

ENVIRONMENTAL BEST MANAGEMENT PRACTICE

BMP NO. 114

Abrasive Blasting Activities

WHAT IS ABRASIVE BLASTING?

Abrasive blasting is used for a variety of surface cleaning and texturing operations, mostly involving metallic target materials. Abrasive blasting systems typically include three basic components: an abrasive container, a propelling device, and an abrasive blasting nozzle(s). The three propelling methods used in abrasive blasting systems are: centrifugal wheels, air pressure, or water pressure. Centrifugal wheel systems use centrifugal and inertial forces to mechanically propel the abrasive media. Air blast systems use compressed air to propel abrasive to the surface being cleaned. Finally, the water blast method uses either compressed air or high pressure water.

TYPES OF ABRASIVE BLASTING MEDIA

Abrasive materials used in blasting can generally be classified as sand, slag, metallic shot or grit, synthetic, or other.

Sand has a rather high breakdown rate, which can result in substantial dust generation.

Metallic abrasives include cast iron shot, cast iron grit, and steel shot. Cast iron shot is hard and brittle and is produced by spraying molten cast iron into a water bath. Cast iron grit is produced by crushing oversized and irregular particles formed during the manufacture of cast iron shot. Steel shot is produced by blowing molten steel. Steel shot is not as hard as cast iron shot, but is much more durable. These materials typically are reclaimed and reused.

Synthetic abrasives, such as silicon carbide and aluminum oxide, are becoming popular substitutes for sand. These abrasives are more durable and create less dust than sand. These materials typically are reclaimed and reused.

Other abrasives include mineral abrasives (such as garnet, olivine, and staurolite), cut plastic, glass beads, crushed glass, and nutshells. As with metallic and synthetic abrasives, these abrasives are generally used in operations where the material is reclaimed. Mineral abrasives are reported to create significantly less dust than sand and slag abrasives.

CONTROLS

A number of different methods have been used to control the emissions from abrasive blasting such as blast enclosures, vacuum blasters, drapes, water curtains, wet blasting, and reclaim systems. Wet blasting controls include not only traditional wet blasting processes, but also high pressure wet blasting, high pressure water and abrasive blasting, and air and water abrasive blasting.

MEDIA BLASTING GUIDELINES

All sand and abrasive blasting projects must be approved through Environmental Services prior to the start of the project.

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Environmental Services will conduct a Method 9 Visual Emission Observation (VEO) during the blasting to ensure that any emissions produced by media blasting do not exceed 20%.

Morenci operations must minimize dust emissions to the atmosphere through the use of the following good modern practices:

1. Wet blasting;
2. Effective enclosures with necessary dust collecting equipment; or
3. Any other method approved by the Arizona Department of Environmental Quality (ADEQ) Director

At least one of the control methods listed above must be utilized during any abrasive blasting activities.

BLASTING MEDIA DISPOSAL

All spent/used blast media (waste) must be managed according to **BMP 312 – Spent Blast Media**.

EMPLOYEE TRAINING

All personnel shall receive training and have access to **BMP 114** when sandblasting on Morenci property.

The Supervisor and/or Department Environmental Representative will provide training to the workforce.

QUESTIONS OR NEED HELP? CONTACT ENVIRONMENTAL SERVICES