



# Do The New York City Mold Remediation Guidelines Protect Maintenance Personnel?



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## About the Author

Dr. Spurgeon, who is a Certified Industrial Hygienist, has extensive experience as an expert witness in mold litigation cases, and currently has a number of active cases in California and Texas. His experience includes both commercial and residential properties. His areas of expertise include microbial IAQ investigations, assessment strategies, sampling methods, and data analysis and interpretation. Dr. Spurgeon can be reached at [cih@bi-air.com](mailto:cih@bi-air.com).

The purpose of this article is to illustrate the level of exposures that can occur while workers are performing a Level 1 and a Level 2 mold remediation as defined by the "New York City Guidelines" on mold remediation.<sup>1</sup>

The NYC guidelines were originally developed in 1993 to address the remediation of *Stachybotrys chartarum*. Those guidelines were revised in 2000 to apply to the remediation of all indoor fungal contaminants. It has been my experience that the NYC guidelines, along with the US Environmental Protection Agency document on mold remediation in schools<sup>2</sup>, are frequently quoted in remediation plans, articles on mold remediation, and in expert depositions.

Furthermore, the NYC guidelines are often referenced by management as guidance in providing adequate protection for maintenance workers performing small-scale, "routine" mold remediations. This last point is especially relevant.

Maintenance workers may not be routinely exposed to airborne mold spores in their work. But, they will certainly be subject to episodic exposures. When performing risk calculations, federal agencies such as OSHA and EPA assume those episodic exposures may continue for as long as 40 years. The magnitude of those episodic exposures may be important because of possible sensitization reactions in some individuals.

Therefore, a preliminary study was conducted to determine the range of exposures that might occur during an episodic response by maintenance personnel.

The NYC guidelines define a Level 1 mold remediation as the remediation of a small isolated area of 10 square feet or less, while a Level 2 remediation is a mid-sized area of 10-30 square feet. These remediations may be performed under the following conditions:

1. Remediation can be conducted by the regular maintenance staff after receiving a brief period of training;
2. N95 disposable respirators are recommended, plus hand and eye protection;
3. Work area should be unoccupied, but vacating people from adjacent work spaces is not necessary, except in special circumstances;
4. Containment of the work area is not necessary [cover work surfaces with plastic for Level 2 remediations].

Mold remediations were performed in two residential apartments. The remediation in Unit 1 met the definition of a Level 1 remediation, while the remediation in Unit 2 met the definition of a Level 2 mold remediation. Both remediations were performed according to the above NYC guidelines. The company performing the mold remediations worked primarily for property management companies. The author was given permission to collect airborne samples during the remediations, but was not directly involved in the remediations.

The Level 1 remediation in Unit 1 involved removing the section of wall above the foot

of a bathtub surround. There was not any visible mold or water damage on the drywall, but a plumbing leak from Unit 2, directly above Unit 1, was known to have affected the wall cavity.

The bathroom had typical dimensions of 5 feet x 8 feet, with an area of 40 square feet. An area of drywall about 5 square feet was removed from the area above the bathtub surround opposite the plumbing wall, plus about 4-5 feet of drywall from the ceiling above that area. The bathtub and wall were covered with plastic, and the remediation was performed by one person, with the door closed and a HEPA-filtered vacuum continuously operating inside the bathroom to control airborne dust and spores. The average concentrations of airborne spores during the 75-minute remediation were 27,430 spores/m<sup>3</sup> of *Stachybotrys* and 8,557 spores/m<sup>3</sup> of *Aspergillus/Penicillium* type spores.

The Level 2 remediation involved removing a portion of wall from the living room in a typical two-bedroom apartment. The drywall was removed from one stud bay to a height of about 4 feet, and an adjacent stud bay to a height of about 6 feet; a total area of about 13 feet. There was no visible mold or water damage on the drywall, but a plumbing leak in the water supply line to the shower was known to have affected the wall cavity.

The living room and kitchen had a combined area of 300 square feet to 400 square feet. The wall, floor and furnishings in the work area were covered with plastic sheeting. In addition, a negative air machine in scrub mode was used during the remediation to control airborne dust and spore concentrations. A HEPA-filtered vacuum was also used by the three workers during removal activities. The average concentrations of airborne spores during the 45-minute remediation were 2,033 spores/m<sup>3</sup> of *Stachybotrys*,

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5,864 spores/m<sup>3</sup> of *Aspergillus/Penicillium* type spores, and 433 spores/m<sup>3</sup> of *Chaetomium*.

What might be termed typical amounts of visible mold were present on the interior surfaces of the drywall removed in both remediations. However, the amounts of visible contamination were not extensive.

As a matter of comparison, personal and area samples were collected during two contained mold remediations that were performed by qualified workers wearing full PPE and full-face respirators. Both containments included a negative air machine in scrub mode. The average airborne concentrations in the first containment were 19,600 spores/m<sup>3</sup> for personal samples, and 17,800 spores/m<sup>3</sup> for area samples. During the second contained remediation, personal samples were 15,215 spores/m<sup>3</sup> and area samples were 5,535 spores/m<sup>3</sup>.

This preliminary study suggests that maintenance personnel performing episodic Level 1

and Level 2 mold remediations can be exposed to significant concentrations of airborne fungal spores, as well as other microbial contaminants that may be present with the spores. Based on the limited data presented here, maintenance workers performing an uncontained Level 1 mold remediation, and wearing N95 respirators, can be exposed to higher concentrations of airborne spores than fully protected remediation workers. In addition, personnel in adjacent work spaces may also be subjected to significant exposures during uncontained Level 1 mold remediations.

#### References

- <sup>1</sup> Guidelines on Assessment and Remediation of Fungi in Indoor Environments; New York City Department of Health, Bureau of Environmental & Occupational Disease Epidemiology, April 2000; <http://www.ci.nyc.ny.us/html/doh/html/epi/moldrpt1.html>.
- <sup>2</sup> Mold Remediation in Schools and Commercial Buildings; EPA 402-K-01-001, March 2001; <http://www.epa.gov/mold>.



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