



Eric J. Holcomb
Governor

Lindsay M. Weaver, MD, FACEP
State Health Commissioner

August 30, 2024

RDC 594

Jessica Davis
Assistant Head of School
Bloomington Montessori School
1835 S. Highland Ave.
Bloomington, IN. 47401

Dear Ms. Davis:

The purpose of this letter is to report the result of our indoor air quality evaluation of the Bloomington Montessori School on August 29th. This evaluation was conducted at your request after a parent expressed concern about the carbon dioxide concentration in the classrooms. This evaluation was conducted starting at 10:30am so we would be entering classrooms that had been occupied for an extended period.

The Carbon dioxide (CO₂) levels inside were measured with the highest reading 1481 parts CO₂ per million parts of air (ppm) in the east Forest room. The School Indoor Air Quality rule, 410 IAC 33-4-2 states "(a) "Outdoor Air shall be supplied to classrooms when occupied. (b) Carbon dioxide concentrations in the breathing zone shall never exceed 700 ppm over the outdoor concentration", in this case giving a limit of 1139 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 76 percent (%) and the indoor relative humidity had a range of 47 to 65%. 410 IAC 33-4-4 sets the maximum relative humidity level in air-conditioned schools at 65% during periods of student occupancy. In the US EPA's publication "Mold Remediation in Schools and Commercial Buildings" they recommend maintaining a relative humidity level below 60% but ideally 30 – 50% if

To **promote**, **protect**, and **improve** the health and safety of all Hoosiers.

2 North Meridian Street • Indianapolis, Indiana 46204 • 317-233-1325 • health.in.gov

An equal opportunity employer.

The Indiana Department of Health is accredited by the Public Health Accreditation Board.



possible. Studies have shown that low relative humidity can cause dryness and irritation of the respiratory tract making individuals more susceptible to infections while high relative humidity levels can promote the growth of allergens such as dust mites or mold.

Based on our measurements and our visual inspection we note the following:

- 1) 410 IAC 33-4-2 (a) states "Outdoor air shall be supplied to classrooms when occupied." and 410 IAC 33-4-2(b) states "carbon dioxide concentrations in the breathing zone shall never exceed 700 ppm over the outdoor concentration",** The carbon dioxide concentrations were above the allowed limit. The fresh air dampers on the HVAC units should be checked and adjusted to ensure that sufficient fresh air is being supplied to the classrooms.

410 IAC 33 requires you to 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, within 5 working days of receipt, to be posted for 14 days both at the school building stated in the report, and on the school's website, where it is accessible to students, parents, and employees. The rule also requires your response to this report to be posted within 5 working days of sending the response to us. That too is to be posted for 14 days. Please respond back providing the links where these are posted on the website.

If you have questions I can be reached at 317.682.9033.

Sincerely,

RON CLARK,
Industrial Hygienist
Indoor Air Section, Environmental Public Health

Enclosure



TABLE 1
Bloomington Montessori School

Indoor Air Quality Measurements
Taken August 29, 2024

Sample	Location	Occupants	Temp °F	RH %	CO2 ppm
1	Outside - 10:30am	---	79	75	436
2	Magnolia	16	76	59	1297
3	Forest (west room)	10	75	47	1470
4	Forest (east room)	17	75	51	1481
5	Sweet Gum	2	74	65	886
6	Hickory	27	74	60	1214
7	Maple	25	75	50	1202
8	Walnut	17	75	58	1460
9	Outside - 11:30am	---	80	76	439

Notes:

RH-----Relative humidity

% -----percent

ppm-----parts per million