



Improving the Efficiency of the Air Scrubbing Process during Remediation Projects

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*Recently, an addendum to the 2017 white paper entitled *The Importance of Dust Control during Construction and Remediation Projects* was produced. This addendum addressed *The Challenge of Capturing Small Particles during Remediation Projects*. The main point of the addendum is that while negative pressure enclosures have a long history of protecting adjacent areas from the migration of airborne contaminants, such a setup does not necessarily ensure the removal of small particles from the air in such an isolated work space.*

Why Small Particles Are a Problem for Remediation Projects

There is no denying that technology has advanced rapidly over last 20 years, especially in the construction and restoration industries. New tools and techniques are entering the industry every day which claim to offer greater efficiency, but also tend to have their own drawbacks.

A very visual example of this change can easily be seen by looking at the evolution in the approach to removing gypsum board from a structure. Whether it is a section of the ceiling that has to be cut out because of water pooling on top from a pipe leak, a wall section that needs to come out because of mold contamination, or a hole that has to be cut to provide access to a mechanical component, the process requires that a number of cuts be made in the existing finish material. Just a few years ago the choice of tool and work procedure was pretty simple for such a project. The worker would either grab a razor knife or a drywall saw from the toolbox and start hacking away. In an effort to improve the efficiency of such work, contractors started using reciprocating saws to do the job -- the ever handy "sawz-all." But the danger of a mistake with a reciprocating saw, cut water or electrical lines from blades

angled in too deep, prompted the development of heavy-duty roto-zip tools for such tasks. Even this advancement was soon eclipsed by the introduction of oscillating cutting tools.

Each step of the way, the tool made it easier to complete the task. However, an unintended side effect was that the nature of dust created during the process changed dramatically. The razor knife or drywall saw produces a lot of chips and coarse dust during the cutting process. Progressively finer dust particles are created as you move from the reciprocating saw, to the roto-zip, to the oscillating cutting tool. Interestingly, the oscillating cutting tool operates at such high speed and produces such small particles that a significant percentage of the dust being created may not be visible.

Whether initially visible or not, dust in the air will be noticed in terms of fall-out on surfaces and its impact on health. The changes in cutting technology have spurred other changes as well. Dust barriers have migrated to isolation barriers. Negative pressure has been added to the mix to keep particles from migrating to work area. HEPA-filtered vacuums and air scrubbing equipment have been added to eliminate the recirculation of dust once it has been directed to the capture device (negative air machine). Still, these efforts have not been completely successful. The recent white paper addendum pointed out that the difficulty in removing small particles from the air is a result of a combination of three main factors, including:

1. poor capture efficiency of negative air machines at even a few feet away from the intake
2. a lack of air movement inside the work area leading to the creation of "dead spots"
3. vertical stratification

A Practical Approach to Dealing with the Control of Airborne Particles

One industry that has a long history of dealing with the problem of small airborne particles as a result of their work is the asbestos abatement profession. For over 30 years, a majority of all abatement projects have included a step between the visual inspection and the collection of clearance air samples that involves the application of a sticky substance to the entire work area. This "lockdown" step involves the application of chemicals designed to adhere microscopic airborne fibers to one another and surfaces. The lockdown materials are sprayed or fogged throughout the entire isolated work area. The success of this added step in the remediation process is undeniable with industry experts estimating that half million gallons of lockdown products are sold annually in North America.

The primary reason that asbestos abatement contractors employ the lockdown step is that it helps them reach their clearance criteria by capturing airborne fibers which prevents the asbestos residue from recirculating in the air. The big drawback to this entire approach is

that a lockdown residue is present on all surfaces that remain in the work area after the isolation barriers have been removed. Clearly, such a process would not be acceptable for projects like mold remediation where many of the surfaces inside the work area are not covered or removed during the work.

Fortunately, the drawbacks of using a lockdown formula can be eliminated while maintaining the benefits of such a process for remediation other than asbestos. The key point is to add a fogging step in the restoration process with the challenge of finding a fogging agent that traps the airborne particles without leaving a sticky residue.

Particulate Conqueror was specifically formulated by Bad Axe Restoration Products to address this issue, along with many others. It is a safe fogging agent that captures all sizes of particulates, whether in the air or on surfaces. This ability to surround various sizes and types of particles is matched with a chemistry that is water soluble which makes cleanup of the captured materials quick and easy.

The Advantages of Particulate Conqueror

Not only does fogging with *Particulate Conqueror* increase the effectiveness of the negative air machine by adding mass to the small particles to improve the collection efficiency, the product addresses all three of the primary difficulties in capturing small particles identified in the white paper addendum.

When completed as recommended, fogging with *Particulate Conqueror* addresses the problem of negative air machines only pulling in particles from a few feet away. A fogging process that starts at a point where the makeup air enters the work area and progresses logically around the room with the fogging is always directed at the negative air machine. This drives the particles to the intake rather than relying on them to get close enough in a random way to be captured by the airflow moving into the NAM.

That same fogging process overcomes the problems of dead spots and vertical stratification. As discussed in the addendum, the fogging should be done in an intentional pattern that consistently moves the air toward the collection point of the negative air machine. Remembering that the work area is three-dimensional is incentive for the worker to move the nozzle of the fogger up-and-down during the process so that the *Particulate Conqueror* fog reaches from floor to ceiling.

Although fogging is a relatively quick process, to be done correctly all areas of the work area must be impacted by the fogging process. However, the time that it takes to complete the fogging in a controlled manner is miniscule compared to the amount of time that fogging can save for a standard restoration project. Many contractors and consultants report that

utilizing *Particulate Conqueror* allows them to reduce their time for air scrubbing by up to two thirds. Many practical examples reported for actual jobs have post remediation air scrubbing time being reduced from 24 to 8 hours; with better results.

A Cost-Effective Solution

A process that reduces both the time necessary for air scrubbing and the number of callbacks for re-cleaning because of the way that improves the removal of small particles from the air is clearly a benefit. Nevertheless, those benefits have to be weighed against the cost of the change in mold remediation procedures to include the fogging. This is another area where *Particulate Conqueror* excels.

Most restoration contractors already have an ultralow volume fogger they use for the application of deodorizers, disinfectants, and other products necessary for remediation. Even if one needs to be purchased, such a fogger can easily be found in the \$250-\$300 price range. Beyond the fogger, only *Particulate Conqueror* and water are necessary. At \$64.99 a gallon, the *Particulate Conqueror* concentrate that mixes to 8 gallons of solution means that a gallon of the product to be fogged is just a little more than eight dollars. Since a gallon of the diluted *Particulate Conqueror* covers up to 7000 ft.³, most average sized projects only take one to 2 gallons of mixed solution. As such, the direct cost of supplies is less than \$20 on average and significantly reduces the time necessary for air scrubbing and addresses the aggravation of the seemingly random projects that fail post-remediation clearance. That is the very small price to pay to save the cost of re-mobilizing, re-cleaning, and re-sampling because your other work efforts on the project failed to properly control small airborne particulates.

A Low-Cost Experiment

Learning about new technologies and work processes is always beneficial. The real question is whether the benefit will flow to your organization on actual projects. While many restoration contractors have answered that question with a resounding "yes" after considering *Particulate Conqueror*, there is one sure way to find out. With the low "cost of entry" to incorporate fogging into standard work procedures, it is worth an experiment. Purchase a gallon and try fogging with *Particulate Conqueror* on the next few projects just before your final wipe down. Such an experiment will demonstrate how the power of new technology can easily be harnessed to your benefit.

More information on Bad Axe Particulate Conqueror can be obtained by calling 708-441-7982, emailing cheller@badaxeproducts.com, or by visiting www.BadAxeProducts.com.