

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

January 28, 2003

Mr. Jeffrey S. Moquin
Director, Risk Management Department
The School Board of Broward County
1320 Southwest Fourth Street
Building No. 7
Fort Lauderdale, Florida 33312

RE: Preliminary Indoor Environmental Quality Evaluation – Room No. 621
Tamarac Elementary School
7601 North University Drive
Tamarac, Florida 33321
SCG File No. 1031.49

Dear Mr. Moquin:

Salazar Consulting Group, Inc. (SCG) performed a Preliminary Indoor Environmental Quality (IEQ) Evaluation of Room No. 621 at Tamarac Elementary School, located in Tamarac Florida, on January 10, 2003. Evaluative activities included walk-through of indoor areas for observation of existing conditions; observations of accessible ventilation system components; moisture measurements of randomly selected indoor building materials; and measurement of indoor and outdoor environmental parameters to include temperature, relative humidity, carbon dioxide, and particulate levels. Detailed observations and collected data of the site visit are as follows:

Indoor Building Conditions

1. Vinyl floor covering generally clean and in good condition.
2. Ceiling tile system intact and in good condition; individual ceiling tiles presented as generally clean.
3. Ceiling plenum observations unremarkable; plenum spaces generally clean at observed locations.
4. Room positively-pressurized with respect to outdoors, as determined by smoke tube testing.
5. Restroom negatively-pressurized with respect to adjacent indoor locations, as determined by smoke tube testing.
6. Several live foliage plants displayed within room.
7. Area (floor) rug clean and in good condition.
8. Housekeeping appeared generally adequate; minimal accumulations of dust/debris on environmental surfaces.
9. Moisture levels within randomly selected building materials remained low.

6607 Heatherton Court, Tampa, Florida 33617-3027
(813) 980-1915 • FAX (813) 988-7486

Ventilation System Observations

1. Supply/return air registers generally clean.
2. Supply/return air registers operational, as verified by smoke tube testing.

Air Handling Unit No. 2

Outdoor Air Pre-Conditioning Unit

1. Accumulations of dust/debris visible on cooling coils and accessible air conveyance duct segments.
2. Pleated filtration media improperly sized and installed, allowing air by-pass.

Central Unit

1. Internal components, fan unit, cooling coils, and respective insulative materials presented as generally clean and in good condition. (NOTE: Previous or existing fluid loss from fan unit evident.)
2. Pleated filtration media properly sized, installed, and presented as generally clean.
3. Internal metal surfaces of accessible ventilation air conveyance duct segments presented as generally clean.

Environmental Parameter Measurements

During occupancy, detected indoor temperature, relative humidity, and carbon dioxide levels were 68.9 degrees Fahrenheit (°F), 58.0 percent (%), and 690 parts carbon dioxide per million parts air (ppm), respectively. Detected outdoor temperature, relative humidity, and carbon dioxide levels were 63.4 °F, 75.0 %, and 450 ppm, respectively.

The total indoor particulate concentration detected was 0.020 milligrams particulates per cubic meter of air (mg/m^3); the detected indoor respirable particulate concentration was $0.018 \text{ mg}/\text{m}^3$. The total outdoor particulate concentration detected was $0.049 \text{ mg}/\text{m}^3$; the respirable outdoor particulate concentration detected was $0.046 \text{ mg}/\text{m}^3$.

Conclusions and Recommendations

Generally, SCG did not identify any existing conditions presenting immediate health and safety concerns to building occupants. Observations of indoor room areas, ceiling plenum spaces, and internal air handling unit components were generally unremarkable (the mechanical issue identified within the air handling unit at the time of evaluation likely had minimal impact on indoor conditions); observed conditions were not unique. Indoor room areas presented as those typical of occupied environments in similar settings. Detected indoor temperature, relative humidity, and carbon dioxide levels were generally maintained within criteria ranges recommended by the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE); indoor particulate concentrations remained lower than those detected outdoors.

Nonetheless, to further improve IEQ within Room No. 621, a proactive response to reported findings of the evaluation should minimally include the following:

1. Properly install adequately sized filtration media within the outdoor air pre-conditioning air handling unit.

Pleated filters within the unit were not properly sized nor installed. Properly sized filtration media should be installed to minimize air by-pass and subsequent dust/debris accumulations on respective mechanical components.

2. Clean/sanitize internal components of the outdoor air pre-conditioning unit and respective air conveyance duct segments.

Visible dust/debris was observed on the cooling coils and internal components of the pre-conditioning unit, likely resulting from improper sizing/installation of filtration media. Respective components should be cleaned/sanitized in accordance with generally accepted industry practices.

3. Further evaluate mechanical operation of the fan unit within the central air handling unit; provide corrective measures as necessary.

Slight fluid leakage was observed from the fan unit within the central air handling unit. The mechanical operation of the fan unit should be further evaluated and corrective measures provided as necessary. Any fluid residues identified within the unit and respective air conveyance duct segments should be eliminated accordingly.

4. Limit use of live foliage plants indoors.

Indoor foliage serves as a prime source of microbial and other biological allergens. Foliage allergens may be associated with the plant material itself, or with the medium (soil) in which it is growing. Therefore, to minimize indoor allergen reservoirs, limit use of live plants indoors

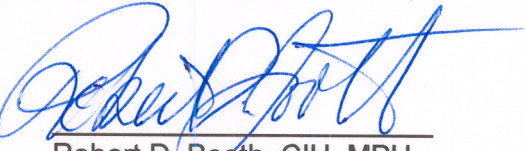
Again, although SCG did not identify existing conditions within Room No. 621 presenting immediate health concerns to room occupants, strategies to generally improve indoor environmental quality are recommended. The recommendations listed serve as proactive measures in this regard.

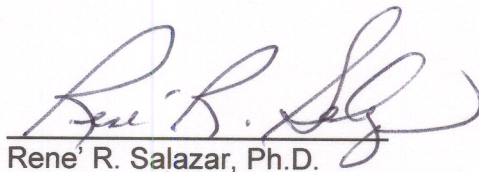
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SCG appreciates the opportunity to be of assistance. Please do not hesitate to contact us should you have any questions, comments, or require additional information.

Sincerely,

SALAZAR CONSULTING GROUP, INC.

By: 
Robert D. Booth, CIH, MPH
Senior Industrial Hygienist

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