



Eric J. Holcomb
Governor

Jerome M. Adams, MD, MPH
State Health Commissioner

January 18, 2017

MB3-99-RLP-#365
Mr. Jeff Fritz, Superintendent
Clay Community Schools
1013 S. Forest Ave.
Brazil, IN 47834

Dear Mr. Fritz:

The purpose of this letter is to report the result of our indoor air quality evaluation at North Clay Middle School on January 9, 2017. This evaluation was conducted at the request of a concerned citizen to address the health concerns of the occupants that may be related to indoor air quality of the school.

The Indiana State Department of Health's Microbiological Laboratory incubated and counted the fungal and bacterial units. The total colony forming units per cubic meter of air (CFU/M³) were computed by adding the fungal and bacterial counts, and dividing the sum by the total volume of the sampled air. Please refer to Table 1 for further details.

Fungal counts inside Room B-212 were slightly higher than the outdoors. It is not uncommon to find slightly higher fungal counts indoors during the winter months. Very few mold spores are found outdoors when temperatures are near freezing and snow cover is on the ground. Residual mold spores can be brought into the building through the heating, ventilation, air conditioning (HVAC) system or by the occupants clothing and shoes. These spores can remain in the carpet and become airborne if disturbed by foot traffic and/or wind currents. There are no limits established as an acceptable concentration of fungal counts indoors. There are guidelines that recommend fewer counts indoors than outdoors.

The Carbon dioxide (CO₂) level was measured inside the classrooms. The highest carbon dioxide level measured was 1752 parts CO₂ per million parts of air (ppm). The School Indoor Air Quality rule, 410 IAC 33-4-2 states "carbon dioxide concentrations in the breathing zone shall never exceed 700 ppm over the outdoor concentration", in this case giving a limit of 1082 ppm. ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers) recommends 15 cfm (cubic feet per minute) of outdoor air per person for classrooms.



The outdoor relative humidity was measured at 49 percent (%). The indoor relative humidity had a range of 17% and 24%. The American Society of Heating, Refrigeration and Air-conditioning Engineers (ASHRAE) recommend the relative humidity in habitable spaces preferably should be maintained between 30% and 60% to minimize growth of allergenic and pathogenic organisms. Humidity levels above 50% have been found to increase the population size of molds, fungi and mites that may cause allergies. The evidence suggests that humidity levels should be maintained between 40% and 50% to reduce the incidence of upper respiratory infections and to minimize the adverse effect on people suffering from asthma or allergies. Such a range would be hard to maintain, however, exposure to higher or lower levels are unlikely to affect the health of most people.

Based on sample results and our visual inspection we note the following:

- 1) **410 IAC 33-4-2 (b): states “carbon dioxide concentrations in the breathing zone shall never exceed 700 ppm over the outdoor concentration”.** Classrooms B-109, B-117, B-119, and B-212 all exceeded the carbon dioxide concentration limit of 1082 ppm. Please ensure there is a sufficient amount of outdoor air being supplied into the classrooms.
- 2) No visible mold was observed in Room B-212. However, a more invasive inspection should be conducted in the classroom for hidden mold. Please inspect above the drop ceiling.

Individuals experiencing any health problems should seek medical advice from a physician.

Please respond within 60 days of any actions you take based upon this report.

The School Indoor Air Quality rule 410 IAC 33-6-2 requires this report, and your response to this report, to be posted for 14 days at the location of the school building stated in the report so they are accessible to all students, parents, and employees.

If you have questions, please contact me at 317/351-7190 ext. 264

Sincerely,



RICK PLEW
Industrial Hygienist
Indoor Air Section, Environmental Public Health Division
Enclosure

TABLE 1
North Clay Middle School
 3450 W. SR 340
 Brazil, IN 47834

Computed Microbiological Air Sample Results
 Taken January 9, 2017

SAMPLE ID	LOCATION	NO. OF OCCUPANTS	RELATIVE HUMIDITY (%)	CARBON DIOXIDE (ppm)	AIR SAMPLED (liters)	FUNGAL COUNT (CFU/M ³)	BACTERIAL COUNT (CFU/M ³)	TOTAL COUNT (CFU/M ³)
1	A-103	4	18	645	200	0	40	40
2	A-107	2	17	615	200	15	0	15
3	A-115	6	17	701	200	10	15	25
4	B-109	23	22	1372	200	40	0	40
5	B-117	24	24	1752	200	15	5	20
6	B-119	42	20	1185	200	10	0	10
7	B-212	19	21	1391	200	60	0	60
8	Outdoor	-	49	382	200	25	0	25

Notes: Outdoor- snow cover on ground. Outdoor fungal counts varied between North Clay and Northview schools. Although the schools were in the same locale, fungal counts ranged between 25 and 80.

% -----percent

Ppm-----parts per million

CFU/M³—colony forming units per cubic meter of air