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Coral Springs Christian Academy Reduces Mold Using Liquid Dessicant Technology

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Executive Summary

Coral Springs Christian Academy, a K-12 school based in Coral Springs, FL, had a history of mold problems caused by damp conditions and water leaks. It struggled with conventional methods and systems for mold removal and remediation, which proved ineffective.

In Spring 2011, [Air Allergen & Mold Testing, Inc.](#) conducted an independent test to evaluate the effectiveness of a new technology selected by the school to treat a mold outbreak in one of its classrooms. [Air Allergen](#) found that the technology, manufactured by [Advantix Systems](#), removed nearly 90 percent of the airborne mold spores in the classroom that conventional air treatment equipment had previously left behind. As a result, the school avoided additional problems with indoor air quality and was able to continue providing a safe, comfortable and productive environment for students and staff.

Indoor Air Quality Testing of Classroom 133

Coral Springs Christian Academy is located in Coral Springs, Florida in Broward County. The school teaches K-12, and there are currently 880 students and 60 teachers. Mold is an ongoing issue for Florida buildings and schools because they are often impacted by conditions of high moisture and warm temperatures, resulting from hurricanes and tropical storms. High humidity can often lead to mold, mildew, or other biological growth.

In March 2011, mold contamination was detected in a classroom. School administrators took immediate action for the remediation and restoration of the contaminated areas. A professional technician from Air, Allergen & Mold Testing, Inc. was retained to insure that appropriate techniques and protocols were followed so that student and teacher occupancy of the classroom could be resumed as quickly as possible.

Mold Testing Approach

The most widely accepted screening guideline to identify a possible mold problem is the comparison of indoor and outdoor mold spore levels. Indoor mold spore levels should be similar to or lower than levels of naturally-occurring mold spores found outdoors, and the types of mold spores found indoors should be similar to types found outdoors. In addition, carpet dust samples (which can be collected from almost any surface) can provide a snapshot of the history of the indoor environment and provide valuable information about air quality conditions when combined with air samples.

As a part of the remediation plan, a carpet dust sample was taken from Classroom 133 on March 14. It contained more than 330,000 mold colony forming units (cfu) per gram of dust. Mold levels in excess of 100,000 cfu/g are considered very high and are a strong indication of conditions that support mold growth. Seven of the 14 mold species found in the carpet dust sample were associated with high humidity or moisture. Many of the species are known allergens, and some are suspected of carrying mycotoxins, or chemical toxins.

In addition, an air quality test was conducted on the same day to analyze the outside and inside mold spore levels prior to the installation of Advantix Systems air conditioning and dehumidification units. The second test, 10 weeks following the installation of the equipment, was conducted on May 20, 2011.

Test Results

The air sample take on March 14 indicated the following:

| | Outside Air | Air in Classroom 133 |
|------------------|-------------|----------------------|
| Temperature (°F) | 83° | 75° |

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| Humidity (%) | 35% | 48% |
| Total spore count per cubic meter | 866 | 377 |

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The air sample taken on May 20, after the installation of the Advantix technology, indicated the following:

| | Outside Air | Air in Classroom 133 |
|-----------------------------------|-------------|----------------------|
| Temperature (°F) | 98° | 84° |
| Humidity (%) | 37% | 29% |
| Total spore count per cubic meter | 2,047 | 44 |

In the May 20 sample there were only 44 spores per cubic meter. The number of detected spores inside the classroom was significantly reduced by nearly 90 percent compared to the baseline test in March.

At the same time, the outside spore count increased from 886 in March to 2,047 spores per cubic meter in May, most likely as a result of the seasonal increases in temperature and humidity. The significant measurable reduction of mold spore counts, background particulate and humidity in the classroom air – despite significant increases of each in the **outdoor air** – can be directly attributed to the introduction of the dehumidification equipment.

Health Risks Associated with Mold

When mold spores are present, as they were in Classroom 133 in March, they may present a health **hazard** to humans. Severity of reactions to mold spores will always differ from person to person. A 1998 survey of literature published on indoor air quality, **ventilation** and health symptoms in schools performed by Lawrence Berkeley National Laboratory states that health problems in schools related to indoor air quality are very similar to those symptoms reportedly experienced as sick building syndrome. The survey revealed that microbiological pollutants were some of the most commonly measured **air pollutants** in schools, and that fungal spores, **bacteria**, and **allergens** may be of particular concern. The survey also cites water damage leading to mold contamination as the second most frequently reported building-related problem in schools.

The United States government’s General Accounting Office reported in 2000 that nationwide one in five schools reports having indoor air quality problems. Consequences of poor indoor air quality in schools include: increasing **risk** of long and short-term health problems in teachers and students; a negative impact on students’ ability to learn due to physical symptoms; reduced **productivity** of teachers; and destruction of school equipment, including text books.

Conclusion

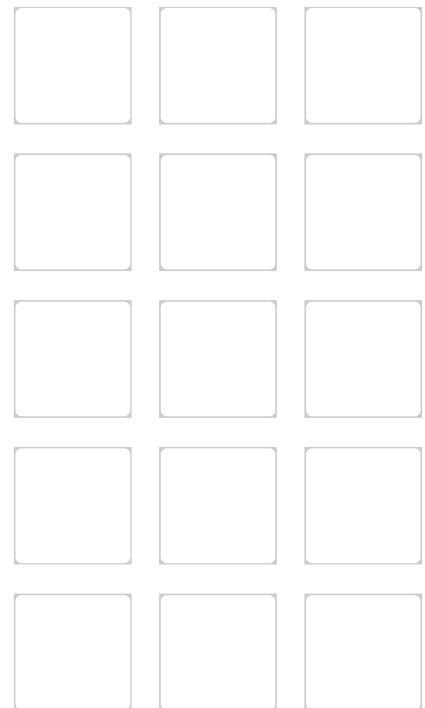
The independent test by Air Allergen & Mold Testing, Inc. found that the Advantix Systems technology removed nearly all of the airborne spores that conventional air treatment equipment had previously left behind – even with the higher humidity and temperature conditions in May.

Date of Tests: March - May 2011
Conducted by: Richard Johnson, Air Allergen & Mold Testing, Inc.

The Healthy Facilities Institute (HFI) does not endorse products.

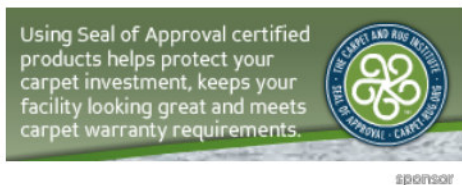


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