

## dts environmental

419 N. Raymond Ave.  
Pasadena, CA 91103

October 12, 2010

Mr. Anthony Abate  
AtmosAir Solutions  
418 Meadow St.  
Fairfield, CT 06824

**RE: Summary of Testing and IAQ Testing Results at Manuel Esqueda Elementary School Rooms 206 and 212.**

The purpose of the IAQ monitoring at Manuel Esqueda Elementary was to study 2 classrooms both operating under typical classroom occupied conditions. One room was outfitted with an air purification system consisting of an AtmosAir model D100 system and a Tri-Dim Tri-Dek three ply media filter to see what effects this would have on room air quality.

The IAQ testing took place over a four (4) month period, beginning on March 15, 2010 and completing on July 21, 2010. Testing was performed at the Manuel Esqueda Elementary School 2240 South Main St. Santa Ana, CA. Two (2) classrooms were monitored, Room 206 and Room 212. The AtmosAir systems and a Tri-Dim filter were installed into the rooftop air handling system that serves Room 206 on March 11, 2010. The rooftop air handling unit serving Room 212 was operated as it typically had been without any enhanced air purification systems installed. IAQ monitoring began on March 15, 2010.

In order to eliminate any pre-disposition the rooms might have to prevailing environmental conditions, the air purification systems were switched between rooms on May 14, 2010. Room 206 then began being operated as typically, without any enhanced air purification systems installed into its rooftop air handling system and Room 212 had the AtmosAir D100 and Tri-Dim Tri-Dek filter installed into its rooftop air handling system. This remained that way until the end of the testing period July 21, 2010.

Two types of IAQ testing were conducted. Continuous IAQ data logging was taken for the elements listed below:

- Temperature
- Relative Humidity
- Carbon Dioxide
- Carbon Monoxide
- Particles (PM10)
- Particles (PM2.5)
- TVOC
- Radon
- Ozone

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The above elements were recorded on a 24 hour basis and data was downloaded on a weekly basis. The values listed on the attached spreadsheet represent the weekly averages for all of the data recorded. Due to power interruptions or malfunction to the data loggers IAQ measurements were not taken for the following periods of time:

3/27/10 – 4/4/10 Rooms 206 & 212

5/7/10 – 5/13/10 Room 212

6/24/10 – 7/1/10 Room 206

The data was logged using two (2) Aircuity Optima 500 monitors, serial numbers 100-0066 and 100-0208. Each unit was calibrated at the factory prior to use for this project. Details regarding the sensor array and testing protocols of the Optima 500 are attached to this report. A representative from Tri-Dim placed the monitors in each room and performed weekly downloads of the data. I observed the placement of these monitors and observed them on a weekly basis and found all to have been done correctly.

Additionally a total of sixty (60) mold spore samples were taken from 3/19/10 thru 6/4/10. These samples were taken on a weekly basis. The mold samples were taken in two different manners. Thirty two (32) samples were taken using the Aircuity Optima 500 monitor. (description attached) and twenty eight (28) samples were taken by DTS Environmental in accordance with EPA/SCAQMC/OSHA requirements. All samples were analyzed by an NVLAB accredited laboratory.

A spreadsheet which summarizes the weekly averages of the sensor readings and results of the mold spore sampling has been attached.

Based on the results of the IAQ testing performed and my review of the data collected, there appears to be no issues with unacceptable IAQ levels in either of the two classrooms. This is based on comparing the results to accepted standards and guidelines for the element that was tested.

In comparing the results of classrooms that were equipped with the AtmosAir and Tri-Dim systems I did observe a measureable difference in TVOC (Total Volatile organic Compounds) readings. Room 206 that had the AtmosAir system and Tri-Dim filter showed significantly lower levels of TVOC than Room 212. When the air purification system was switched between the two rooms the TVOC levels in Room 206 increased and the TVOC levels in Room 212 decreased.

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Volatile Organic Compounds (VOCs) include a large number of compounds commonly found in indoor and outdoor environments. These compounds have many sources, paints, solvents, spray products, combustion by-products, cleaning products, pesticides, emissions from furnishings, building materials and some natural sources. VOC's can be off-gassed into a space as well as entrained into a space by the air system or through pressurization. At present there is no standard or guideline as to an acceptable level of TVOC. There are standards as to acceptable levels of individual compounds. Exposure to elevated levels of VOC's can cause symptoms in susceptible individuals.

On my review of the mold spore samples that were taken by the Optima 500 units as well as samples I took, both outdoor and in each of the classrooms, there appear to be no concerning mold spore levels. There were detectable levels seen in the Optima sampling performed on 3/26 and in my sampling performed on 4/23 in Room 212, which at the time did not have the air purification systems.

**Donald Short,**

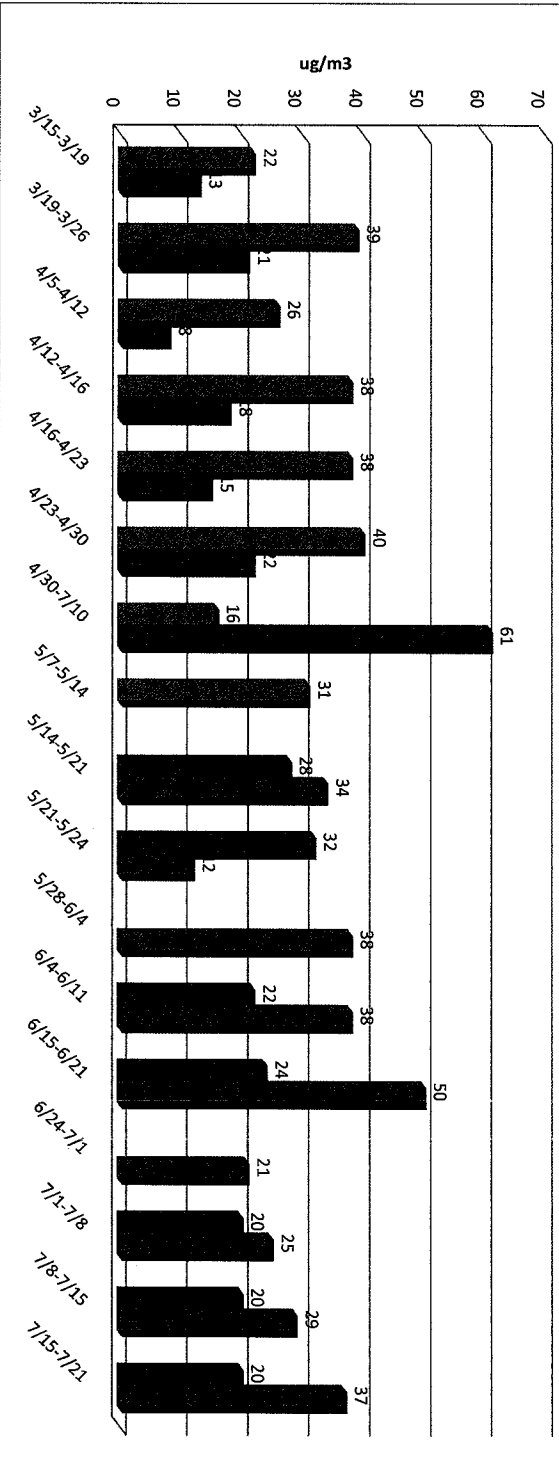
**CA REA#07108**

**California Certified Site Surveillance Technician # 95-1729**

**EPA Building Inspector Div. Approval #CA-013-06**

3/15-3/19	3/19-3/26	4/5-4/12	4/12-4/16	4/16-4/23	4/23-4/30	4/30-7/10	5/7-5/14	5/14-5/21	5/21-5/24	5/28-6/4	6/4-6/11	6/15-6/21	6/24-7/1	7/1-7/8	7/8-7/15	7/15-7/21
22	39	26	8	38	40	16	.31	28	32	38	22	24	21	20	20	20
13	21	8	18	15	22	61	34	12	38	38	38	50	21	25	29	37

**Particle Testing (PM10)**



**Notes:**

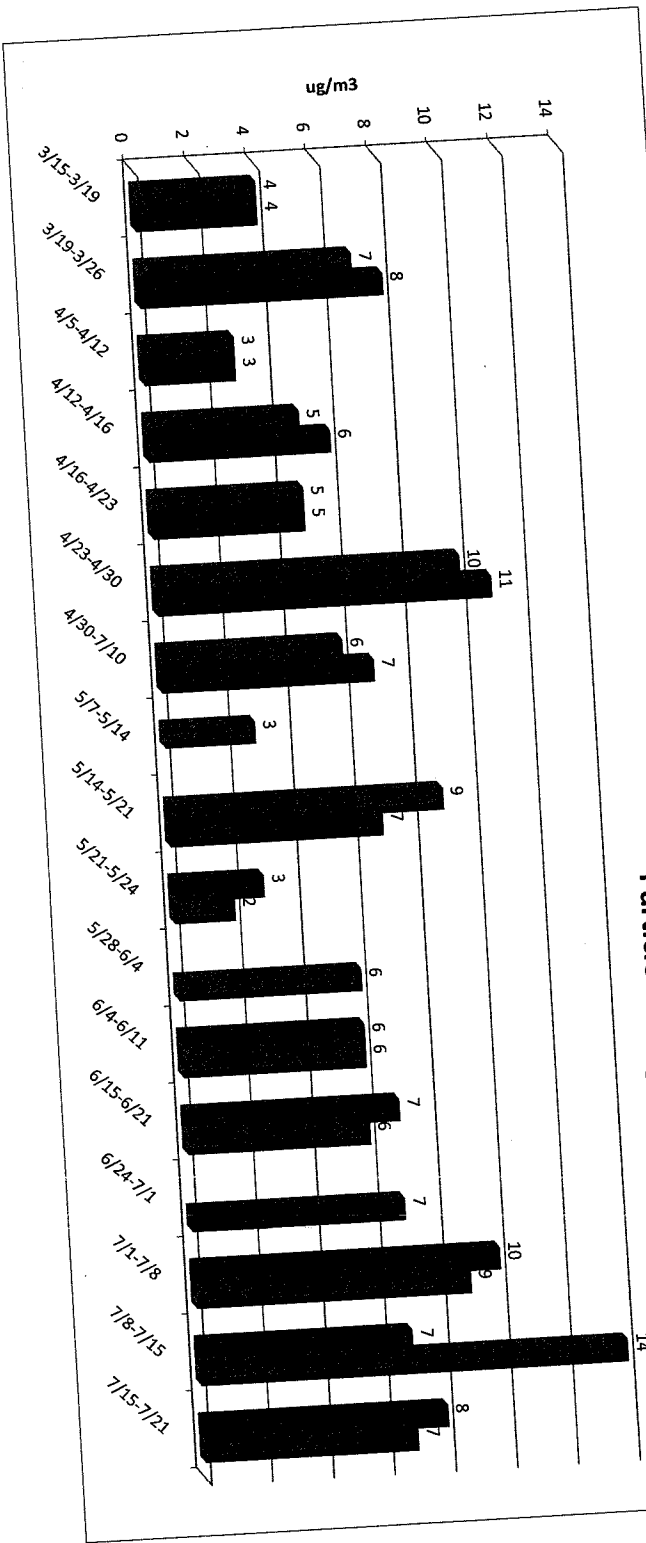
Blue bars represent room treated with AtmosAir Bi-Polar Ionization  
 Red bars represent control room without AtmosAir

The AtmosAir system was installed into Room 206 on 3/15/10 and removed on 5/14/10  
 The AtmosAir system was installed into Room 212 on 5/14/10 thru the end of the trial 7/21/10  
 PM 10 is measured in micrograms per cubic meter ug/m3

<b>Average Levels</b>	<b>Room 206</b>	<b>Room 212</b>
3/15/10-5/14/10	31.25 ug/m3	22.5 ug/m3
5/14/10-7/21/10	23.7 ug/m3	31.5 ug/m3

Date	Value	Date	Value	Date	Value	Date	Value	Date	Value	Date	Value	Date	Value
3/15-3/19	4	4/5-4/12	3	5/14-5/21	9	6/4-6/11	6	7/1-7/8	10	7/8-7/15	7	7/15-7/21	8
3/19-3/26	7	4/12-4/16	5	5/21-5/24	3	6/15-6/21	7	6/24-7/1	7				
4/5-4/12	3	4/16-4/23	5	6/4-6/11	6	6/15-6/21	7						
4/12-4/16	5	4/23-4/30	10	6/24-7/1	7								
4/16-4/23	5	4/30-7/10	6										
4/23-4/30	11	5/7-5/14	3										
4/30-7/10	6	5/14-5/21	9										
5/7-5/14	7	5/21-5/24	2										
5/14-5/21	9	5/28-6/4	6										
5/21-5/24	3	6/4-6/11	6										
5/28-6/4	7	6/15-6/21	7										
6/4-6/11	9	6/24-7/1	7										
6/15-6/21	2												
6/24-7/1	6												
7/1-7/8	10												
7/8-7/15	6												
7/15-7/21	7												

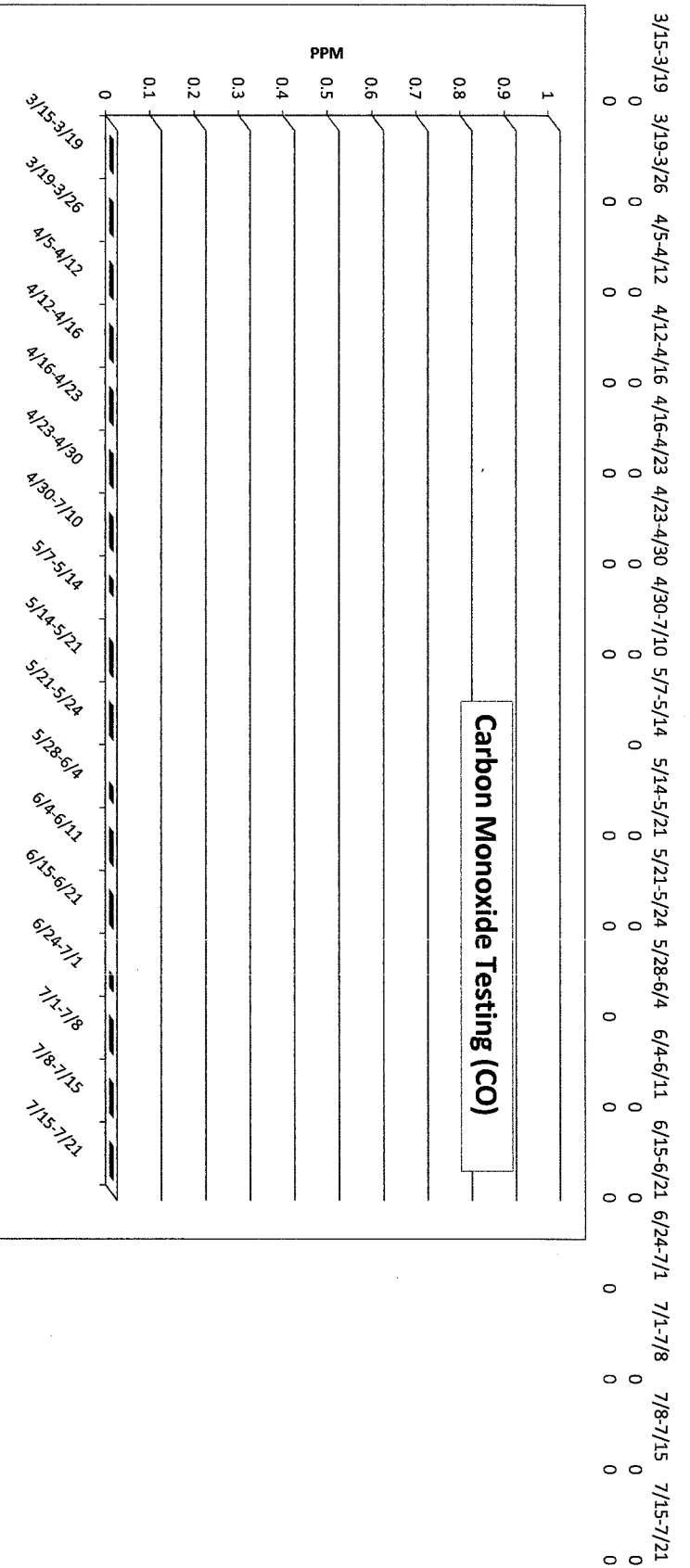
**Particle Testing (PM2.5)**



**Notes:**

Blue bars represent control room treated with AtmosAir Bi-Polar Ionization  
 Red bars represent control room without AtmosAir  
 The AtmosAir system was installed into Room 206 on 3/15/10 and removed on 5/14/10  
 The AtmosAir system was installed into Room 212 on 5/14/10 thru the end of the trial 7/21/10  
 PM 2.5 is measured in micrograms per cubic meter ug/m3

Average Levels	Room 206	Room 212
3/15/10-5/14/10	5.3 ug/m3	6.2 ug/m3
5/14/10-7/21/10	7.1 ug/m3	7.1 ug/m3



**Notes:**

Blue bars represent room treated with AtmosAir Bi-Polar Ionization  
 Red bars represent control room without AtmosAir

The AtmosAir system was installed into Room 206 on 3/15/10 and removed on 5/14/10

The AtmosAir system was installed into Room 212 on 5/14/10 thru the end of the trial 7/21/10

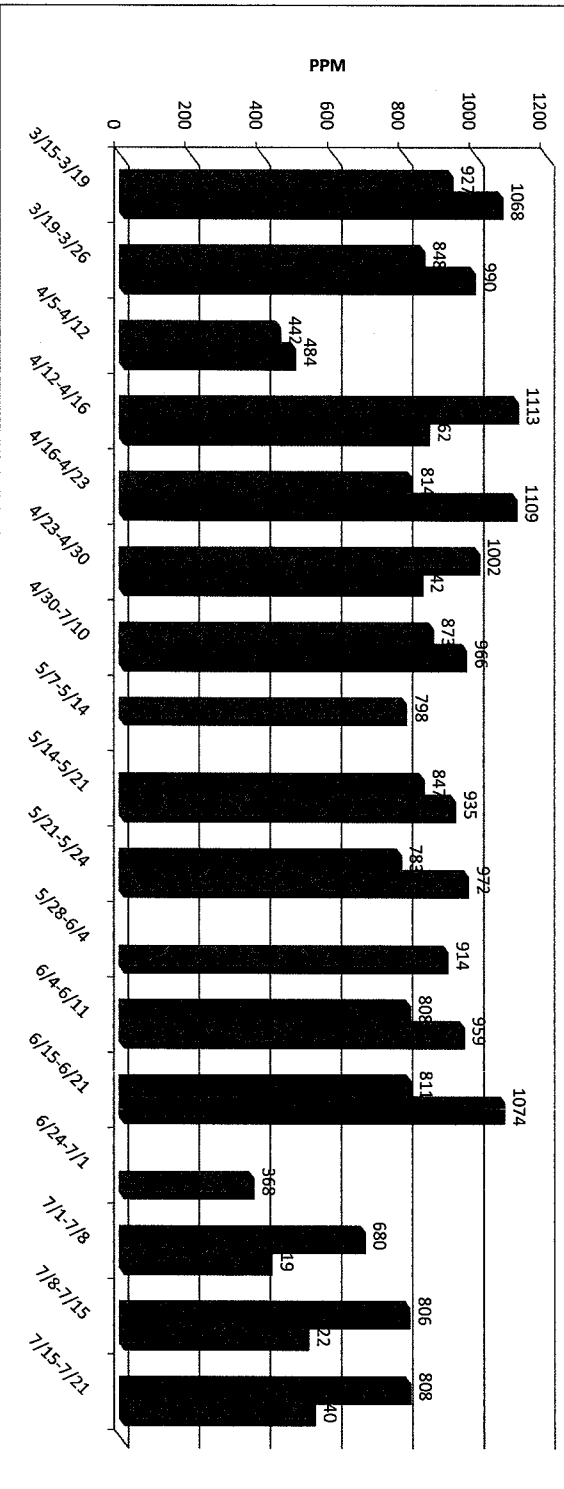
Carbon Monoxide is measured in parts per million (PPM)

**Average Levels**

Room	Room 206	Room 212
3/15/10-5/14/10	0 ppm	0 ppm
5/14/10-7/21/10	0 ppm	0 ppm

3/15-3/19	3/19-3/26	4/5-4/12	4/12-4/16	4/16-4/23	4/23-4/30	4/30-7/10	5/7-5/14	5/14-5/21	5/21-5/24	5/28-6/4	6/4-6/11	6/15-6/21	6/24-7/1	7/1-7/8	7/8-7/15	7/15-7/21
927	848	442	1113	814	1002	873	798	847	783	914	808	811	1074	368	419	540
1068	990	484	862	1109	842	966	935	972	972	914	959	811	1074	368	419	540

### Carbon Dioxide Testing (CO2)



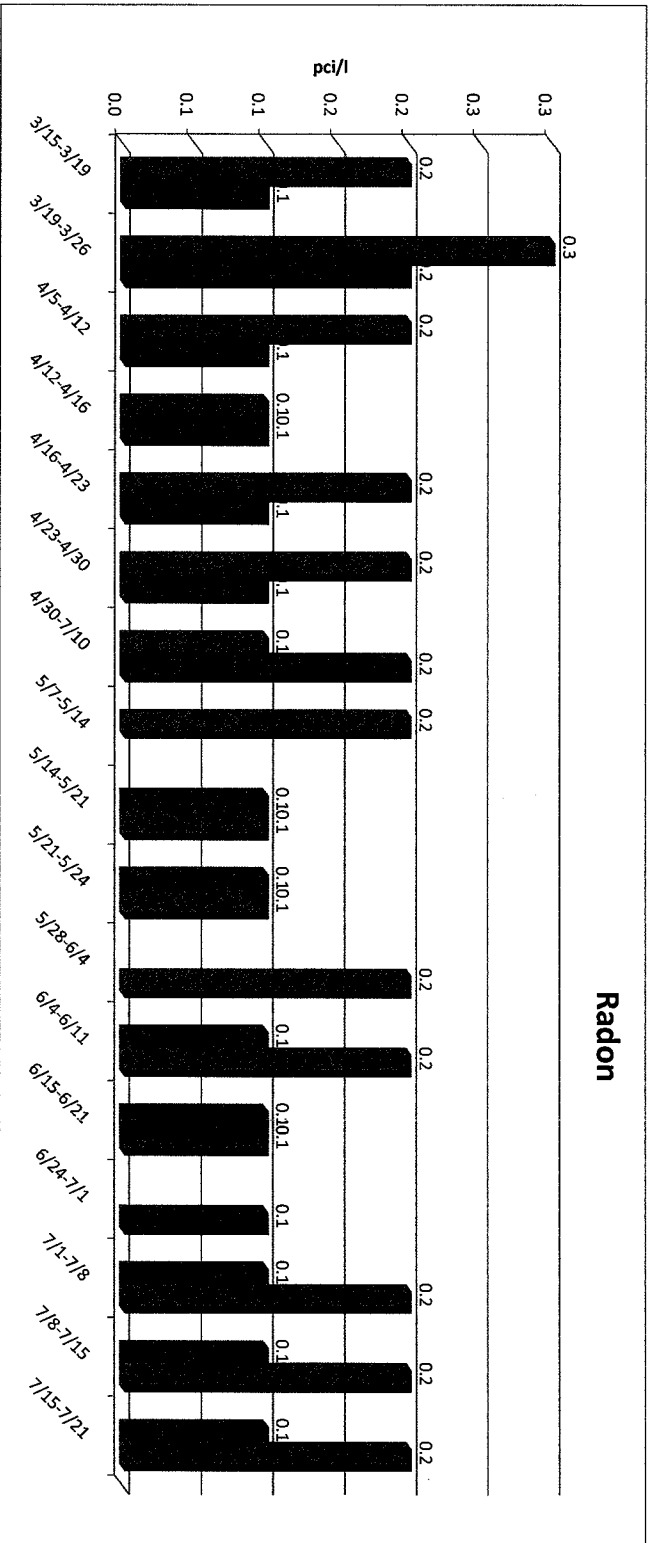
#### Notes:

Blue bars represent room treated with AtmosAir Bi-Polar Ionization  
 Red bars represent control room without AtmosAir  
 The AtmosAir system was installed into Room 206 on 3/15/10 and removed on 5/14/10  
 The AtmosAir system was installed into Room 212 on 5/14/10 thru the end of the trial 7/21/10  
 Carbon Dioxide is measured in parts per million (PPM)

#### Average Levels

3/15/10-5/14/10	Room 206	852 ppm	Room 212	903 ppm
5/14/10-7/21/10	Room 206	792 ppm	Room 212	745 ppm

3/15-3/19	3/19-3/26	4/5-4/12	4/12-4/16	4/16-4/23	4/23-4/30	4/30-7/10	5/7-5/14	5/14-5/21	5/21-5/24	5/28-6/4	6/4-6/11	6/15-6/21	6/24-7/1	7/1-7/8	7/8-7/15	7/15-7/21
0.2	0.3	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2



**Notes:**

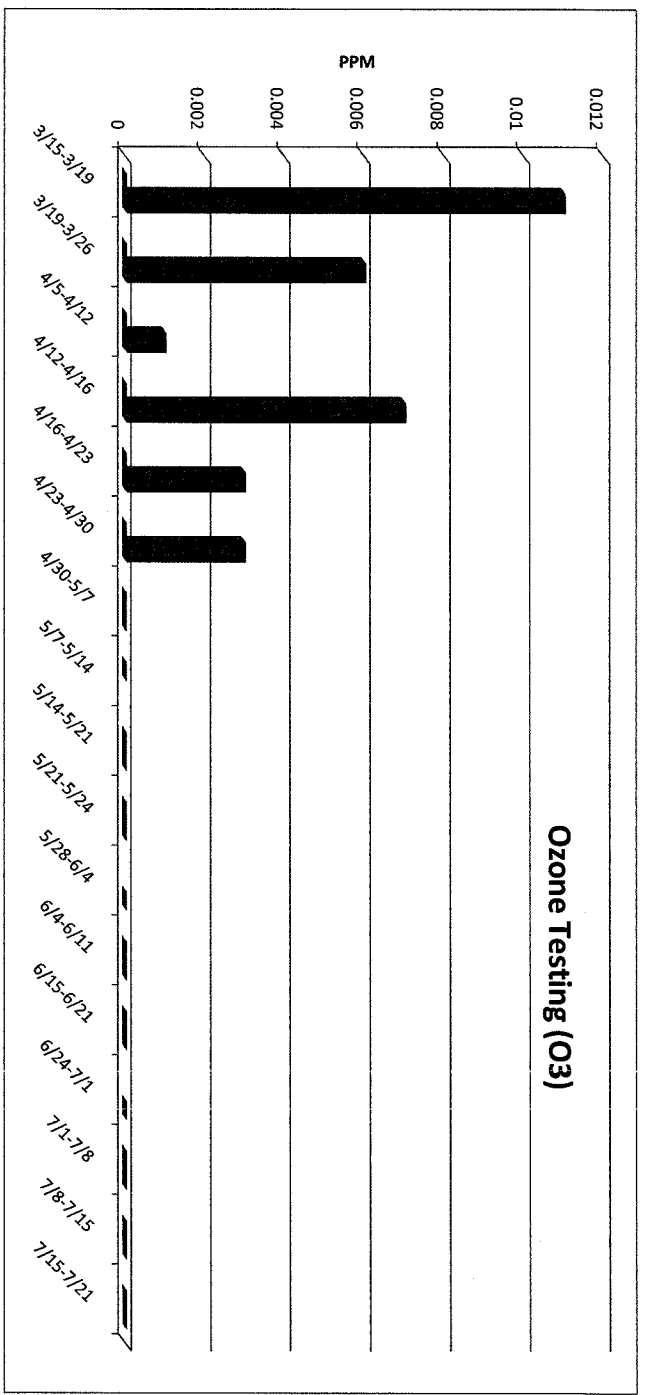
Blue bars represent room treated with AtmosAir-Bi-Polar Ionization  
 Red bars represent control room without AtmosAir  
 The AtmosAir system was installed into Room 206 on 3/15/10 and removed on 5/14/10  
 The AtmosAir system was installed into Room 212 on 5/14/10 thru the end of the trial 7/21/10  
 Radon is measured in pico curies per liter (pCi/l)

**Average Levels**

3/15/10-5/14/10	Room 206	Room 212
5/14/10-7/21/10	.18 pCi/l	.12 pCi/l
	.1 pCi/l	.15 pCi/l



3/15-3/19	3/19-3/26	4/5-4/12	4/12-4/16	4/16-4/23	4/23-4/30	4/30-5/7	5/7-5/14	5/14-5/21	5/21-5/24	5/28-6/4	6/4-6/11	6/15-6/21	6/24-7/1	7/1-7/8	7/8-7/15	7/15-7/21
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.011	0.006	0.001	0.007	0.003	0.003	0	0	0	0	0	0	0	0	0	0	0



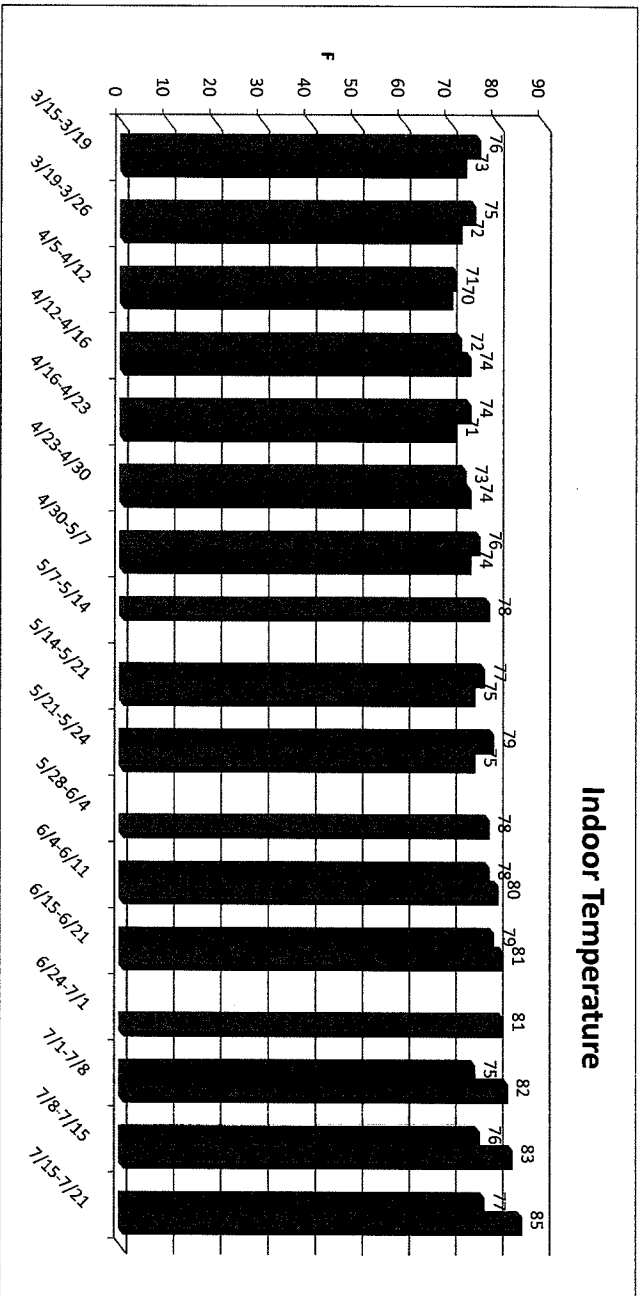
**Notes:**

Blue bars represent room treated with AtmosAir Bi-Polar Ionization  
 Red bars represent control room without AtmosAir  
 The AtmosAir system was installed into Room 206 on 3/15/10 and removed on 5/14/10  
 The AtmosAir system was installed into Room 212 on 5/14/10 thru the end of the trial 7/21/10  
 Ozone is measured in parts per million (PPM)

**Average Levels**

Room 206	Room 212	
3/15/10-5/14/10	0 ppm	0.04 ppm
5/14/10-7/21/10	0 ppm	0 ppm

3/15-3/19	76	73	3/19-3/26	75	72	4/5-4/12	71	70	4/12-4/16	72	74	4/16-4/23	74	71	4/23-4/30	73	74	4/30-5/7	76	74	5/7-5/14	78	75	5/14-5/21	77	75	5/21-5/24	79	75	5/24-5/28	78	80	5/28-6/4	78	81	6/4-6/11	78	81	6/11-6/15	79	81	6/15-6/21	79	81	6/21-6/24	79	81	6/24-7/1	79	81	7/1-7/8	75	82	7/8-7/15	76	83	7/15-7/21	77	85
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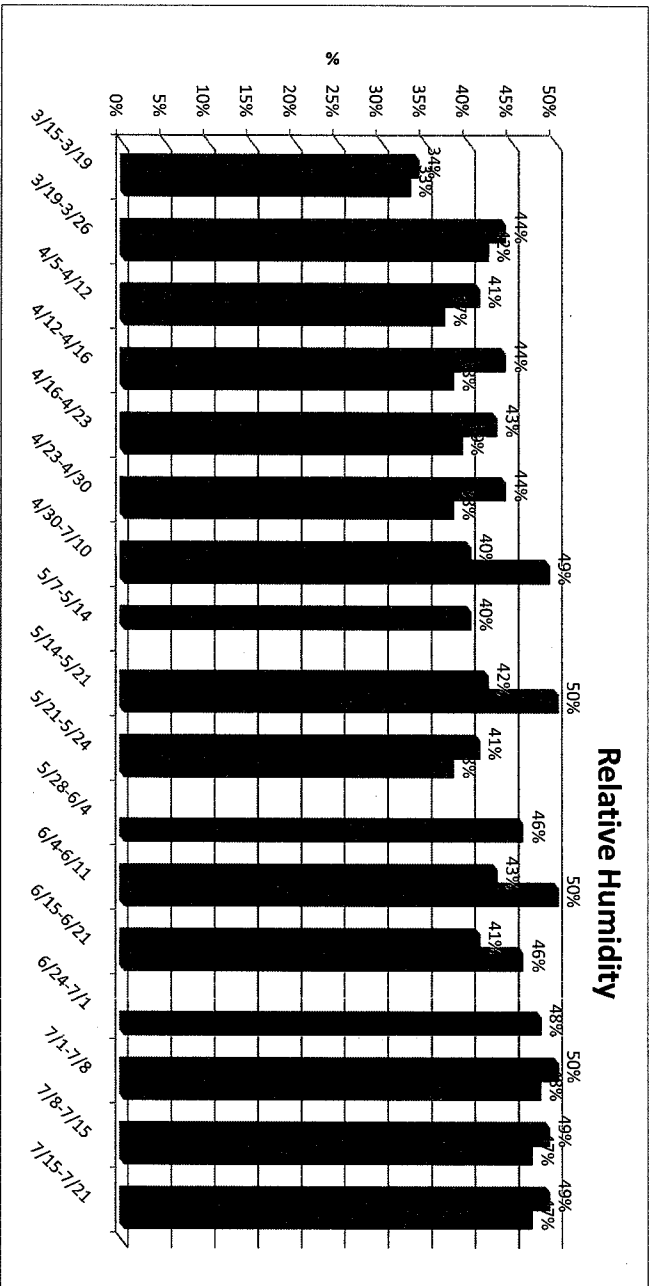
**Notes:**

Blue bars represent room treated with AtmosAir Bi-Polar Ionization  
 Red bars represent control room without AtmosAir  
 The AtmosAir system was installed into Room 206 on 3/15/10 and removed on 5/14/10  
 The AtmosAir system was installed into Room 212 on 5/14/10 thru the end of the trial 7/21/10  
 Temperature is measured in degrees Fahrenheit (°F)

**Average Levels**

3/15/10-5/14/10	74.3 °F	72.5 °F
5/14/10-7/21/10	77.2 °F	80 °F

3/15-3/19	3/19-3/26	4/5-4/12	4/12-4/16	4/16-4/23	4/23-4/30	4/30-7/10	5/7-5/14	5/14-5/21	5/21-5/24	5/28-6/4	6/4-6/11	6/15-6/21	6/24-7/1	7/1-7/8	7/8-7/15	7/15-7/21
34%	44%	41%	44%	43%	44%	40%	40%	42%	41%	50%	38%	46%	50%	48%	50%	49%
33%	42%	37%	38%	39%	39%	38%	49%	50%	38%	46%	50%	46%	48%	48%	47%	47%



**Notes:**

Blue bars represent room treated with AtmosAir Bi-Polar Ionization  
 Red bars represent control room without AtmosAir

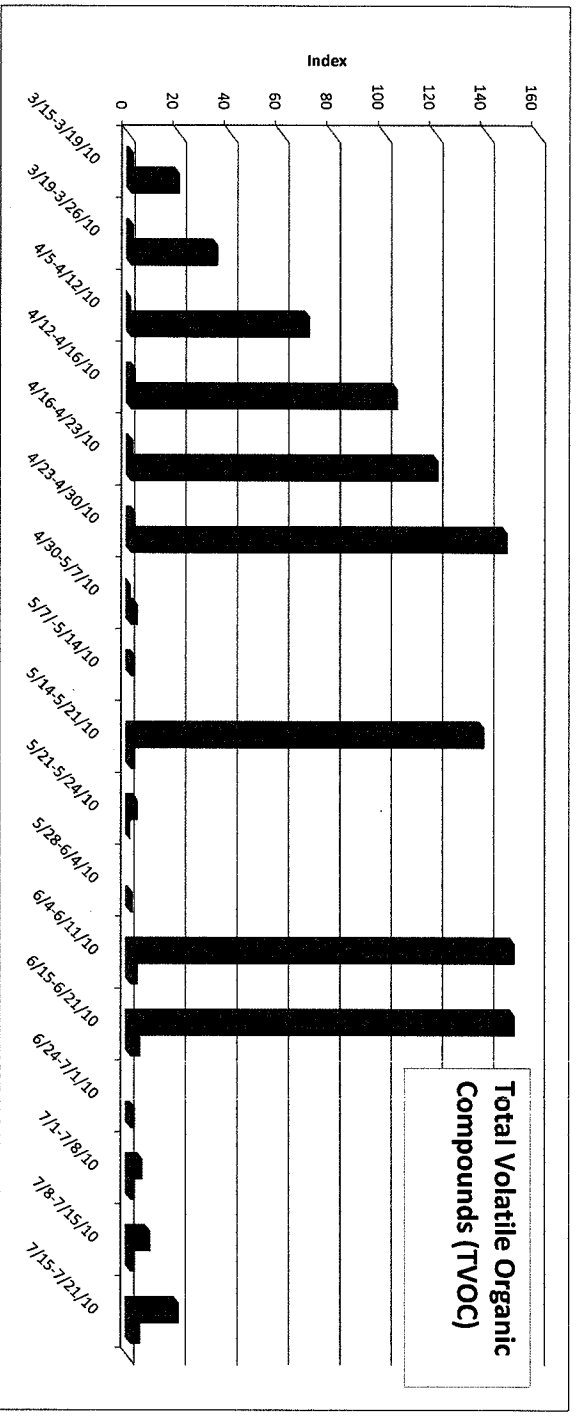
The AtmosAir system was installed into Room 206 on 3/15/10 and removed on 5/14/10

The AtmosAir system was installed into Room 212 on 5/14/10 thru the end of the trial 7/21/10

Relative Humidity is measured in percentage of relative humidity (%RH)

<b>Average Levels</b>	<b>Room 206</b>	<b>Room 212</b>
3/15/10-5/14/10	41.25%	39.42%
5/14/10-7/21/10	45%	46.60%

3/15-3/19/10	3/19-3/26/10	4/5-4/12/10	4/12-4/16/10	4/16-4/23/10	4/23-4/30/10	4/30-5/7/10	5/7-5/14/10	5/14-5/21/10	5/21-5/24/10	5/28-6/4/10	6/4-6/11/10	6/15-6/21/10	6/24-7/1/10	7/1-7/8/10	7/8-7/15/10	7/15-7/21/10
1	1	0	2	1	2	0	2	138	0	1	150	150	2	5	8	19
19	34	70	104	120	147	3	2	2	3	3	3	4	2	2	2	4



**Notes:**

Blue bars represent room treated with AtmosAir Bi-Polar Ionization  
 Red bars represent control room without AtmosAir  
 The AtmosAir system was installed into Room 206 on 3/15/10 and removed on 5/14/10  
 The AtmosAir system was installed into Room 212 on 5/14/10 thru the end of the trial 7/21/10  
 TVOC is measured on a custom index developed by the air testing equipment manufacturer Aircutty Inc.

**Average Levels**  
 Room 206 71 Index  
 Room 212 67.5 Index  
 3/15/10-5/14/10 1.1 Index  
 5/14/10-7/21/10 2.2 Index

Sampling Date	3/15-3/19/10	3/15-3/19/10	3/19-3/26/10	3/19-3/26/10	4/5-4/12/10	4/5-4/12/10
<b>Contaminant</b>	<b>Room 206</b>	<b>Room 212</b>	<b>Room 206</b>	<b>Room 212</b>	<b>Room 206</b>	<b>Room 212</b>
PM10	22 ug/m <sup>3</sup>	13 ug/m <sup>3</sup>	39 ug/m <sup>3</sup>	21 ug/m <sup>3</sup>	26 ug/m <sup>3</sup>	8 ug/m <sup>3</sup>
PM2.5	4 ug/m <sup>3</sup>	4 ug/m <sup>3</sup>	7 ug/m <sup>3</sup>	8 ug/m <sup>3</sup>	3 ug/m <sup>3</sup>	3 ug/m <sup>3</sup>
TVOC	1	19	1	34	0	70
CO	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm
CO2	927 ppm	1066 ppm	848 ppm	990 ppm	442 ppm	484 ppm
Radon	.2 pCi/l	.1 pCi/l	.3 pCi/l	.2 pCi/l	.2 pCi/l	.1 pCi/l
Ozone	0 ppm	.011 ppm	0 ppm	.006 ppm	0 ppm	.001 ppm
Total Mold Spores Outdoor	1,104 m <sup>3</sup>	1,104 m <sup>3</sup>	0 m <sup>3</sup>	0 m <sup>3</sup>	0 m <sup>3</sup>	0 m <sup>3</sup>
Total Mold Spores Indoor	208 m <sup>3</sup>	69 m <sup>3</sup>	69 m <sup>3</sup>	838 m <sup>3</sup>	0 m <sup>3</sup>	0 m <sup>3</sup>
Ratio of Indoor to Outdoor Spores	19.00%	6.00%	0.00%	0.00%	0.00%	0.00%
Avg Indoor Temp / RH	76 F 34%	73 F 33%	75 F 44%	72 F 42%	71 F 41%	70 F 37%
Avg Outdoor Temp / RH	66 F 33%	66 F 33%	60 F 48%	60 F 48%	58 F 40%	58 F 40%
<b>Sampling Date</b>	<b>4/12-4/16/10</b>	<b>4/12-4/16/10</b>	<b>4/16-4/23/10</b>	<b>4/16-4/23/10</b>	<b>4/23-4/30/10</b>	<b>4/23-4/30/10</b>
<b>Contaminant</b>	<b>Room 206</b>	<b>Room 212</b>	<b>Room 206</b>	<b>Room 212</b>	<b>Room 206</b>	<b>Room 212</b>
PM10	38 ug/m <sup>3</sup>	18 ug/m <sup>3</sup>	38 ug/m <sup>3</sup>	15 ug/m <sup>3</sup>	40 ug/m <sup>3</sup>	22 ug/m <sup>3</sup>
PM2.5	5 ug/m <sup>3</sup>	6 ug/m <sup>3</sup>	5 ug/m <sup>3</sup>	5 ug/m <sup>3</sup>	10 ug/m <sup>3</sup>	11 ug/m <sup>3</sup>
TVOC	2	104	1	120	2	147
CO	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm
CO2	1113 ppm	862 ppm	814 ppm	1109 ppm	1002 ppm	842 ppm
Radon	.1 pCi/l	.1 pCi/l	.2 pCi/l	.1 pCi/l	.2 pCi/l	.1 pCi/l
Ozone	0 ppm	.007 ppm	0 ppm	.003 ppm	0 ppm	.003 ppm
Total Mold Spores Outdoor	4/12/2010	4/12/2010	4/23/2010	4/23/2010	4/30/2010	4/30/2010
Total Mold Spores Indoor	0 m <sup>3</sup>	0 m <sup>3</sup>	276 m <sup>3</sup>	276 m <sup>3</sup>	0 m <sup>3</sup>	0 m <sup>3</sup>
Ratio of Indoor to Outdoor Spores	0.00%	0.00%	25.00%	50.00%	0.00%	0.00%
Avg Indoor Temp / RH	72 F 44%	74 F 38%	74 F 43%	71 F 39%	73 F 44%	74 F 38%
Avg Outdoor Temp / RH	46 F 49%	46 F 49%	57 F 60%	57 F 60%	59 F 53%	59 F 53%

**Accepted Standards / Guidelines**

USEPA 150 ug/m<sup>3</sup>  
 USEPA 65 ug/m<sup>3</sup>  
 N/A  
 USEPA 9 ppm OSHA 50 ppm ACGIH 25 ppm  
 OSHA 5000 ppm ACGIH 5000 ppm NIOSH 5000 ppm  
 USEPA 4.0 pCi/l  
 USEPA .08 ppm CARB .05 ppm ACGIH .05 ppm  
 USEPA 9 ppm OSHA 50 ppm ACGIH 25 ppm  
 There are no standards or guidelines for acceptable mold spore levels  
 The accepted protocol is to compare outdoor and indoor levels for ratio and spore type

USEPA 150 ug/m<sup>3</sup>  
 USEPA 65 ug/m<sup>3</sup>  
 N/A  
 USEPA 9 ppm OSHA 50 ppm ACGIH 25 ppm  
 OSHA 5000 ppm ACGIH 5000 ppm NIOSH 5000 ppm  
 USEPA 4.0 pCi/l  
 USEPA .08 ppm CARB .05 ppm ACGIH .05 ppm  
 USEPA 9 ppm OSHA 50 ppm ACGIH 25 ppm  
 There are no standards or guidelines for acceptable mold spore levels  
 The accepted protocol is to compare outdoor and indoor levels for ratio and spore type

Sampling Date	4/30-5/7/10	4/30-5/7/10	5/7/-5/14/10	5/7/-5/14/10	5/14-5/21/10	5/14-5/21/10
<b>Contaminant</b>	<b>Room 206</b>	<b>Room 212</b>	<b>Room 206</b>	<b>Room 212</b>	<b>Room 206</b>	<b>Room 212</b>
PM10	16 ug/m <sup>3</sup>	61 ug/m <sup>3</sup>	31 ug/m <sup>3</sup>	N/A	28 ug/m <sup>3</sup>	34 ug/m <sup>3</sup>
PM2.5	6 ug/m <sup>3</sup>	7 ug/m <sup>3</sup>	3 ug/m <sup>3</sup>	N/A	9 ug/m <sup>3</sup>	7 ug/m <sup>3</sup>
TVOC	0	3	2	N/A	138	2
CO	0 ppm	0 ppm	0 ppm	N/A	0 ppm	0 ppm
CO2	873 ppm	986 ppm	798 ppm	N/A	847 ppm	935 ppm
Radon	.1 pCi/l	.2 pCi/l	.2 pCi/l	N/A	.1 pCi/l	.1 pCi/l
Ozone	0 ppm	0 ppm	0 ppm	N/A	0 ppm	0 ppm
<b>Total Mold</b>	<b>5/7/2010</b>	<b>5/7/2010</b>	<b>5/14/2010</b>	<b>5/14/2010</b>	<b>5/21/2010</b>	<b>5/21/2010</b>
Spores Outdoor	1105 m <sup>3</sup>	1105 m <sup>3</sup>	552 m <sup>3</sup>	552 m <sup>3</sup>	2,762 m <sup>3</sup>	2,762 m <sup>3</sup>
Total Mold	139 m <sup>3</sup>	139 m <sup>3</sup>	69 m <sup>3</sup>	208 m <sup>3</sup>	0 m <sup>3</sup>	0 m <sup>3</sup>
Spores Indoor	139 m <sup>3</sup>	139 m <sup>3</sup>	69 m <sup>3</sup>	208 m <sup>3</sup>	0 m <sup>3</sup>	0 m <sup>3</sup>
Ratio of Indoor to Outdoor Spores	13.00%	13.00%	12.00%	37.00%	0.00%	0.00%
Avg Indoor Temp / RH	76 F 40%	74 F 49%	78 F 40%	N/A	77 F 42%	75 F 50%
Avg Outdoor Temp / RH	64 F 53%	64 F 53%	62 F 47%	62 F 47%	63 F 60%	63 F 60%
<b>Sampling Date</b>	<b>5/21-5/24/10</b>	<b>5/21-5/24/10</b>	<b>5/28-6/4/10</b>	<b>5/28-6/4/10</b>	<b>6/4-6/11/10</b>	<b>6/4-6/11/10</b>
<b>Contaminant</b>	<b>Room 206</b>	<b>Room 212</b>	<b>Room 206</b>	<b>Room 212</b>	<b>Room 206</b>	<b>Room 212</b>
PM10	32 ug/m <sup>3</sup>	12 ug/m <sup>3</sup>	N/A	38 ug/m <sup>3</sup>	22 ug/m <sup>3</sup>	38 ug/m <sup>3</sup>
PM2.5	3 ug/m <sup>3</sup>	2 ug/m <sup>3</sup>	N/A	6 ug/m <sup>3</sup>	6 ug/m <sup>3</sup>	6 ug/m <sup>3</sup>
TVOC	3	0	N/A	1	>150	3
CO	0 ppm	0 ppm	N/A	0 ppm	0 ppm	0 ppm
CO2	783 ppm	972 ppm	N/A	914 ppm	808 ppm	959 ppm
Radon	.1 pCi/l	.1 pCi/l	N/A	.2 pCi/l	.1 pCi/l	.2 pCi/l
Ozone	0 ppm	0 ppm	N/A	0 ppm	0 ppm	0 ppm
<b>Total Mold</b>	<b>5/28/2010</b>	<b>5/28/2010</b>	<b>5/28/2010</b>	<b>5/28/2010</b>	<b>6/4/2010</b>	<b>6/4/2010</b>
Spores Outdoor	N/A	N/A	552 m <sup>3</sup>	552 m <sup>3</sup>	552 m <sup>3</sup>	N/A
Total Mold	N/A	N/A	0 m <sup>3</sup>	0 m <sup>3</sup>	0 m <sup>3</sup>	N/A
Spores Indoor	N/A	N/A	0 m <sup>3</sup>	0 m <sup>3</sup>	0 m <sup>3</sup>	N/A
Ratio of Indoor to Outdoor Spores	N/A	N/A	0.00%	0.00%	0.00%	N/A
Avg Indoor Temp / RH	79 F 41%	75 F 38%	N/A	78 F 46%	78 F 43%	80 F 50%
Avg Outdoor Temp / RH	63 F 53%	63 F 53%	66 F 54%	66 F 54%	67 F 62%	67 F 62%
<b>Sampling Date</b>	<b>6/15-6/21/10</b>	<b>6/15-6/21/10</b>	<b>6/24-7/1/10</b>	<b>6/24-7/1/10</b>	<b>7/1-7/8/10</b>	<b>7/1-7/8/10</b>
<b>Contaminant</b>	<b>Room 206</b>	<b>Room 212</b>	<b>Room 206</b>	<b>Room 212</b>	<b>Room 206</b>	<b>Room 212</b>
PM10	24 ug/m <sup>3</sup>	50 ug/m <sup>3</sup>	N/A	21 ug/m <sup>3</sup>	20 ug/m <sup>3</sup>	25 ug/m <sup>3</sup>
PM2.5	7 ug/m <sup>3</sup>	6 ug/m <sup>3</sup>	N/A	7 ug/m <sup>3</sup>	10 ug/m <sup>3</sup>	9 ug/m <sup>3</sup>
TVOC	>150	4	N/A	2	5	2
CO	0 ppm	0 ppm	N/A	0 ppm	0 ppm	0 ppm
CO2	811 ppm	1074 ppm	N/A	366 ppm	680 ppm	419 ppm
Radon	.1 pCi/l	.1 pCi/l	N/A	.1 pCi/l	.1 pCi/l	.2 pCi/l
Ozone	0 ppm	0 ppm	N/A	0 ppm	0 ppm	0 ppm
Avg Indoor Temp / RH	79 F 41%	81 F 46%	N/A	81 F 48%	75 F 50%	82 F 48%
Avg Outdoor Temp / RH	67 F 55%	67 F 55%	68 F 61%	68 F 61%	68 F 66%	68 F 66%

USEPA 150 ug/m<sup>3</sup>  
 USEPA 65 ug/m<sup>3</sup>  
 N/A  
 USEPA 9 ppm OSHA 50 ppm ACGIH 25 ppm  
 OSHA 5000 ppm ACGIH 5000 ppm NIOSH 5000 ppm  
 USEPA 4.0 pCi/l  
 USEPA .08 ppm CARB .05 ppm ACGIH .05 ppm  
 USEPA 9 ppm OSHA 50 ppm ACGIH 25 ppm  
 There are no standards or guidelines for acceptable mold spore levels  
 The accepted protocol is to compare outdoor and indoor levels for ratio and spore type

USEPA 150 ug/m<sup>3</sup>  
 USEPA 65 ug/m<sup>3</sup>  
 N/A  
 USEPA 9 ppm OSHA 50 ppm ACGIH 25 ppm  
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 USEPA 9 ppm OSHA 50 ppm ACGIH 25 ppm  
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 USEPA .08 ppm CARB .05 ppm ACGIH .05 ppm  
 USEPA 9 ppm OSHA 50 ppm ACGIH 25 ppm

Summary of Air Testing Results Manuel Esqueda Elementary School Rooms 206 and 212

Sampling Date	Room	7/8-7/15/10	7/8-7/15/10	7/15-7/21/10	7/15-7/21/10	
Contaminant	Room 206	Room 212	Room 206	Room 212		
PM10	20 ug/m <sup>3</sup>	29 ug/m <sup>3</sup>	20 ug/m <sup>3</sup>	37 ug/m <sup>3</sup>	USEPA 150 ug/m <sup>3</sup>	
PM2.5	7 ug/m <sup>3</sup>	14 ug/m <sup>3</sup>	8 ug/m <sup>3</sup>	7 ug/m <sup>3</sup>	USEPA 65 ug/m <sup>3</sup>	
TVOC	8	2	19	4	N/A	
CO	0 ppm	0 ppm	0 ppm	0 ppm	USEPA 9 ppm OSHA 50 ppm ACGIH 25 ppm	
CO2	806 ppm	522 ppm	808 ppm	540 ppm	OSHA 5000 ppm ACGIH 5000 ppm NIOSH 5000 ppm	
Radon	.1 pCi/l	.2 pCi/l	.1 pCi/l	.2 pCi/l	USEPA 4.0 pCi/l	
Ozone	0 ppm	0 ppm	0 ppm	0 ppm	USEPA .08 ppm CARB .05 ppm ACGIH .05 ppm	
Avg Indoor Temp / RH	76 F 49%	83 F 47%	77 F 49%	85 F 47%	USEPA 9 ppm OSHA 50 ppm ACGIH 25 ppm	
Avg Outdoor Temp / RH	74 F 49%	74 F 49%				

LA Testing Mold Spore Sampling

Sampling Date	4/2/2010	4/2/2010	4/12/2010	4/12/2010	4/23/2010	4/23/2010
	<u>Room 206</u>	<u>Room 212</u>	<u>Room 206</u>	<u>Room 212</u>	<u>Room 206</u>	<u>Room 212</u>
Total Avg Mold	1,740 m3	1,740 m3	653 m3	653 m3	5,910 m3	5,910 m3
Spores Outdoor	42 m3	42 m3	645 m3	562 m3	380 m3	1,070 m3
Spores Indoor	2.00%	2.00%	98.00%	86.00%	6.00%	18.00%
Ratio of Indoor to Outdoor Spores						
Avg Indoor Temp / RH	76 F 34%	73 F 33%	75 F 44%	72 F 42%	71 F 41%	70 F 37%
Avg Outdoor Temp / RH	66 F 33%	66 F 33%	60 F 48%	60 F 48%	58 F 40%	58 F 40%
<b>Sampling Date</b>	<b>4/30/2010</b>	<b>4/30/2010</b>	<b>5/7/2010</b>	<b>5/7/2010</b>	<b>5/14/2010</b>	<b>5/14/2010</b>
	<u>Room 206</u>	<u>Room 212</u>	<u>Room 206</u>	<u>Room 212</u>	<u>Room 206</u>	<u>Room 212</u>
Total Mold	4,295 m3	4,295 m3	3,200 m3	3,200 m3	1,095 m3	1,095 m3
Spores Outdoor	405 m3	757 m3	168 m3	420 m3	42 m3	253 m3
Spores Indoor	9.00%	17.00%	5.00%	13.00%	3.00%	23.00%
Ratio of Indoor to Outdoor Spores						
Avg Indoor Temp / RH	76 F 34%	73 F 33%	75 F 44%	72 F 42%	71 F 41%	70 F 37%
Avg Outdoor Temp / RH	66 F 33%	66 F 33%	60 F 48%	60 F 48%	58 F 40%	58 F 40%
<b>Sampling Date</b>	<b>5/28/2010</b>	<b>5/28/2010</b>				
	<u>Room 206</u>	<u>Room 212</u>				
Total Mold	553 m3	553 m3				
Spores Outdoor	126 m3	772 m3				
Spores Indoor	22.00%	139.00%				
Ratio of Indoor to Outdoor Spores						
Avg Indoor Temp / RH	76 F 34%	73 F 33%				
Avg Outdoor Temp / RH	66 F 33%	66 F 33%				

**Accepted Standards / Guidelines**  
*There are no standards or guidelines for acceptable mold spore levels  
The accepted protocol is to compare outdoor and indoor levels for ratio and spore type*



3/15/10-5/14/10

**Contaminant Averages**

	<u>Room 206</u>	<u>Room 212</u>
PM 10	31.25 ug/m <sup>3</sup>	22.50 ug/m <sup>3</sup>
PM 2.5	5.3 ug/m <sup>3</sup>	6.2 ug/m <sup>3</sup>
TVOC	1.1 Index	7.1 Index
CO2	852 ppm	903 ppm
CO	0 ppm	0 ppm
Radon	.18 pCi/l	.12 pCi/l
Ozone	0 ppm	0.004 ppm
Total Spores	380 m <sup>3</sup>	380 m <sup>3</sup>
Outdoor (Aircuity)		
Total Spores	78 m <sup>3</sup>	174 m <sup>3</sup>
Indoor (Aircuity)		
Total Spores	2815 m <sup>3</sup>	2815 m <sup>3</sup>
Outdoor (LA Testing)		
Total Spores	280 m <sup>3</sup>	517 m <sup>3</sup>
Indoor (LA Testing)		
Indoor Temp	74.3 F	72.5 F
Indoor RH	41.25%	39.42%
Outdoor Temp	59 F	59 F
Outdoor RH	54.70%	54.70%

5/14/10-7/21/10

**Contaminant Averages**

	<u>Room 206</u>	<u>Room 212</u>
PM 10	23.7 ug/m <sup>3</sup>	31.5 ug/m <sup>3</sup>
PM 2.5	7.1 ug/m <sup>3</sup>	7.1 ug/m <sup>3</sup>
TVOC	67.5 Index	2.2 Index
CO2	792 ppm	745 ppm
CO	0 ppm	0 ppm
Radon	.1 pCi/l	.15 pCi/l
Ozone	0 ppm	0 ppm
Total Spores	1657 m <sup>3</sup>	1657 m <sup>3</sup>
Outdoor (Aircuity)		
Total Spores	0 m <sup>3</sup>	0 m <sup>3</sup>
Indoor (Aircuity)		
Total Spores	553 m <sup>3</sup>	553 m <sup>3</sup>
Outdoor (LA Testing)		
Total Spores	126 m <sup>3</sup>	772 m <sup>3</sup>
Indoor (LA Testing)		
Indoor Temp	77.2 F	80 F
Indoor RH	45%	46.60%
Outdoor Temp	67 F	67 F
Outdoor RH	57.50%	57.50%

**Notes:**

AtmosAir D100 system and Tridim TriDek filter were installed to the rooftop unit serving Room 206 from 3/15/10 to 5/14/10. The AtmosAir unit and Tridim filter were then removed from the Room 206 rooftop unit on 5/14/10 and installed to the rooftop unit serving Room 212 from 5/14/10 thru 7/21/10.

On 6/16/10 the outside air dampers to Room 212 were closed. These were re-opened on 7/8/10. On 7/8/10 the outside air dampers to Room 206 were closed. These were then re-opened on 7/21/10.