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# PROFESSIONAL BUILDING INSPECTORS

1057 MORA PLACE, WOODMERE, NY 11598 • 6 JULIA CIRCLE, EAST SETAUKET, NY 11733



PHONE: 516-295-2581 • FAX: 516-791-6832 • WEB: PROFESSIONALBUILDINGINSPECTOR.COM

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July 16, 2009

Mr. M.S.  
E. Setauket, NY 11733

## SUMMARY OF OUR FINDINGS

At your request we returned to the home on July 10<sup>th</sup> 2009 and performed a follow up inspection. As with our previous visit to the home in May of this year our goal was to determine if any adverse conditions inside the house that are negatively impacting the indoor air quality.

As part of this inspection we utilized a Graywolf / Lighthouse, 6 channel, laser particle counter. This device precisely measures the fine particles in the air (those that we breathe in) and we have displayed those results in a graph below. Essentially we used this tool to measure the “dustiness” of the house.

Our inspection and review of the data reveal the following:

1. **The TSP (Total Suspended Particles) and RSP (Respiratory Suspended Particles) were higher than outdoors, and significantly higher than the recommended indoor/outdoor ratio of 1:3. In Dillon's Room the ratio was the highest and we suspect the substrate in the reptile cages to contribute to this.**
2. We continue to find a **moderate amounts of visible dust throughout the residence on horizontal surfaces**. This condition will lead to poor air quality as there is increased particulate and it promotes dust mites, both of which are well known trigger reactive airway disease.
3. In your son's bedroom a **general clutter of contents hinders effective cleaning**. This leads to persistent dust and particulate. The wall-to-wall carpeting also traps dust particles, mold and allergens. We recommend you consider the installation of Hardwood flooring, additional storage cabinets or debulking the clutter.
4. The **reptiles in your son's bedroom** maybe hypoallergenic themselves, however, the substrate used in the base of the terrarium often contain allergens that cause respiratory effect. We recommend these pets be moved to another room.
5. The free standing filters in the house are dirty and need ot be cleaned if theya re going to be used. Please remember that malfunctioning ionic filters can generate ozone. We recommend abandoning these devices and installing automated systems that will do a better job at filtering and humidifying the air is necessary or higher quality filters such as those mentioned in the attached file.

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Please realize that many clients ask for referrals to qualified contractors, and over the years working with insurance carriers and loss prevention firms we have developed a list of reputable contractors, none of which we have any financial relationship with, ethically that would create a conflict of interest. Should you need assistance in locating a contractor please feel free to contact our office and we can provide you a list of firms qualified to handle projects such as this.

## LASER PARTICLE COUNTER SUMMARY

**The TSP (Total Suspended Particles) and RSP (Respiratory Suspended Particles) were higher than outdoors, and significantly higher than the recommended indoor/outdoor ratio of 1:3 especially in Dillon's Room.**

**Dust indoors contains a large amount of specific allergens. It is an indisputable fact that an elevated particle content in air increases the load on the airways, and that at the same time these particles may be carriers of specific irritating and allergenic agents. The particle content of air should therefore be kept low, i.e. elimination measures such as good cleaning and good ventilation (inclusive of good filtration of supply air).**

Total Suspended Particles (TSP) concentrations represent the largest range of particles, including those which are respirable (as small as 3 micron and less) and can reach the alveolar area of the lungs, and thoracic (less than 5 micron), which can reach the trachea and all the airways and those between 5-10 micron (inhalable), which can reach only the inside of the nose, mouth, trachea and upper airways, but cannot reach the gas exchange areas in the lower lobes of the lungs.

Besides the potential health effects on exposed individuals, TSP have the physical quality of carrying and dispersing odors and odorless gases generated by an interior source, such as work stations, office equipment, building materials, carpets, wallpapers, etc.

How long particles remain airborne, before their sedimentation on interior surfaces, depends on their size and weight: if for particles of 1 $\mu$  it takes 4 hours, and for 0.3 $\mu$  particle 5-6 days, 10.0 $\mu$ particle will take only 3 minutes. Heavier particles larger than 10.0 $\mu$  fall down and are deposited on interior surfaces and released into the air when disturbed in the process of human activity. They are removed by cleaning, as TSP (below the size of 10.0 $\mu$  particles) can be primarily eliminated by means of ventilation and filtration.

Particles under 1  $\mu$ m in size normally constitute 99.9% of the number of particles in room air, and have a mass, which make up ca 30% of the total mass. The movement of particles in air is also affected by their charge and the presence of electric fields. For particles of the order of 1  $\mu$ m, their

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charge and the presence of electric fields are of significance, for e.g. particle deposition on the skin, while deposition of larger particles is governed by air movements.

## **GOVERNMENT AND INDUSTRY GUIDELINES FOR PARTICLE COUNTS**

There presently are no government guidelines for particle counts related to indoor air quality or health & safety. However, particle mass concentration is addressed by the US EPA, US OSHA, WHO & other government agencies.

The following is details the locations that we assessed using the particle counter. The sample location # is keyed to the graph below. In all locations a 5 minute sample time was used. The range of the particles we tested was: 0.3 microns ( $\mu$ ), 0.5  $\mu$ , 1.0  $\mu$ , 2.5  $\mu$ , 5.0  $\mu$  and 10.0  $\mu$ .

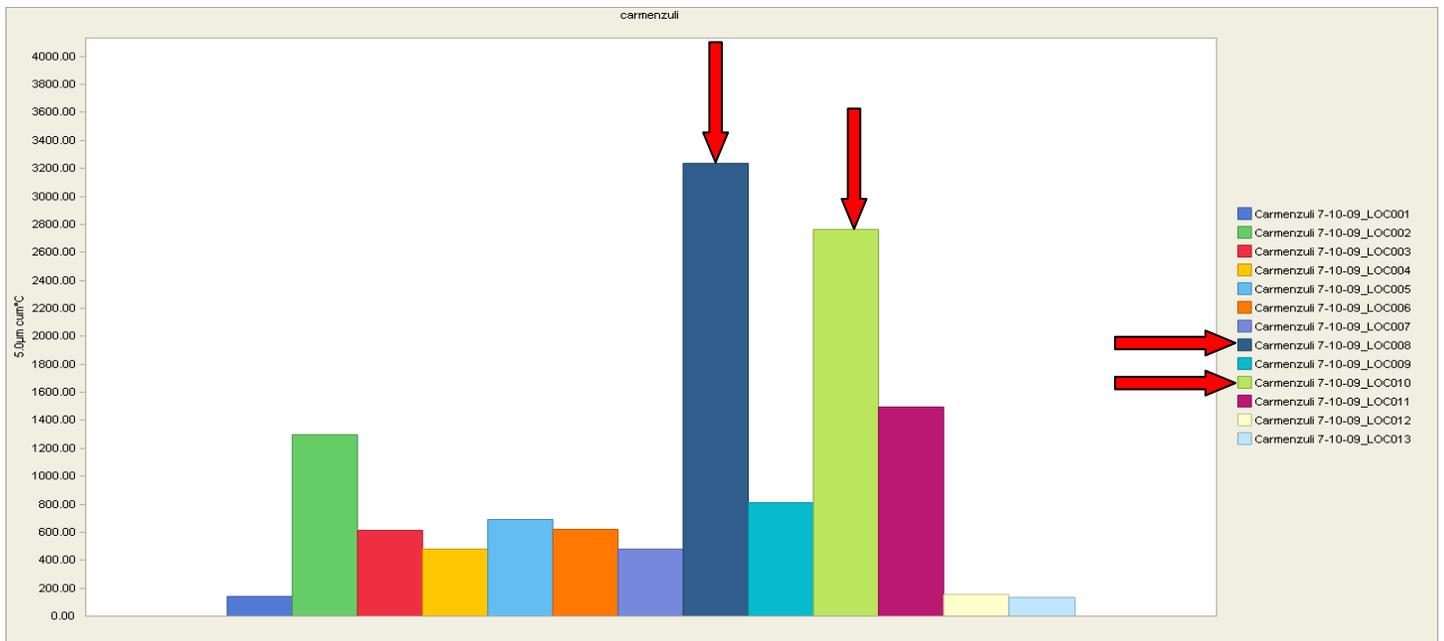
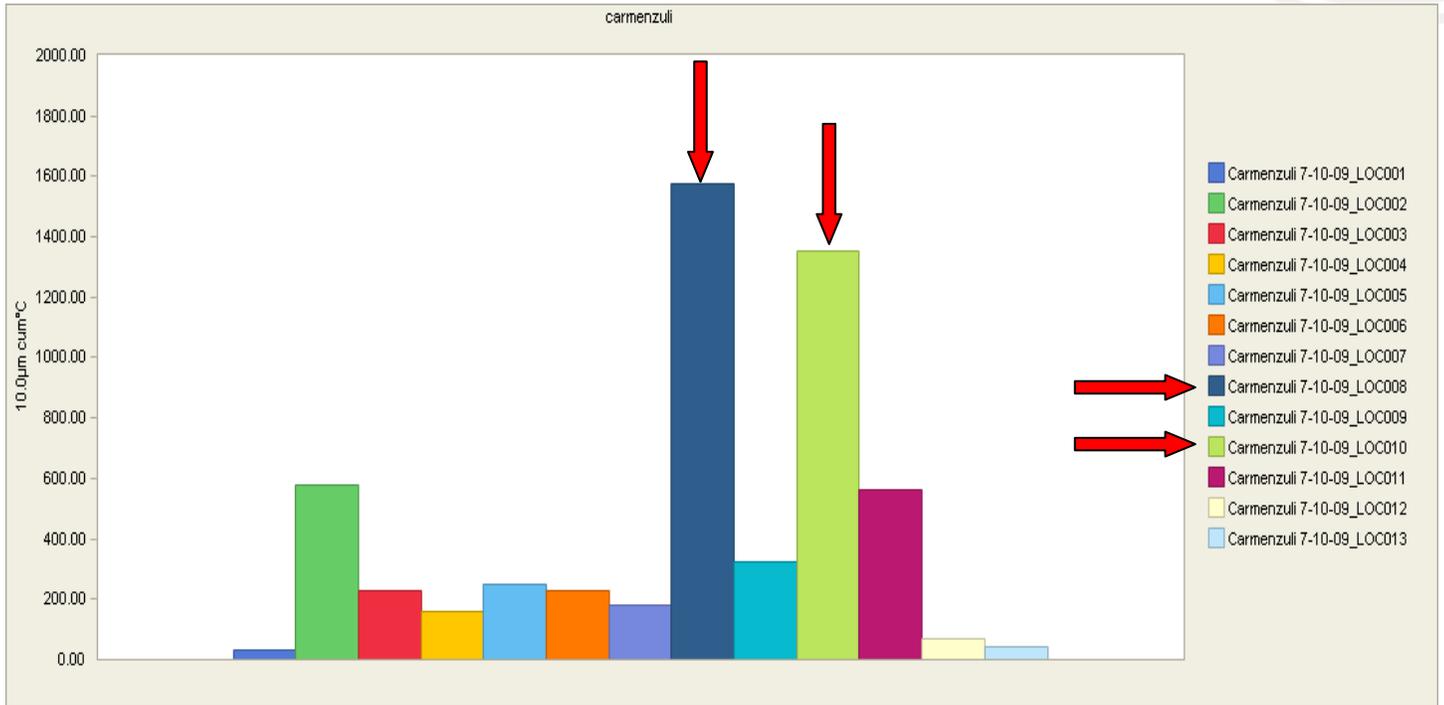
1. Outside the house (front)
2. Living room
3. Kitchen
4. Dining room
5. Den
6. Spare bedroom on the first floor
7. Master bedroom
8. Son's room
9. Daughter's room
10. Repeat test in Son's Room
11. Common hallway on the second floor
12. Under the HVAC discharge on the second floor
13. Outside the house (front)

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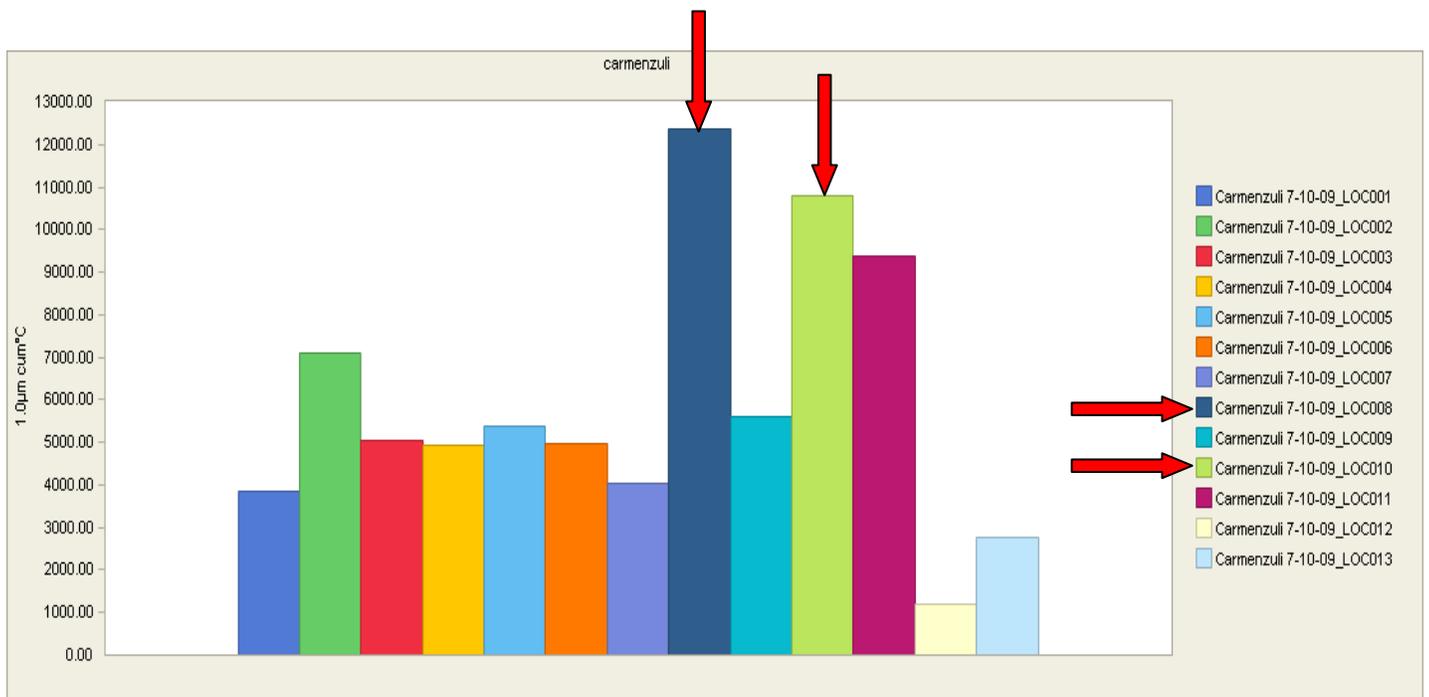
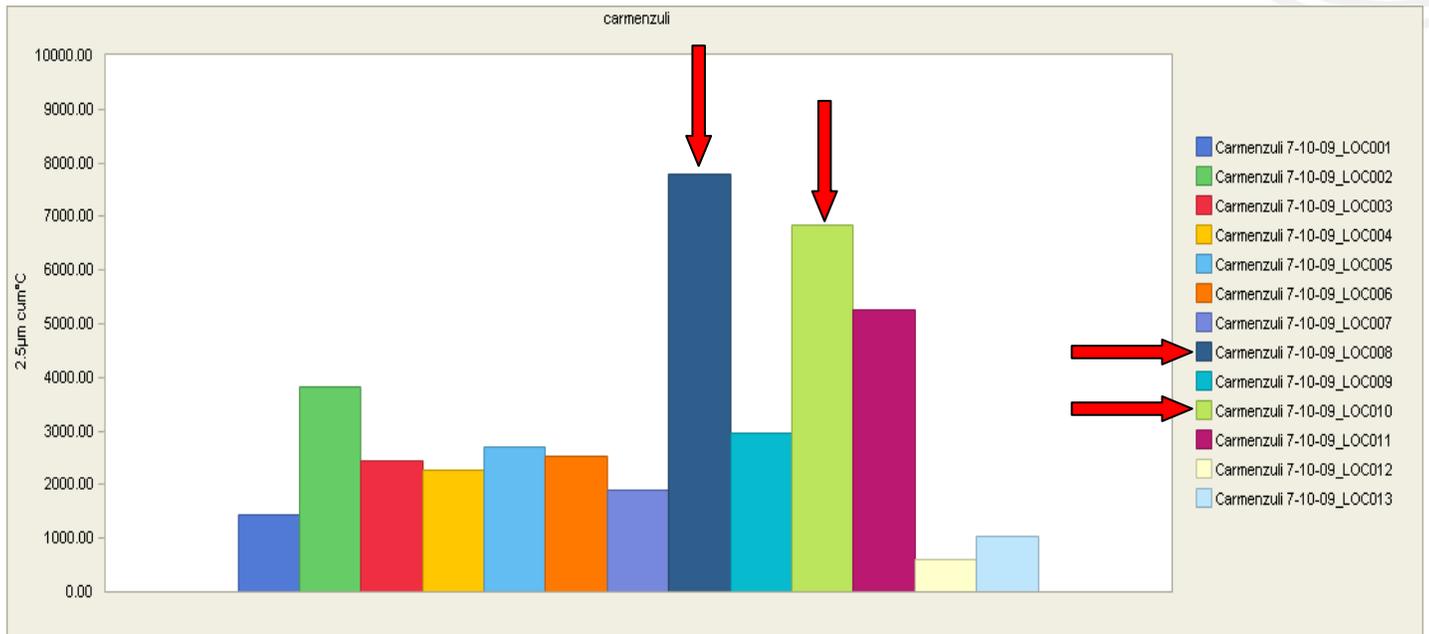


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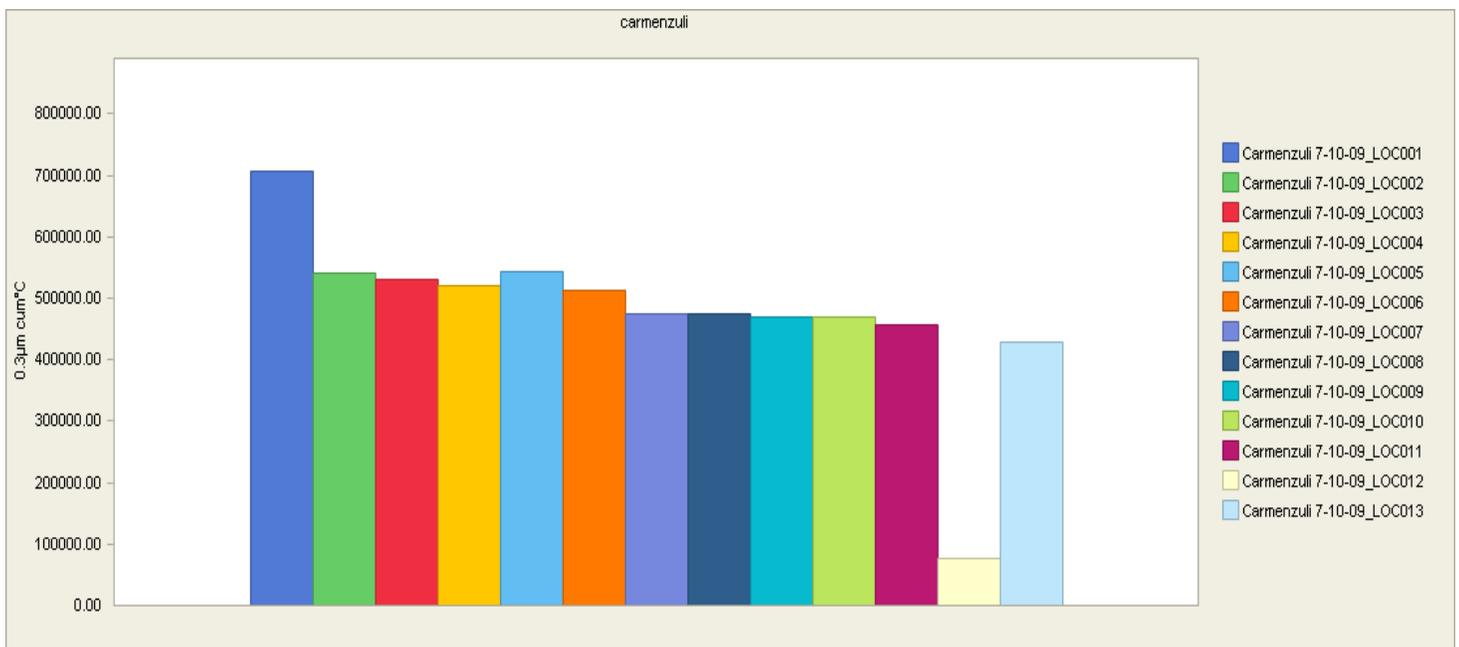
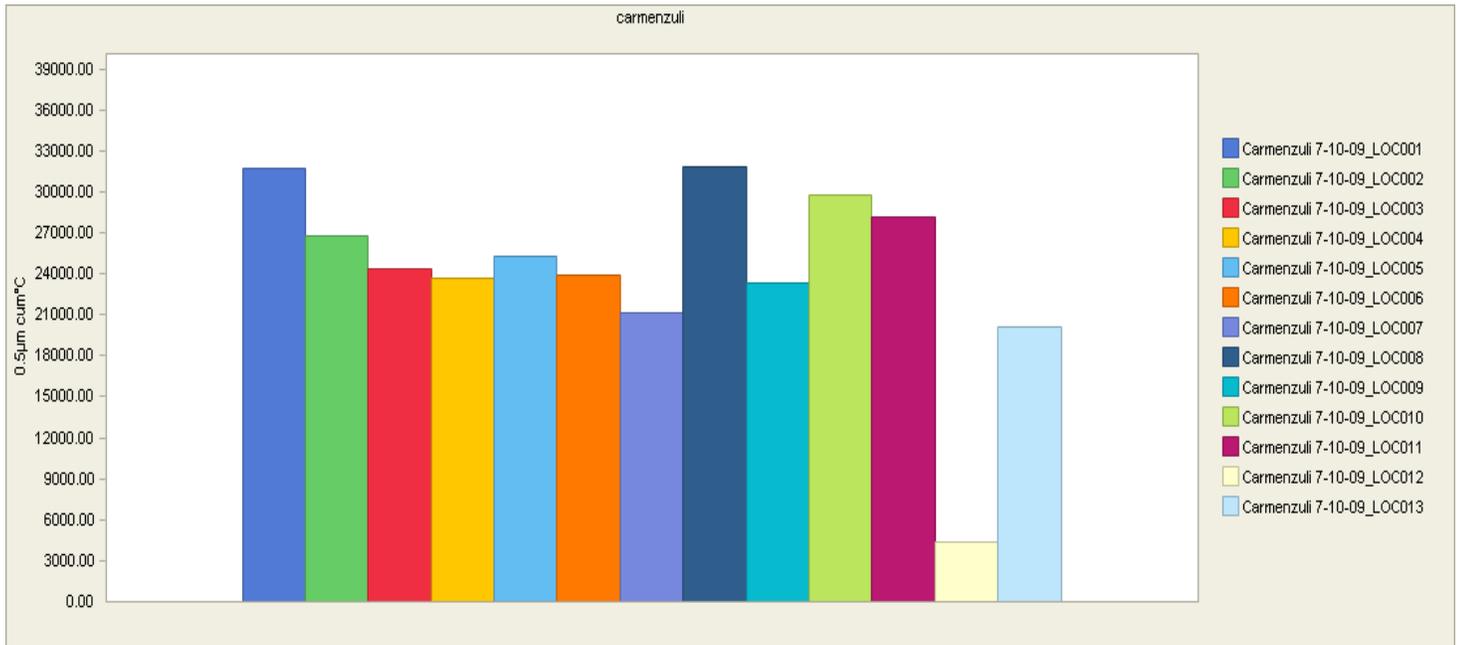


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## VISUAL INSPECTION

We find no significant structural changes to the colonial style home since our last inspection. There are two zones of central air-conditioning, only one of which was operational during the inspection. We continue to find **heavy dust accumulation on the furniture and horizontal surfaces in all rooms throughout the house.** The images below are typical of our findings of **this visit in July**



In both of the children's bedrooms we continue to find numerous stuffed animals, wall-to-wall carpeting and several fish tanks with reptiles. As previously mentioned....

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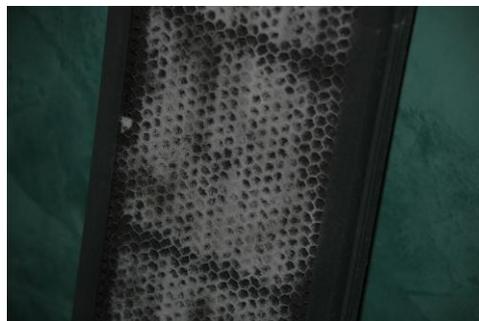
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*“we recommend that the stuffed animals and extra possessions be removed. This will allow for better cleaning and reduce the reservoir for mold, allergens and dust. We also recommend that you consider the installation of hardwood floors. In your son's bedroom we recommend the terrarium to be removed and placed into another area of the building.”*



We continue to find portable freestanding, electrostatic filters. These units are visibly very dirty and if you plan on using them they need be cleaned.



Please remember that malfunctioning electrostatic filters can create ozone, a known carcinogen and contaminant. The filters themselves are generally not strong enough to effectively clean the air. We have included information regarding **ATMOSPHERE AIR PURIFIERS** as an addendum. Unlike the current units you have these portable filters can effectively clean the air.

We continue to support the recommendation that you install a high quality filter in the air handler located in the attic. This air handler has a powerful fan that can move sufficient volume of air through the building. In addition to the installation of electrostatic filter a **UV light** assembly can be installed to kill viruses, bacteria and fungus. This light would be located in the air handler

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## HUMIDIFICATION SYSTEM

Please do not forget to install a Humidification System in the house before the wintertime. The average building can accept more than five gallons of additional water a day to achieve a comfort zones between 35 and 50%. **Low humidity is a well known trigger for Reactive Airway Disease.** Please consider looking into a unit such as those made by April Aire. [www.aprilaire.com](http://www.aprilaire.com)

This report was designed following current industry guidelines for the interpretation of microbial sampling and analysis utilized by the independent laboratories used by Professional Building Inspectors for the analysis of samples taken. Interpretation of these parameters is a scientific work in progress and may as such be changed at any time without notice. This report makes no express or implied warranty or guarantee as to the testing methodology used, and Professional Building Inspectors makes no express or implied warranties as to such use or interpretation.

Sincerely,

*Scott Gressin*

*Certified Indoor Environmental Consultant # 0705065  
NYS Home Inspector License #16000028893  
Certified EIFS Inspector #785806  
Certified Infrared Thermographer #32227  
NYS EPA Asbestos Inspector #07-07380  
EPA Lead Risk Assessor #NYR 17027-1*

## REFERENCE MATERIALS

**I.E.S.O.**, (Indoor Environmental Standards Organization), *Standards of Practice for the Assessment of Indoor Environmental Quality, 2<sup>nd</sup> Edition*

**I.I.C.R.C. Standard S-520**, *Standard and Reference Guide for Professional Mold Remediation.*

**U.S.E.P.A.**, Office of Air and radiation, Indoor Environments Division,  
*Mold Remediation in Schools and Public Buildings*

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**N.A.D.C.A. ACR 2006**, *Assessment, Cleaning and Restoration of HVAC Systems*

**N.Y.C. DOH**, *Guideline on Assessment and Remediation of Fungi in the Indoor Environment*

**U.S.E.P.A.**, *Building Air Quality, A Guide for building owners and facility Managers*

**A.C.G.I.H.**, *American Conference of Governmental Industrial Hygienists, Bioaerosols, Assessment and Control*

**O.S.H.A.**, Hazard Communication Standard 29 CFR 1910.1200, 1910.134, 1910.138