



Michael R. Pence  
Governor

Jerome M. Adams, MD, MPH  
State Health Commissioner

November 2, 2016

MB3-99-RLP-#354

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 Forest Park Elementary School on October 24, 2016. This evaluation was conducted at Mr. Howard's request 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/M<sup>3</sup>) 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 outdoors were higher than any areas inside the building. 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 (CO<sub>2</sub>) level was measured inside the classrooms. The highest carbon dioxide level measured was 1415 parts CO<sub>2</sub> 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 1116 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 59 percent (%). The indoor relative humidity had a range of 40% and 49%. 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”.** Rooms A-105 and A-106 had carbon dioxide levels above the allowable limit of 1116 ppm. The damper should be checked on the unit vents to ensure sufficient fresh air is being supplied to the classrooms.

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

Forest Park Elementary School  
800 S. Alabama Street  
Brazil, IN 47834

## Computed Microbiological Air Sample Results Taken October 24, 2016

SAMPLE ID	LOCATION	NO. OF OCCUPANTS	RELATIVE HUMIDITY (%)	CARBON DIOXIDE (ppm)	AIR SAMPLED (liters)	FUNGAL COUNT (CFU/M <sup>3</sup> )	BACTERIAL COUNT (CFU/M <sup>3</sup> )	TOTAL COUNT (CFU/M <sup>3</sup> )
1	A-133 *	5	40	582	50	240	20	260
2	A-106	22	47	1350	50	300	0	300
3	A-105	24	48	1415	50	200	80	280
4	A-104	16	48	1015	50	360	60	420
5	C-112 *	25	46	542	50	300	0	300
6	C-133 *	4	47	503	50	280	0	280
7	C-124	8	49	633	50	120	0	120
8	Outdoor	-	59	416	50	560	0	560

**Notes:** \*classrooms have dehumidifiers

**% -----percent**

**Ppm-----parts per million**

**CFU/M<sup>3</sup>—colony forming units per cubic meter of air**