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# TO TEST OR NOT TO TEST

Redefining the Role of Third-party Consultants

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## Redefining the role of Third-party Restoration Consultants

By Ed Light, CIH

Environmental consultants (ECs) are increasingly included in restoration projects to perform baseline tests, make cleanup recommendations and clear sites for re-occupancy. Environmental testing has limitations, however, and third-party consultation can impede the restoration process.

Conclusions based on environmental sampling alone typically over- or underestimate the scope of damage and fail to identify the underlying cause. While ECs may have expertise in microbiology, chemistry and sampling, they often lack knowledge of building science and restoration methods.

ECs tend to use generic guidelines as project specifications, which do not consider site-specific conditions. Furthermore, they often discount suggestions by the restoration contractor that may be more effective. At the completion of work, ECs again base their findings on contaminant testing, which may accept sites where the work is incomplete and conversely, fail sites that are restored properly.

When a third-party consultant is brought into the restoration project, his involvement should enhance—not impede—the process. By focusing on building science, he can add value by providing an accurate assessment and setting appropriate performance objectives. When the EC

teams include the owner and contractor in the planning stage, generally a cost-effective mitigation plan results.

Site clearance can then be based on verification that specified work practices are followed, that the site is restored to pre-existing condition and that the root cause of the loss is corrected. To accomplish this, the EC cannot simply return to the site at completion, but should also observe the contractor's work practices, suggesting necessary adjustments as the project progresses.

With the EC signing off on mitigation plans and site clearance, the contractor's and owner's liability can be reduced. The contractor is still responsible for complying with specifications and completing the scope of work, and the owner is still responsible for occupant safety. However, the EC now determines that specifications will meet restoration objectives and verifies that these objectives have been met.

Qualifications of an EC should not be limited to knowledge of contaminants and test methods, but also need to include expertise in building science and experience with restoration.

## DOES ENVIRONMENTAL TESTING ANSWER CRITICAL QUESTIONS?

Traditionally, the restoration industry assessed contaminated sites based on site inspection, with the overall objective of returning affected areas to pre-existing condition. Now, many ECs rely on environmental sampling and emphasize compliance with "acceptable levels". Limitations of this approach commonly include failure to account for varying concentrations of environmental contaminants and not allowing credit for normal background levels. Furthermore, in the absence of consensus standards, each EC applies his own in-house criteria when judging cleanup efficacy.

The following studies compare conclusions reached by side-by-side assessments of the same property, conducted first where the EC's findings were based on contaminant sampling and second, by another EC based on general evaluation of site conditions:

Immediately following the 9/11 terrorist attack on the World Trade Center in New York City, an owner's EC cleared a building near Ground Zero for continued occupancy based on air quality testing. Tenants, however, continued to complain of building-related symptoms and had the situation re-evaluated by an EC who considered the problem from a mechanical engineering perspective.

The second assessment found that residual smoke from the disaster site was impacting the general area and that unfiltered outside air was infiltrating the structure. The building was under strong negative pressure because intake fans had been blocked due to concerns regarding outdoor air quality, but exhaust fans were left running. Occupant health complaints were found clustered in offices adjacent to an ongoing renovation where the windows had been removed, providing a major pathway for contaminated air (Light and Bailey, 2008).

The second side-by-side evaluation was conducted at another site near Ground Zero several months after 9/11. This building had been closed for restoration of smoke damage. At completion, testing by the owner's EC failed to clear the site for re-occupancy based on trace measurements of dioxin on surfaces. A review of this data by another EC found that the measured dioxin level was consistent with normal urban background and restoration was deemed complete (Light and Bailey, 2008).

Twelve water-damaged sites were evaluated, first by an EC who based evaluation on mold testing, and then by another EC who based assessments on engineering evaluation. Findings suggested that mold testing either over- or underestimated the area requiring remediation and often failed to identify the moisture source (Light et al., 2011).

*Continued on page 15*

## DUELING CONSULTANTS

In this case study, mold growth was widespread in an unoccupied school where air conditioning had been turned off for the summer to save energy. The school district hired the EC to develop a remediation plan and to determine when the school was safe for re-occupancy. A restoration contractor was then retained to perform the work. Here's how such a project might proceed with an EC taking a microbiological approach, and then with the EC taking a more general, engineering approach.

| ENVIRONMENTAL CONSULTANT'S ASSESSMENT |
| --- |
| Based on testing for airborne and surface mold. |
| Rooms with elevated air concentrations declared contaminated with "toxic mold". |
| Rooms with lower concentrations of spores considered "unaffected". |
| **CONTRACTOR'S RECOMMENDATIONS** |
| Performed site review and made suggestions to EC based on findings. |
| Observed mold growth behind furniture in several rooms deemed "unaffected" by EC's air samples and suggested these be remediated.<br><br>Drywall demolition not needed; sanitizing surfaces sufficient for remediation.<br><br>Full containment not needed; critical barriers sufficient to isolate work areas. |
| **ENVIRONMENTAL CONSULTANT'S RESPONSE** |
| Disagreed with contractor's recommendations |
| EC recommended:<br>1. Full containment, under negative pressure.<br>2. Remove all drywall in "affected" areas.<br>3. Don't use antimicrobials because of chemical concerns. |
| **SITE WORK AND VERIFICATION** |
| EC not onsite during remediation.<br><br>At completion, EC found surfaces to be clean and free of mold growth but would not clear because airborne spore counts exceeded outdoor levels in mold tests. |
| EC cleared for occupancy after retesting found lower outside spore counts now exceeded indoor levels. |
| **EPILOGUE** |
| Mold growth caused by excessive humidity reoccurred the following summer. |

| ENGINEERING CONSULTANT'S ASSESSMENT |
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| Focused on identifying moisture source and extent of suspected mold growth. |
| Rooms with visible mold growth required remediation. |
| Rooms with no observed growth or evidence of condensation were considered "unaffected". |
| **CONTRACTOR'S RECOMMENDATIONS** |
| Performed site review and made suggestions to EC based on findings. |
| Observed mold growth behind furniture in several rooms deemed "unaffected" by EC's air samples and suggested these be remediated.<br><br>Drywall demolition not needed; sanitizing surfaces sufficient for remediation.<br><br>Full containment not needed; critical barriers sufficient to isolate work areas. |
| **ENGINEERING CONSULTANT'S RESPONSE** |
| Accepted contractor's recommendations for mold remediation with minor adjustments. |
| EC recommended:<br>1. Isolate work areas with critical barriers.<br>2. Disinfect mold growth on cleanable surfaces with antimicrobial sanitizer.<br>3. Modify HVAC operation to control humidity. |
| **SITE WORK AND VERIFICATION** |
| EC inspected work to ensure compliance with specifications.<br><br>Contractor improved work practices.<br><br>EC cleared for re-occupancy based on inspection; surfaces clean and dry. |
| EC confirmed that school maintenance personnel had corrected HVAC deficiencies related to dehumidification. |
| **EPILOGUE** |
| School remained free of humidity-related mold growth. |

To the layperson, an EC's report highlighting contaminant concentrations is perceived as a science-based document.

*Continued from page 12*

To the layperson, an EC's report highlighting contaminant concentrations is perceived as a science-based document. However, these data do not characterize overall site conditions and do not provide a sufficient basis for specifying mitigation. When re-testing is conducted at project completion, data presentation generally does not differentiate contamination from normal background and results can be misleading.

On the other hand, documentation of environmental indicators (i.e., visible discoloration, suspect odors, moisture content), although qualitative, allows for better overall understanding of site contamination. At project completion, reassessment of these same indicators is sufficient to determine whether the site has been returned to conditions pre-existing the loss.

## RESTORATION OF WATER DAMAGE: MICROBIOLOGICAL VERSUS ENGINEERING APPROACH

When brought into a water loss, many ECs focus on site microbiology, basing their recommendations primarily on mold sampling. On the other hand, ECs with engineering expertise focus on moisture dynamics, which enables them to locate suspect growth not detected by mold testing and to identify the source(s) of water damage. Effective moisture evaluation requires knowledge of site history, a detailed visual inspection, and systematic measurement of moisture content, relative humidity and other indicators (ASTM, 2010).

Although some sensitive individuals may experience symptoms in the presence of indoor growth, mold is not generally considered a health hazard that causes illness in the general population at typical exposures. Many ECs, however, specify hazardous material procedures for restoration work involving mold.

While protecting occupants from exposure to mold growth during and after remediation is now a generally accepted precaution, the degree of isolation needed to accomplish this depends on factors such as occupant proximity and sensitivity. When overly stringent controls are required by an EC, cost and time are added to a project without real benefit.

Another potential conflict arises in the choice of treatment solutions. While a sanitizing step is traditionally included in water-damage restoration, many ECs preclude the use of antimicrobials due to theoretical concerns regarding chemical exposure.

## WHEN IN DOUBT, USE COMMON SENSE

Although ECs may not be needed for routine restoration, their involvement can be valuable when projects are complex or potentially subject to litigation. Qualifications of an EC should not be limited to knowledge of contaminants and test methods, but also need to include expertise in building science and experience with restoration. Cost-effective restoration requires close coordination with the owner and contractor. By assuming responsibility for specifications and providing independent verification that restoration objectives have been met, a knowledgeable EC may reduce the owner's and contractor's liability. **RIA**

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