



OFFICE OF
MANAGEMENT AND BUDGET



NOVETAS SOLUTIONS, LLC.

MANUFACTURERS OF

NEW-AGE®

BLAST MEDIA

Rationale for Reclassification of Coal Slag Abrasives as a RCRA Subtitle C Hazardous Waste

Novetas Solutions and glass supplier representatives.

Meeting:
Office of Management and Budget
Washington, D.C.
January 19, 2010

Presentation Key Points

- **Coal Slag Abrasives** do not meet the current **EPA** and **C²P²** criteria of “**beneficial use**” to warrant the exemption from being classified as a hazardous waste. They need to be removed from the program.
- Impact of EPA decision to reclassify **slag abrasives** as Hazardous would :
 - Remove a government subsidy allowing **increased competition** in the abrasive market and insure the market makes an educated choice.
 - Improve human health by **reducing toxic abrasive use** and allowing safer alternatives ,already on the market, to compete fairly.
 - Environmental benefits include **reduced hazardous material** in landfills, increased landfill capacity and less metals in the air/water.
 - Allow slag industry to **maintain beneficial use** on existing or even new products where science and economic reality align. i.e. **shingles**
- This decision would publically illustrate the **EPA/OMB/ C²P²** renewed commitment to **real beneficial** use of CCB’s and protection of human health and the environment!

Why Coal Slag fails to meet the EPA's current Beneficial use Criteria.

EPA Website * states: Coal combustion products (CCPs) are the materials produced primarily from the combustion of coal in coal-fired power plants. CCPs include the following materials:

- **Fly Ash, Bottom Ash, Boiler Slag Flue Gas Desulfurization Material (FGD)**

The beneficial use of CCPs involves the **use of or substitution of coal combustion products for another product based on performance criteria.** Beneficially using CCPs can generate significant environmental, economic, and performance benefits.

- **Coal Slag** when used as an Abrasive does not meet the above criteria for beneficial use under the current EPA rules.
- Current government studies and the coal slag industry (via their November 2009 meeting materials) confirm this statement

* <http://www.epa.gov/waste/conserve/rrr/imr/ccps/index.htm>

Technical Background on Coal Slag Abrasives and the Process of Grit Blasting on the glassy, smooth particles.

Before Blasting Coal Slag made of black, angular particles in a glassy vitrified state. Contained in this **glassy matrix** are metals that include **arsenic, lead, beryllium, chromium, etc.** The Industry acknowledged this in November by stating “ **metals may be present within boiler slag....its vitrified state renders it virtually inert and non-hazardous*” Report states slag is safe in a **glassy state 8 times.**

During/After Blasting Coal Slag propelled against a metal substrate at 120-150 psi particles are pulverized into a fine particulate dust . Dust can be breathed by un-protected workers, especially in confined spaces and can settle over large areas including water (bridges, shipyards). Spent media that can be collected is **landfilled or stays on ground.** The **glassy state no longer exists** after the abrasive is **USED AS INTENDED.**

EPA and C²P² Criteria for CCP Beneficial Use

***Environmental Benefits (per the below link to EPA/C2P2 website)**

“Greenhouse Gas and Energy Benefits. CCP’s like coal ash reduces GHG emissions ...”

Coal Slag Abrasive Reality

Sample of Government Comments on Air Quality when Coal Slag is Blasted:

- Sep 1997 EPA Study¹ states: “ Black Beauty TM ...slags..have been documented to release hazardous air pollutants (HAP), into the air”
- Dec 2006 OSHA Document² discusses high “ airborne levels ... air contaminants (arsenic, beryllium , chromium, lead, nickel, ...)
- Sep 1998 NIOSH Study³: “ Coal slag... has a greater geometric mean airborne concentration than that of silica sand for... ten hazardous health related agents”

Coal Slag, when used in grit blasting, is pulverized. Fine particulates containing toxic metals are emitted into the air becoming HAP's HAPs hurt air quality, the environment and human health.

The EPA,OSHA,NIOSH have 13 years of studies confirming this fact.

* <http://www.epa.gov/waste/partnerships/c2p2/use/benefits.htm>

EPA and C²P² Criteria for CCP Beneficial Use

Website states “**Benefits from Reducing the Landfilling of CCPs.**

Beneficially using CCPs instead of landfilling them also reduces the need for additional landfill space. The U.S. annually landfills over 73 million tons of CCPs.”

Coal Slag Abrasive Reality

- Unlike shingles, **coal slag used as an abrasive** is sent to a landfill!
- **Estimated 600 – 800 k tons of slag abrasives per year are not recycled!**
- The slag no longer is in a stable “**glassy**” or “**virtually inert**” state.
- **The used abrasive slag’s carcinogens and heavy metals** are exposed when dumped into regular non hazardous landfills across the country.

“**Benefits from Reducing the Need to Mine Virgin Materials.** CCPs can be substituted for many virgin materials that would otherwise have to be mined.”

Coal Slag Abrasive Reality

Substitute abrasives like glass and recycled garnet could replace slags. Less than 1.0 m tons of slag abrasives* are used annually in the US.

The EPA** states **12.0 m tons** of waste glass in the US and only 3.0 m is recycled! Increasing the use of recycled glass will **INCREASE landfill space!**

*ACAA 2008 CCP Production & Use Survey

**<http://www.epa.gov/osw/conservematerials/glass.htm>

EPA and C²P² Criteria for CCP Beneficial Use

Performance and Economic Benefits

Website states” Boiler slag, is sought-after as a replacement for sand in blasting grit, since it is free of silica. Its use eliminates the potential health risk of silicosis.”

Coal Slag Abrasive Reality

Coal Slag Abrasives when blasted emit **arsenic, lead, beryllium, chromium, etc . All are listed as Carcinogens by OSHA/IARC** ⁴, just like Free Silica

- Aug 2007 NIOSH report⁵ on coal slag due to numerous studies showing **excess levels of beryllium** over the OSHA PEL. Study found levels of beryllium exceeded PEL both days.
- Dec 2006 OSHA Blast Industry Guidance². Warns of elevated levels of metals in coal slag airborne dust when blasting and in the virgin product.
- 2004 Internal Northrop Grumman safety manual⁶ states coal slag **exceeded OSHA arsenic** PEL levels during blasting.

EPA and C²P² Criteria for CCP Beneficial Use

Performance and Economic Benefits

November 12 Meeting Coal Industry PowerPoint/ Price List ⁷ states:

- Coal Slag Bagged product is shown as the cheapest in Market.
- Glass “does not work... on tough coatings”
- Slags are approved by US Navy, CARB

Market Abrasive Reality

Pricing of Abrasives

- The industry price list is inaccurate and misleading. Pricing for all abrasives vary by region, orders, avail, etc. The EPA is subsidizing the true cost of using slags by allowing disposal in regular landfills.

Glass Performance in the Field: GLASS WORKS!

- 2 different brands of glass are approved by US Military⁸ and CARB!
- EPA added glass to their Comp Procurement Guidelines 2007 ⁹
- Glass is used on same structures as slags: boats, bridges, tanks, dams!
- Many private companies using glass vs. slag.
- In the 70's, the **Sand Industry** also claimed that coal slag would not work when EPA and OSHA regulated sand's use due to free silica issues.

EPA and C²P² Criteria for CCP Beneficial Use

Environmental and Health Risks

Environmental and Health Cautions Associated with Concrete and Other Encapsulated Uses

When coal ash is used in concrete for building roads and bridges, its constituents - **such as heavy metals** - are bound (**encapsulated**) in the **matrix** of the concrete and are very stable. **Leaching** of these constituents for all practical purposes **does not occur**.

Environmental and Health Cautions Associated with Unencapsulated Uses

...sound management practices should be applied when using coal ash in **unencapsulated** uses. **Water and air** are the two media most likely to be affected by coal ash or coal ash constituents.

Ingestion, inhalation, and skin contact are the ways that humans and other living things could be exposed to coal ash. Other issues ...**leaching of elements** such as mercury and metals into ground water, contamination of vegetation and the impact on other elements on the food chain, and **airborne dust**. **In most cases, however, the way that coal ash is used, the engineering requirements for that use, and the handling and management methods applied minimizes exposure to the ash.**

Reality Check: Coal Slag Abrasives when blasted are the worst case scenario for the above EPA and C²P² Caution Criteria. The fact that slag abrasives are **sold to the general public** should warrant immediate action by the EPA to prevent this misuse of the program!

Rationale for Reclassification of Coal Slag Abrasives as a RCRA Subtitle C Hazardous Waste : Reference list

1. Emission Factor Documentation for AP-42, Section 13.2.6 Abrasive Blasting. Final Report For **U. S. Environmental Protection Agency** Office of Air Quality Planning and Standards Emission Factor and Inventory Group EPA Contract 68-D2-0159 September 1997
<http://www.epa.gov/ttn/chieff/ap42/ch13/final/c13s02-6.pdf>

2. **OSHA Guidance Document** Blasting Industry December 2006
C:\Documents and Settings\Paul\My Documents_Abrasive Facts\OSHA Abrasive Blasting Hazards in Shipyard Employment.mht
http://www.osha.gov/dts/maritime/standards/guidance/shipyard_guidance.html

3. EVALUATION OF SUBSTITUTE MATERIALS FOR SILICA SAND IN ABRASIVE BLASTING CONTRACT No. 200-95-2946
Prepared For: Department of Health and Human Services Centers for Disease Control and Prevention **National Institute for Occupational Safety and Health** Prepared By: KTA-Tator, Inc. December 21, 1998
<http://www.cdc.gov/niosh/abrpt946.html>

4. (**IARC**) **International Agency for Research** on Cancer, Group 1 Carcinogens to Humans
<http://monographs.iarc.fr/ENG/Classification/crthqr01.php>

5. EXPOSURE ASSESSMENT FOR OCCUPATIONAL EXPOSURE TO BERYLLIUM: ABRASIVE BLASTING WITH COAL-SLAG
DATE: August, 2007 FILE NO.: EPHB 263-13a **National Institute for Occupational Safety and Health**
<http://www.cdc.gov/niosh/surveyreports/pdfs/ECTB-263-13a.pdf>

6. **Northrop Grumman Newport News** Contractor Environmental, Health and Safety Resource Manual: Arsenic
http://sourcing.nn.northropgrumman.com/sourcing/Contractor_Safety/05_arsenic.pdf
Copyright 2004 Northrop Grumman Corporation

7. **Boiler Slag Industry Representatives Meeting** with EPA/OMB Nov 12, 2009, PowerPoint and Addendum Document 3 (Competitor and Coal Slag average Market Pricing list for bagged abrasives)
http://www.whitehouse.gov/omb/2050_meeting_111209/

8. **NAVSEA** The Qualification Data set for the following governing specification was last updated on 06-NOV-2009
QPL-22262 MIL-A-22262 21-MAR-1996 Active Abrasive Blasting Media Ship Hull Blast Cleaning
weblink: http://qpd.daps.dla.mil/qpd/quick_search/default.aspx?qpl=QPL-22262

9. **U.S. Environmental Protection Agency**
Comprehensive Procurement Guidelines: Blasting Grit
<http://www.epa.gov/osw/conserva/tools/cpg/products/grit.htm>



Comprehensive Procurement Guidelines

[Recent Additions](#) | [Contact Us](#) | [Print Version](#) Search:

GO

[EPA Home](#) > [Wastes](#) > [Comprehensive Procurement Guidelines](#) > [Products](#) > [Blasting Grit](#)

- Home
- About
- CPG/RMAN
- Products
- Background
- Related Links
- Buy
- Recycled News
- Product Fact Sheets
- Supplier Database
- Propose a Product

miscellaneous products



Blasting Grit

Blasting grit is an industrial abrasive used to shape, cut, sharpen, or finish a variety of other surfaces and materials. Abrasives are used in many industries, including construction, automotive, and landscaping and can be fashioned for use on metals, ceramics, carbides, composites, glass, and plastics.

- [Recommended Recovered Materials Content Ranges](#)
- [Product Specifications](#)
- [Product Information](#)
- [Additional Links](#)

Recommended Recovered Materials Content Ranges:

EPA's [RMAN](#) recommends recycled-content levels for purchasing blasting grit as shown in the table below.

EPA's Recommended Recovered Materials Content Levels for Blasting Grit

Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Steel ¹	16-67	25-100
Coal Slag	--	100
Copper and Nickel Slag	--	100
Bottom Ash	--	100
Glass	100	100
Glass/Plastic	20	100
Fused Alumina Oxide	100	100
Walnut Shells	--	100

¹The recommended recovered materials content levels for steel in this table reflect the fact that the designated item may contain steel manufactured in either a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF), or a combination of both. Steel from the BOF process contains 25% - 30% total recovered steel, of which 16% is postconsumer. Steel from the EAF process contains 100% total recovered steel, of which 67% is postconsumer.

According to industry sources, blasting grit containing a combination of BOF and EAF steel would contain 25% - 85% total recovered steel, of which 16% - 67% would be postconsumer. Since there is no way of knowing which type of steel was used in the manufacture of the item, the postconsumer and total recovered material content ranges in this table encompass the whole range of possibilities, i.e., the use of EAF steel only, BOF steel only, or a combination of the two.

Product Specifications:

EPA did not find any specifications that would preclude the use of recovered materials in blasting grit. EPA recommends that procuring agencies exercise OSHA or other required standard safety practices when using blasting grit, **particularly when using blasting grit containing slag materials.**

Product Information:

[Database of Manufacturers and Suppliers](#)

This database identifies manufacturers and suppliers of blasting grit containing recovered materials.

Additional Links:

2004 Buy-Recycled Series: Miscellaneous Products

[Adobe Acrobat PDF File](#) (180 KB)

This fact sheet highlights the construction products designated in the CPG and includes recommended recovered-content levels and a list of resources.

[Technical Background Document](#)

This background document includes EPA's product research on blasting grit as well as a more detailed overview of the history and regulatory requirements of the CPG process.