WONDER MAKERS ENVIRONMENTAL

Information Series

REMEDIATION OF BUILDING MATERIALS

Excerpt from *Fungal Contamination: A Comprehensive Guide for Remediation*

Remediating fungal contamination that is impacting building materials involves a number of steps that are widely accepted in the industry, and experience has determined that these steps should be performed in a particular order. This method offers the best possibility for removing visible mold growth and associated debris without cross contaminating surrounding areas. Remediation professionals should use the following steps as a starting point for developing a specific work plan for each project.

1. Set up initial engineering controls, including isolation barriers, negative pressure system, and drop cloths necessary to protect the structure during initial response activities.

2. Remove standing water.

3. Assess condition of contents, set up appropriate decontamination structure, and remove contents from the mold remediation work area.

4. Finalize engineering controls for removal of building materials harboring fungal growth. Make sure the setup can accommodate any unexpected hidden growth.

5. Work with the air flow. Generally this means that the project should be set up so that mold impacted materials closest to the decontamination unit are removed first. Work then progresses from the decon unit toward the negative air machine.

6. Remove porous materials with visible growth. Use work practices that minimize the generation of dust. This may include the use of hand tools or power tools to which a HEPA vacuum can be attached.

REMOVING CONTAMINATED BUILDING MATERIALS

- Dust-free demolition
- Clean as you go
- Removal progresses with the air flow

7. Enforce work procedures that emphasize a clean-as-you-go approach. Whenever possible, as they are removed from walls and ceilings, cut building materials in sections small enough to fit directly into waste bags. Bag all waste immediately rather than allowing it to pile up on the floor. Change negative air machine and vacuum filters often enough to keep them operating at optimum levels.

8. Seal waste bags using the gooseneck technique. Move waste bags into the decontamination unit where the exteriors of the bags are cleaned or they are double bagged prior to movement through unprotected areas of the building.

9. Determine the remediation approach for semi-porous materials that have visible fungal growth. Depending on the condition of the material some items, such as rotted wood studs, may have to be removed for later replacement. Other semi-porous materials that have not suffered structural damage can be cleaned by scraping, sanding, scrubbing, or blasting. Whenever possible, use tools in conjunction with a HEPA vacuum. Specialty tools, such as the Scravac, are specifically designed for scraping contamination directly into a vacuum nozzle. Make sure that the cleaning technique does not exceed the capacity of the engineering controls. Blasting, for example, may require a substantial increase in the amount of negative pressure and airflow as compared to a standard mold remediation work area.

10. Clean all non-porous materials that have visible fungal growth. This usually involves damp wiping or HEPA vacuuming.

11. Using the HEPA sandwich technique, clean the entire isolated work area, including ceilings and non-impacted walls. If there are any bacterial concerns because of gray or black water, incorporate appropriate antimicrobial chemicals into the damp wiping step.

HEPA SANDWICH
Standard Cleaning Technique for Contents and Surfaces

- HEPA vacuum
- Wet wipe, allow to dry
- HEPA vacuum

12. If necessary, dry the remaining material in the work area through dehumidification. Be careful that airflow from fans and dehumidifiers does not impact the integrity of the isolation barriers.

13. Conduct a thorough visual inspection of the isolated work area. Use the white glove test to ensure that the area is free of dust. Re-clean as necessary.

14. Conduct post-remediation *evaluation* sampling. Compare the results to the company's standards for mold remediation (see box for suggested post-remediation sample criteria). Re-clean and re-sample if necessary.

15. Coordinate post-remediation *verification* sampling by a pre-selected third party. Evaluate the results in comparison to the criteria that were agreed upon at the beginning of the project (see box for suggested post-remediation sample criteria). Re-clean and re-sample if necessary. If the building owner chooses to forgo verification sampling, move to the next step.

16. If included as part of the remediation project, apply antimicrobial coating to exposed structural members to prevent future mold contamination. Follow the manufacturer's instructions for application. Allow all surfaces to dry thoroughly.

17. Have the HVAC system cleaned following NADCA guidelines.

18. If included as part of the project, replace and refinish building materials that were removed during remediation.

19. Remove isolation barriers and remediation equipment. Unless specifically exempted in the remediation contract, repair any damage to finish materials caused by the isolation barriers.

This excerpt is taken from Chapter 10 of Fungal Contamination: A Comprehensive Guide for Remediation, Second Edition, a textbook used for mold remediation training that makes important and understandable connections between mold work and other restoration activities. This informative book of over 450 pages is available for purchase from Wonder Makers Environmental (www.wondermakers.com).

REMOVAL OF VISIBLE CONTAMINATION

- Non-porous surfaces (plastic, metal, etc.)
  - Vacuum with HEPA filters
  - Wash with detergents
  - Thoroughly dry, HEPA vacuum
- Semi-porous (wood studs, etc.)
  - Vacuum, scrape, sandblast, or otherwise remove growth
  - Wash with detergents or wet-wipe with antimicrobial
  - Coat with sealer or biocidal encapsulant (after successful visual inspection)
- Porous (ceiling tiles, carpet, upholstered furniture, wallboard)
  - Remove and replace
- Miscellaneous (intrinsic value items, books, etc.)
  - Launder / dry clean
  - Freeze dry / vacuum
  - Ultrasonic
  - Dry ice blasting
  - Treat with specialty chemicals

POST-REMEDIATION EVALUATION CRITERIA

1. **Visual Inspection** - By submission of samples client has indicated that specifications were followed, moisture source was identified and corrected, contents and debris were removed, all visible mold was removed, and work area is white-glove dust free.
2. **Total Spore Concentration** - Total concentration of fungal material on work area sample is below 2,000 c/m^3. If less than 800 c/m^3, go to criterion 4.
3. **Comparison to Make-up Air Source** - Total concentration of fungal material on work area sample is below comparison sample.
4. **Rank / Order Comparison** - The level of each fungal type and hyphae recovered on the work area sample is less than 100 c/m^3 above the comparison sample levels.
5. **Indicator Organisms** - *Aspergillus/Penicillium*-like spores on the work area sample are below 200 c/m^3.
6. **Target Organisms** - The work area sample recovered no target fungal types (*Stachybotrys*, *Fusarium*, *Trichoderma*, *Memnoniella*, *Chaetomium)*.