Sentinel Products, Inc.
BETTER SOLUTIONS FOR A CLEANER ENVIRONMENT

TECHNICAL BULLETIN

Mold-Resistant Coatings have become a critical tool in the recovery process after wind & water CAT events. This Sentinel Technical Bulletin will go over the reasons why this step enhances the collective value of all the steps in the disaster recovery process, and provides technical guidance that informs the product selection process.

RECOVERY MEMO FOR WIND-WATER STORM EVENTS, FLOODING, ICE, TORNADO, HURRICANE RECOVERY

V 24352

Required for:

- Restoration Contractors
- Adjusters
- Owners
- Occupants
- Government
- Engineers/Consultants
- Architects
- General Contractors

Reality of Recovery Delay for Wet CAT events

In disaster events, recovery on some structures accelerates after the demolition and drying processes are well in hand. Integral to demo is the determination process concerning what can be cleaned and saved, versus what must be replaced or rebuilt. The cleaning process has its own inherent urgency. Wind and water events (salt and fresh) are associated with both atypically high amounts of moisture, and residual mixtures of organic and synthetic matter. These events also present compounding hazards such as bacteria blooms, and exposure to man made chemicals and other hazards. Emergency mitigation of immediate hazards happens first. Restoration can ideally proceed quickly including decontamination by demo and by cleaning. Reconstruction activities cannot safely be conducted until decontamination is complete or nearly finished, but then proceeds as soon as possible. Every project to solve a wind and water event without delay is unique, but this is a common framework, especially for structures that warrant priority attention.

Recovery Delay & Mold Opportunity: Recovery Gaps

However, inevitably other structures suffer recovery delay – a Recovery Gap. Significant time will unavoidably elapse between initial response, actual restoration, and reconstruction into habitability, notably including resumed moisture management/climate control. Gaps in the CAT sequence of events present mold with opportunistic recontamination, and explode the investment made in restoration. Causes of the gap are micro and macro. Post catastrophe community landscapes are often waiting for reestablishment of utilities, and the contributions that generator-supported filtration and humidity control are limited. Containment can be difficult to construct, or non-existent.

Additionally, the local ecosystem itself is an opponent. For example, while freshwater flooding and tornado-ripped roofs can take place anywhere and anytime, the increase in ferocity and landfall of powerful hurricanes/cyclones predominantly impact warm and wet latitudes where the air can hold more moisture, where daily precipitation can be intense, and the natural results are spore and nutrient rich environments.

Tropical or temperate, the fungus foothold can happen quickly. According to the Environmental Protection Agency (EPA), mold can start to grow on surfaces within 24 to 48 hours of exposure to water. As noted, there are several factors: temperatures above 70°F, relative humidity (RH) of +60%, a repeating condensation (or precipitation, or both) cycle, cellulose-rich nutritious food for mold, a dust-prone local area (recovering communities are also a big particle generating construction site), and air currents ideal for transport and deposition of spores into a building interior.[i] In short, after a wind and water CAT event, the race is on to not only get clean, but to fend off a natural recontamination process that can ruin expensive efforts and the best intentions[ii]. When there is a recovery gap, what prevention can block "new mold?"

Use Mold-Resistant Coatings to Block the Recovery Gap

Do you have an answer for: "*What can you do to keep the mold from coming back*?" In part to answer this client question, over 25 years a specialized group of coatings and sealers have been formulated to service the professional mold remediation contractor with a preventative toolbox. MRCs (Mold-Resistant Coatings) can provide a core element to reduce fungal growth post-remediation. The performance principle is simple, chemical and mechanical: Spores land on the paint-like dry coating, and attempt to take root, but the MRC (Mold-Resistant Coating) includes chemistry inhospitable to mold. By contrast, ordinary paint is to be avoided. Typically, it contains limited preventatives, and many paints have cellulose-like ingredients that many molds welcome as food.

Will the client grasp the MRC concept and value? "Doesn't paint come after drywall?" This bulletin is provided to help restorers and specifiers communicate the benefits: stop mold before it starts. While no method or material can assure 0% growth/100% resistance to mold even in ideal conditions, consider: if there was a tear off sheet membrane capable of protecting from mold during a gap between initial cleaning and a return to finish restoration, is that a preventative to share with a client and discuss? Spraying an MRC is simpler, faster and provides superior performance.

More Indoor Moisture, More Indoor Mold:

Mold needs moisture to grow. Indoors, mold growth can be found where humidity levels are high, like basements and showers. Molds produce microscopic cells called "spores" that are spread easily through the air...spores act like seeds, forming new mold colonies when they find the right conditions. Mold only needs a few things to grow and multiply: Nutrients (food), Suitable place to grow, [and] Moisture. ..Many building materials (such as wood, sheetrock, etc.) provide food that can support mold growth. Even dust that has settled on these materials or furniture can be a food source for molds. Molds can grow almost anywhere there is enough moisture or high humidity. Controlling moisture is the key to stopping indoor mold growth. Florida Department of Health

What Makes an Effective MRC?

How can a contractor and specifier expect that an MRC has robust enough mold resistance for damp and spore-rich environments post-event? What about side effects: such as trapping moisture, air pollutants, or increased ability to burn? Are there selection criteria used by both specifiers (architects, engineers) and restoration pros?

Using tests developed by ASTM International, this grid provides basic guidance on how a remediator, and their client can evaluate the suitability of a coating, and to compare coatings available.

Attribute	Test Method	Recommended Performance
No increase in fire risk	ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials	Class "A", (no or minimal contribution to Flame Spread, Smoke Development
Surfaces can breathe (Water vapor is not trapped causing condensation)	ASTM D1653 Standard Test Methods for Water Vapor Transmission of Organic Coating Films	Breathes at a rate of at least 2 Perms (A vapor barrier is <1 Perm)
Does not exceed low VOC requirements	ASTM D6886 Standard Test Method for Determination of the Weight Percent Individual Volatile Organic Compounds in Waterborne Air-Dry Coatings by Gas Chromatography	Less than 100/grams per Liter
Resist future mold growth on or in the coating film	ASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber	G 21: "0" rating = no growth, or D3273 "0" rating = no growth

Chart 1: Suitability of Coating Chart

Remediators asked to use a coating *should* ask the product manufacturer for documentation that satisfies the performance attributes recommended in Chart 1.

Performance criteria for MRCs are provided by the Institute for Inspection, Cleaning & Restoration Certification in the public reviewed and accredited *ANSI/IICRC S520 Standard for Professional Mold Remediation (*short: the S520 Standard, or just 520). This procedural standard combines "essential scientific principles with practical procedures for remediators facing mold remediation challenges"[iii].

For guidance on what MRC performance data should be evaluated by restorers, Chart 1 (see above) is provided in Sec 2 Mold Cleaners, Antimicrobial Chemicals, and Coatings as Remediation Tools (4th ed., 2024). This chart can be sent to distributors and manufacturers like a specification, and a request for information. Per Chart 1, there are four key qualifiers that should be deliverable:

1. Fire Testing: prove negligible support of flame or generation of smoke
2. Permeability: provide data on how well the MRC avoids causing condensation
3. Air Pollutants: demonstrate very low VOCs (Volatile Organic Content)
4. Prevent Mold Growth: No Mold Growth: Even when applied to wood, and exposed to mold, a food source, and ideal conditions (temperature, humidity) for 28 days, did mold grow on or in the MRC film?

For a quality MRC, there should be information available with test data. If not, the initial choice of MRC should be reconsidered.

Use Proactive Prevention for Recovery Delay After Wet CAT events

It is an unfortunate reality that some buildings will not be restored following a textbook timetable after a wind and water CAT event. For many structures, there will be a gap in the sequence of remediation. For those, a reality is vulnerability to opportunistic mold. However, the restoration

industry has preventative materials and proven methods. Among these are Mold Resistant Coatings (MRCs) that provide the tangible benefit of minimizing mold remediation when restoration can resume.

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[i] USEPA. A Brief Guide to Mold, Moisture and Your Home. https://www.epa.gov/mold/brief-guide-mold-moisture-and-your-home. Updated on March 5, 2024

[ii] Florida Department of Health: Indoor Mold and Health, A Fungus Among Us https://www.floridahealth.gov/environmental-health/mold/_documents/%20indoor-mold-and-health.pdf

[iii] Foreword, Institute of Inspection, Cleaning and Restoration Certification (IICRC) IICRC S520 Standard for Professional Mold Remediation (4th Edition, May 2024)