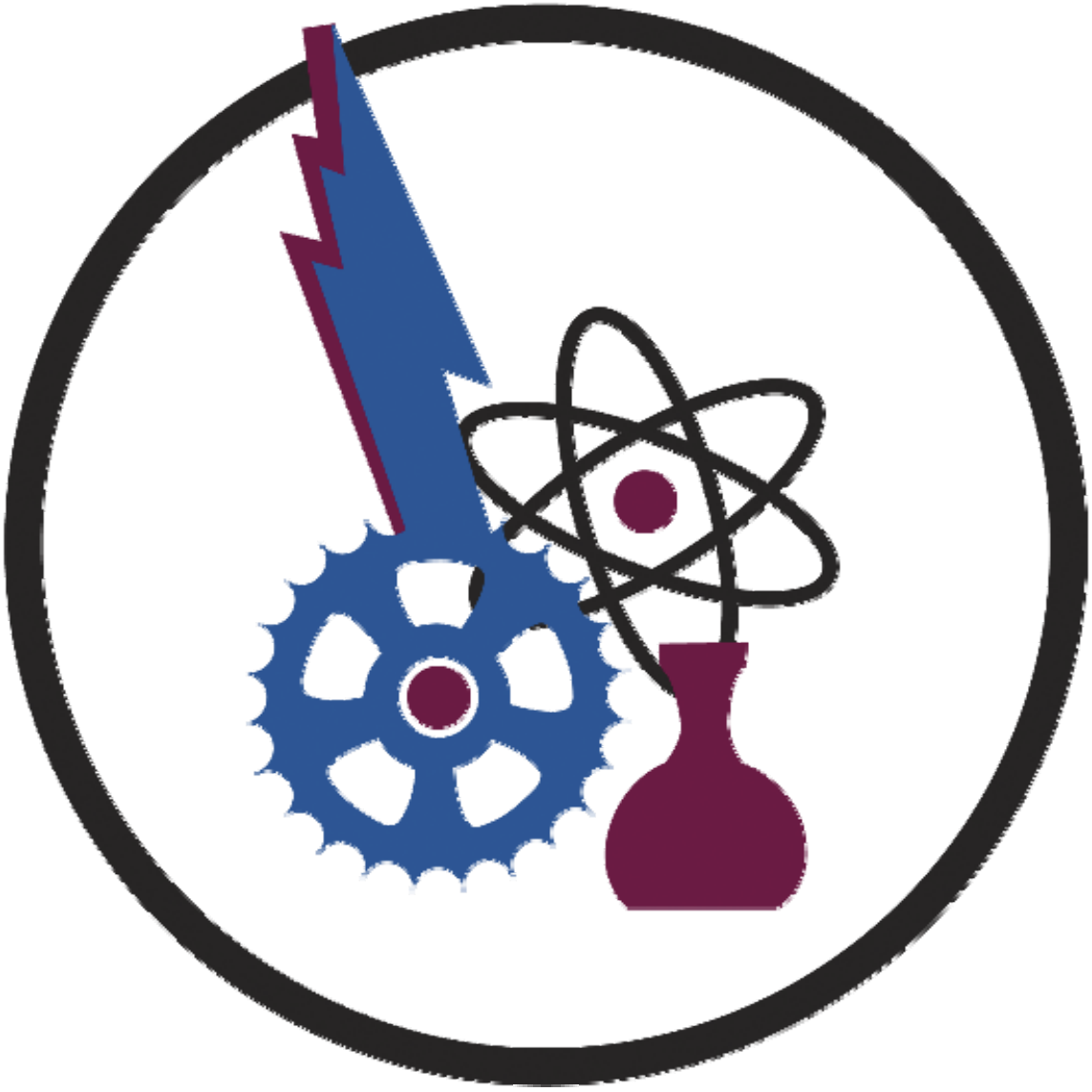
Alternative Mold Remediation Practices



Sponsored by
Baxter Group, Inc.

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Introduction

Baxter Group, Inc. was originally founded in 1989 as an asbestos abatement company. Since the protocol for asbestos abatement and mold remediation have strong similarities, throughout the years the Company was called upon to assist in mold remediation projects. The requests increased to the extent that our Mold Division was formalized in 2010 with staff that received extensive training in the fields of mold assessment, mold remediation supervision, and mold remediation techniques. The protocol for the Mold Division was developed based on the guidance outlined by the EPA and by the IICRC S520 guidelines. And depending on the situation, the Company has employed the use of 28,000 BTU ozone generators, antifungal and antimicrobial disinfectants, and biocides. Our mold remediation projects have been exceptionally successful.

In May of 2012, Baxter Group, Inc. was introduced to a Client, Kirsten Harteis, whose home was suffering from a severe mold contamination, and she urgently needed assistance in remediation. She and her children were experiencing symptoms that one would associate with living in a sick building. These symptoms included runny noses, sore throats, itchy eyes, flu-like aches, and fatigue. Because of Kirsten's desire to keep herself, her husband, and her children healthy, she was adamant about not using products with chemicals that could emit Volatile Organic Compounds (VOCs). Therefore, she was insistent that the cleaning products used during the mold remediation project in her home would not emit VOCs. She requested that Thieves® products be used in place of any that would produce VOCs.

Within two weeks of meeting with Kirsten, Baxter Group, Inc. received three other requests for remediation projects using products that would not emit VOCs. Having always used antifungal and antimicrobial disinfectants, as well as biocides, Baxter Group, Inc. felt it time to explore an alternative to our normal protocol. We needed to determine if there was a non-toxic solution to mold remediation.

Hypothesis

Why would a Company want to veer away from a protocol that has been proven to be highly successful? Proper remediation practices, including the cleaning of mold with antimicrobial disinfectants and biocides, work to eliminate mold and mold spores. However, residuals of VOCs may be left behind by these products.

VOCs may be emitted by many products such as: paints, paint strippers, pesticides, building materials, furnishings, and cleaning products. VOCs can be released while the cleaning products are being used, and even while they are being stored. In addition, elevated concentrations can persist in the air long after a cleaning project is complete.

According to the EPA, VOCs are emitted as gases that include a variety of chemicals which may cause short-term or long-term health effects. Health effects and symptoms associated with exposure to harmful VOCs include eye, nose and throat irritations, allergic skin reaction, headaches, loss of coordination, nausea, dizziness, fatigue, liver damage, kidney damage, damage to central nervous system, and cancer. The extent and nature of the health effects and symptoms will depend on the level of exposure, length of exposure, and an individual's susceptibility.

Ironically, the EPA reports that exposure to mold may cause similar health effects. Mold produces allergens causing allergic reactions, which in turn produce irritants. And, most significantly,

mold spores produce and/or carry mycotoxins which are potentially toxic substances. Therefore, inhaling or touching mold or mold spores can cause allergic reactions, such as hay fever-type symptoms, sneezing, runny nose, red eyes, and skin rashes. Allergic reactions can be immediate or delayed. Mold exposure can irritate the eyes, skin, nose, throat, and lungs. Research about mold and its health effects is ongoing.

One should also be aware that the term "Toxic Mold" is not accurate. Certain molds are toxigenic, which means they produce toxins, specifically mycotoxins. And mold spores, either dead or alive, can carry these mycotoxins. However, the molds themselves are not toxic.

It would be a powerful accomplishment to be able to cure a home of mold contamination without leaving behind VOCs that could potentially cause other health issues that are the same or worse as those caused by mold.

Therefore, the hypothesis for this research was determined:

Thieves® can be used to effectively remediate mold in buildings.

Methodology

The following is a basic, abbreviated remediation plan, as laid out by the EPA and the IICRC S520 guidelines:

1. Contain the contaminated areas in such a way as to prevent contamination in adjacent clean areas.
2. Fix the water or moisture problem.
3. Remove all porous and contaminated building components and dispose of properly.
4. Remove personal effects by the following means:
    a. Dispose of those that cannot be remediated.
    b. Those that can be remediated should be:
        i. HEPA vacuumed.
        ii. Properly cleaned.
        iii. HEPA vacuumed again.
        iv. Stored in a clean area until remediation is complete.
5. HEPA vacuum the ceilings, walls, and floors.
6. Clean the ceilings, walls, and floors.
7. HEPA vacuum the ceilings, walls, and floors a second time.
8. Collect air samples to determine if all unusual mold conditions have been eliminated. If they have not, repeat the process.

Note Step 6 and the use of the word "clean". Discussions continue on what product(s) should be used to clean mold. Everything from simple water to strong disinfectants and biocides have been discussed throughout the remediation industry with no specific product being recommended by any regulatory agency. Baxter Group, Inc., like other remediation companies, includes the use of antifungal disinfectants, antimicrobial disinfectants, and biocides in their mold remediation protocol as an added assurance of sanitation. Baxter Group, Inc. has experienced huge success with remediation projects using these chemicals.

With the years of experience, and a strong reputation to protect, Baxter Group, Inc. did not want to change their mold remediation protocol unless we could be assured that it would not reduce the quality of our work. Quality workmanship, successful completion of projects, and creating a healthier environment for our Clients is of the utmost importance. Our Client's health is dependent on the success of our projects. To embark on a new protocol for mold remediation, we required two assurances. The first being that projects could be completed successfully. This is defined by a clean environment with post-remediation sample results asserting that all unusual mold conditions no longer exist. The second being the health of the environment, and therefore our Clients, would be positively impacted.

It was determined that the current remediation process being used by Baxter Group, Inc., which included the use of antifungal and antimicrobial disinfectants and biocides, was successful in remediating mold. The current hypothesis changes only Step 6 of the remediation plan detailed above. Baxter Group, Inc. selected several projects, including the project completed at the Harteis home, to test the ability of the Thieves® products to remediate mold.

Background of Thieves®

Thieves®, offered through *Young Living*, is a patented oil blend of clove, lemon, cinnamon bark, eucalyptus radiate, and rosemary. *Young Living* asserts that by cleaning and diffusing with Thieves® many forms of bacteria and mold spores are eliminated. Thieves® is believed to purify the air.

Thieves® is comprised of a patented formula:

- **Clove** oil, nature's richest source of eugenol, is the highest-scoring single ingredient tested for its antioxidant capacity on the ORAC scale. Clove is also known for its immune-enhancing properties.
- With 68% d-limonene, **lemon** oil is a powerful antioxidant known for its ability to act as a natural solvent and cleanser.
- High in antioxidants, **cinnamon bark** has a reputation for relieving discomfort during the winter season and for supporting the digestive system.
- As on of the most versatile of the eucalyptus oils, **eucalyptus radiata** has many health-promoting properties. This powerful essential oil contains eucalyptol as one of its major elements, which in laboratory tests has been reported as being effective against bacteria in topical applications.
- **Rosemary** oil is naturally energizing and may be beneficial for helping restore mental alertness when experiencing fatigue.

According to *Young Living*:

- Thieves® Household Cleaner, unlike toxic, chemical-based cleaning agents, is an all-purpose cleaner made of plant-based ingredients and uses a biodegradable formula.
- It is highly concentrated and can be used to clean laundry, dishes, floors, counters, carpets, upholstery, and more.
- Diffusing Thieves® essential oil blend with *Young Living*'s patented diffusing system creates a safe and simple means of filling your home with therapeutic benefits. Many forms of bacteria and mold spores linked to common ailments can travel through the air. Diffusing Thieves® adds an extra layer of protection by purifying the air while adding an uplifting scent to your home.

It is recommended that only therapeutic grade essential oils be used for this purpose. As discussed by Dr. Edward Close in his book Nature's Mold Rx – The Non-Toxic Solution to Toxic Mold (2007):

> "…Buyer Beware! To be absolutely clear, when we use the terms *essential oils* and *therapeutic oils* in this book, we are referring to the lipid (oil) soluble portion of the volatile, aromatic compounds obtained by steam distillation and cold expression or cold pressing of certified organic plant materials (including stems, branches, fruits, flowers seeds, roots, bark, needles, leaves and any other part of the plant) in a way that preserves the essential oil in a form that is as close to nature as the extraction process will permit. This definition also necessitates that the oil is a combination of compounds developed during the entire distillation process, that the oil has been distilled with loving care to avoid the high temperatures and pressures that might damage the more fragile constituents, and that every reasonable effort has been made to prevent contamination by synthetics, chemicals, preservatives and cleansers, in order to preserve the living energy and therapeutic benefits of the oil."

One report published by Dr. Edward Close in his book Nature's Mold Rx – The Non-Toxic Solution to Toxic Mold (2007) reported that there are residual benefits to the use of Thieves®. The disinfecting power continues to work after the use of the product.

Nature's Mold Rx – The Non-Toxic Solution to Toxic Mold – A Breakthrough Discovery by Edward R. Close, PHD and Jacquelyn Close, RA reported the following:

> "…The field tests conducted by Dr. Close indicate that Essential Oil Blend No. 2 (Thieves®) is a strong antifungal agent with powerful inhibitory effects on the most common and most hazardous toxic mold found in buildings. More than that, the tests showed that the mold spores, both living and dead were actually removed from the air. This was one of the most surprising results of the tests and was borne out in all Case Studies completed."
>
> "…Laboratory research studies are good because they are performed under controlled circumstances where the relevant physical and chemical parameters can be carefully measured and recorded, and uncontrolled variables can either be eliminated or minimized. Field studies, on the other hand, if carefully executed, yield even more valuable information because they test the effectiveness of a treatment under real-world conditions."
>
> "…It is important to note that direct-examination spore-trap analysis does not distinguish between live and dead spores. Common objections to the use of fungicides are:
>
> 1. Dead spores can still cause allergic reactions.
> 2. Most fungicides are toxic to humans, plants, and animals.
> 3. The effects of fungicides wear off quickly.
>
> All these objections are overcome with the use of this essential oil blend (Thieves).

1. Both dead and live spores are removed from the air.
2. The essential oil blend EOB2 (Thieves) is nontoxic and is reported to support health and wellness. This blend is approved by the FDA for human consumption.
3. Finally, diffusing EOB2 (Thieves) is shown to have long-lasting residual effects."

The research by Dr. Close and by *Young Living* all pointed towards the direction of success. However, we still did not feel confident enough to offer a new protocol to our Clients without seeing the results for ourselves.

The following Case Studies show the results of the projects that Baxter Group, Inc. completed using the 8 step remediation plan detailed in the previous pages. The only difference between these projects and the projects previously completed by Baxter Group, Inc. are that Thieves® Household Cleaner and diffusing Thieves® Essential Oil Blend was used in place of antimicrobial and antifungal disinfectants and biocides.

In order to interpret the analysis results, please note that laboratory results will show that "Unusual Mold Conditions Exist" when the Total Spore Count is 5,000 spores per cubic meter (sp/m^3) or above, or if the Total Spore Count is significantly higher (125%) than the outside sample. Results will also show "Unusual Mold Conditions Exist" when the following mold spores are found at excessive levels:

Penicillium/Aspergillus group spores	750 sp/m^3 or above
Stachybotrys spores	35 sp/m^3 or above
Chaetomium spores	250 sp/m^3 or above
Memnoniella spores	250 sp/m^3 or above
Bipolaris/Dreschlera spores	250 sp/m^3 or above
Fusarium spores	250 sp/m^3 or above
Torula spores	250 sp/m^3 or above
Trichoderma spores	250 sp/m^3 or above

Case Study One
Harteis

On April 4, 2012, I met with Kirsten. I completed a thorough interview with her, and we performed a complete investigation of her home. The following assessment reveals our findings:

Assessment

Kirsten reported that her children had been sick most of the winter months with cold-like symptoms and fatigue that she felt may have resulted from exposure to mold. There had been a break in the water intake valve behind the toilet in the main bathroom that had spread over the vinyl flooring and leaked into the sub-floor of the bathroom. There had also been an ice jam on the roof near the chimney and roof line. The ice jam was identified when Kirsten was putting wood in the fireplace in the basement. She had noticed water leaking into the fireplace. Apparently, the ice jam caused water to soil the attic area; it streamed from there to the kitchen ceiling, and then leaked onto the kitchen floor, under the kitchen cabinets and into that sub-flooring, down onto some of the ceiling tiles in the basement and into the basement fireplace. She feared that this past history had caused mold contamination in different areas of her house. Their house was built in 1974. They moved into the house in 1998 and have been performing some renovations. A total of seven areas were investigated.

Upstairs Bathroom: When the tub cover was removed, there was apparent mold growth behind and under the tub and embedded mold on different wooden building components. There was apparent mold growth under the vinyl flooring around the toilet. There was suspicious mold growth in the grout found in the tub/shower area.

Laundry Room: There were moisture marks on the ceiling tiles that could attract mold colonization or currently support mold contamination. Contaminated drywall had already been removed. Some suspicious mold remained. Since apparent mold growth on drywall had already been identified and removed by the Client, all suspicious mold growth should be addressed as though it was apparent mold growth.

Laundry Room Closet: There was suspicious mold growth on the lower portion of the wall under the front of the house. Destructive investigation was performed and no mold growth was found behind the wall. The lower portion of the wall had been cleaned by the Client. The remaining suspect are is believed to be stains from a history of mold growth and not current mold contamination. The humidity averaged 36% in the closet area.

Toy Storage Room: The corner of the room that is located in the far right of the room (looking at the room from the entry of the room) had apparent mold growth starting from the floor and rising about one foot up the wall. Upon pulling the wallpaper from the wall, apparent mold growth was found.

Destructive investigation was performed and no suspicious mold was found behind the wall. The mold appears to be isolated to that corner.

Basement Bathroom: It appeared that the leak from the upstairs bathroom had streamed down through the sub-floor and onto the ceiling of the basement bathroom. There was apparent mold growth on the shower walls and on the drywall under the sink. There was enough apparent mold growth in this room to consider the entire room contaminated.

Hot Water Heater Closet: Some of the foam used to insulate the walls had apparent mold growth. The entire room should be considered contaminated.

Attic: The attic contained a dividing wall. On the ceiling, five feet in from where the ceiling meets the diving wall, there was apparent mold growth. The Client reported that on the opposite side of the wall, the ceiling had a similar contamination.

The laboratory results of spore trap analysis samples prior to our introduction were forwarded to me for review. Levels of Stachybotrys and Penicillium/Aspergillus in the main bathroom and in the basement far exceed levels considered to be in a healthy environment and can be associated with adverse health effects.

Assessment Summary and Recommendations:

Based on the apparent and suspicious mold growth identified through this investigation, combined with the results provided for the air samples collected from the house, it is recommended that a mold remediation plan be pursued as outlined in the guidelines published by the EPA. Sampling of all rooms would aid in determining the extent of remediation to be pursued. If further air sampling of the house is not pursued, the Client should operate under the assumption that the entire house is contaminated; therefore, the entire house should be remediated. If each room were to undergo spore trap analysis, it could be determined if the contamination is limited to specific rooms/areas. The main bathroom and the basement should be considered as contaminated areas. Until remediated, access to these areas should be limited or totally restricted.

A remediation plan was proposed to Kirsten at the time that the assessment was provided. At that time Kirsten introduced the concept of using non-VOC emitting cleaners. She approved the remediation protocol with Thieves® replacing any and all cleaning agents typically used. Remediation was completed on May 25, 2012.

Samples were collected in the Bathroom and in the Basement by the initial mold inspector on March 29, 2012, which was prior to the start of the remediation project. The outside spore count was 800 sp/m^3 when the samples were collected.

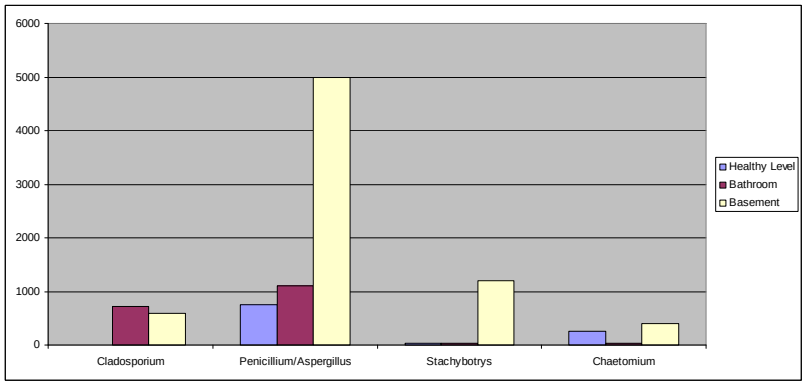

Table 1-1: Results from March 29, 2012

On May 16, 2012, prior to the start of Baxter Group, Inc.'s remediation project, additional samples were collected from the Bathroom, Basement, Elias's Room, and the Tach Room. The outside spore count was 7,800 sp/m^3. It should be noted that Kirsten had been diffusing regularly in the Bathroom. And although there was still visible mold in the Bathroom, the spore count in the air had significantly dropped to be within the healthy level.

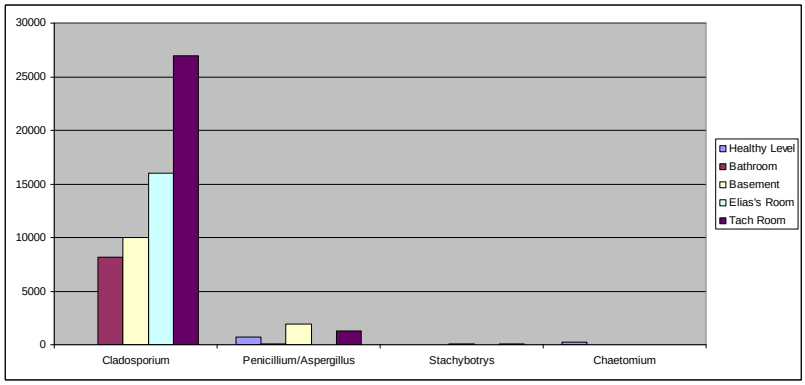

Table 1-2: Results from May 16, 2012

On June 2, 2012, after remediation was complete, samples were again collected. At this time, the outside spore count was 1,600 sp/m^3.

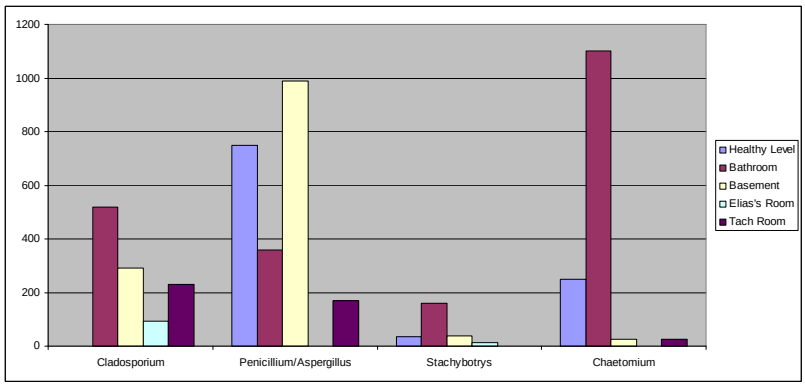

Table 1-3: Results from June 2, 2012

On June 6, 2012, samples were collected. These samples were collected after diffusion. The outside spore count was 2,100 sp/m^3.

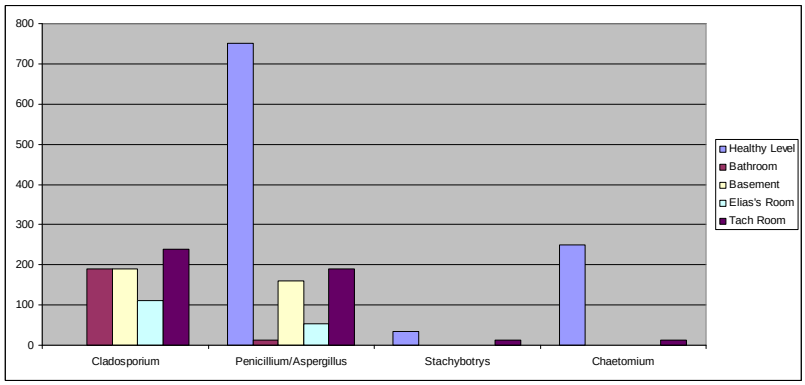

Table 1-4: Results from June 6, 2012

On July 10, 2012, samples were collected prior to an additional diffusion. The outside spore count was 4,100 sp/m^3.

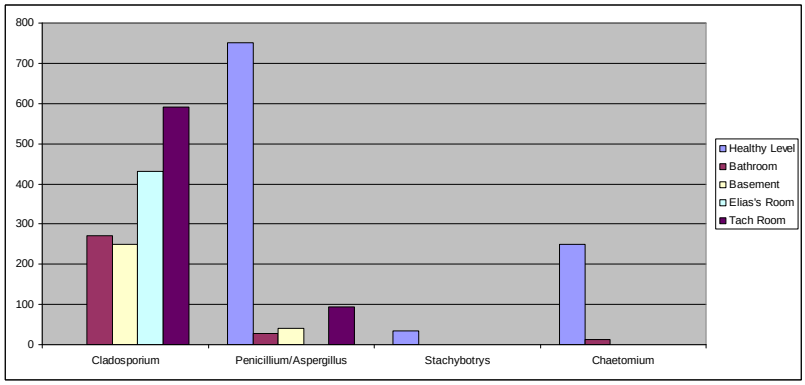

Table 1-5: Results from July 10, 2012

On July 12, 2012, after the additional diffusion was complete, samples were collected. At that time, the outside spore count was 11,000 sp/m^3.

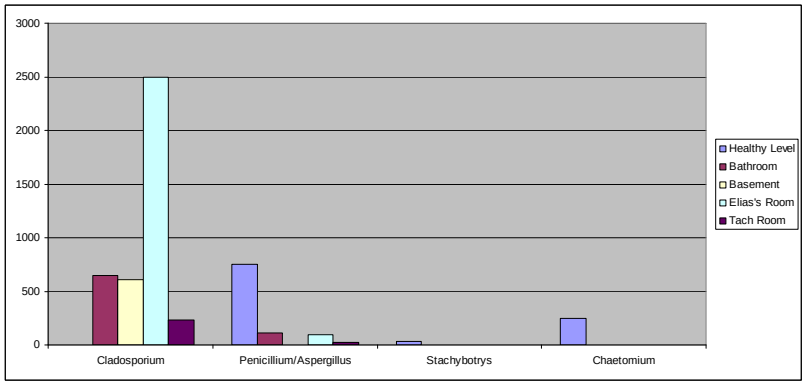

Table 1-6: Results from July 12, 2012

Diffusion was performed again in October, and samples were collected at the completion of the diffusion. On October 24, 2012, the outside spore count was 6,200 sp/m^3.

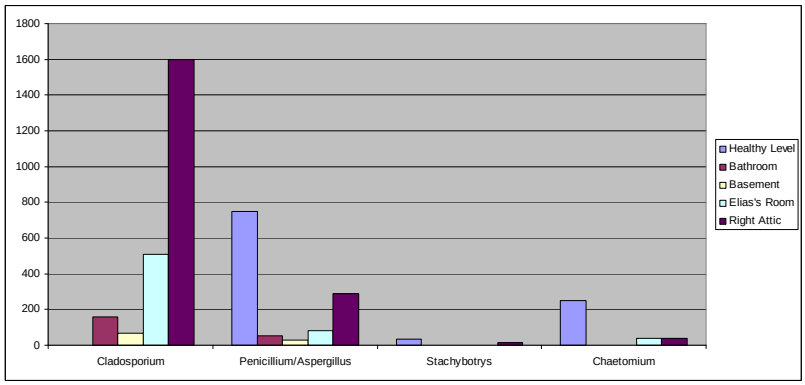

Table 1-7: Results from October 24, 2012

To better determine the effects of the Thieves®, from cleaning with Thieves® Household Cleaner to diffusing Thieves® Essential Oils, the charts below show each spore type from points prior to remediation until after the final diffusion was complete.

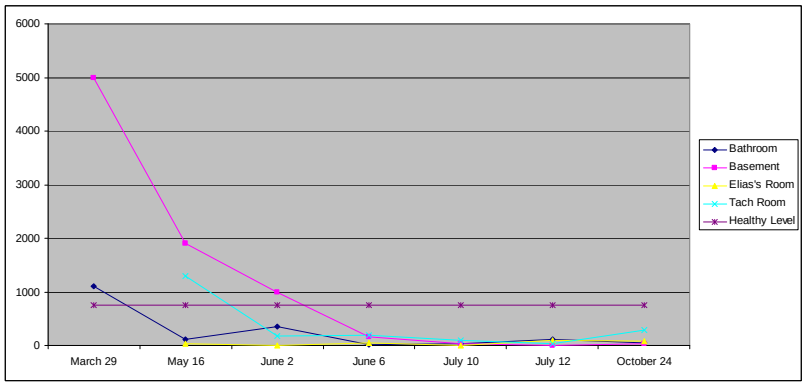

Table 1-8: Penicillium/Aspergillus

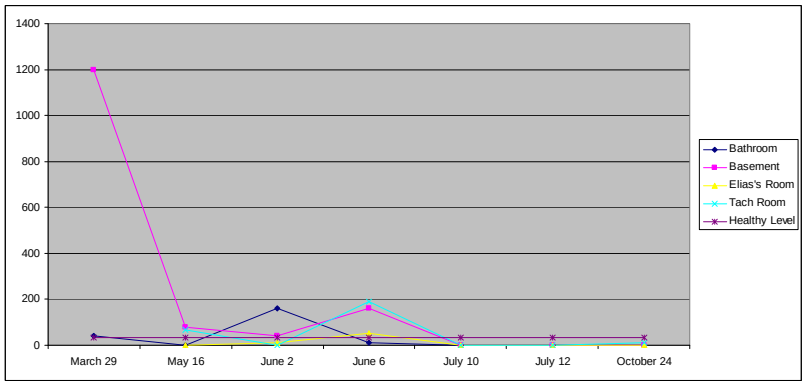

Table 1-9: Stachybotrys

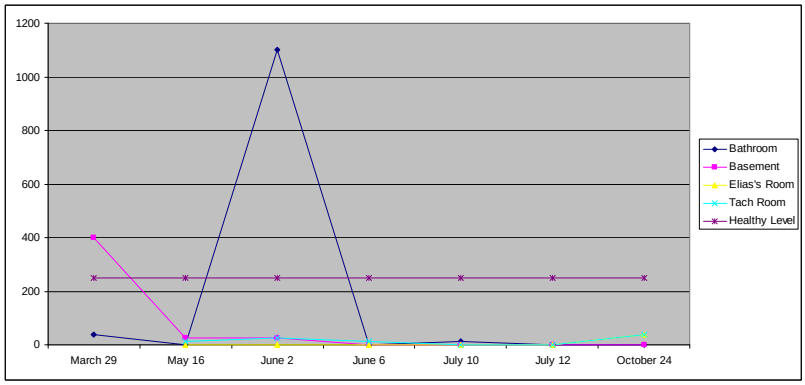

Table 1-10: Chaetomium

As you can see from Table 1-8, Table 1-9, and Table 1-10, after remediation and diffusion, all of the spore types maintained a level below the level that is considered to be hazardous in an indoor environment.

After having such positive results on this project, Baxter Group, Inc. continued to pursue this alternative means of remediation.

Case Study Two
Mrs. B

In the Summer of 2012, the "B" family approached Baxter Group, Inc. with a concern about mold in Mrs. B's basement. Mrs. B, who was in her 90s, shard with us that her husband had always maintained their basement. Since his move into a nursing home and subsequent death, no one ever occupied the area and she had noted a faint odor when she passed the basement area to go to her garage. A visual inspection was performed and air samples were collected. The following assessment was provided:

Assessment

Upon entering the basement, there was an odor commonly associated with a mold contamination. The basement consists of five areas: a main garage, secondary garage, main basement workshop area, a secondary basement storage area, and a canning storage room. The following issues were observed:

Secondary Basement Storage Area: The walls showed staining indicative of a history of water saturation and random scatterings of evident mold. The peg board hanging on one wall had suspicious discoloration commonly associated with mold contamination. The bottom of the wall along the front of the house was wet at the time of investigation. All of the articles stored in the basement had evident mold contamination.

Main Basement Workshop Area: This area had water present on the front wall. The baseboard had evident mold contamination at its base and continuing four to six inches up the wall. The articles in the room were randomly covered with evident mold. There were random marks and a discoloration on the wall above the fireplace that one would suspect to be an indication of mold.

Main Garage: The main garage had suspicious mold contamination in the top and bottom corners of the walls in the back of the house. Under the steps there were marks that indicated a history of mold and water damage. There was a very small pipe leak in the ceiling that was leaving water spots on the floor under it.

Secondary Garage: The secondary garage had visible water history marks around the bottom of the back wall.

Canning Storage Room: This area has a gravel floor. The ceiling and floor were wet at the time of the investigation. There was evident mold contamination on the ceiling.

The outside of the home had several areas where possible water intrusion could occur. They are as follows:

- Brick walkway is sloped towards the house.
- The window wells around the whole house need to be cleaned out and then a cover placed over them to prevent debris and water from intruding.
- The gutter had standing water in it. It should be extended further into the yard, away from the basement, and the slope should be increased to allow water to flow away from the house more freely.

Assessment Summary and Recommendations:

The rooms located in the basement area of Mrs. B's home are suffering from a severe mold contamination. It is recommended that full remediation procedures be pursued in the basement area. Prior to remediation, the "B" family should take all necessary steps to prohibit water intrusions and eliminate moisture and humidity events. A waterproofing specialist should be retained to address these concerns. Until any waterproofing is pursued, Mrs. B should consider installing dehumidifiers. The ideal humidity for human comfort is 40%. The ideal humidity level for the propogation of mold is 60%. Dehumidification will help slow the growth of mold.

The laboratory analysis report confirmed that the basement was suffering from a severe mold contamination. The results seen below show how severe. The outside spore count at this time was 10,000 sp/m^3:

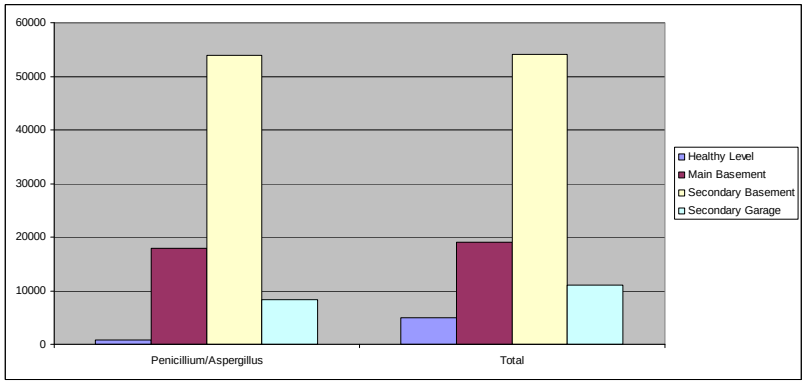

Table 2-1: Results from July 24, 2012

A remediation plan was also proposed at the time that the assessment was provided to Mrs. B. The family decided to have limited remediation completed due to the fact that the basement was a non-occupied area. The protocol for this project would include using non-VOC emitting cleaner, specifically Thieves®. The "B" family cleaned out many of the articles in the basement area. However, unlike Case Study One, the entire basement could not be emptied and the water and moisture intrusions could not be totally remedied. The basement was HEPA vacuumed two times, and it was then thoroughly diffused for a 72-hour period.

The following results are from samples collected after remediation and diffusion had been completed. The outside spore count at this time was 5,600 sp/m^3.

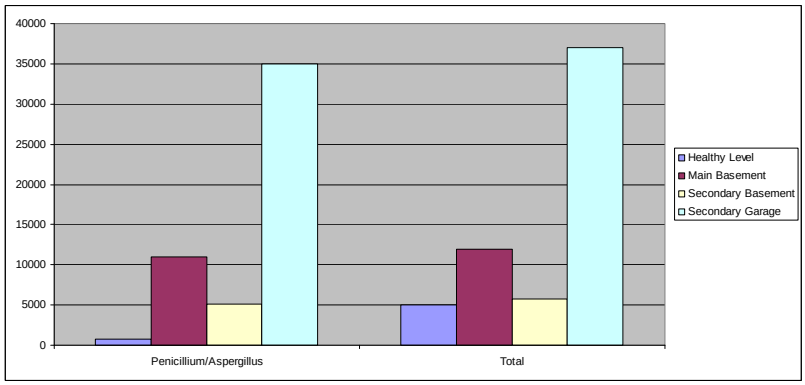

Table 2-2: Results from July 27, 2012

Dr. Edward Close has commented on the residual affects of diffusing Thieves®. Samples were collected from the basement area on December 11, 2012, with no further remediation or diffusion taking place. The outside spore count was 800 sp/m^3.

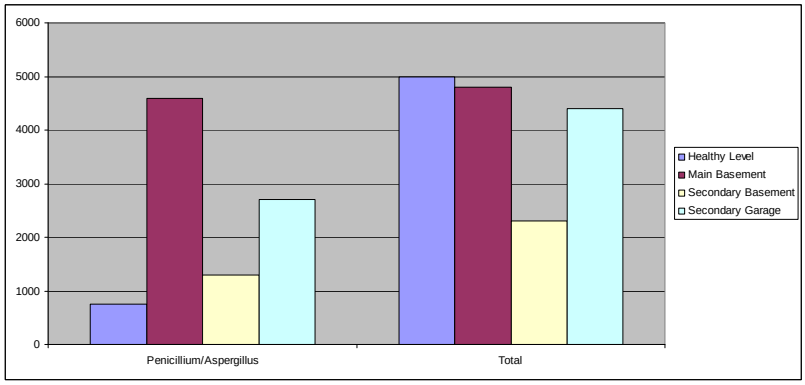

Table 2-3: Results from December 11, 2012

On December 11, 2012, diffusion was commenced for an additional 48-hour period. Air samples were then collected on December 13, 2012 at the completion of the diffusion. The outside spore count was 210 sp/m^3 for this analysis period.

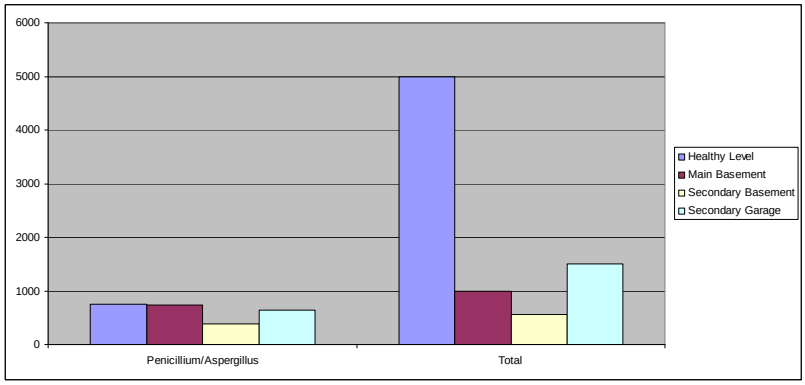

Table 2-4: Results from December 13, 2012

Again, although results are not achieved overnight, Thieves® products have produced a clean environment for the Client, as seen in Table 2-5 below.

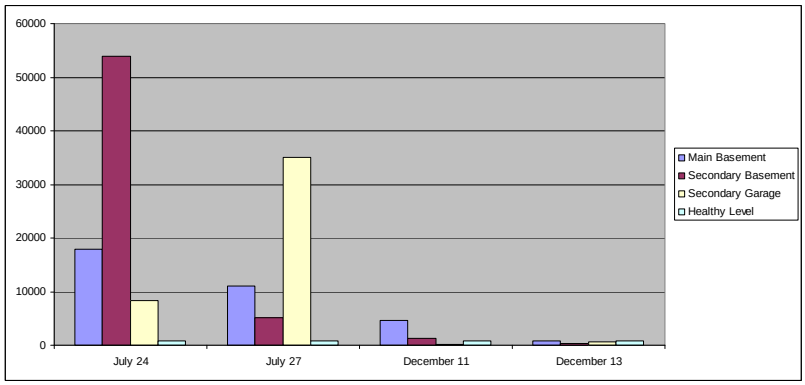

Table 2-5: Penicillium/Aspergillus

Case Study Three
Mrs. G

Mrs. G contacted Baxter Group, Inc. in a panic. She had a Tenant living in a rental property who was concerned about mold and possibly suffering from mold-related heath issues. Mrs. G was very concerned about her tenant. The Tenant's apartment was visited and investigated. She was then provided with the following assessment:

Assessment

Upon entering the apartment, there was no odor commonly associated with mold. It was apparent that the Tenant practiced good housekeeping. The air was humid. Several areas of concern were presented:

Bedroom Closet: The Tenant displayed evidence of leather and/or suede shoes with apparent mold growth on them. The closet had a slight odor commonly associated with mold and moisture. There was no visible evidence of mold on the walls or floor.

Kitchen Cupboards: There was a very slight odor that one would associate with mold in the kitchen cupboards. Pans showed evidence of mold growth on them. There were small dots of brownish yellow substance peppered on the back wall of the cupboard that would be considered suspicious.

Furnace Room: The ceiling of the furnace room had evident mold embedded and rooted into it. The ceiling was not removed to determine what if any contamination may be behind the ceiling tile. There was brownish growth at the bottom of the drywall shared with the above closet that would be considered suspicious.

Laundry Room: There is an exit stairway from the laundry room to the outdoors. This stairway and the floor along the outside wall were wet. There were random areas of evident mold growth: on the face of some of the cupboards, in the outside corner away from the door, and on the floor.

Assessment Summary and Recommendations:

The apartment is suffering from a mold contamination. It is possible that the contamination is isolated to the areas listed above.

It appears that this mold contamination may have been propagated by high humidity levels and dampness originating from moisture in the laundry room, and possibly from infiltration under the front door. Prior to any mold remediation, dehumidifiers should be placed in the apartment to bring the humidity level down to about 40%. It is also recommended that a waterproofing specialist be retained to determine the possibility of eliminating future water intrusions.

There is the possibility that the mold contamination is limited to the isolated areas noted above, rather than throughout the entire apartment. It is our recommendation that the indicated areas undergo remediation procedures. As they are completed, they should be isolated from the remainder of the apartment. Once all indicated areas are completed, the air in the indicated areas and outside these isolated areas should be sampled to determine if the entire apartment should undergo remediation procedures. Also, during the remediation process, continued investigation for mold colonies should be pursued.

A remediation plan was also proposed at the time that the assessment was provided to Mrs. G. She agreed to the remediation plan, offered the assistance of her maintenance worker, and agreed to the use of non-VOC emitting cleaners and diffusing Thieves®.

On October 18, 2012, samples were collected. These samples were collected after the mold had been cleaned by Mrs. G's maintenance worker, but before diffusion of Thieves®. The laboratory analysis report is as follows, with the outside spore count of 870 sp/m^3.

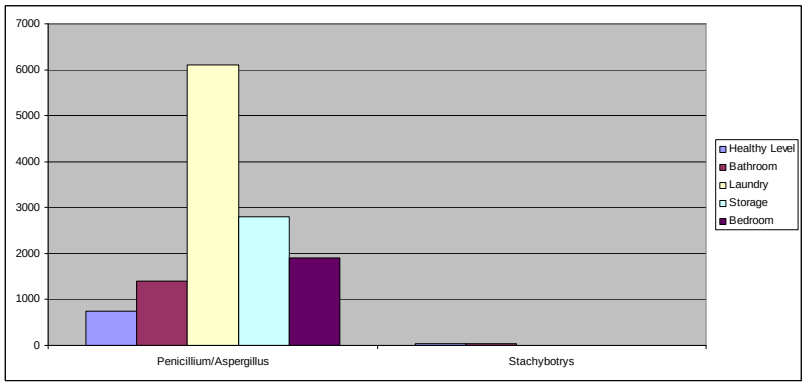

Table 3-1: Results from October 18, 2012

The apartment was then given a 48-hour diffusion of Thieves®. The laboratory results from October 22, 2012 are as follows. The outside spore count was sp/m^3.

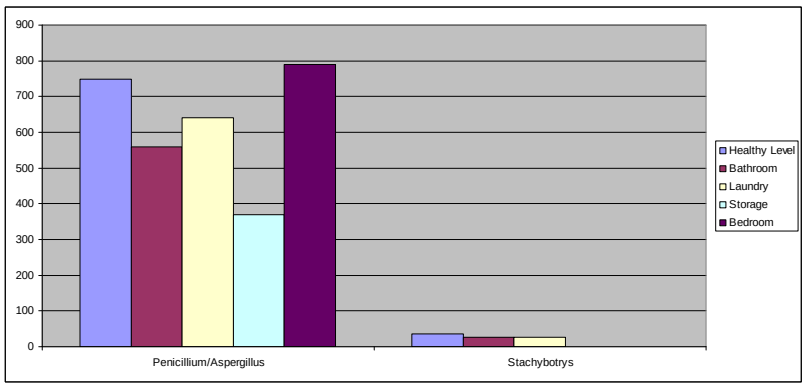

Table 3-2: Results from October 22, 2012

The results show that again, Thieves® has successfully been used to reduce the spore count to beneath the level that is considered unhealthy or hazardous for an indoor environment.

Additional Data

Project One:

In the midst of isolated remediation projects within an apartment complex, on of our Mold Foreman became very concerned about the length of time Tenants' lives would be interrupted by remediation practices. Having some experience with Thieves®, he felt that the use of this product would eliminate the need for multiple cleaning processes, saving the Client time and money. With the Client's permission, we added diffusion to our remediation plan.

The initial samples were collected on November 29, 2012, which was after remediation, but prior to diffusion. Additional samples were collected on December 11, 2012, after diffusion was complete.

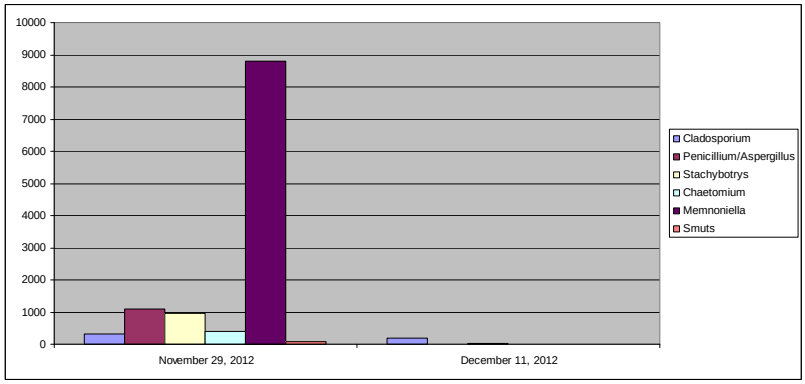

Table 4-1: Apartment Complex Before and After

Project Two:

Upon conferring with a local doctor's office on an unrelated matter, the doctor mentioned a concern about mold growth in the ceiling of her private bathroom. Upon doing a visual assessment, it was determined that there was a moinsture intrusion which lead to an active mold colony on the ceiling tile. She requested a quote for remediation and asked that we collect samples to determine the extent of the mold contamination.

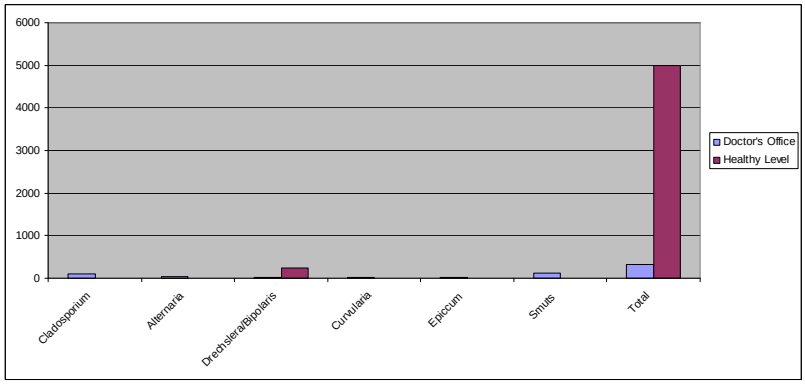

Table 4-2: Doctor's Office

Although a visible mold colony was present in the bathroom, the Doctor has been diffusing her office, including this bathroom, with Thieves® on a regular basis for months. All of the spore counts were below the acceptable level.

Project Three:

Upon performing a visual inspection of the bathroom in an additional property, visible mold was found on the wall behind the bathtub and on a dining room wall adjacent to the bathroom. Full remediation, along with diffusion of Thieves®, was completed in the bathroom.

The results below show the spore count prior to remediation and diffusion, and the spore count after remediation and diffusion had been completed.

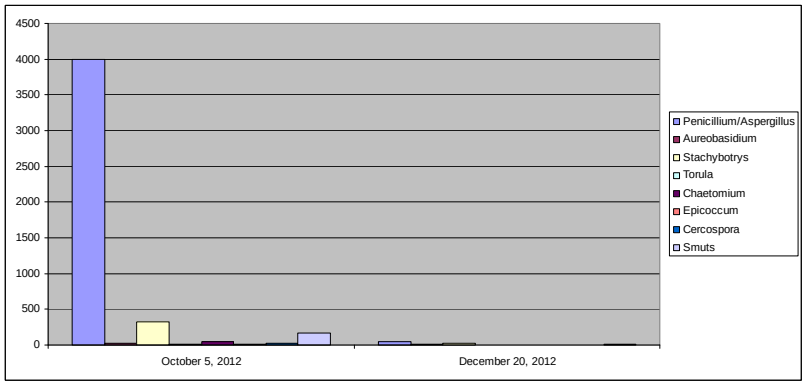

Table 4-3: Additional Bathroom

Conclusion

Several projects were completed by Baxter Group, Inc. using alternate protocol to determine whether or not non-VOC emitting cleaners would provide as much success in remediating mold as the antifungal disinfectants, the antimicrobial disinfectants, and the biocides currently used during mold remediation projects.

After reviewing the data, Baxter Group, Inc. is confident in the quality of the product and is proud to implement the entire Thieves® product line into its remediation practices.