



Pat Quinn, Governor
Damon T. Arnold, M.D., M.P.H., Director

22 Kettle River Drive • Glen Carbon, Illinois 62034-2801 • www.idph.state.il.us

September 30, 2009

Environmental Toxicology #409010901

Mr. David Roberts, Superintendent
Winchester School District
149 S. Elm Street
Winchester, IL 62694

Dear Mr. Roberts:

On September 1, 2009, Bob Schafer of the Illinois Department of Public Health (IDPH) referred an indoor air quality complaint to Edwardsville Regional Office toxicology program staff from the Winchester School District. The contact person for the school district was Becky Lashmett, who also works for the Scott County Health Department. The complaints were coming from [REDACTED] classroom located in the northwestern corner of the original building of the Winchester Elementary School. On September 2, 2009, I visually inspected [REDACTED] room and nearby rooms in the school. Present during some or all of the inspection were Becky Lashmett, Principal Thad Walker, [REDACTED], and you.

The elementary school building is a single story brick with slab on grade construction built around 1959. Heating is provided by hot water, which is heated by a natural gas boiler. Air conditioning consists of window units. There is no school-wide ventilation system to bring in fresh air, but the windows may be opened in each classroom.

Symptoms began on August 28, 2009 and were reported by students and staff members. The symptoms included headaches, the feeling of pressure on eyes and temples, and tingling of feet and hands. These symptoms were not experienced by everyone. The sensation of tingling in feet and hands prompted the school district to call the power company. After inspection of the electrical system by Ingram Electric and Ameren and carbon monoxide testing by the City of Winchester did not reveal any problems, Ameren suggested that it was an indoor air quality issue and that the school district contact their local health department and IDPH. A more in-depth summary of the incident has been written by Becky Lashmett.

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Our visual inspection involved a walk-through of the 8th grade language arts classroom, 8th grade science classroom, classroom north of the language arts classroom, library and adjacent hallways. A PPB RAE Plus instrument (Model 7240, Serial # 250-102520), used to detect volatile organic compounds (VOCs), was used during the walk-through inspection. VOCs are common in many products including paint, aerosol spray cans, cleaners, air fresheners, permanent magic markers, and perfumes. A summary table of the PPB RAE readings for the areas listed above is attached to this letter. Results of the PPB RAE were between 100 parts per billion (ppb) to 400 ppb in all areas except the science room where the concentrations of VOCs were as high as 1,500 ppb. The measurements are total VOCs in air and do not specify the source or type of VOC.

A Q-Trak air monitor (Model 8851, Serial #52032) was placed in [REDACTED] room to monitor the room for a minimum of one week. The Q-Trak monitors carbon dioxide, carbon monoxide, temperature and relative humidity. Carbon dioxide is used to indirectly measure ventilation efficiency, while temperature and relative humidity are associated with thermal comfort. The monitor began recording at approximately 12:30 PM on Tuesday, September 2, 2009 and was disconnected from the power supply and turned off by school district staff on September 14, 2009 at 8:45 AM. Unfortunately, the Q-trak key pad was not locked and it stopped recording at approximately 8:45 AM on September 3, 2009, probably from someone in the classroom touching the record button. During this sampling period students and staff were present in the classroom during the morning of September 3, 2009 and probably only for about one-half hour. Thus the data collected is of limited value. The data collected is shown in the attached graph.

Temperature and relative humidity are in the comfortable range and carbon dioxide is above the 1,000 parts per million (ppm) guideline twice, once when the instrument was set up and the other for a period of about twenty minutes in the morning just prior to shut off of the data logger. The carbon dioxide reading on the morning of September 3rd may be indicative of a lack of adequate ventilation; however, since the activities in and around the monitor at that time are not known and the sample collection period was so brief, additional monitoring should be conducted to determine if the carbon dioxide levels regularly exceed this level. The carbon dioxide, temperature, and relative humidity guidelines are discussed in greater detail in the attached fact sheet entitled "Illinois Department of Public Health Guidelines for Indoor Air Quality."

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Indoor air quality questionnaires were given to the school district to pass out to teachers who were experiencing or had experienced health symptoms during this school year. Three questionnaires were completed and returned to the district and these were received by the Edwardsville Regional Office on September 29, 2009. The responses in the questionnaires described conditions in [REDACTED] room with two individuals complaining of a feeling of pressure in the head (either behind the ears or side and front) and another two complaints were of tingling hands and fingers or legs. Lack of air circulation also was a complaint in two of the three questionnaires. Symptoms individuals experienced in the building within the last three months were sinus irritation in all three; 2 of 3 reported sneezing, dry/sore throat, headaches; and 1 of the 3 report the following symptoms dry, itching, or irritated eyes, stuffy or runny nose, and dizziness.

Conclusions from the investigation of Winchester Elementary School are that the source of the tingling of extremities and the head "pressure" reported by teachers while in [REDACTED] classroom could not be determined from the investigation, but they do not appear to be an indoor air quality issue. Headaches, lack of air circulation (stuffiness), and limited carbon dioxide readings may indicate a lack of adequate ventilation. Additional carbon dioxide, temperature, and humidity readings, which can be collected by IDPH, would aid in determining if adequate ventilation is present in the classroom(s). If it is necessary to improve ventilation it is recommended that a heating, cooling, and ventilation specialist or engineer be contacted.

If you would like more extensive carbon monoxide, carbon dioxide, temperature and humidity data, please contact me to re-sample the classroom(s) with the Q-Trak. In addition, if you have questions please contact me at 22 Kettle River Drive, Glen Carbon, IL 62034, or telephone (618) 656-6680.

Sincerely



David R. Webb
Environmental Toxicologist

Attachments

cc: Scott County Health Department
Division of Environmental Health
Edwardsville Region

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PPB RAE readings from Winchester Elementary in afternoon of September 2, 2009

Location	Range of volatile organic compounds in parts per billion
8th Grade Language Arts Classroom	300-400
Science Classroom	Up to 1,500
Hallways to East and North of Language Arts	200-300
Library	100-250
Classroom north of Language Arts Classroom	300-400

Winchester Elementary School

Room [Redacted]

