

# *Salazar Consulting Group, Inc.*

*A professional team of engineers, industrial hygienists,  
safety experts, physicians, and health scientists.*

Indoor Environmental Quality Evaluations  
Environmental and Medical Monitoring  
EPA/OSHA Compliance  
Expert Testimony

Hazardous Waste Control  
Hazard Communication  
Safety Evaluations  
Training

December 13, 2006

Mr. Jeffrey S. Moquin  
Director, Risk Management Department  
7770 West Oakland Park Boulevard  
Sunrise, Florida 33351-6750

RE: Preliminary Indoor Environmental Quality Evaluation  
Dave Thomas Center- West (Select Areas – December 1, 2006)  
4700 Coconut Creek Parkway  
Coconut Creek, Florida 33066  
SCG File No.: 1031.70

Dear Mr. Moquin:

Salazar Consulting Group, Inc. (SCG) performed a Preliminary Indoor Environmental Quality (IEQ) Evaluation of select areas of the aforementioned educational facility on December 1, 2006. The evaluation was requested by The School Board of Broward County in response to occupant complaints of development of adverse health effects allegedly associated with occupancy of select indoor locations. Evaluative activities were limited to those areas identified by site and/or Broward County School Board personnel as problematic, and included Room Nos. 207 (Original Computer Lab), 209 (Science Lab and Material Prep Rooms), 210 (Science Lab), and 237 (Newly-Assigned Computer Lab). Evaluative tasks were limited to observations of respective indoor/outdoor areas, ceiling plenum spaces, and of easily accessible ventilation system components; moisture testing of select indoor building materials, primarily drywall/wood materials installed on interior surfaces of exterior wall systems; and measurement of environmental parameters to include temperature, relative humidity, carbon dioxide, and total and respirable particulate levels from indoor and outdoor locations. Details of conditions observed, data collected, and information provided on the date of evaluation follow.

## ***Reported Occupant Remarks***

SCG understands that complaints within evaluated areas of the facility are limited to faculty/staff occupying the respective indoor spaces. SCG understands that such complaints are described generically as "the building makes them sick", eye irritation, and perhaps detection of transient odors. SCG further understands that qualified representatives of the School District have evaluated the rooms prior, have found minimal deficiencies, if any, and have not identified any specific source(s) or cause(s) of occupant complaints.

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### ***Observed Exterior Building Conditions***

Conditions observed immediately exterior of evaluated areas presented as generally unremarkable, appearing as typical for a building of it's age and design. Outdoor conditions conducive to obvious and significant degradation of indoor environmental quality within affected areas of the facility were not detected on the date and at the time of evaluation.

### ***Observed Interior Building Conditions***

#### *First Floor*

#### Room No. 207 (Original Computer Lab)

1. Room is currently unoccupied as students and faculty/staff have been re-located to Room No. 237 as a direct result of occupant complaints.
2. Suspended ceiling tile system intact and in good condition.
3. Vinyl floor tile system in good condition and generally clean; slight abrasions on floor tile surfaces visible sporadically and apparently due to movement of student chairs.
4. Visible evidence of slight moisture effects to vinyl floor tiles immediately adjacent to doorway at rear entry to room; appears to be caused by slight moisture intrusion through rear door system.
5. Ceiling plenum spaces present as generally unremarkable and as expected, with dust/debris settled sporadically at observed locations.
6. Housekeeping appears generally adequate, but slight dust/debris settled on environmental surfaces sporadically throughout room.
7. One (1) stained ceiling tile within adjacent storage closet/room.
8. Moisture levels low within all building materials tested; even within wall materials presenting with obvious moisture effects immediately adjacent to rear entry door.

#### Room No. 209 (Science Material Prep)

1. Room appears to be used for general storage of science teaching supplies/equipment; abundance of clean glassware and science demonstration equipment available within room.
2. Suspended ceiling tile system intact and in good condition.
3. Vinyl floor tile system and ceramic floor tile section in good condition and generally clean.
4. One (1) stained ceiling tile.
5. Ceiling plenum spaces present as generally unremarkable and as expected, with dust/debris settled sporadically at observed locations; ceiling plenum spaces present as generally unremarkable even at stained ceiling tile location.
6. Housekeeping appears generally adequate, but slight dust/debris settled on environmental surfaces sporadically throughout room.
7. Moisture levels low within all building materials tested.

Room Nos. 209 and 210 (Science Labs)

1. Rooms appear to be used for general teaching/lecture purposes; availability of stored science chemicals/supplies not obvious.
2. Suspended ceiling tile systems intact and in good condition.
3. Vinyl floor tile systems and ceramic floor tile sections in good condition and generally clean.
4. One (1) stained ceiling tile within each room.
5. Ceiling plenum spaces present as generally unremarkable and as expected, with dust/debris settled sporadically at observed locations; ceiling plenum spaces present as generally unremarkable even at stained ceiling tile locations.
6. Housekeeping appears generally adequate, but slight dust/debris settled on environmental surfaces sporadically throughout rooms.
7. Moisture levels low within all building materials tested.

*Second Floor*

Room No. 237 (Newly-Assigned Computer Lab)

1. Room is currently used as Newly-Assigned Computer Lab due to vacating of Room No. 207 (Original Computer Lab); no complaints voiced by room occupants.
2. Suspended ceiling tile system intact and in good condition.
3. Vinyl floor tile system in good condition and generally clean; slight abrasions on floor tile surfaces visible sporadically and likely due to movement of student chairs.
4. Ceiling plenum spaces present as generally unremarkable and as expected, with dust/debris settled sporadically at observed locations.
5. Housekeeping appears generally adequate, but slight dust/debris settled on environmental surfaces sporadically throughout room.
6. Moisture levels low within all building materials tested.

***Ventilation System Observations***

General Observations

Ventilation systems servicing evaluated areas appear to be ducted return-air systems.

Room Nos. 207 (Original Computer Lab), 209 (Science Material Prep), 209 (Science Lab), 210 (Science Lab), and 237 (Newly-Assigned Computer Lab)

Slight dust/debris visible on ventilation supply air registers.

Air Handling Unit No. 2-1 (housed within Mechanical Room 213; reportedly services evaluated first floor areas); Air Handling Unit Nos. 2-2 and 2-3 (housed within Mechanical Room 236; reportedly service evaluated second floor area)

1. Mechanical rooms clean and orderly.
2. Exterior of air handling units clean and generally unremarkable.
3. Interior components and cooling coils of units present as generally unremarkable and clean.
4. Pleated filters properly installed and clean.
5. Slight amounts of standing water within condensate drain pans; amounts accumulated appear typical and require no further response measures at this time.

### ***Environmental Parameter Measurements***

Environmental parameter data collected on the date of evaluation are summarized in Table 1. Temperature levels detected within the facility ranged from 70.8 degrees Fahrenheit (°F) to 74.1 °F and averaged 71.8 °F, relative humidity levels ranged from 64.7 percent (%) to 69.1 % and averaged 66.8 %, carbon dioxide levels ranged from 431 parts carbon dioxide per million parts air (ppm) to 500 ppm and averaged 456 ppm, respirable particulate levels ranged from 0.003 milligrams particulate per cubic meter air (mg/m<sup>3</sup>) to 0.005 mg/m<sup>3</sup> and averaged 0.004 mg/m<sup>3</sup>, and total particulate levels ranged from 0.004 mg/m<sup>3</sup> to 0.006 mg/m<sup>3</sup> and averaged 0.005 mg/m<sup>3</sup>. Outdoor temperature, relative humidity, carbon dioxide, and respirable and total particulate levels were detected at 86.3 °F, 54.4 %, 366 ppm, 0.026 mg/m<sup>3</sup>, and 0.029 mg/m<sup>3</sup>, respectively.

*NOTE: Indoor environmental parameter data (temperature, relative humidity, and carbon dioxide levels) collected were compared with generally recommended criteria levels published by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE). These guidelines generally suggest maintenance of indoor temperature at 69.0 °F to 79.0 °F, relative humidity below 60.0 %, and an indoor-to-outdoor carbon dioxide differential of 700 ppm or less. Indoor particulate concentrations were compared to those detected outdoors, with detection of indoor particulate concentrations at or below those detected outdoors considered ideal.*

**Table 1. Environmental Parameter Measurements  
 Dave Thomas Center - West  
 Collection Date: December 1, 2006**

LOCATION	TEMP (°F)	RH (%)	CD (ppm)	PARTICULATE (mg/m <sup>3</sup> )		COMMENTS
				RSP	TTL	
Room No. 207 (Original Computer Lab)	70.9	65.2	447	0.004	0.005	unoccupied
Room No. 209 (Science Material Prep)	71.0	69.1	452	0.004	0.005	unoccupied
Room No. 209 (Science Lab)	72.0	65.9	447	0.003	0.004	unoccupied
Room No. 210 (Science Lab)	70.8	68.9	431	0.005	0.006	unoccupied
Room No. 237 (Newly-Assigned Computer Lab)	74.1	64.7	500	0.003	0.004	unoccupied
Outdoors	86.3	54.4	366	0.026	0.029	clear day

TEMP (°F) = temperature (degrees Fahrenheit)  
 RH (%) = relative humidity (percent)  
 CD (ppm) = carbon dioxide (parts carbon dioxide per million parts air)  
 RSP= respirable particulates  
 TTL = total particulates

Conditions and/or sources obviously contributing to occupant complaints within evaluated areas of the facility were not detected at the time of evaluation. Nonetheless, based upon conditions observed, data collected, and information provided at the time of evaluation, SCG recommends timely implementation of the following remedial measures to further improve indoor environmental quality within the facility, some of which might perhaps serve to improve occupant comfort levels and reduce occupant complaints:

1. Attempt to improve the appearance of vinyl floor tile surfaces within Room Nos. 207 (Original Computer Lab) and 237 (Newly-Assigned Computer Lab) by eliminating visible abrasions on floor tile surfaces.
2. Accurately identify and effectively eliminate the source(s) of moisture intrusion through the rear entry door system of Room No. 207 (Original Computer Lab); remediate moisture-affected floor tiles and wall materials by methods in accordance with generally accepted industry guidelines.
3. Ensure frequent, routine, and effective cleaning within evaluated indoor areas to prevent accumulations of settled dust/debris on environmental surfaces.
4. Accurately identify and effectively eliminate the source(s) of moisture resulting in sporadic staining of ceiling tiles within the adjacent storage closet/room of Room No. 207 (Original Computer Lab), and Room Nos. 209 (Science Material Prep),

209 (Science Lab), and 210 (Science Lab) ; eliminate affected tiles promptly upon detection.

5. Clean/sanitize ventilation supply air registers throughout the facility presenting with accumulated dust/debris.
6. Further evaluate relative humidity control within evaluated areas and ensure consistent maintenance at or below the ASHRAE-recommended maximum of 60.0 %; provide improvement measures as deemed necessary.

Again, conditions and/or sources obviously contributing to occupant complaints within evaluated areas of the facility were not detected by SCG at the time of evaluation. Nonetheless, timely implementation of the remedial measures described should be provided to further improve indoor environmental quality within respective areas.

Please understand that conditions observed, data collected, and the resulting remedial recommendations, as described in this report, are relevant only to the time of evaluation; conditions observed on the date of evaluation may continue to change. Given the expected variations in indoor environmental conditions, SCG is not able to offer comment on the suitability for occupancy of any area of the facility, whether evaluated or not, prior to, during, or after completion of any implemented response measures. Issues regarding the suitability for occupancy of any part of the facility by any specific individual(s) should be discussed with an appropriate health practitioner.

Furthermore, although completion of the remedial tasks described may likely be accomplished with minimal disruption, corrective measures should be implemented during times of minimal building occupancy. The decision to continue occupancy of any section(s) of the facility at any given time while such measures are in progress should be dictated by prevailing conditions and relevant circumstances.

SCG appreciates the opportunity to be of assistance in this regard. Please do not hesitate to contact us should you have any questions, comments, or require additional information.

Sincerely,

SALAZAR CONSULTING GROUP, INC.

By:   
Rene' R. Salazar, Ph.D.  
Certified Industrial Hygienist