



November 15, 2011
Project Number: 11-428

Mr. Joe Ammons
Maintenance Director
Harrison County Schools
408 E.B. Saunders Way
Clarksburg, West Virginia 26301

**Report of IAQ Assessment
Lumberport Middle School
Lumberport, West Virginia**

Dear Mr. Ammons:

Per the request of the Harrison County Board of Education, MSES Consultants, Inc. (MSES) performed an indoor air quality assessment at the Lumberport Middle School in response to reports of poor indoor air quality at the school. The indoor air quality assessment was performed by MSES on November 14, 2011. The following sections of this report provide specific information concerning the indoor air quality assessment performed by MSES.

Indoor Air Quality Assessment

Typical indoor air quality parameters including temperature, relative humidity, carbon monoxide, and carbon dioxide were measured in multiple classrooms on each floor of the school. Temperature ranged from 71.6 to 78.2 °F with the highest temperature measured on the second floor of the building.

Relative humidity levels ranged from 44.5 to 52.2%. Carbon dioxide levels ranged from 390 to 916 ppm with the highest levels found in the girls' locker room. No appreciable levels of carbon monoxide were found to be present in any of the areas sampled.

All indoor air quality parameters were found to be within the ASHRAE acceptable levels. The higher concentration of 916 ppm in the girls' locker room is most likely due to the lack of ventilation in that area. The following table provides the specific readings collected by MSES during the November 14, 2011 site visit.

Area	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Room 308	77.4	45	450	0.9
Room 305	77.6	44.5	390	0.8
Room 302	77.8	44.9	458	0.7
Room 208	78.2	44.7	422	0.6
Room 212	77.6	45.6	430	0.6
Room 204	77.2	47.3	457	0.6
Room 105	71.6	49.6	454	0.0
Boys RR – 1 st Floor	74.0	52.2	565	0.1
Room 108	75.6	50.5	505	0.3
Girls' Locker Room	74.7	51.8	916	0.2
Room 104	73.7	49.8	567	0.0
Outside Building	73.2	50.3	343	2.0

Fungal Sampling on November 14, 2011

In order to assess the presence of airborne fungi within the building, MSES performed air sampling for fungi in the areas of the building where the indoor air quality sampling was performed. The air samples were collected using a high volume air sampling pump fitted with an Anderson single stage impactor and the appropriate agar plates for fungi. The samples were collected at a flow rate of 28.3 liters per minute for a period of 3 minutes resulting in a sample volume of 75 liters. Upon completion of the air sampling, the samples were submitted under chain of custody to Pure Earth Environmental Laboratory for quantification and identification of fungi.

Analysis of the airborne fungal samples will require approximately two (2) weeks to complete. MSES will provide a separate report of findings for these fungal samples upon receipt of the analytical results.

Conclusions

While the majority of indoor air quality measurements taken within the building were within acceptable levels as established by the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), the carbon dioxide level measured within the girls' locker room was approaching the recommended level of 1,000 ppm with minimal occupancy during the sampling period. While concentrations exceeding 1,000 ppm do not present a significant health hazard, they do indicate a potential issue with respect to air exchange within the area. No method of ventilation currently exists within the girls' locker room to allow for adequate air exchange within the area and the introduction of fresh air. Such ventilation would help control the level of carbon dioxide.

Recommendations

Based upon the information gathered during the indoor air quality assessment performed on November 14, 2011, MSES would make the following recommendations:

- Harrison County Schools should explore available options with respect to the installation of an exhaust fan within the boys' and girls' locker rooms. An exhaust fan would allow for an increase in air exchange within these areas which would subsequently control the build-up of carbon dioxide.

Additional recommendations may be made once the airborne fungal sampling results are received and reviewed by MSES. Any such recommendations will be included in a separate report which will be prepared for the fungi sampling.

Summary

The conclusions and recommendations presented in this report are based upon the information gathered during performance of the indoor air quality assessment and the conditions present within the school during the site visit performed by MSES.

Should you have any questions concerning the information provided in this report or need any additional information, please contact me or John Keeling at (304) 624-9700.

Respectfully submitted,

A handwritten signature in blue ink that reads "Allen R. Cutlip". The signature is written in a cursive style with a large, prominent "R".

Allen R. Cutlip, C.I.H., C.S.P.
Safety/Industrial Hygiene Coordinator