a safe working environment during abrasive blasting operations. We can accomplish this by understanding abrasive blasting hazards and the controls that can be implemented to reduce, avoid or eliminate them.

3 Applicability

3.1 This policy applies to all subsidiary companies and departments of The Cianbro Companies.

3.2 All organizations are required to comply with the provisions of this policy and procedure. Any deviation, unless spelled out specifically in the policy and requires the permission of the Corporate Safety Officer or the designee.

4 Definitions

4.1 Abrasive Blasting: Abrasive blasting is the most common surface preparation technique used to remove old paint and other surface materials such as rust, mill scale, dirt, and salts. In abrasive blasting, compressed air is used to propel abrasive material from a blast pot, through a blasting hose to a nozzle, where it is directed to the work area at high velocity by the operator.

4.2 Base Materials: The base materials used include iron and non-iron-containing metals.

4.3 Media: Common blasting abrasives used for paint removal and surface preparation in fabrication shops and bridges include coal slag, copper slag, and other metallic grit and shot.

4.4 Surface Coatings: Any paints or primers used to protect base materials from corrosion.

5 Policy

5.1 The project’s top management is responsible for the abrasive blasting operation. Management shall implement and adhere to this policy and all other Cianbro policies and procedures relating to this operation.

6 Responsibilities

6.1 The Corporate Safety Officer or designee is responsible for providing approval for the use of media blasting materials under this policy.

6.2 The top Cianbro manager on the job site is responsible for the implementation of this policy on the project.

6.3 The corporate safety department is responsible for maintaining this document.
7 Abrasive Blasting Operations Program Index

7.1 Precautions ........................................................................................................................................ 2
7.2 Procedure .......................................................................................................................................... 2
7.3 Disposal ........................................................................................................................................... 3
7.4 Records ............................................................................................................................................ 3
7.5 References ....................................................................................................................................... 3
9 Related Documents ............................................................................................................................. 4
9.1 Appendix A Potential Air Contaminants Associated with Abrasive Blasting Table ......................... 5

7.1 Precautions

Team members who are engage in abrasive blasting are at an increased risk of exposure to toxic dusts, high noise levels, and a range of other safety and health hazards. Helpers (e.g., the "pot tender" and cleanup personnel) and others may also be at risk if they work in the vicinity of areas where abrasive blasting is conducted.

7.1.1 The following requirements must be in effect prior to conducting any blasting of unknown materials, including coatings:

- Obtain positive documentation on materials/ingredients or remove sample(s) and conduct lab analysis of materials. This shall be done before materials are shipped to Pittsfield from a jobsite, or before any on-site blasting is initiated. Identification should be coordinated with the client.
- The composition and toxicity of the dust created during blasting operations shall be considered in making an evaluation of the potential health hazards.
- Where there is potential for flammable or explosive dust mixtures, the blast nozzle shall be bonded and grounded to prevent the build up of static charges. Organic abrasives shall be used only in automatic systems.
- Identify contractually, before shipment, who is responsible for waste to be generated and plan accordingly for disposal.
- Review blasting methods and materials then select the proper respiratory protection for the anticipated hazard(s). Use a NIOSH approved type C or CE supplied air respirator for abrasive blasting. Follow Cianbro’s respiratory protection Safety Policy and Procedure for other tasks and for safe respirator use.
- Grit materials to be used shall be identified and the appropriate MSDS of the grit reviewed. Elements in the MSDS shall be included in the activity plan and reviewed with all involved team members.

7.2 Procedure

7.2.1 Before any blasting activities commence and the precautions have been addressed, the following considerations shall be placed:

- Personnel must be equipped with the appropriate protective safety equipment (e.g.: respirator, clothing, foot protection, hearing protection, eye protection, etc.).
- Personnel must use proper hygiene practices while in hazardous areas, and remain fully protected at all times in the work area. Before leaving work areas, ensure protective clothing is removed, properly stored in a controlled area and wash facilities used to remove any contaminants from exposed skin. Specific procedures and facilities established for personal hygiene shall be covered in the activity plan and covered with all team members.
- Air monitoring should be planned for and accomplished for those activities which involve known/suspected hazards (e.g.: lead, silica, PCB, etc.), unless we can substantiate similar operations which we have monitoring results on file for.
- All personnel shall be current with medical and fit testing approvals.
- If segregation of waste generated by job is necessary, proper controls must be in place to collect and contain waste in approved storage/shipping containers properly marked and labeled. (Contractual agreements should dictate).
- Dust shall not be permitted to accumulate on the floor or on ledges outside the blast enclosure. Dust, shot, and other abrasives shall be cleaned up promptly to prevent slipping hazards.
• An accurate log of blasting activities should be maintained to show specific activities by job.
• Training shall be conducted for all team members prior to abrasive blasting activities following this safety policy and procedure elements and the specific written activity plan developed for work to be accomplished. Activity plans shall cover specific PPE, engineering (ventilation requirements), administrative controls and hazards/solutions to be used.
• Any other activity specific health or safety hazards identified shall be in compliance with OSHA and Cianbro standards. Cianbro Safety Policy and Procedures for issues like noise or fall protection shall be followed. Activities involving the potential for exposure to arsenic will include safety precautions following OSHA standards and covered in the activity specific safety plan.
• Abrasive blast cleaning nozzles shall be equipped with an operating valve which must be held open manually. A support shall be provided on which the nozzle may be mounted when it is not in use.
• Team members shall not use compressed air to clean up work areas or to clean debris off their clothing.

7.3 Disposal
7.3.1 Waste materials must be properly disposed of in accordance with State, Federal, Cianbro and Contractual Requirements.
• Prior to shipping materials, a sample should be analyzed for positive identification and proper manifesting.
  NOTE: Ensure client involvement in cases of contract agreements.
• When contractual agreements dictate, manifests should show the client as generator and responsible for proper manifesting, shipping and disposal. Hazards such as cleaning, cold work, and hot work shall be considered and planned for the specific confined space work and will be communicated to all involved team members.
• Whenever a manifest is generated, prior to shipment, the Safety Department shall be notified.
• Waste materials must be disposed of through one of Cianbro’s approved hazardous materials and waste disposal companies.

7.4 Records
7.4.1 All reports, records, logs and forms used and required to manage blasting and waste activities shall be completed and stored in a specified location in Pittsfield.
7.4.2 An accurate log of all activities conducted in the Pittsfield shotblast area and at each jobsite shall be maintained.

7.5 References
• 40 CFR 264, Protection of Environment, Subpart C, D.
• DEP Chapter 851.
• Hazardous Materials/Waste Procedures: (03-501, 03-502, 03-503, 03-504, 03-505).
• Cianbro Corporation Workplace Respiratory Protection Program Safety Policy and Procedure.

8 Budget / Approval Process
8.1 It is the responsibility of each jobsite to procure and provide all materials and PPE required and provide necessary training.
9 Related Documents

9.1 29 CFR-1910 (General Industry)

9.2 29 CFR-1926 (Construction)

9.3 ANSI Standards

9.4 Document available on Cianbro.net>Standard Operating Procedures - SOP.

| Pre-Blast Checklist | SD1017 |
Table 1. Potential Air Contaminants Associated with Abrasive Blasting

<table>
<thead>
<tr>
<th>Source</th>
<th>Potential Air Contaminants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base Material</strong></td>
<td><strong>Aluminum, cadmium, chromium, copper, iron, lead, manganese, nickel, and zinc</strong></td>
</tr>
<tr>
<td>(e.g., steel, aluminum, stainless steel, galvanized steel, copper-nickel and other copper alloys)</td>
<td></td>
</tr>
<tr>
<td><strong>Surface Coatings</strong></td>
<td><strong>Copper, barium, cadmium, chromium, lead, tributyl tin compounds, zinc</strong></td>
</tr>
<tr>
<td>(e.g., pre-construction primers, anticorrosive and antifouling paints)</td>
<td></td>
</tr>
<tr>
<td><strong>Abrasive Blasting Media</strong></td>
<td><strong>Arsenic, beryllium, amorphous silica, cadmium, chromium, cobalt, crystalline silica, lead, manganese, nickel, silver, titanium, and vanadium</strong></td>
</tr>
<tr>
<td>(e.g., coal slag, copper slag, nickel slag, glass, steel grit, garnet, silica sand, soda)</td>
<td></td>
</tr>
</tbody>
</table>