FoamShield – an Improved Asbestos Fiber Abatement/Containment System

Today's Panel Topics:

- **Asbestos and Foam**
  Greg Holton, PhD
- **The Biobased FoamShield**
  Steve Rundell
- **A Contractor's Viewpoint & Case Studies**
  Lisa Rumsey, First Environmental Services

ASBESTOS AND FOAM

Gregory A. Holton, Ph.D.

What is asbestos?

- Commercial name for six forms of naturally occurring silicate minerals that are classified into two families
- Serpentine family – chrysotile
- Amphibole family – amosite, crocidolite, anthophyllite, tremolite and actinolite

Chrysotile is the most common form of asbestos.

- White asbestos accounts for 95% of historical use.
- Characterized by curly fibers
- Chrysotile asbestos-containing materials (ACM) include:
  - Adhesives
  - Brake pads
  - Cement
  - Drywall
  - Fireproofing
  - Gaskets
  - Insulation
  - Roofing
  - Vinyl tiles

Amphibole asbestos asbestos has needle-shaped fibers.

- Amosite (brown asbestos) and crocidolite (blue asbestos) are the most commercially employed amphibole forms.

- Anthophyllite, tremolite and actinolite are considered noncommercial forms, but trace levels are found in chrysotile, talc, and vermiculite.

Products that contain amosite and crocidolite:

Amosite

- Cement sheets
- Pipe insulation
- Gaskets
- Ceiling tiles
- Roofing products
- Vinyl tiles
- Thermal insulation products

Crocidolite

- Acid storage battery casings
- Ceiling tiles
- Cement sheets
- Fireproofing
- Spray-on coatings
- Pipe insulation

Mechanical disturbance of ACM generates asbestos fibers.

- Each fiber is composed of millions of fibrils that are released when the physical integrity of the fiber is compromised.
- Inhalation of asbestos fibers can cause serious and fatal illnesses including lung cancer, mesothelioma, and asbestosis.
- The minimum 20 to 1 length to width aspect ratio of asbestos fibers makes them difficult to be removed or metabolized in the lung.
- Crocidolite fibers are extremely thin and may be responsible for more deaths than any other form of asbestos.

Traditional abatement procedures use negative pressure plastic enclosures to minimize exposure outside the work zone.

Problems with the traditional procedures.

- Asbestos exposure to workers is dependent on efficacy of personal protective equipment and decontamination methods.
- Failure of containment leads to potential public exposure and additional cleanup outside the work zone.
- Projects are longer and more costly.

Given these problems, why are traditional procedures used?

- Traditional procedures achieve the abatement.
- Owners are unaware that alternative procedures exist.
- Project engineers are reluctant to try something new.
- Regulators are reluctant to approve something new.

Methods involving wetting of ACM essentially eliminate fiber emissions.

- Wet asbestos produces little if any fibers when disturbed.
- Water on fiber surfaces captures microscopic fibrils before they become airborne.
- Asbestos surfaces need to stay wet, necessitating frequent rewetting.
- Using water generates waste water that has to be properly disposed.

Applying penetrating foam solves water-only problems.

- Foam achieves better fiber wetting through use of surfactants.
- Foam does not dry out as fast as water, reducing the need to reapply.
- Foam adheres to the removed ACM, so no additional waste is generated.
- Workspace air monitoring demonstrates effectiveness of foam use.

Holton Environmental Associates, Inc.

Gregory A. Holton, Ph.D.

The Biobased FoamShield

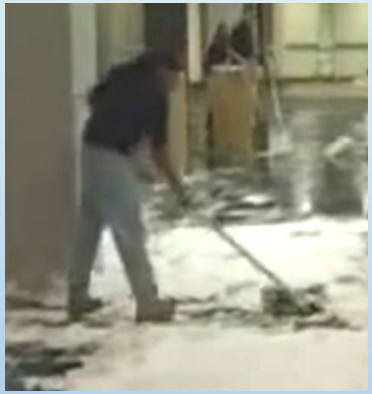
Solvent Systems International (SSI) & FoamShield

Steve Rundell, President, SSI

Biobased Foam Shield Removes Asbestos Building Materials Easy and ***Fast***

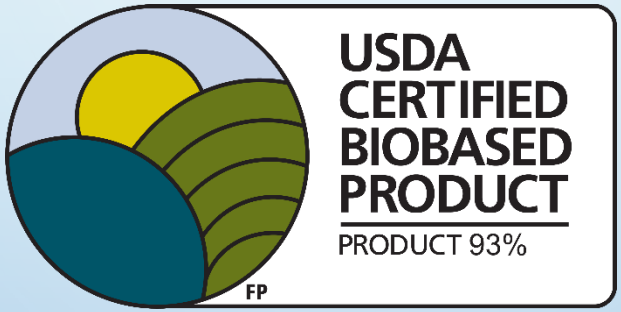
- Biobased Foam encapsulates asbestos contaminated building materials and adhesive completely.
- Total encapsulation eliminates exposure to hazardous particles.
- Guaranteed lowest fiber release.
- Made from natural, plant-based, and eco-friendly ingredients.

Spray, Scrape and Dispose



Mastic Remover Too

A Major Ingredient In FoamShield is USDA Certified Biobased!



The U.S. Government has recognized the advantages of biobased and has regulated that federal agencies purchase a certain percentage of biobased products with this certification. Other Businesses value the trusted certification of the biobased content.

Why Is Biobased Better?

- Low VOC.
- Reduces indoor air pollution and is safer for people.
- Made from plant-based vegetable oils.
- Natural ingredients are renewable, sustainable and biodegradable.
- Does not harm vegetation, even acts like a fertilizer.
- Biobased equals petrochemicals in performance.

SSI is a Leader in Biobased Chemical manufacturing

- Our oleochemical engineering innovation has optimized biobased products for industrial use.
- Our custom BioManufacturing Facility processes vegetable oils to produce high quality biobased products such as cleaners, solvents and lubricants with Zero VOCs! This is a significant indoor air quality benefit.
- Our SSI Methyl Ester and UltraSolve are USDA Biobased Certified products.

And By The Way…
Biobased Makes Many Products Better Such As:

Cleaning Graffitti

Cleaning Ink Soaked Parts

Cleaning Floors

Success Story

Soy-Based Graffiti Remover: Tough on Paint - Gentle on Environment
Biobased Product Helps Protect Virginia River

Biobased Graffitti Remover conquered this problem:

- Spray paint was layered on granite rocks near the Rappahannock River. Due to this environmentally sensitive location, city staff members worried about product runoff impacting the river ecosystem.
- Some of the graffiti dated to 1996 and vandals repeatedly painted over it, making it extremely difficult to remove.

Solvent Systems International (SSI) & FoamShield

Steve Rundell, President, SSI

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ABATEMENT SOLUTIONS

The FoamShield™ Advantage

A Contractor's Viewpoint & Case Studies

Lisa Rumsey

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The FoamShield Advantage

A Proven, Acceptable, Respected System

- The FoamShield method of asbestos abatement is a patented process which has been used extensively throughout the USA, Australia and Europe.
- The use of the process is compliant under the OSHA Construction Standard (1926.1101) and complies fully with the current rule(s).
- As an alternative control, many labor and cost intensive controls are legally removed. Containment/Negative Pressure/Respirators, etc.
- Worker safety is increased.
- Risk of building contamination is greatly reduced.
- The FoamShield Advantage reduces Owners abatement costs.

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Asbestos Regulations

National Emission Standards for Hazardous Air Pollutants (NESHAP)

Basic Controls:

- Notification
- Adequately Wet (FoamShield)
- Leak-tight Containers
- Labels
- Waste Shipment Record (WSR)
- Proper Disposal

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Asbestos Regulations

Occupational Safety and Health Act (OSHA)

Basic Controls:

- Wet Methods or Wetting Agents (FoamShield)
- HEPA Vacuums
- Prompt Clean-up and Leak-tight Containers
- Barriers (FoamShield)
- Enclosure or Isolation of the process (FoamShield)
- Alternative Controls (FoamShield)
- Negative Exposure Assessment (Currently established for multiple materials)

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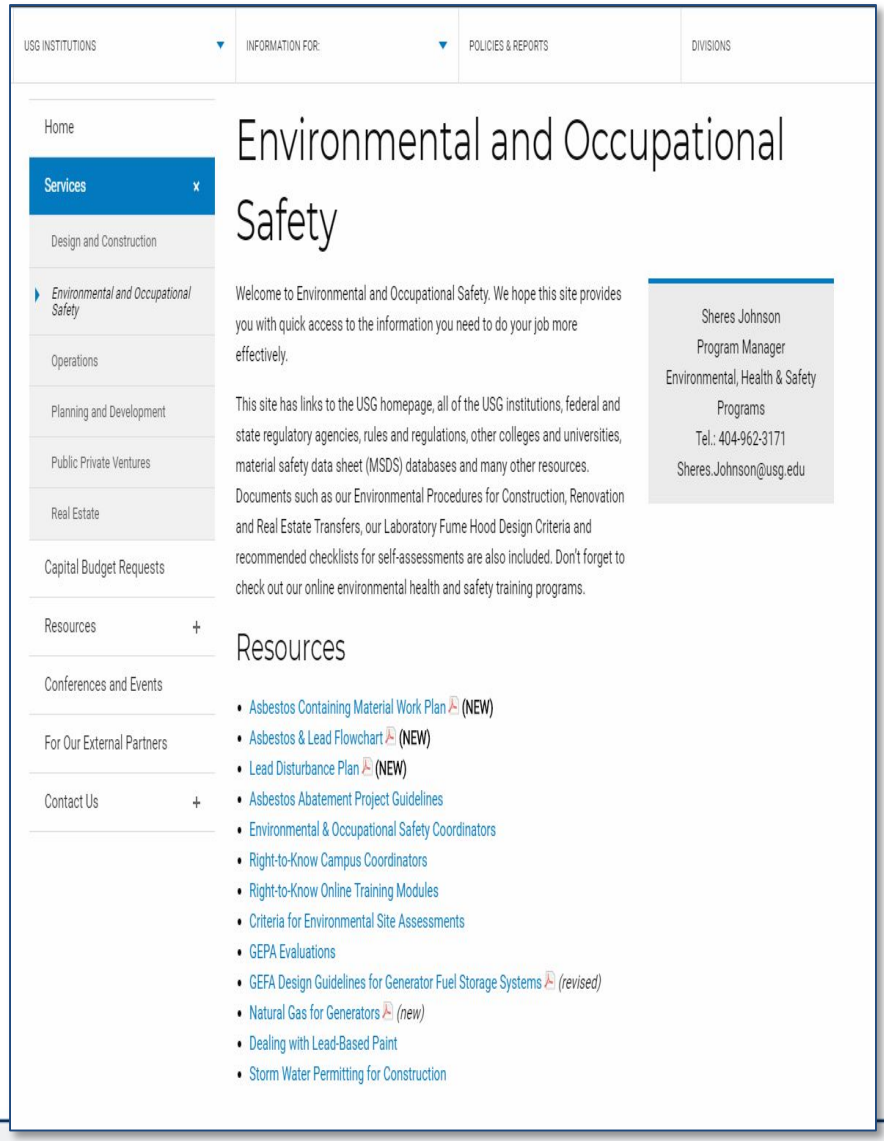
BOR Asbestos Containing Work Plan



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Environmental and Occupational Safety

Welcome to Environmental and Occupational Safety. We hope this site provides you with quick access to the information you need to do your job more effectively.

This site has links to the USG homepage, all of the USG institutions, federal and state regulatory agencies, rules and regulations, other colleges and universities, material safety data sheet (MSDS) databases and many other resources. Documents such as our Environmental Procedures for Construction, Renovation and Real Estate Transfers, our Laboratory Fume Hood Design Criteria and recommended checklists for self-assessments are also included. Don't forget to check out our online environmental health and safety training programs.

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Resources

- Asbestos Containing Material Work Plan (NEW)
- Asbestos & Lead Flowchart (NEW)
- Lead Disturbance Plan (NEW)
- Asbestos Abatement Project Guidelines
- Environmental & Occupational Safety Coordinators
- Right-to-Know Campus Coordinators
- Right-to-Know Online Training Modules
- Criteria for Environmental Site Assessments
- GEPA Evaluations
- GEFA Design Guidelines for Generator Fuel Storage Systems *(revised)*
- Natural Gas for Generators *(new)*
- Dealing with Lead-Based Paint
- Storm Water Permitting for Construction

REMOVAL OF ASBESTOS-CONTAINING MATERIAL

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Mr. Mark Demyanek, Associate Vice President, Georgia Institute of Technology

This document is prepared to compliment current guidance documents provided by USG/BOR. Further this document supersedes all other documents. If clarification is required, contact the USG/BOR Office of Real Estate and Facilities.

INTRODUCTION

A. Prior to a project (renovation or demolition), all material that is scheduled to be disturbed shall be sampled by an Accredited Asbestos Inspector and analyzed by an accredited laboratory or Presumed Asbestos Containing Material (PACM) by Responsible Unit Designated Person (this person can be a University Employee, Contractor or outside Consultant). All projects without a Designated Person must coordinate with the Designated Institution Official (DIO). The DIO could be the Facilities Director and/or Environmental and Occupational Safety Director. All projects shall have a Designated Person or DIO for all asbestos projects.

1. Guidance for this can be found in the 2014 EPA Purple Book as revised and reissued by the Environmental Information Association "Managing Asbestos in Buildings: A Guide for Owners and Managers". www.EIA-USA.com
2. If NO ACM is identified or Presumed, Responsible Unit Designated Person must document the results. All documents must be retained electronically and accessible by DIO.
3. If asbestos is detected in laboratory analysis of ≤1%, Friable or Non-Friable, Responsible Unit Designated Person and/or DIO can request the material be analyzed using the Point Count method, analyzed using the Transmission Electron Microscopy (TEM) method or declare the material to be below the regulatory amount of >1%. If any Point Count result is >1%, the material is to be considered ACM.
   a. If declared to be below the regulatory amount, OSHA compliance is still required of the contractor. Awareness training, along with personnel monitoring for Permissible Exposure Limit (PEL), Excursion Limit (EL) and Negative Exposure Assessment (NEA) shall be required and submitted to Responsible Unit Designated Person. All documents must be retained electronically and accessible by DIO.
4. If asbestos is detected in laboratory analysis of >1% or PACM, the contractor will be required to comply with these specifications or work plan.

- ***It should be noted that although this specification covers ACM, if material contains coatings, additional considerations for Lead Based Paint (RRP 40 CFR 745 Certification) and other Toxic Substances and/or Hazardous Materials to include Solid Waste should be reviewed prior to beginning work.***

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FoamShield throughout USG

Abraham Baldwin Agricultural College	Albany State University
Atlanta Metropolitan State College	Augusta University
Clayton State University	College of Coastal Georgia
Columbus State University	Dalton State College
East Georgia State College	Fort Valley State University
Georgia Archives	Georgia College & State University
Georgia Gwinnett College	Georgia Highlands College
Georgia Institute of Technology	Georgia Public Library Service
Georgia Southern University	Georgia Southwestern State University
Georgia State University	Gordon State College
Kennesaw State University	Middle Georgia State University
Savannah State University	South Georgia State College
University of Georgia	University of North Georgia
University of West Georgia	Valdosta State University

** NO violations, NO citations **

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The FoamShield Advantage

Acoustical Ceiling Texture Abatement

Tile Floors, Exterior & more!

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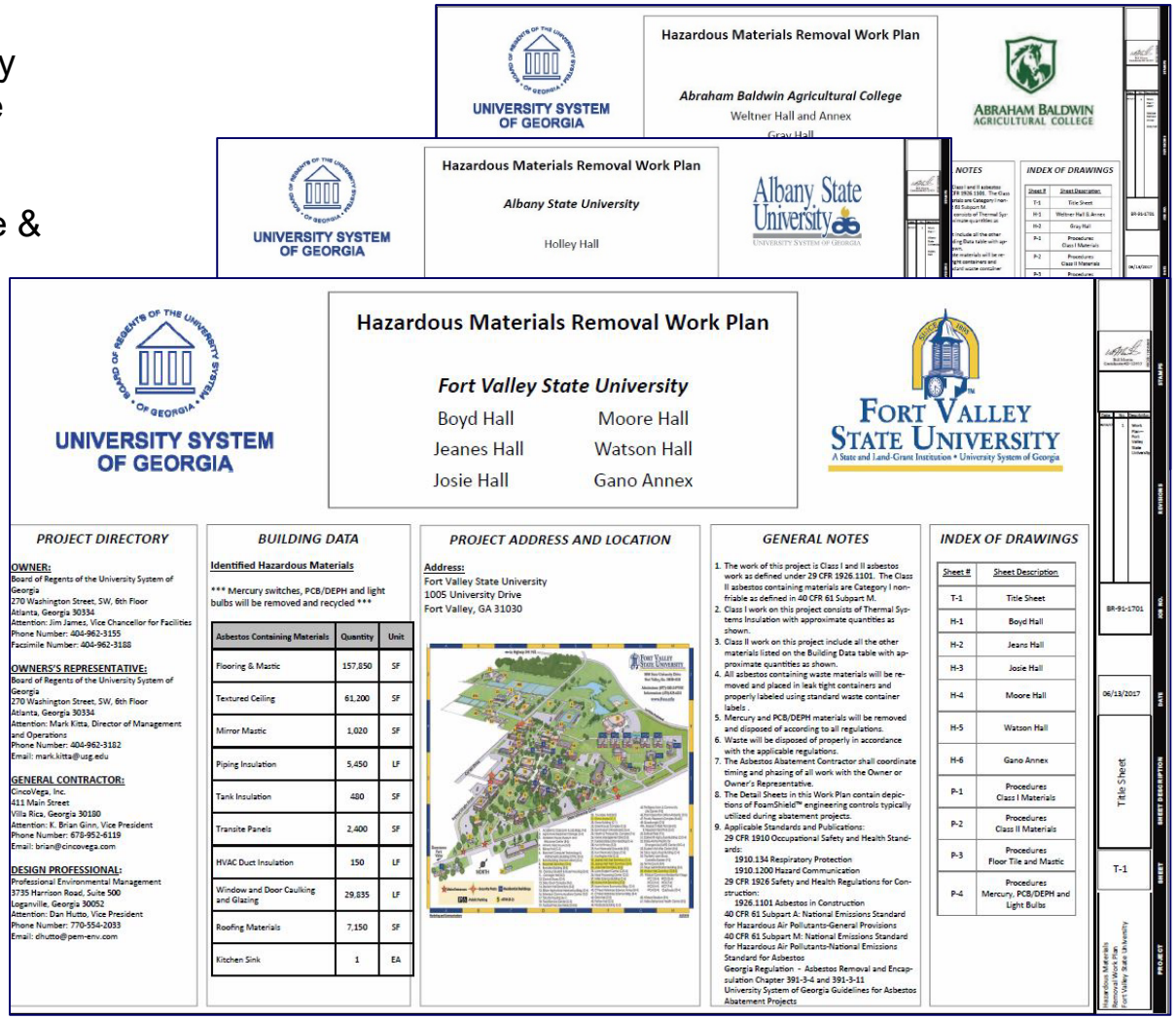
Board of Regents Case Study
Multi Campus Abatement – Summer 2017

- FoamShield was used as the primary control method to contain particulate matter
- Multiple ACMs were abated: floor tile & mastic, textured ceiling material, caulking & glazing, transite panels, etc. Even a kitchen sink!
- Collaborated with BOR staff, campus staff, project management teams, consultants, air monitors, etc.
- Extensive asbestos air data b v b sampling was performed. Air sampling results showed no exposure above the PEL



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Board of Regents Case Study
Multi Campus Abatement – Summer 2017

Bid Tabulation:	
Contractor 1	$2,795,000
Contractor 2	$2,249,600
Contractor 3	$1,398,000
Contractor 4	$ 917,790

Savings to OWNER!!

- ✓ Time
- ✓ Money
- ✓ Material
- ✓ Worker safety
- ✓ Less waste
- ✓ Better work conditions
- ✓ Biodegradable green technology
- ✓ Meets and exceeds Federal and State regulation

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Case Studies

Floor Tile & Mastic

- One of the first demonstrations of FoamShield before the Georgia EPD as well as members of the US EPA
- Floor tile and mastic were removed in an occupied University library
- FoamShield was used as the control method to contain particulate matter
- Extensive asbestos air data sampling was performed
- **ALL** air sampling results showed no exposure above the PEL

Concrete Panels

- Precast concrete panels were covered in an asbestos containing stucco
- FoamShield was used to contain particulate matter
- Extensive air data sampling was performed including:
  - Asbestos
  - Silica and respiratory dust
  - RCRA 8 metals
- **ALL** air sampling results showed no exposure above the PEL

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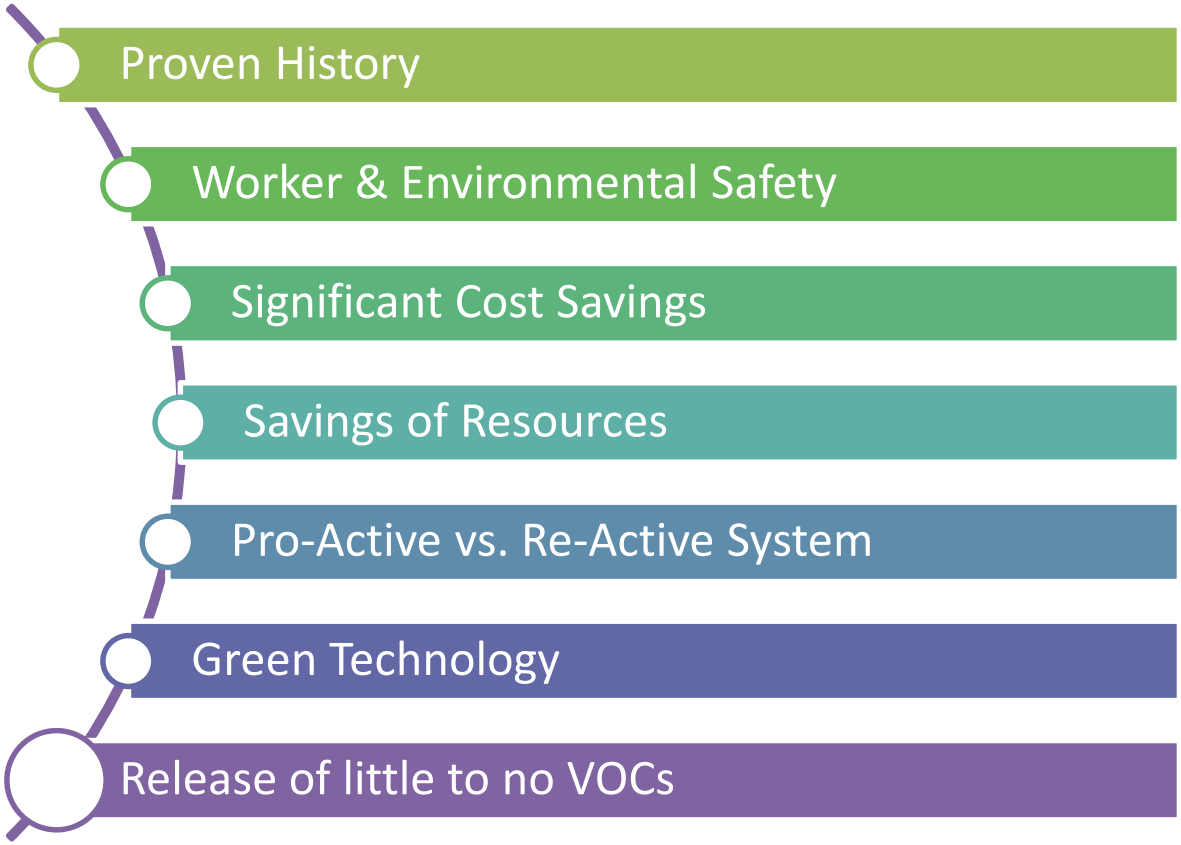
Benefits of FoamShield



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A Certified FoamShield Contractor

Certificate #GA793801