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TOOLS AND TECHNIQUES FOR ENVIRONMENTAL INVESTIGATION AND REMEDIATION

I know that there is a continuing debate in the cleaning and restoration industry regarding the proper role of consultants versus contractors. Particularly in the mold remediation field there is much talk about conflict of interest and the legitimacy of remediation professionals collecting their own samples. Even if we set aside the issue of who should perform post-remediation verification, contractors are still left with many situations in which they need specific information, such as developing a scope of work or gauging the progress of a project.

Fortunately, there are many tools—in addition to moisture meters and infrared cameras (two important pieces of equipment that should be in the toolbox of most restoration and cleaning contractors)—that are available, affordable, and valuable for working on gray or black water losses, mold remediation, meth lab clean-ups, cleaning to arrest an outbreak of infectious contamination, or disturbing painted surfaces in older structures.

Detection is Key to Removal

In most situations involving environmental contaminants the cleaning process can be broken into two main phases. The work crew must first remove visibly contaminated items such as saturated carpet, moldy drywall, litter, and even such disgusting items as birds' nests, feces, dead animals, or guano. Once this has been accomplished the second phase commences, in which workers are tasked with removing contamination that cannot be seen.

Because of its adaptability to a wide range of environmental projects and ease of use, one of the most important tools that cleaning and restoration contractors should consider adding to their arsenal is an ATP tester, a device that measures the amount of biological residue on surfaces or in liquids. They can be used for determining the category of water in a structure after an intrusion, verifying that a surface is clean following mold or water work, and gauging the effectiveness of cleaning procedures when dealing with infectious agents such as flu viruses, noroviruses, or antibiotic resistant bacteria (MRSA).

ATP testers are based on a relatively simple chemical reaction principle. Adenosine triphosphate (ATP) is a chemical that is a component of living cells. When this material comes in contact with a particular enzyme the resulting chemical reaction produces light. This form of bioluminescence is what causes fireflies to light up at night and certain jellyfish to be visible in the dark depths of the ocean. Manufacturers of ATP testers have harnessed this natural process and converted it into a nifty swab system that allows you to wipe a measured area and then receive a direct read out of the level of biological material found on the swabbed surface.

Although there are a number of manufacturers of ATP testers, my favorite is Bio-Reveal.¹ One of the reasons this particular unit is so useful to restoration professionals is that the manufacturer has done extensive research to correlate the results available from the Bio-Reveal to industry situations and standards. This is critical in preventing users from having to “make it up as they go” when interpreting results.



Of course, another critical reason for using a Bio-Reveal or other ATP tester is the immediacy of the results. The effectiveness of cleaning and restoration work can be checked at a number of critical junctures so that mistakes can be corrected or re-cleaning conducted immediately rather than having to return to a project site days after a job was thought to be complete.

A Renewed Emphasis on Lead

Hopefully by now most cleaning and restoration contractors have heard about the new EPA regulations regarding the disturbance of lead paint that will be enforced in April 2010. The Renovation, Repair, and Painting (RRP) Final Rule mandates inspection or assessment of every painted surface that will be disturbed in child-occupied or target residences that were constructed in 1978 or earlier. Since target housing includes homes that are supported with HUD grants or loans, and that paperwork is often unavailable, it may be difficult for contractors to determine which residences are covered by the regulations. Therefore, it is best to treat all older residences as if they are covered by the rule.

Under these new regulations any activity that disturbs a painted surface, whether it be during a water loss, mold remediation, remodeling, or repair, would require the use of appropriate engineering controls, personal protective equipment, and work practices.

To avoid unnecessary effort and cost contractors can determine if painted surfaces contain lead. Fortunately, this determination can be made quickly, accurately, and inexpensively by utilizing EPA-approved chemical spot tests. My recommendation is one that I have successfully used for over 15 years, LeadCheck swabs by Hybrivet Systems.² Using this product is as simple as 1-2-3. You crush the ampoules inside the cardboard tube, shake the internal mixture and squeeze onto the cotton swab tip, and then rub on the surface to be tested. If the golden color changes to pink or red it is an indication that lead is present. (If it's red it's lead.) LeadCheck swabs are a great value at about \$2 each.



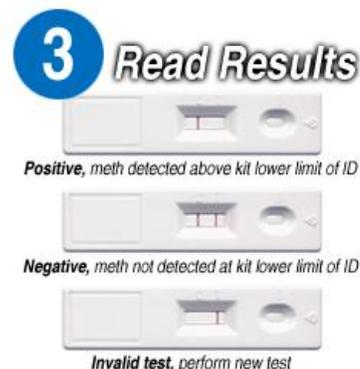
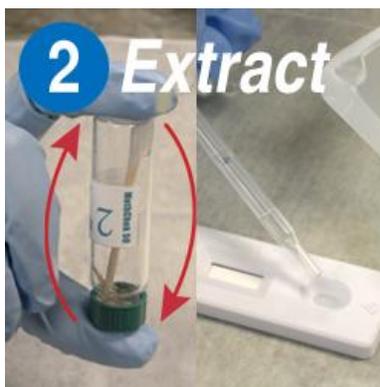
The guts of a LeadCheck swab



The tip of an activated LeadCheck swab before and after contact with a surface coated with lead paint

Detecting the Hidden Dangers of Illicit Drug Labs

Although cleaning and restoration contractors do not face hazards from methamphetamine residue as often as they do black water, mold, or lead, the growing use of a shake-and-bake or one-pot method for manufacturing meth from cold tablets and common household chemicals means that any structure has the potential to be contaminated with this dangerous substance. Fortunately there is a technology similar to the LeadCheck swab that can be used to help determine if surfaces are contaminated with meth residue. The various brands of testing products available come in slightly different forms. My favorite is ChemTest for methamphetamine from Nextteq. These wipes are the simplest to use of the meth testing products that I have encountered. You simply take the pre-wetted filter paper out of the package and rub it across a measured surface area using the handy plastic tab, and then watch for a color change. Other field portable meth testing systems use Q-tip-style swabs to wipe a known area, (MethChek from SKC) or samplers that are shaped like a pen (Ampoule Drug Residue Test MET-X from XLAR). These involve multiple steps including saturating the swab and putting the reacted solution on a test strip. The SKC process looks startlingly similar to a home pregnancy test where a single bar on the left side of the test strip indicates a clean surface while a colored stripe on the right lets you know that dangerous chemicals are present. The technology on the chemical meth detectors is now so good that some of them offer test kits at different sensitivities which correspond with the various standards for a clean surface.



The SKC MethChek is a multi-step sampling process that provides real time results for illicit drug residue.

Knowledge is Power

It is an old adage but one that fits very well in the modern world where cleaning and restoration contractors operate: Knowledge is power! Knowing what problems you are facing allows you to choose the most effective cleaning or remediation process, conduct quality control efforts during the work—even for microscopic contaminants, and evaluate the condition of the project after work is completed. These benefits make it imperative for professional contractors to join with consultants in understanding and utilizing the technology that can take our efforts to the next level.

¹ It is important for readers to note that the author does not receive any commission or compensation for discussing or recommending products in this column. My suggestions are based strictly on research, discussions with contractors and consultants, and personal experience. Readers who have suggestions for products or processes that have been helpful and could be beneficial to fellow restoration professionals should contact me so that I can start the evaluation process and share these with our colleagues.

² In the interest of full disclosure I need to mention that I completed my dissertation on the *Chemical Reagents for the Identification of Lead in Paint*. This research in 1994-1996 convinced me that LeadCheck swabs were one of the most accurate products on the market. Their early acceptance by the EPA for the RRP program continues to validate my research.

About the Author

*Michael A. Pinto currently serves as Chief Executive Officer of Wonder Makers Environmental, Inc. He is a nationally recognized expert in the areas of indoor air quality and biological contamination. His educational background includes a Bachelor of Science degree in philosophy and a Masters Degree in public administration. Michael holds numerous other certifications including Certified Safety Professional (CSP) and Certified Mold Professional (CMP). His expertise in the IAQ area has been recognized by the legal system through his appearance in a variety of cases as an expert witness. He has made presentations regarding the intricacies of indoor investigations at numerous seminars and conferences around the country, and he is an instructor of three levels of RIA-certified mold remediation training that is conducted around the country and in Canada. Michael is the author of three books, including *Fungal Contamination: A Comprehensive Guide for Remediation*, over 120 technical articles, and 18 commercial training programs. He can be reached at 269-382-4154 or map@wondermakers.com.*