

Illinois Department of
**Public
Health**

John R. Lumpkin, M.D., M.P.H., Director

2125 South First Street • Champaign, Illinois 61820-7499
#610269501

November 17, 1995

Mr. Gerald Meznarich, Superintendent
St. Joseph Grade School
404 South 5th Street
St. Joseph, Illinois 61873

Dear Mr. Meznarich:

Per your request, Cary Ware from this Department conducted an indoor air survey at the St. Joseph Grade School on October 26, 1995. Employees working in the basement of the school have allegedly experienced sinus irritation and infection, headache, dizziness, and fatigue/drowsiness during school work hours.

The following air parameters were sampled: temperature, relative humidity, carbon monoxide, and carbon dioxide. Enclosed is Table 1 which contains the air sample results collected on October 26, 1995. No carbon monoxide levels were detected.

The October 26, 1995 walk through sampling results detected temperatures ranging from 78°-79°F, relative humidity levels ranging from 33-37%, and carbon dioxide levels peaking at 1720 parts per million (ppm). The long-term (October 26 - November 1, 1995) week day temperature and relative humidity levels in [REDACTED] Classroom ranged from 72-74°F and 42-50% respectively. As expected, the carbon dioxide levels peaked prior to lunch and again in the afternoon (1800 ppm) up to the time of school dismissal.

Since it is difficult and labor intensive to sample for all the possible indoor air contaminants, we approach potential indoor air problems by trying to eliminate and narrow down the range of possible problem causes. Towards that end, carbon dioxide levels were measured because it is a normal constituent to evaluate whether adequate quantities of outside air are being introduced into the building. During the investigation, the carbon dioxide concentrations approached or exceeded 1800 ppm, or approximately 6 times the outdoor (background) level. This is well above the recommended guidelines of 1000 ppm. If this guideline is approached or exceeded, an inadequate supply of fresh air being brought into an occupied space is indicative.

In 1989, the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) published its "Standard 62: Ventilation for Acceptable Indoor Air Quality." This standard recommends air supply rates for office-type buildings be provided at a minimum of 20 cubic feet per minute (cfm) of outdoor air per person. It appears that this recommended standard was not being met based on the carbon dioxide levels measured during the investigation.

In addition, ASHRAE has published standards for thermal environmental conditions, "Standard 55: Thermal Environmental Conditions for Human Occupancy." The comfort zone lies between 73° and 77°F and 20 to 60% relative humidity. Limited studies show that some tight building and/or sick building syndrome complaints (stiffness, headaches,

Page 2

Mr. Gerald Meznarich
St. Joseph Grade School

irritability, etc.) may be alleviated by simply lowering the thermostat 2°F. Relative humidity levels falling around 20% are associated with increased discomfort and drying of the mucous membranes.

To reduce the number of health complaints attributed to the indoor air quality, follow these recommendations:

1. Continue to maintain temperature and relative humidity levels as previously mentioned.
2. Supply outdoor air to all classrooms during the entire time they are occupied. Towards this end, educate staff on the proper operation/control of the thermostat for wall units. Instruct them on how to operate units so outside vents are open and the units' fans are distributing outside air into the classroom even at times when heat is not needed.
3. Continue to maintain both dehumidifiers located in the hallway.
4. Continue to use a dehumidifier in [REDACTED] storage room. Additionally, a fan should be used at times to increase air circulation so mold and mildew odors are reduced.

If you have any questions, please contact Mr. Ware or me at our Champaign Regional Office located at 2125 South First Street, Champaign, Illinois 61820, telephone (217) 333-6914, fax (217) 244-3954.

Very truly yours,



Mark Kuechler, P.E.
Regional Engineer

CW:kgb

Enclosure

cc: Champaign Regional Office *CW*
Division of Environmental Health ✓

St. Joseph Grade School

TABLE 1. ST. JOSEPH GRADE SCHOOL
INDOOR AIR SURVEY
October 26, 1995

Room/Area	Time (p.m.)	Temp (°F)	RH (%)	CO (ppm)	CO ₂ (ppm)	Comments
[REDACTED]	2:07	78	33	<1.0	790/1030*	Door and both windows closed. Both ceiling fans operating. 20 children present.
[REDACTED]	2:20	79	37	<1.0	1430	Door open, both windows closed. Both ceiling fans operating. 23 children present.
[REDACTED]	2:35	79	37	<1.0	1720	Door closed; only one window available and it was closed. Two ceiling fans were not operating. 22 children present.
Hallway	2:50	78	33	<1.0	930	North dehumidifier operating. South dehumidifier not operating.

* CO₂ levels before and after children returned to the classroom from P.E.