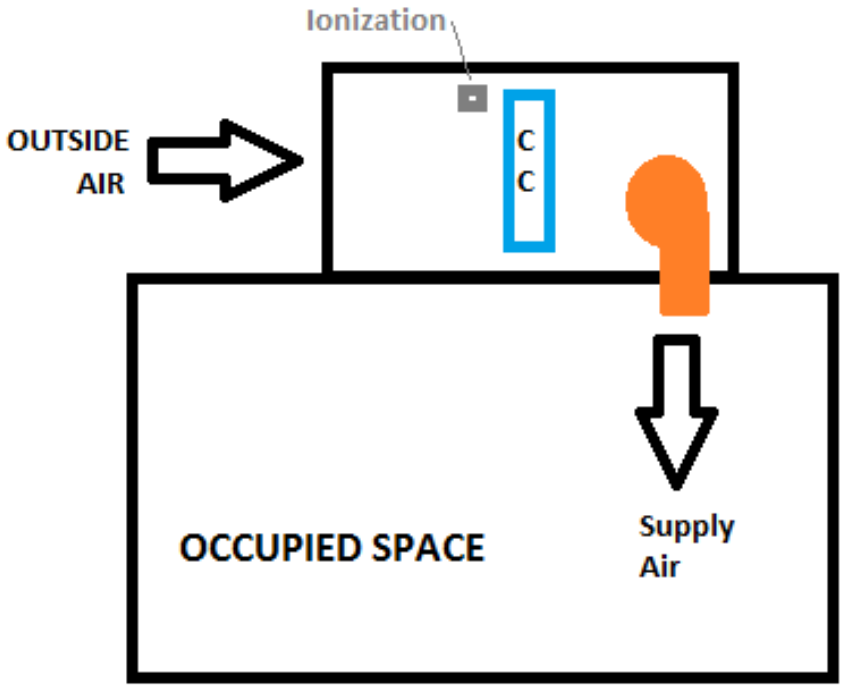
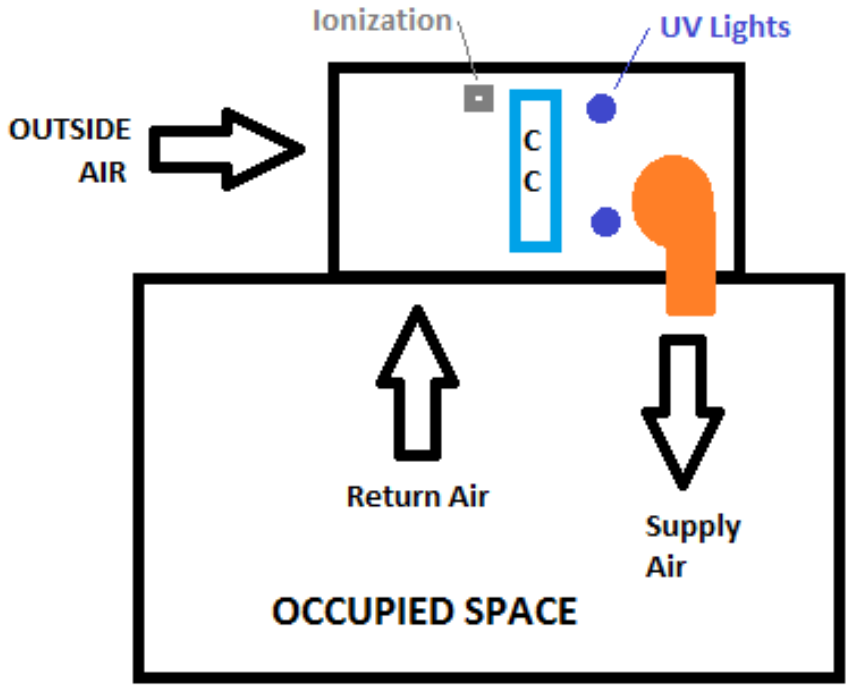
Independent Testing by World Renowned EMSL Labs

THE ONLY PRODUCT PROVEN TO KILL PATHOGENS IN THE SPACE

Pathogen	Time Exposed	Kill Rate
E.coli	15 minutes	99.68%
MRSA	30 minutes	96.24%
TB	60 minutes	69.01%





GreenCleanAir

1251 Weatherstone Ct. Reston,VA 20194

703.927.7532 Steve@GreenCleanAir.com

Mold Reduction Report

November 11, 2011

Rodney Fugitt
Strategic Property Systems
10772 Alyssia Lane
Waldorf, MD 20603

Re: 9201 Messina Drive
Ft. Washington, MD

Dear Rodney,

We appreciate the opportunity to assess the quality of the air in this property.

On October 26, I took 2 airborne mold samples within the property in order to determine how many airborne spores were present. I used an air pump and drew 75 liters of air through an special filter which captures airborne mold.

The lab report results show that there were:

- 335,518 total airborne mold spores per cubic meter in the main room of the basement.
- 356,912 total airborne mold spores per cubic meter in the back bedroom of the basement.

The predominant species that were captured are chaetomium, cladosporium, aspergillus and penicillium. The airborne samples included several other mold species but they were in much lower levels.

On November 10, I took 2 airborne mold samples in the same places with the same air volumes and sent them to the same lab for consistent comparison analysis.

The lab report results show that there were:

- 9,212 total airborne mold spores per cubic meter in the main room of the basement.
- 2,667 total airborne mold spores per cubic meter in the back bedroom of the basement.

The predominant species that were captured are chaetomium, cladosporium, aspergillus and penicillium. The airborne samples included several other mold species but they are in much lower levels.

Therefore, the total airborne mold spores per cubic meter in the **main room** of the basement were reduced by **97.5%** and, the total airborne mold spores per cubic meter in the **back bedroom** of the basement were reduced by **99.5%.**

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Report (cont)

A point of explanation about the particular molds in the before and after tests. As seen in the November 4th lab report "comments", there were so many airborne mold spores that the "Spore count may be underestimated due to heavy particulate load". Indeed, with a debris rating of 4, fully "75% to 90% of a sample may be occluded", ie.-spores and spore pieces which cover the spores underneath them. (See footnotes on page 2). This means that there were likely many more airborne spores in the spaces on October 26th. The second samples of November 10th had a debris rating of 3 which lowers the occlusion factor to 26% to 75% of the sample. This explains the apparent discrepancy between the "higher" level spores in the second sample-basidiospores and cladosporium. While these two species may appear to have increased in the second sample, they were under-counted in the initial samples, so a precise count was impossible in the first air samples due to occlusion. The second sample is closer to their correct count and had the first sample not have been so occluded, it would have provided a correct and much higher count of these species.

Professional Observations

It is my understanding that a mold remediation firm had already taken out the moldy sheetrock and carpets from this property. This firm had then applied fungicides (Microban) to the basement walls and floors and then sealed the walls with a mold sealant (Fiberlock). I observed the white coating from the Fiberlock on the exposed walls.

When we visited the property on 10/26/11 and I first took air samples inside the basement, it had very pungent mildew odor which would be indicative of high airborne mold levels. The lab results supported this by showing that there were 335,518 to 356,912 airborne mold spores.

That was not the case when I returned to the property on November 10. The mold levels dropped to 9,212 and 2,667 respectively. The strong mold odors were totally absent. It is my understanding that you installed two Global Plasma Systems RN units on November 6th, so they had been operating for 4 days. These units produce cold plasma fields and it is significant that this cold plasma technology was able to effect the drop in airborne mold levels by 99.5% and 97.5%. In my professional career of taking airborne mold samples, I have never seen such a reduction as this within such a short period of time except by a total mold remediation. That this technology was able to produce such significant results post-facto a mold remediation, is unknown to me up till now. As the chairman of the nonprofit Indoor Environmental Standards Organization (IESO.org) committee which is writing the first mold investigation standard for educational facilities, it is my business to be aware of effective mold reduction technologies like cold plasma. Had the Lab results not have confirmed what my nose had no longer smelled, I would never have believed that this was possible.

The other significant feature of the second lab report was how the cold plasma had reduced the airborne stachybotrys levels. Stachybotrys mold is considered to produce one of the most toxic mold chemicals (mycotoxin) and the reduction to negligible levels was an important health benefit, along with the large drops in aspergillus and penicillium species which produce also mycotoxins.

Therefore, it is my professional opinion that if you allow the G.P.S. RN cold plasma unit to run longer, that the remaining airborne mold levels should be even further reduced.

If you have any questions, please contact me.

Regards,

Steve

Steven Welty CIE, CAFS, LEED® AP

enclosure: Aerobiology Test Results

Odor and VOC Neutralization

Odor Control - The ions produced by TPI and GPS' needlepoint ionization break down gases with electron-volt potential numbers equal and below 12 to harmless compounds prevalent in the atmosphere such as oxygen, nitrogen, water vapor and carbon dioxide. The resultant compounds are a function of the entering contaminants into the plasma field. A simple example would be formaldehyde, which is produced by building furnishings and thought to be carcinogenic, breaks down to carbon dioxide and water vapor, thus eliminating the health hazard. Another example is ammonia that is produced by occupants (typical body odor smell), breaks down to oxygen, nitrogen and water vapor. As you can see, what chemical you start with determines how it reacts with the ionization field and how it breaks down.

Independent Testing on a 2,400 sqft Office

Health: Chemical Pollutants

TEST RESULTS

What We Found: Chemical pollutant levels were between 501-3000 ug/m3 for a day or more.

Action Recommended for Sensitive Individuals

Why is action recommended?

Chemical pollutants are generally a cause for concern when daily average levels are above 500 ug/m3.

Chemical pollutants are known to trigger asthma and allergy symptoms. At moderate levels, eyes and nasal passages can be irritated. Some people can experience nausea and headaches. At very high levels, they can even affect normally healthy adults by overworking the liver and kidneys. Children, the elderly, and pregnant women are more susceptible.

Source: European Union (EU); Leadership in Energy & Environmental Design (LEED); Environmental Protection Agency at Research Triangle Park (EPA-RTP).

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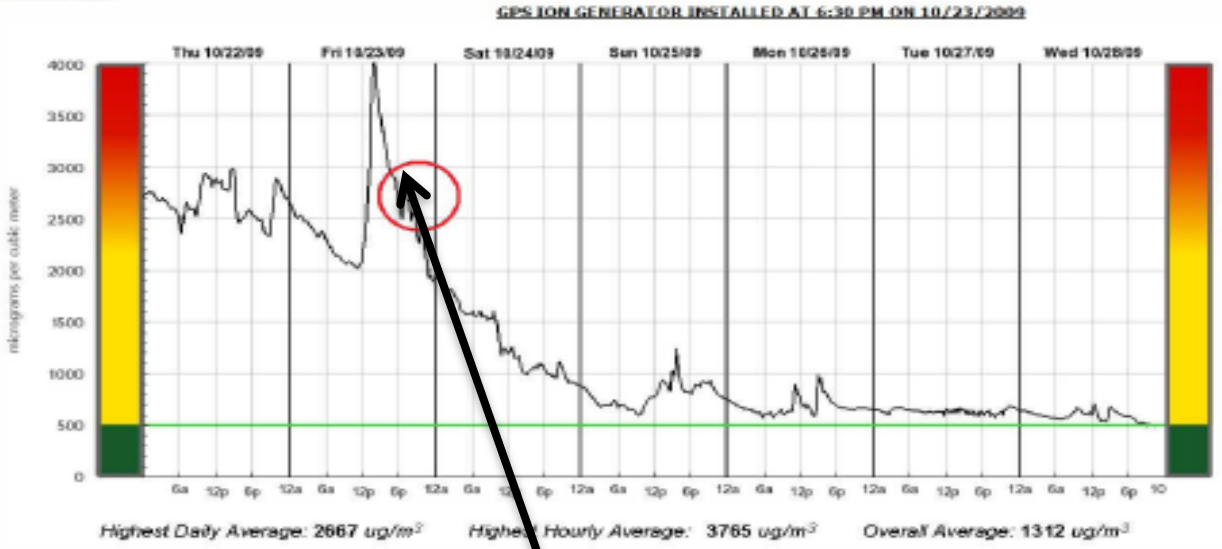

ABOUT CHEMICAL POLLUTANTS

Levels can build up in your home's air due to usage of chemical products and heating/cooling system issues.

Sources: Off-gassing from building materials, carpeting, furniture and other synthetic materials, fuel fumes, scented products and air fresheners, personal care products, many household products such as paint, glue, and plastics.

Possible heating & cooling issues: Lack of fresh air introduced into home (either inadequate mechanical ventilation or none present), no chemical pollutant removal equipment.

RECOMMENDED ACTION

There are many steps you can take to control sources of chemical pollutants. You can:

- Limit use of air fresheners
- Ventilate or store chemicals outside

3765 ug/m3 Initial Chemical Level

Final Chemical Level 231 ug/m3

Health: Chemical Pollutants

TEST RESULTS

What We Found: Chemical pollutant levels were below 500 ug/m3.

No Action Necessary

Why is no action necessary?

Chemical pollutants are generally not a cause for concern when daily levels are below 500 ug/m3.

Chemical pollutants are known to trigger asthma and allergy symptoms. At moderate levels, eyes and nasal passages can be irritated. Some people can experience nausea and headaches. At very high levels, they can even affect normally healthy adults by overworking the liver and kidneys. Children, the elderly, and pregnant women are more susceptible.

Source: European Union (EU); Leadership in Energy & Environmental Design (LEED); Environmental Protection Agency at Research Triangle Park (EPA-RTP).

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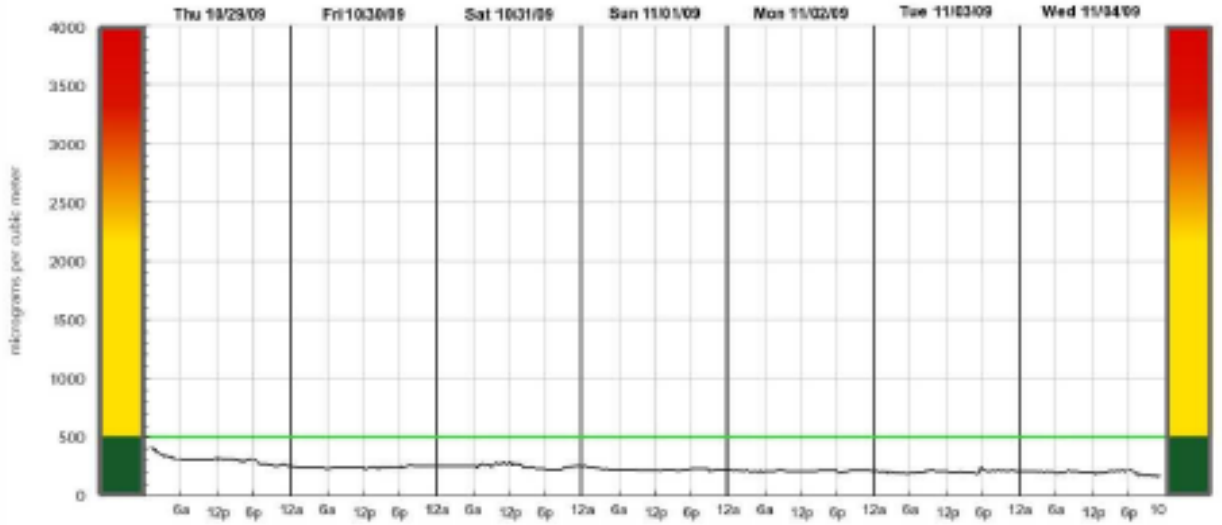


Highest Daily Average: **294** *ug/m³* *Highest Hourly Average:* **289** *ug/m³* *Overall Average:* **231** *ug/m³*

ABOUT CHEMICAL POLLUTANTS

Levels can build up in your home's air due to usage of chemical products and heating/cooling system issues.

Sources: Off-gassing from building materials, carpeting, furniture and other synthetic materials, fuel fumes, scented products and air fresheners, personal care products, many household products such as paint, glue, and plastics.

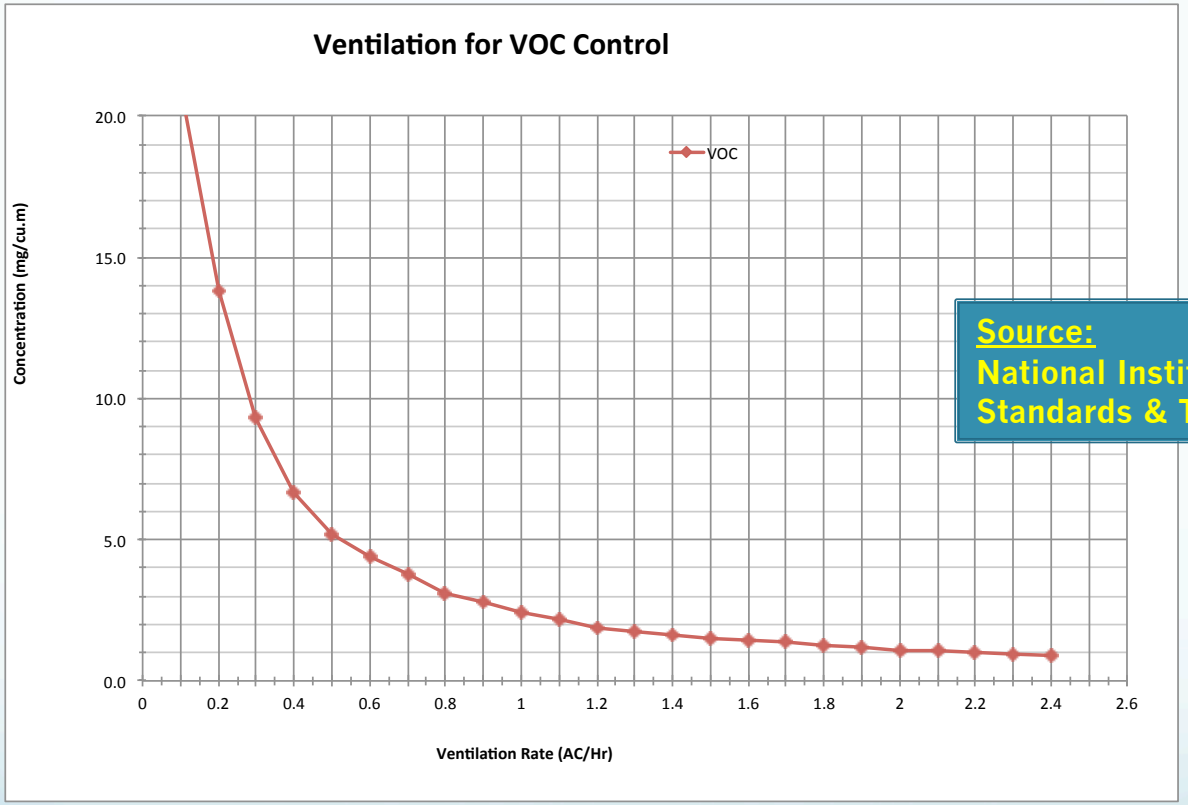
Possible heating & cooling issues: Lack of fresh air introduced into home (either inadequate mechanical ventilation or none present), no chemical pollutant removal equipment.

RECOMMENDED ACTION

None -- no action necessary. For more information on indoor air quality, see:

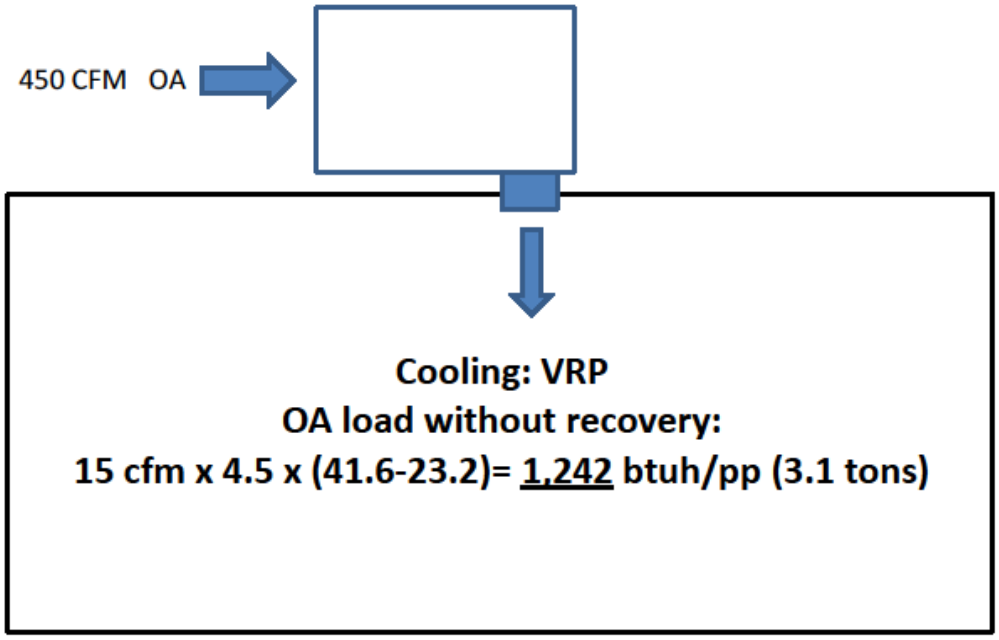
- www.airadvice.com

OA Does Not Control IAQ Alone!



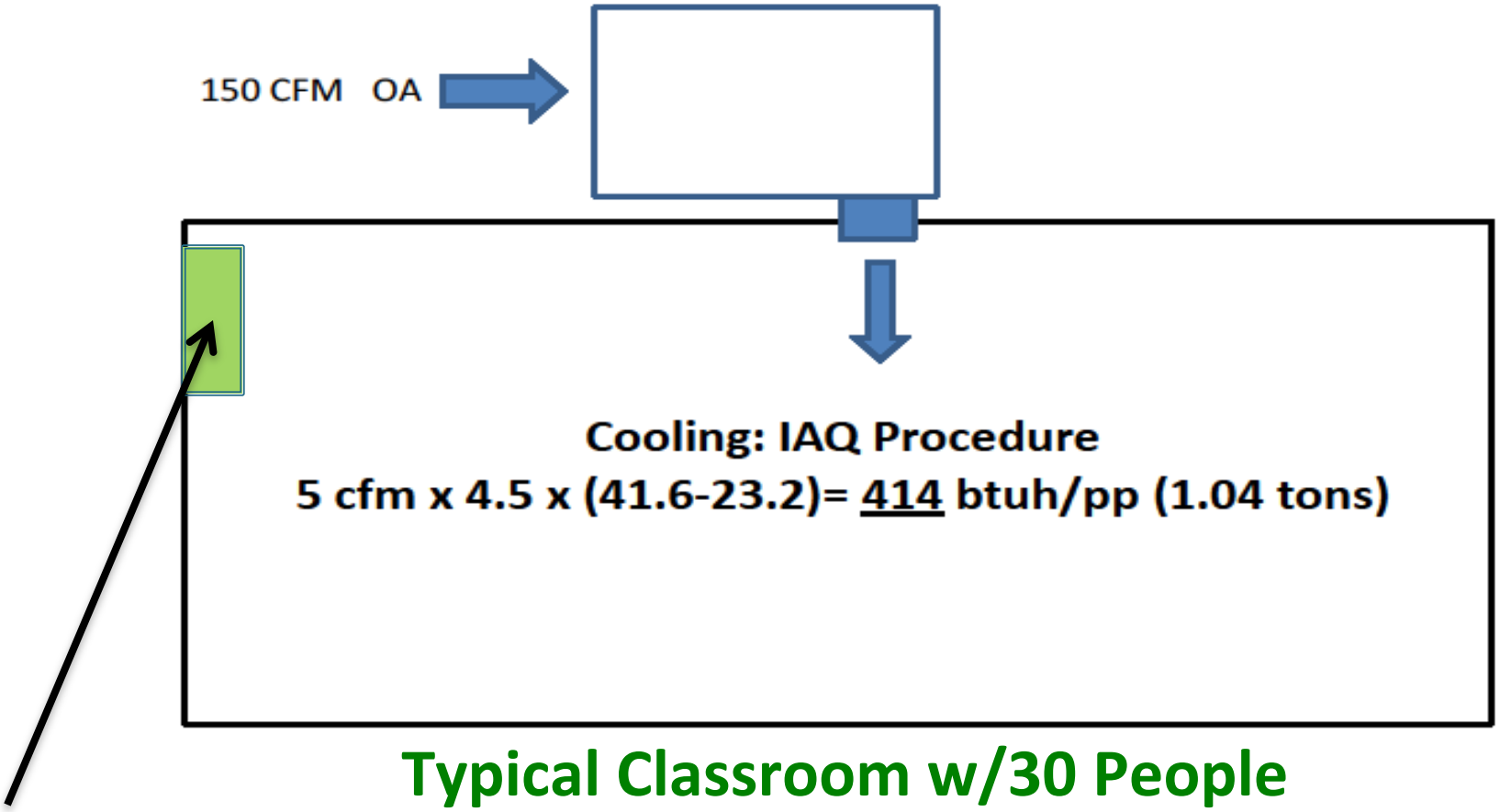
Source:
National Institute of Standards & Technology

Ventilation Rate Procedure w/o Energy Recovery Unit



Typical Classroom w/30 People

IAQ Procedure with Energy Recovery Unit



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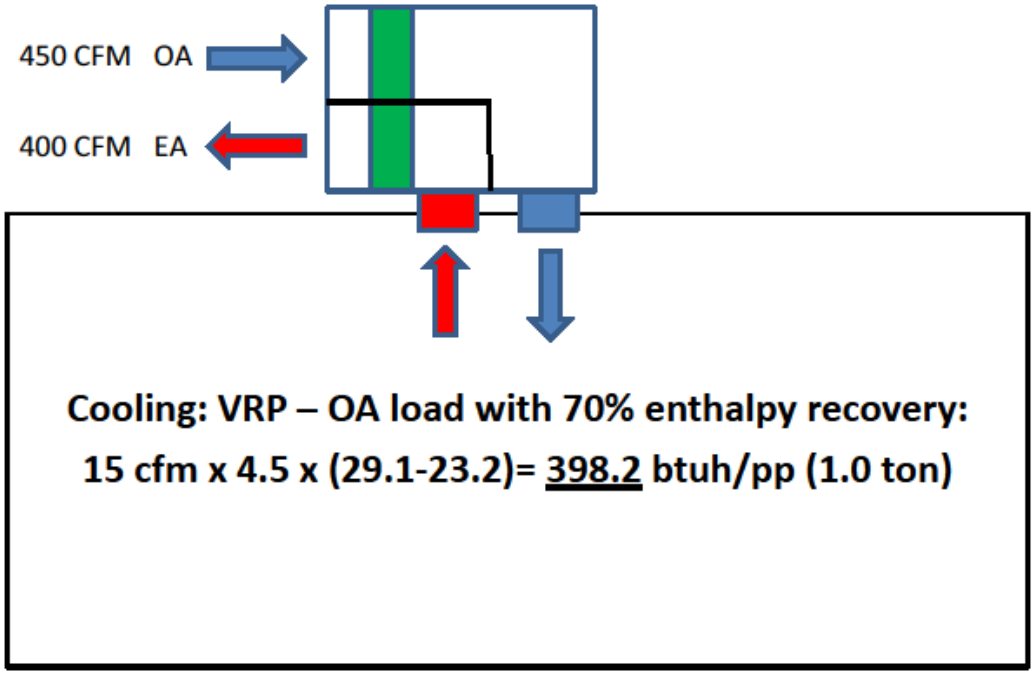
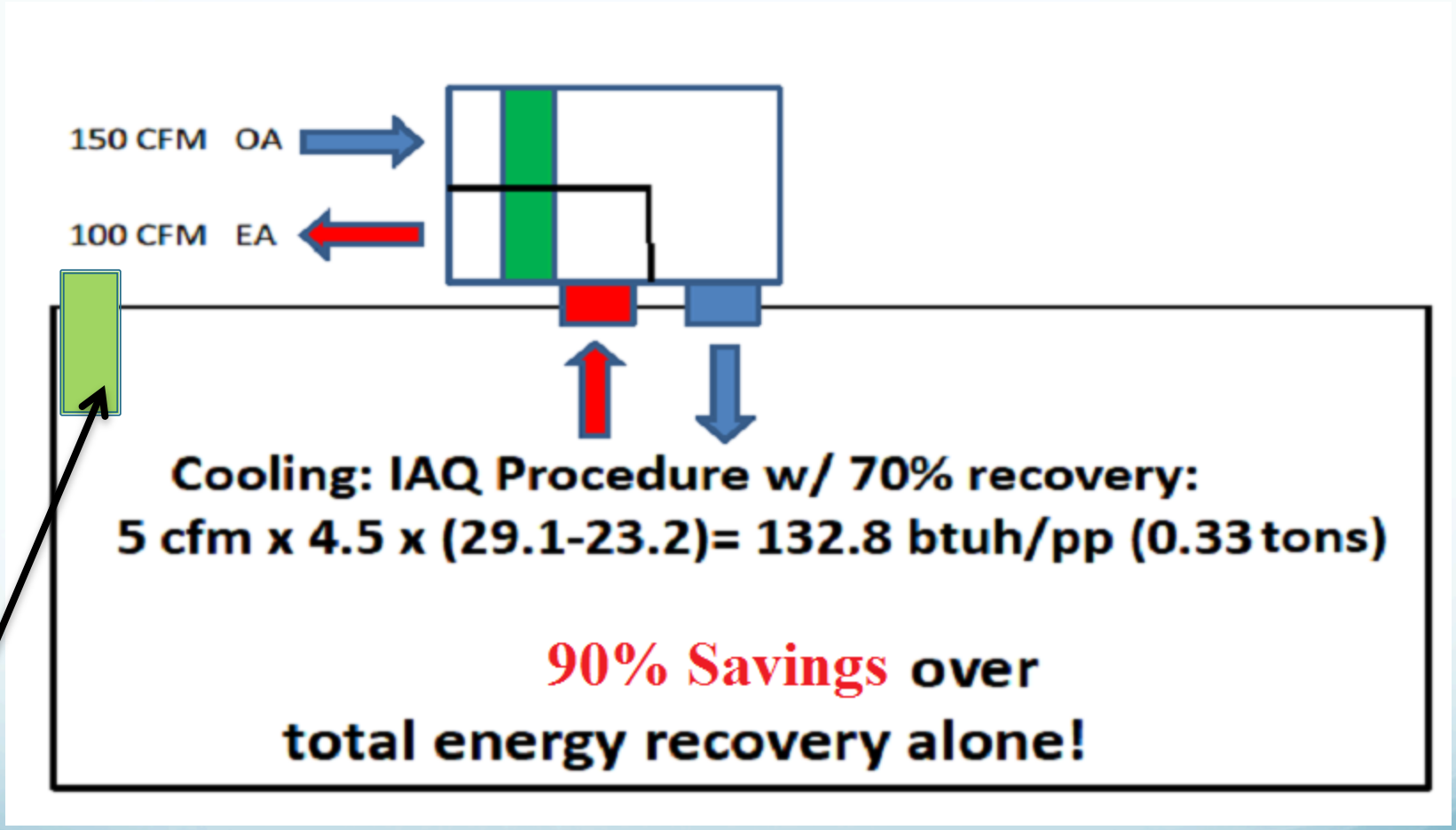


Typical Classroom w/30 People

IAQ Procedure with Energy Recovery Unit



Wall Unit w/TPI

Typical Classroom w/30 People

The Big Picture w/ OA Reduction

- Atlanta Area Schools (120,000 ft^2)
- Typical First Cost Savings = $300,000 to $400,000
- or $2.50/$ft^2$

- Typical Annual Energy Savings = $48,000
- or $0.40/$ft^2$

- TPI Adds **VALUE** Not Cost!

System Comparison Summary

- 450 CFM OA – No *ERU or IAQP & Filtration 3.10 T
- 150 CFM OA using IAQP & filtration 1.04 T
- 450 CFM OA with *ERU 1.00 T
- ***150 CFM OA with *ERU & IAQP &Filtration 0.33 T***

*ERU – Energy Recovery Unit

Technology Comparison

	TPI Phenomenal Aire	Corona Discharge Ion	UV Technology	Photocatalytic	Ozonizer	Adv. Photocatalytic
Does unit create detectable ozone	No	Yes	Yes	Yes	Yes	Yes
Does unit require fragile glass tubes	No	Yes	Yes	Yes	Yes	Yes
Does unit require replacement tubes	No	Yes	Yes	Yes	Yes	Yes
How often do tubes need to be replaced	NA	1-2 yrs	1-2 yrs	1-2 yrs	1-2 yrs	1-2 yrs
What is the approximate cost of replacement tubes	NA	$200+	$200+	$200+	$200+	$200+
Does unit kill bacteria, viruses, mold, fungus	Yes	Yes	Yes	Yes	Yes	Yes
Does unit have to see bacteria, viruses, etc. to work	No	No	Yes	No	No	No
Does unit eliminate odor and smoke	Yes	Yes	No	Yes	Yes	Yes
Does unit neutralize VOC's and Allergens	Yes	Yes	No	Yes	Yes	Yes
Does unit aid conventional particle filtration	Yes	Yes	No	No	No	No
Does unit eliminate static electricity	Yes	Yes	No	No	No	No
Can unit be mounted in air supply	Yes	Yes	Yes	Yes	No	Yes
Can unit be mounted in return air	Yes	No	Yes	Yes	No	Yes
Can unit operated from 24 VAC	Yes	No	No	No	No	No
Can unit be submerged in water	Yes	No	No	No	No	No
Can unit be mounted in a ductless split	Yes	Yes	Yes	Yes	No	Yes
Does unit HARM HVAC equipment	No	Maybe	Yes	Yes	Maybe	Yes

Specifications

- Air Flow Capacity – 0 to 6,000 CFM per unit
- Pressure Drop – < 0.05” WC
- Needlepoint Probe Length – 6”
- Electrode – Carbon Resin
- Temperature Range – -20F to 140F
- Humidity Range – 0-99%
- Mounting Box – ABS UL 94 Plastic
- Power Head Dimensions – 5” Diameter x 3.5” Hi
- Warranty = 2 years

Voltage – 24VAC

Power Consumption – 12 VA

Frequency – 50 – 60 Hz

Air Flow Sensing - Integral

Ionization Generation – Needlepoint Bi-Polar Ionization

Ion Status - Green LED

Weight – 5 lbs

Made in the USA