The Preparation of Mold Abatement Protocols

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The goal of mold remediation is to remove mold contamination in a way that prevents the spread of fungi into other areas of a building while protecting the health of workers performing the abatement. The goal of a Mold Abatement Protocol (MAP) document is to provide a guideline for the abatement contractor to complete the project in accordance with current industry standards so the building can be safely occupied. Normally, a microbial consultant is requested to prepare the MAP as an independent third party. Often, they represent either the property owner, or the insurance company, to provide assurance that the work is completed in accordance with standard industry practices.

There are three phases in every mold abatement project (preparation, removal, and clean-up). The abatement protocols are designed to provide detailed instructions to be completed for each phase. The MAP is not a contract, but the technical guidance document to provide the information necessary for a professional abatement contractor to complete the abatement activities and know how they will be judged that the work is acceptable. The MAP can be used to solicit bids from contractors to complete the work.

To begin the preparation of a MAP, the extent of the mold contamination (to the best knowledge of all parties) and the cause of the elevated moisture should have been determined. It would be prudent that several abatement references, an educational biography of the site supervisor, and the contractor's proof of Errors and Ommisions (E&O) Insurance be provided.

The scope of work that the MAP presents will depend on the extent and location of the contamination, the source of elevated moisture, the floorplan (layout) of the affected area, the type of building construction materials, the type of occupancy usage, the hours of availability for abatement activities, and any considerations of abatement activities for the HVAC system or any other engineering system. The following is the general content of a MAP:

Project Background

The MAP should include an abstract of the findings from the microbial assessment that was completed by the consultant. The location and extent of contamination, the source of the elevated moisture that resulted in the mold contamination, and the recommendations that were presented by the consultant should be included. Any laboratory data collected on the site should be included in the MAP. If an asbestos survey is required by state or federal laws, then the results of this issue should be presented.

Goals and Limitations of the Abatement Activities or Contractor

The MAP should clearly state the goals and limitations of the abatement activities for the project. This may appear to be self evident as we often find abatement projects to be repetitive, however this is the portion of the MAP that the desired result of the abatement activities is defined and any limitations for access to the property, discretionary requirements by the contractor's employees or equipment is presented.

The limitations of completing mold abate-

ment activities should be presented so the property owner and contractor understand the long term liabilities. For example, unless mold growth preventative coatings (that have a warranty that covers the reoccurrence of elevated moisture conditions) are applied to the building materials, the contactor cannot be held responsible for any future growth of mold colonies, as new growth can be achieved with the reintroduction of moisture. In addition, a warranty to prevent future mold growth is actually provided by the manufacturer and not the contractor.

The MAP should present the contractor's liabilities. For example, the contractor should be responsible for the following:

- Damage to any property during the abatement activities
- Failure to pass the PRV
- Compliance with all federal, state and local codes that are applicable for the remediation activities. The contractor should acquire and pay for all permits as required by governmental entities.
- The contractor agrees to staff the project with full-sized crews without stopping.
- The on-site supervisor that is identified by the contractor and whose biography was reviewed by the consultant will continue with the project until completion.
- The contractor agrees time schedule that the property is available for abatement.
- The contractor agrees to the project documentation requirements

Contractor Mobilization

Prior to the mobilization of the contractor, considerations for temporary toilet, water and electrical systems should be determined. As previously stated, the contractor should be required to obtain any permits by the local building department and be registered with the local municipal authorities as a contractor. The contractor should have a folder in the field that contains the MAP, the route to the hospital, the project contacts and their phone numbers, Daily Field Activity Logs, and any other document that is required for completing the project.

The MAP should include the requirements, that prior to starting the scope of work, the contractor should provide the following to the consultant:

- Training biography of the key personnel in the project
- Qualifications for any subcontractors
- Example of daily log forms
- Any chemicals to be used to be identified and the MSDS sheets
- A written technical approach (if there are unanswered questions) to complete the scope of work provided in the MAP
- How waste will be packaged, decontaminated and disposed of
- The contractor's Respirator Protection Plan
- The contractor's Health and Safety Plan
- The contractor's E&O Insurance that covers mold abatement activities

Project Scope of the Work

The project scope of work defines the location of the mold contamination, the engineering controls to be used, and the technical approach to reach the goals of the abatement project. The five steps to complete most abatement projects are to address the contents of the affected areas, construct engineering controls (such as critical barriers) to create the containment area, remove the mold contamination by demolition or using an abrasive technique, remove and dispose of waste debris, and complete the cleanup activities. The MAP should also include statements that the contractor is responsible for assessing any building materials that are exposed during the abatement process to confirm that the identified scope of work does not require modifications.

Handling Contents

The contents of an area scheduled for abatement activities are generally removed prior to beginning the work. Items that cannot be removed (e.g. a water treatment system) should be covered and sealed with plastic. All of the national guidance documents provide recommendations for cleaning contents. The MAP should state whether or not laboratory sampling of the cleaned contents will be part of

*See **Protocols**, page 26*

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the PRV process. The method of evaluating the laboratory results and steps for failing is described below.

Containment Area

The MAP should include the following specific items to describe how the contractor is to construct critical barriers:

- Describe the exact locations and number of barriers for the critical barriers.
- Include the type of plastic to be used for the critical barriers.
- Indicate how the edges of the barriers are to be sealed.
- Require that the contractor calculates the volume of air inside the containment area and remove a minimum of 4 air volumes per hour.
- State that the contractor must use an electronic recording device to monitor and print the differential air pressure between the area inside the containment area and outside.
- Require that the makeup air will enter the containment area on the opposite side of the negative air machines (NAMs).
- Indicate that spaces of the building that have no potential for air flow will have air scrubbers or fans to create air turbulence.
- Doorways in egress chambers should have zippers or double flaps to control air flow.
- State how the carpet will be protected or removed and when this should occur.
- State the possible use of positive air pressure if multiple rooms are abated.
- State that the contractor should clean the HEPA filters in the NAMs each day.

Remediation Techniques

The MAP specifies the methods for removing the mold contamination from the containment area. For example, the exact location of demolition of porous materials (i.e. gypsum board) the method of demolition, or the abrasive technique to remove mold colonies from wood surfaces that are not to be removed may be specified. Note that the MAP may specify that contaminated semi-porous materials that are being removed are cut beyond the visibly contaminated area by a specified distance (i.e. 2 feet beyond visual contamination).

If it is most cost effective to sand, scrub, soda blast, or use dry ice blasting equipment to remove the mold contamination from building materials, the MAP should allow the contractor some liberties to make decisions. The contractor is ultimately responsible for accomplishing the abatement to meet the requirements of the PRV, meet the expectations for discretion by the property owner, and satisfy the goals of the abatement activities.

If mold contamination cannot be removed, then a method of encapsulation may be considered. This is often required when removing a few square inches of contamination would cost thousands of dollars in reconstruction fees. For example, in a basement, where mold is on the overhead subfloor and the floor joists, there is probably mold contamination between the wood surfaces of the seam where they meet. Have discussions with the stakeholders that these areas may be sealed with caulk to prevent an exposure potential. Prior to the beginning of a project, the property owner must be made aware in writing that the contractor may not be expected to remove all of the mold (to zero values), but that steps will be taken to minimize the potential exposure to future occupants.

Note that there are no guidelines that allow for the use of a chemical product to simply kill mold contamination and leave it in place as the method of abatement. For example, fogging an area and then painting over the contaminated surfaces is not an accepted abatement technique and opens all participants of the project to potential liabilities after the property is re-occupied.

Waste Disposal

Waste must be removed from the containment area in a way that does not spread the contamination and provides the discretion that is expected by the property owner. The MAP should specify the method of packaging the waste and how the surfaces of the package are cleaned before it is removed. Generally, the standard protocol is to place the bagged materials in the egress chamber. The surfaces are then HEPA vacuumed and then wiped with a cloth soaked in a soapy solution. This process is repeated three times.

Cleaning Techniques

The MAP should specify that all surfaces inside the containment area be HEPA vacuumed and then wiped with a cloth soaked in a soapy solution. As with the disposal of waste, the containment area should be cleaned three times. It is important to stress in the MAP that this activity must be accomplished in detail to pass the PRV. Everything that leaves the containment area must be cleaned in accordance with the protocols (except personnel which will be wearing disposable suites) to prevent the spread of contamination outside the abatement area.

HVAC system

There is considerable discussion regard-

ing whether to have the HVAC system cleaned as part of a standard abatement project. If the consultant feels that the HVAC system must be cleaned as part of the project, then the method should conform to National Air Duct Cleaners Association General Specifications for the cleaning of commercial Heating, Ventilating , and Air Conditions Systems, Publication 1992-01.

Post Remedial Verification

The purpose of the PRV is to document the mold abatement activities were successfully completed. The scope of a PRV and applying an acceptable standard of cleanliness is currently an area of debate in our industry. The MAP should also clearly state how the laboratory data from the PRV will be assessed (i.e. indoor-outdoor differences and mold species found inside the containment area) and what will be acceptable cleanliness. A contractor should know how they will be judged prior to accepting the project.

Project file Documentation

The MAP should specify that the contractor provide an abatement report at the conclusion of the project to provide the following:

- Executive Summary signed by the contractor supervisor that they warrant the work was completed in accordance with the MAP. Also, a statement that the printout of the pressure recordings is available at any time in the future upon request.
- Daily Activities Logs that describe the activities by the contractor for each day
- Photographs of activities to document compliance with the MAP

Summary

The purpose of the MAP is to provide guidelines for the abatement contractor to complete a project in accordance with current industry standards and demonstrate that the building is safe to occupy. Preparing a MAP with the content described herein will greatly reduce the future liabilities for the property owner, consultant, and contractor. However, the first step is for the property owner, or appropriate shareholder, to find a competent consultant.

Robert Bennett is the owner and President of Farsight Management Inc. He has been in environmental consulting for 24 years. He is a Certified Microbial Consultant through the American Indoor Air Quality Council and a Mold Remediation Supervisor through the Indoor Air Quality Association. Mr. Bennett provides training classes that are approved by the State of Ohio, IICRC, and the Home Inspection Industry to provide continuing education credits on mold inspections and removal techniques. The complete version of this article can be downloaded at www.UseFarsight.com.