Indiana Department of Health

Eric J. Holcomb
Governor

Lindsay M. Weaver, MD, FACEP
State Health Commissioner

August 29, 2024

RDC 593
Dr. Stephen Bournes, Superintendent
School City of East Chicago
Administration Building,
1401 E 144th Street
East Chicago, IN 46312

Dear Dr. Bournes:

The purpose of this letter is to report the result of our indoor air quality inspection of East Chicago Central High School on August 26th. This visit was to address two issues. First, we received a complaint regarding temperature in classrooms. Second, the school had not responded to the deficiencies noted in our Indoor Air Report dated June 17 as it is past the 60 days allowed to respond.

During our June 14th visit to the school it was explained that a power surge had damaged portions of the HVAC system, but repair parts were on order and the system should be back in operation prior to the start of the fall semester. Upon arrival at the school on August 26th the principal explained that motors had been removed from one of the HVAC units and sent off for repair, and it was estimated that it would be December before the unit was back in operation. Portable air conditioner units had been placed in some of the affected classrooms with more on site to be installed. We were also told that not all of the portable AC units could be in operation at the same time due to lack of sufficient electrical circuits to support the electrical load.

The Carbon dioxide (CO_2) levels inside were measured with the highest reading 1509 parts CO_2 per million parts of air (ppm) in room ZC11. 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 1135 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 57 percent (%) and the indoor relative humidity had a range of 53 to 69%. 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 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 discussions, measurements and visual inspection we note the following:

1) First, you need to send us a response to the deficiencies noted in our report dated June 17, 2024.

2) **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 concentration in some of the classrooms was above the allowed limit. As no outside air is being supplied to any of the affected classrooms, we would expect to see the carbon dioxide concentrations to continue to rise throughout the day as the rooms continue to be occupied.

3) **410 IAC 33-4-4 (b) states "Where provided air-conditioning systems shall be capable of providing and shall be operated to maintain a temperature not to exceed seventy-eight (78) degrees Fahrenheit and sixty-five percent (65%) relative humidity during periods of student occupancy"** Although the portable air conditioning units will help to lower the temperature and relative humidity levels, our measurements indicate that they are not sufficient to maintain a temperature at or below 78 degrees. This is especially true if the units cannot operate throughout the day due to electrical constraints.

4) In addition to addressing the deficiencies noted above please provide additional information on any steps you are taking to address the lack of ventilation or temperature control in the affected areas. We would also ask that you provide an estimate of when the HVAC unit will be back in operation.

As you are past the 60 days allowed to respond to our report dated June 17, 2024, please respond to this report as soon as possible.

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

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

Enclosure

TABLE 1
East Chicago Central High School

Indoor Air Quality Measurements
Taken August 26, 2024

Sample	Location	Occupants	Temp °F	RH %	CO2 ppm
1	Outside - 9:00am	---	82	57	435
2	A126 x	18	74	68	785
3	A206	18	78	69	626
4	A208 *	18	78	59	987
5	A218 *	16	78	54	1083
6	A281 *	15	79	55	1178
7	A266 *	0	79	53	789
8	A318 *	7	76	55	1083
9	A316 portable AC turned off	20	79	59	1173
10	A319 *	18	78	56	1312
11	Cafeteria #2	4	78	62	703
12	ZC8	5	79	63	1139
13	ZC11	22	80	66	1509
14	ZC15 x	13	80	62	928
15	Outside 10:00am	---	85	54	427

Notes: * Portable AC unit in room, x window open in room
% ---------percent
ppm-------parts per million
CFU/M^3—colony forming units per cubic meter of air