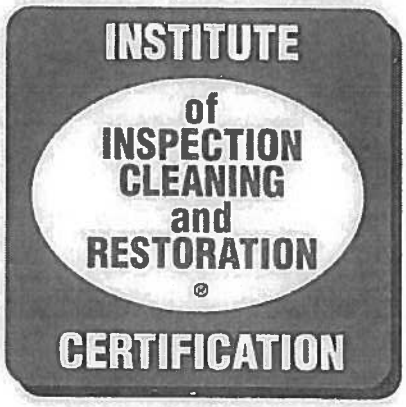
IICRC S520

Standard and Reference Guide for Professional Mold Remediation



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Second Edition

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Institute of Inspection, Cleaning and Restoration Certification (IICRC)
2715 East Mill Plain Boulevard
Vancouver, Washington 98661 USA
Phone (360) 693-5675 • www.iicrc.org

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POST-REMEDIATION MATERIALS CONSIDERATIONS AND ALTERNATIVE METHODOLOGIES

Introduction

Physically removing mold contamination is the primary means of remediation. Mold contamination should be physically removed from the structure, systems and contents to return them to Condition 1. See Chapter 1, *Principles of Mold Remediation*.

Mold remediation is a relatively young industry. New and innovative products and alternative techniques are likely to be proposed, developed and introduced subsequent to the issuance of this document. Before implementing or adopting new, innovative or alternative mold-remediation methodologies, whether specified or requested, remediators should evaluate whether or not such methodologies are consistent with the *Principles of Mold Remediation* and the goals of a specific remediation project, and carefully consider the potential benefits and consequences from use. In addition, using a particular product or technique in the industry does not necessarily equate to remediation efficacy.

Chemicals (Biocides and Antimicrobials)

There are a variety of chemical products available for professional mold remediation. Remediators should be familiar with the advantages and disadvantages of using these products, along with customer concerns and preferences. There are several different types of chemical products, each with different suggested uses, cautions, PPE requirements, and advantages and disadvantages.

Removing the source of mold contamination should always be the primary means of remediation. Indiscriminate use of antimicrobials, coatings, sealants, and cleaning chemicals is not recommended. However, chemical products can be useful, and complementary tools.

Definition and Regulation

Antimicrobial pesticides are defined by the United States Environmental Protection Agency (USEPA) as substances or mixtures of substances used to destroy or suppress the growth of microorganisms, whether bacteria, viruses, or fungi. The USEPA's Antimicrobials Division registers and regulates antimicrobial pesticides under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Some states require users of antimicrobial products to be licensed pesticide applicators.

The European Union (EU) Biocidal Products Directive establishes regulation of both antimicrobial products and other non-agricultural pesticides in member states. Also, while not a regulatory body, the international Organization for Economic Co-operation and Development (OECD), through the OECD Biocides Program, strives to promote harmonization of non-agricultural pesticides in the EU and in 15 other member countries, including the United States. In both the EU and the OECD, the term "biocides" includes both antimicrobial products and other non-agricultural pesticides, such as insecticides and rodenticides.

Product Efficacy

There are several general classes of compounds commercially available for use as antimicrobial pesticides. These products encompass a wide range of physical and performance characteristics. Antimicrobial pesticide activity varies widely, and effectiveness against specific microbial groups is designated by label claims, which can include the product classes described below. Some products can have special-use claims against specific microbes, such as *Legionella pneumophila, Mycobacterium tuberculosis, Aspergillus fumigatus*, or the hepatitis or human immunodeficiency viruses. Whether or not a chemical product is appropriate for a specific situation depends on the objectives of the application and project circumstances. Adherence to label instructions is extremely important, since effective use of antimicrobial products depends upon proper handling and application.

Terminology

Classes of antimicrobial pesticides include sanitizers, disinfectants, sterilizers (sporicides), and growth inhibitors:

- **sanitizers** - Used to reduce, but not necessarily eliminate, microorganisms from the inanimate environment to levels considered safe as determined by public health codes or regulations. Sanitizers may be used to treat semi-porous and porous materials, provided the product is specifically registered by the EPA for such materials.
- **disinfectants** - Used on hard, non-porous, inanimate surfaces and objects to destroy or irreversibly inactivate infectious fungi and bacteria, but not necessarily their spores.
- **sterilizers (sporicides)** - Used to destroy or eliminate all forms of microbial life, including fungi, viruses, and all forms of bacteria, and their spores.
- **growth inhibitors (bacteriostats, fungistats)** - Used to treat surfaces or incorporated into materials to suppress or retard future vegetative bacterial and fungal growth under potential moisture conditions.

Limitations of Use

Antimicrobials are not to be used as an alternative to proper cleaning procedures and physically removing mold contamination. Antimicrobials should be used only in conjunction with proper cleaning, and should not be used indiscriminately. For thoroughly cleaned non-porous building materials, antimicrobials generally are not needed. It is important to note that killing mold and fungal spores does not eliminate the contaminants or contaminated material's allergenic or toxigenic properties.

Gas- or vapor-phase antimicrobials have not been shown to effectively and safely remediate a microbially contaminated building because of problems with delivery, efficacy and toxicity, and the lack of physical removal of contaminants. Fungal growth is likely to remain viable unless the antimicrobial reaches every space and surface, and contacts microorganisms in sufficient concentration for the necessary period of time (as noted on the EPA-registered label for the antimicrobial product used). In summary, the efficacy of any aqueous fog, gas, or vapor-phase antimicrobial application is compromised when sufficient concentration cannot be maintained in a space for the necessary time. Moreover, as noted above, even when mold and fungal spores are killed, without physical removal, these application methods do not eliminate the allergenic or toxigenic properties of contaminants or contaminated materials. (Cole, Foarde, ACGIH Bioaerosols 16.2.5)

Antimicrobials should only be used in gas-vapor phase applications when such products are registered by the EPA specifically for this method of application. Remediators choosing to use antimicrobials in this manner should employ all reasonable engineering controls and necessary precautions to protect the safety and health of workers and occupants.

Antimicrobials should have clear, detailed label application directions, and adequate information on hazards and risks. If used, such products shall be used with full knowledge of their limitations and capabilities, and in strict accordance with manufacturer's directions and all regulatory requirements, and only with a client's informed consent obtained in advance.

Biocide and Antimicrobial Application Considerations

Biocides and antimicrobials can harm humans, pets and wildlife if used improperly. When using biocides or antimicrobials as a post-remediation application, for efficacy, safety and legal liability reasons, remediators shall follow label directions carefully and explicitly. In some countries, such as the United States, it is a violation of law to use these products in a manner inconsistent with the label. In order to minimize potential liability, remediators shall:

- Only apply chemicals to treat microorganisms for which the product has been registered by appropriate governmental agencies;
- Only apply chemicals on those types of surfaces for which the product has been registered by appropriate governmental agencies (i.e., porous, semi-porous, non-porous);
- Only apply chemicals in those types of structures for which the product has been registered by appropriate governmental agencies (i.e., schools, hospitals, residential);
- Only apply chemicals for the purpose for which the product has been registered by appropriate governmental agencies;
- Comply with applicable training, safety, use and licensing requirements in the respective jurisdictions;
- Ensure that proper personal protective equipment (PPE) is available and worn by remediators who are engaged in antimicrobial (biocide) use and application;
- Not use such products in heating, ventilating, air-conditioning, or refrigerating systems unless the product is specifically approved for that application by appropriate governmental agencies;
- Apply products strictly in accordance with label directions, and
- Dispose remaining antimicrobials (biocides) according to label directions.

In addition, remediators should:

- Discuss potential risks and benefits with customers, make available product information including the MSDS, and obtain a written informed consent with the customer's signature before applying antimicrobials (biocides).
- Inquire about pre-existing health conditions that might require special precautions.

- Advise customers to remove occupants and animals from the product application site, particularly, children and those with compromised health.
- Document relevant biocide application details.
- Refrain from making statements or representations to customers beyond those stated on the product label or in the efficacy claims made by the product manufacturer and approved by the applicable government agency.
- Clean treated surfaces of antimicrobial (biocide) residues, if required by the product label.

In addition to information concerning the use of chemical products in mold remediation in this document, the IICRC recognizes the practices for management of microbial growth and of antimicrobial product use outlined by the American Conference of Governmental Industrial Hygienists (ACGIH) in its publication *Bioaerosols: Assessment and Control*, 1999, as a valuable resource for understanding biocide use. Summarized below are several principles of microbial use contained within this publication in chapters 15 and 16: mold growth in a surface of condensation on painted walls or non-porous surfaces can usually be removed by vacuuming, washing with dilute biocide and detergent, cleaning, thorough drying, and repainting (Section 15.2); mold remediation can generally be accomplished by physical removal and thorough cleaning of non-porous materials. The application of a biocide would serve no purpose that could not be accomplished with a detergent or cleaning agent (Section 15.4); biocides should not be considered if careful and controlled removal . . . is sufficient to address a problem (Section 16.2); effective remediation involves the use of appropriate techniques to promote rapid drying and complete removal of contaminated materials rather than the application of biocides (Section 16.2.3).

Antimicrobial Coatings and Sealants

Definition and Regulation

Antimicrobial coatings and sealants are liquid-applied, film-forming products, which contain a "bound" antimicrobial agent. They are designed to help prevent future growth of mold on previously contaminated surfaces that have been properly cleaned, particularly in environments where moisture control is difficult. Antimicrobial coatings and sealants should not be used in place of: proper source removal of mold contamination, moisture control, or regular cleaning and maintenance. They can protect some materials from microbial growth. (Cole, Foarde, ACGIH Bioaerosols, 16.3.3).

Product Efficacy

Currently, there are no regulations regarding the nature, substance or minimum performance requirements of coatings and sealants formulated for mold. Antimicrobial coatings used in post-remediation applications demonstrate optimal performance results when tested in accordance with industry standards ASTM G-21 ('0' rating) and ASTM D-3273 ('10' rating).

Antimicrobial coatings and sealants should not create a vapor barrier that could lead to a buildup of moisture, and possibly contribute to a future microbial or structural problem. Products should demonstrate reasonable permeability as tested under ASTM D-1653. Antimicrobial coatings and sealants products should be water-based, low-odor, and contain low volatile organic compounds (VOCs).

Product Classes

- Mold-Resistant Coatings - Coatings and sealants that contain EPA-registered antimicrobials and are intended to inhibit mold growth on or in the coating film.
- Fungicidal Coatings - EPA-registered antimicrobial sealants are designed to deliver antimicrobial activity on pre-cleaned surfaces, while also providing long-term inhibition of fungal growth on treated surfaces.

Use Limitations

Antimicrobial coatings and sealants are effective only when applied to surfaces that have been properly cleaned, and disinfected or sanitized when appropriate. A layer of dirt and debris accumulated on treated materials or surfaces can act as a physical barrier between the coating or sealant film and microorganisms, and eliminate product effectiveness. (Cole, Foarde, ACGIH Bioaerosols 16.3.3).

Mold-resistant coatings should not be used as sealants or encapsulants to contain or cover active, viable mold growth. Failure to properly clean and remove mold can permit continued growth beneath the coating, as the active ingredients in these products inhibit growth only on or in the coating film.

Fungicidal coatings should not be used as sealants or encapsulants to contain or cover active, viable mold growth. Fungicidal coatings are only effective as an antimicrobial after visible growth has been removed and the surface has been cleaned. Some jurisdictions might require users of fungicidal coatings to be licensed pesticide applicators.

Where concern exists that an opaque coating or sealant may be used to cover up mold contamination without proper cleaning, a clear or translucent product may be used to allow visual post-inspection of the treated surfaces.

Coatings and sealants should be applied only after post-remediation evaluation and verification has verified the return to Condition 1. If antimicrobials, fungicidal coatings, mold-resistant coatings or sealants are used, and concerns exist that there could be future reoccurrence, the use of non-pigmented (clear) coatings could permit future visual inspection of treated surfaces.

Heat

Methods involving the controlled application of heat to a structure have been reported to be an effective form of biological control, which might or might not kill some fungal spores and vegetative structures. This process is a developing technology and should be evaluated and understood before use. It is important to note that killing mold and fungal spores has not been shown to eliminate the contaminants or their allergenic or toxigenic properties.

Gas-phase Ozone and Vapor-Phase Biocides

According to the American Conference of Governmental Industrial Hygienists (ACGIH), "No gas- or vapor- phase biocides can effectively and safely remediate a microbially contaminated building because of problems with biocide delivery, efficacy and toxicity." (ACGIH Bioaerosols 16.2.5) Studies have shown that ozone cannot be generated in sufficient concentration to kill or even suppress

microbials on most structural materials, including wood and drywall. (Foarde, K.K., Van Osdell, D.W., Steiber, R.W., Investigation of Gas-Phase Ozone as a Potential Biocide, US EPA, Applied Occupational Environmental Hygiene, August, 1997) Ozone has been shown to increase submicron particles and adversely react with many compounds (Weschler, C.J, "Ozone in Indoor Environments: Concentrations and Chemistry", Indoor Air, 2000) as well as cause damage to many types of artifacts (Cass, G.R., et al, "Protection of Works of Art from Atmospheric Ozone", The Getty Conservation Institute, 1989). Ozone is a strong oxidizing agent, reactive (rubber and electrical wire insulation), and very unstable (Cole, Foarde, ACGIH Bioaerosols, 16.2.5).

Ultraviolet (UV) Light

UV light is not a practical mold remediation methodology for several reasons, including lack of intensity and insufficient dwell time. According to the Centers for Disease Control and Prevention (CDCP), "UVGI . . . has only a minimal inactivating effect on fungal spores." (CDC: Guideline for Environmental Infection in Healthcare Facilities)

bag is changed. HEPA vacuum cleaners should be serviced within the capture zone of an AFD, or outdoors using appropriate precautionary measures.

Before HEPA vacuums are removed from containment areas, the unit's exterior should be thoroughly cleaned to remove dust and spores. This cleaning includes the exterior of the hose. Openings, such as filter and vacuum hose inlets, should be sealed with tape, or plastic and tape to prevent particles from escaping.

Other vacuum systems

There are a variety of other vacuum cleaners and systems that do not fully meet the definition of HEPA filtration. Some of these may have valid uses in the remediation process, but they should not be substituted for a HEPA vacuum during remediation. Other vacuum units can include:

- High-filtration vacuums - For purposes of this document, these units are defined as those designed to be significantly more effective at trapping particles than standard vacuum systems. They may closely approximate the filtration performance of true HEPA vacuums. Such machines can contain a filter marketed as "HEPA," which may be built-in or sold with the machine as an after-market attachment. These machines are not normally marketed for capturing hazardous materials, such as lead or asbestos. They frequently are less expensive than HEPA-rated vacuums.
- Standard wet-dry or canister vacuums - These machines should not be used for most mold remediation work. Their inefficient filters allow mold spores and fragments to be aerosolized. However, they may be acceptable when: used outdoors with appropriate precautions for preventing worker, occupant or public exposure; used inside high-volume laminar-airflow cleaning chambers; vented to the building exterior; or in other situations where the aerosolized particles they exhaust do not create exposure issues, or the particles can be adequately contained with engineering controls.
- Exterior-venting vacuum systems - This category includes equipment, such as truck-mounted carpet cleaning systems, or other high-volume vacuum systems that vent outside the building. Their use may be acceptable, if HEPA vacuums are not specified and the exhaust will not vent in a location where exposure issues result. These units require decontamination after use.

Misting

Misting is a method of atomizing water or other aqueous solutions into the air for the purpose of controlling airborne and surface particulates during remediation. Applying misting during demolition, prior to removing contaminant or during final cleaning, is controversial in the remediation industry. Some remediators routinely advocate using misting techniques in the field, while others believe misting is inappropriate and do not use such techniques.

Some documents and organizations recommend using misting during mold remediation. Other research indicates that the hydrophobic nature of mold spores and hyphae unreasonably promotes aerosolization of mold spores and growth fragments during the misting process, and introduces moisture into the work environment possibly promoting further mold growth. Further research is needed to determine the effectiveness and propriety of using misting during mold remediation. Therefore, if

deemed acceptable, in the professional judgment of a remediator, misting may be considered for dust suppression and clean-up purposes, when applied in conjunction with adequate engineering controls.

Spraying, wetting or misting moldy building materials can release or disperse mold spores, and mold growth may be promoted by introducing excessive moisture. When mold remediation occurs concurrently with asbestos abatement or other types of demolition where misting water is required, mold remediation shall be performed with adequate engineering controls in place to limit the release or spread of mold or spores within the work environment, or in other parts of the building, to prevent the development of new mold.

Dehumidification

Dehumidification may be needed during the remediation process to dry the structure or maintain conditions that will not support additional mold growth. Equipment operated in Condition 2 or 3 portions of a building requires cleaning after use. It may be possible to precondition make-up air in Condition 1 areas of the building to provide dehumidification of the make-up air for the work zone. (See also Chapter 5 *Equipment, Tools and Materials*)

Caution

Remediators are faced with a challenge when drying contaminated structures. The goal is to achieve acceptable drying while not cross-contaminating other areas of the structure, or contents. In order to accomplish this, air pressure differentials between suspected uncontaminated and contaminated areas should be carefully managed. There should be balance between dehumidification capacity and air movement capacity used to create any air pressure differentials. With high negative pressure in contaminated areas, and under certain ambient conditions, there can be a potential for drawing humid air from outside into the structure, which could slow, stop or reverse the drying process.

With proper controls, some remediation processes, such as demolition, may proceed while drying is underway. However, it is critical that remaining structural materials reach the drying goal of acceptable moisture content (MC) before remediation work can be completed.

Remediation Work Procedures

Technical Specifications and Report Review

When available, remediators should attempt to obtain environmental reports describing the nature and extent of existing mold contamination. Remediators should review available documents related to the project, and understand the project objectives, goals, methods, timeline, material requirements and other circumstances before work is performed. IEPs may or may not have conducted site visits, collected samples, provided interpretations, outlined necessary remedial actions, or written protocols or technical specifications.

In cases where enough information is currently available to determine that Condition 2 or 3 exists throughout the affected structure, systems, or area, including contents, the remediator should develop work plans, protocols and specifications following this standard. In cases where there is not enough information available to determine that Condition 2 or 3 exists throughout the affected structure,

Deviation from Removal Processes

The Principles of Mold Remediation state that mold contamination should be controlled as close to its source as possible. Further, mold should be physically removed during remediation. Attempts to kill, encapsulate or inhibit mold, instead of proper source removal, generally are not adequate. (See Principles, Standard Section 4.3 and 4.4) However, unique circumstances can arise for which antimicrobial or biocides sealants may be considered in specific situations.

It is recognized that remediation projects are unique, and that in certain circumstances, common sense, experience and professional judgment may justify deviation from this Standard. It is the responsibility of remediators to determine and verify on a case-by-case basis that application of this Standard is appropriate.

When Condition 3 situations exist that cannot be physically removed using reasonable measures, or when ongoing moisture intrusion cannot be resolved, it may be necessary to manage a Condition 3 area for extended periods by using long-term engineering controls, encapsulants, sealants or other methods. Allowing mold or moisture conditions to remain is strongly discouraged, since it can compromise the health of occupants, further damage building materials, and expose remediators to liability and other consequences. However, when deviations of this kind from this Standard are considered, it is recommended that remediators advise customers in writing that controlling mold or moisture conditions in place can:

- have limited effectiveness;
- result in a release of contaminants;
- result in additional structural deterioration;
- require long-term management, or
- result in additional remediation work being necessary.

It is recommended that remediators advise customers that follow-up assessment of affected areas by an IEP may be appropriate when:

- affected areas become visibly damaged;
- a change in the condition of the material or its surroundings occurs;
- there are health complaints, or
- engineering solutions fail.

Since deviation from the source removal principle occurred, periodic assessments may be advisable. It is recommended that remediators consult with appropriate technical professionals or attorneys for specific language to use in written communications with customers.

Disposal of Contaminated Materials

Bagged or wrapped materials should be handled carefully and not dropped, thrown or handled roughly while moving them to a disposal container or site. Bagged or wrapped materials should be placed in a reasonably secure location or transport vehicle, after removing them from the building.

Chapter 12

HVAC Remediation

The Relationship Between a Building and Its HVAC System

Heating, Ventilating and Air-Conditioning (HVAC) systems have a major impact on controlling conditions that lead to water vapor condensing on surfaces. The design, installation, operation and maintenance of HVAC systems are important factors in controlling microorganism germination, growth, amplification and dissemination. In addition, mold growth from other causes can be carried to the interior of HVAC system components where it can accumulate and degrade system operation. When system operation is affected, this can result in poor environmental control that allows widespread condensation to form. This can lead to the spread of contamination by the system and increase the scope of the mold problem by dispersing contaminants throughout a building.

Types of HVAC systems include residential, commercial and industrial. In a typical system, the fan or blower circulates air from the occupied space through the air filter, return grills, return ducting, heating or cooling coils, and through supply ducting into the occupied space. HVAC mechanical components can be located in various areas of the occupied space, outdoors, or in other locations. Residential systems vary in configuration and type from one part of North America to another; however, within each region, HVAC systems are generally similar in design.

Typically, many airborne spores are in the range of one to five micrometers in diameter, but can appear in clumps or in growth structures two to ten times that size. Airborne fragments of mold, such as hyphal fragments, can be much smaller, in sub-micron sizes, or also can agglomerate or form larger clumps. Conventional HVAC system filters with a Minimum Efficiency Reporting Value (MERV) 6 rating or less are not effective at stopping the distribution of particles in this size range throughout an HVAC system. In systems with filters of MERV ratings of 11 or higher, a substantial amount of bioaerosol is captured. Completely containing or eliminating contamination in HVAC systems requires HEPA filtration, which is 99.97% efficient in removing particles at 0.3 microns aerodynamic diameter, and more efficient in removing particles both larger and smaller.

Overview of HVAC Operations and Particulate Implications

Up-flow Systems

In a vertically mounted, up-flow HVAC system, air is drawn through the bottom of the system and discharged out the top. Typically, these systems are located within the conditioned portion of the residence, in a basement, or within a closet constructed of wood and drywall materials. In addition, the return-air plenum often is a part of this enclosure, with openings covered by a metal grill. Organic construction materials can provide an excellent food source for mold contamination if moisture from the HVAC is allowed to accumulate on or penetrate into them.

Chapter 12

HVAC Remediation

Accumulated fungal growth is difficult to clean from coil fin surfaces. Often cleaning agents (high and low pH) are required due to the difficulty of removing impacted particulate within the coil's air stream surfaces. These HVAC coil cleaners can potentially cause damage to heat-transfer surfaces. Damage can range from pitting of surfaces (which interferes with flow of condensate from fin surfaces) to accelerated component deterioration. Also, residues from such cleaners can add contamination to air flowing over coil surfaces, if not completely rinsed off. Excessive water pressure used during cleaning can also damage fin structures. Application equipment and techniques can be tested on scrap before using them in the field.

HVAC components should be isolated from portions of the building where remediation is taking place. It is recommended that HVAC systems be remediated after other remediation activities have been completed. Normally, it is not necessary to build containment for HVAC system cleaning. Procedures described in NADCA ACR 2006 are designed to prevent the release of spores or other contamination during cleaning.

Under unusual circumstances or in sensitive locations, such as active healthcare facilities, containment should be constructed. In addition, if an air handler is located in an equipment room, which is also part of the conditioned space, containment should be constructed. Air handlers located outdoors or on rooftops require only limited containment procedures during cleaning. Remediators should use appropriate personal protective equipment while cleaning HVAC systems, and isolate the portion of the system being cleaned from uncontaminated areas by blocking air ducts or supply vents. Sufficient ventilation is needed to dilute emissions from cleaning products used. Residue from cleaning products should be completely rinsed from surfaces before the equipment is placed back into operation.

Plenums, with interior-lined fiberglass or other porous insulation, are sites where mold contamination is likely to occur. Flexible duct sections are handled as indicated in NADCA ACR 2006. When visible growth is present and penetrates below the surface of the fiberglass coating, replacing or upgrading components might be necessary. Any action taken should be in accord with NADCA ACR 2006, or an equivalent industry standard.

Using an antimicrobial product may be considered, to inhibit future mold growth in an HVAC system, but only after mechanical surface cleaning has been performed and the need for such treatment has been deemed necessary. Antimicrobial use should never be substituted for completely removing mold contamination. In addition, products used shall be: specifically registered by the EPA or other applicable regulatory agency for use in HVAC systems; have undergone a risk assessment for such use, and contain specific and detailed label directions. Care should be taken to use antimicrobial products in compliance with applicable regulations. If label directions cannot be followed completely, use shall be avoided.

On occasion, using a sealant, coating or other product in an HVAC system may be considered for a variety of purposes. Such use may include, but is not limited to:

- smoothing the interior profile of surfaces within HVAC systems to improve the ability to clean;
- reducing the probability that surfaces may acquire foreign materials that could support future microbial activity;
- repairing or restoring mechanical insulation or linings, and

- installing a sealant or coating film containing active ingredients that may inhibit future mold growth in an HVAC system.

In all cases, using sealants, coatings or other products should not be substituted for removing viable mold or fungal fragments. Such products shall be used in accordance with safety regulations.

Coatings and sealants used in HVAC systems, which claim antimicrobial performance, shall be registered by the EPA or other applicable regulatory agency specifically for use in HVAC systems; have undergone a risk assessment for such use, and contain specific and detailed label directions. If label directions cannot be followed completely, including the use of personal protective equipment, such use shall be avoided.

Coatings and sealant products that do not claim antimicrobial performance, and in which antimicrobial ingredients protect from microbial growth only on or in the coating film, do not need to be registered by the EPA. Such products fall within the scope of the Treated Articles Exemption of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). However, coatings to be used in HVAC systems are often required to have been tested to the performance protocols of the National Fire Protection Association (NFPA) 90A/90B.

For more information concerning the use of chemical products inside HVAC systems, it is recommended that remediators consult the most current versions of the NADCA Fact Sheets pertaining to the use of disinfectants, sanitizers and coatings in HVAC applications.

REFERENCES

ANSI/ACCA 6 HVAC System Cleanliness: 2007

WORKING WITH AN INDOOR ENVIRONMENTAL PROFESSIONAL

A remediator's relationship with an IEP can sometimes be quite complex depending on why, when and by whom the IEP was hired. If there are complexities, complications or conflicts, a remediator may need to request additional input or guidance from an IEP. (See Chapter 9, *Limitations, Complexities, Complications and Conflicts*)

Other relationship issues may include, but are not limited to:

- **independence** - It is preferable that the IEP be an unbiased resource. An IEP engaged to perform pre-remediation assessment or post-remediation verification should be independent of the remediator. In some jurisdictions, the law may require that the inspection and assessment function be performed by an individual or entity independent of the remediator.
- **confidentiality** - A company owes a duty to its client, which can include confidentiality. Where an IEP is retained by someone other than the remediator, there may be a limit to the information that the IEP can provide to the remediator. Ideally, an IEP will be authorized by the client to share all information with all parties. The EPA's *Mold Remediation in Schools and Commercial Buildings*, for example, encourages communication with occupants to help alleviate concerns and suspicions. However, in cases involving litigation, it may be difficult to share or obtain information.
- **reliance** - Mold remediators often rely on an IEP to determine the scope of work and other essential tasks. However, reliance on the training, experience, reputation and credentials of an IEP might not absolve the remediator of legal risk or other responsibilities.
- **overlap** - There may be circumstances when a remediator's normal activities overlap or conflict with those of an IEP. In those cases, a remediator can reach the point where a decision is necessary to continue an inspection or to transfer the responsibility for further inspection and preliminary determination to an IEP. Factors that influence the decision of whether and when to involve an IEP are addressed in Chapter 8, *Inspection and Preliminary Determination,* the Preface, and Sections 9 and 15 of this Standard.