

MOLD AND MILDEW – AN OVERVIEW

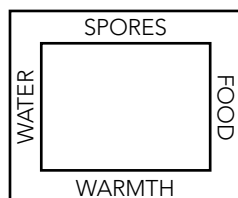
Mold and mildew problems in the wallcovering, paint, tarpaulin, interior and exterior upholstery, swimming pool and shower curtain markets, to name a few, have been well documented over the last 25 years. The objective of this overview is to review the causes and cures of these unsightly and odoriferous problems and suggest actions to reduce their impact on the quality of goods as perceived by the consumers.

THE CAUSE – MICROORGANISMS

The two principal causes of offensive odors and unsightly stains and growths are bacteria and fungi, commonly called microorganisms. Bacteria are simple, single-celled organisms. Fungi, referred to as mold and mildew, are significantly more complex. A subset of fungal organisms is a type that produces colored byproducts as part of their digestive process. These byproducts are recognized as stains and are typically pink, yellow, purple or black. All microorganisms require a source of energy; carbon for cell structure, nitrogen for amino acid synthesis, essential minerals and water. Organisms causing problems in the industrial, health care, hospitality, and home environments are frequently very self-sufficient in synthesizing required biochemicals from the most basic molecules. Microorganisms are ubiquitous, they are everywhere, and thus, microbial contamination is the rule. The total absence of microbes, sterility, is the exception.

CURRENT REALITY

Dr. James Kimbrough and Dr. Virginia Peart of the University of Florida have extensively studied the biological problem and its effect on the hospitality industry along the Gulf Coast. They have presented a graphical summary of the elements needed for mildew growth and examined these in an attempt to suggest a viable solution to this problem. To have a mildew problem, you need four elements that are referred to as the Mildew Square. In order for mildew to proliferate, spores, food, warmth, and moisture are necessary. Elimination of one of these elements would break the square, and the mildew problem would be eliminated.



The most likely element to control is moisture. Keep a surface dry and the ambient air dry, and you can break the link in the Mildew Square. Theoretically, with today's moisture control technology, one should be able to dehumidify a room to prevent mildew growth. In actuality, this is very difficult. Showers steam up bathrooms, doors and windows are opened on hot, humid days, and some air conditioner systems do not perform as designed when mixing fresh air into an otherwise closed building. The result is enough moisture for organisms to grow. A study conducted by the American Hotel and Motel Association suggests several ways to control moisture in new and rehab construction as well as daily operations. Most of these suggestions involve designs, equipment and people. In most cases, it is the "people part" that breaks down in an attempt to get something done cheaper or faster.

A COMPLEX PROBLEM

As an example, one can observe an unsightly stain or growth on the surface of a wallcovering and ask the question, "How did it get there?" A closer examination of the construction will reveal if the actual contamination is on the surface, the backing, the adhesive or the wallboard. If new wallcovering was installed over old wallcovering and the old wallcovering was contaminated to begin with, the new wallcovering will be contaminated from the backside forward. It is quite common for these organisms to produce stains that can migrate or diffuse to the surface. A person in a room would see the stain on the wallcovering, but not see the growing organism. In any case, the public perception of the wallcovering's quality has been seriously affected.

THE SOLUTIONS

As in most complex problems, there are a variety of actions one can take to prevent microbiological problems. These actions must be directed to the components of the product, construction, installation, and the operational systems of a building. Working in concert, they will assure the highest probability of success in eliminating quality problems associated with mildew contamination. The solution consists of three components: eliminate the moisture supply, remove or kill any existing mildew contamination, and use new materials that are treated to inhibit the new fungal growth.

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MOLD AND MILDEW – AN OVERVIEW continued**ACTION STEPS**

1. Reduce the humidity. In new construction, overall design and building practices play a major role in moisture retention. In rehab work, action must be taken to eliminate the sources of moisture, not just cover up existing problems.
2. Remove or kill any existing mildew contamination. Stained wallcovering must be removed and wallboards must be washed with a dilute solution of household bleach in water. Walls must be thoroughly dried before new wallcovering is installed. Severely deteriorated wallboard or wood subwall must be replaced.
3. Use new materials that are protected with an effective antimicrobial to inhibit the new fungal growth. Here the building owner or job specifier has the greatest power for they can specify the performance requirements to assure long-term protection for components such as adhesives and wallcovering.

ANTIMICROBIAL PRODUCTS

Antimicrobial is a generic term used in the preservative industry to describe compounds that act as bactericides and fungicides. A broad spectrum antimicrobial will be effective against a wide variety of bacteria, fungi, and yeasts. There are two general types of applications; those described as giving “in-can” or “dry film” biological protection. The antimicrobial used to give long-term biological resistance to vinyl or other polymer films is classified as a dry film preservative. For over 30 years, antimicrobial compounds have been safely used by the vinyl film industry, and these films are used in a myriad of different end products. These compounds have proven themselves in both extensive laboratory and field testing.

VINYL PRODUCER AND ANTIMICROBIAL SUPPLIER PARTNERSHIP

Vinyl, as a plastic, is unique in that it can be modified by a wide variety of additives to give it the desired properties that are required by the specific end use. A vinyl film used as part of a wallcovering could contain a half dozen additives to give the film the desired flexibility, color and processing stability. Suppliers of antimicrobials not only bring their product to the vinyl film producer, they also bring their expertise in biochemistry and microbiological testing to assist in achieving the desired properties.

THE FINAL PRODUCT – QUALITY YOU CAN COUNT ON

Microbiological resistance is one property that is used to build the Total Quality Profile of any product. The Chemical Fabrics & Film Association has included in its “Standard Test Methods” pamphlet protocols for Mildew Resistance (CFFA-120) and Bacterial Resistance (CFFA-300). If these test methods are incorporated into a product specification to demonstrate biological resistance, you can be assured that “Quality” has been built in, not just added on.