

**Illinois Department of  
Public  
Health**

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

525-535 West Jefferson Street • Springfield, Illinois 62761-0001

#908219501

August 24, 1995

Mr. Michael Sartore  
Principal  
Macomb Jr./Sr. High School  
1525 South Johnson Road  
Macomb, IL 61455

Dear Mr. Sartore:

The Illinois Department of Public Health (IDPH) conducted a walk-through evaluation of indoor air quality (IAQ) at the Macomb Junior-Senior High School, Macomb, Illinois on August 21, 1995. The purpose of the sampling was to determine if the heating, ventilation, and air conditioning (HVAC) system was operating properly in response to reports of high humidity and subsequent mold growth in the classrooms of the school. Faculty and students have reported aggravated allergic and asthmatic symptoms as a result of exposure to the indoor environment of the school.

The results of the walk-through IAQ survey are shown in Table One. Please keep in mind that a walk-through survey is merely a "snapshot" of air conditions that can change from day to day inside a building. Longer term sampling is much more indicative of the typical indoor environment. The walk-through allowed us to identify the temperature and humidity levels of reportedly problematic rooms and wings in the building and to visually inspect other concerns.

Interior classrooms consistently had relative humidity levels greater than 70%. Relative humidity can be an important factor for occupant comfort and health. High relative humidity reduces the body's ability to lose heat and can increase levels of body odors. Sensitivity to odors increases with increased humidity, as does release of gases from some building materials. High relative humidity (above 60%) can support microbial growth inside buildings. Building materials such as carpeting, ceiling tiles, and drywall can act as a reservoir for microbials. Under high humidity conditions microbial growth is amplified. The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) *Ventilation for Acceptable Indoor Air Quality* (62-1989) recommends that relative humidity be maintained between 30% and 60%. Classroom S-10 had a dehumidifier and floor fan in operation, however the relative humidity in that room was reduced only slightly compared to other interior classrooms.

In general, classroom temperatures were maintained at the lower end of the comfort zone recommended by ASHRAE (*Thermal Environmental Conditions for Human Occupancy 55-1992*). At a relative humidity of 60%, the ASHRAE thermal comfort range is from about 72 to 79 degrees. Classrooms were not at full occupancy during the walk-through survey. Student occupation would be expected to cause both temperature and humidity to be higher than the measured levels.

In addition to the general indoor air parameters described above, other conditions were noted during the walk-through survey. Water was condensing from the air and running down the movable classroom walls. During an inspection a few days earlier the McDonnough County Health Department reported mold growth on some of these walls, primarily near the floor. At the time of the IDPH walk-through, mold growth had been removed from classroom walls. Mold growth was visible in the thermostat guard and on a corn root specimen in Room S-10. Sagging ceiling tiles indicate past or present water damage, but no visible microbial growth was evident in any of the inspected classrooms.

Based on our sampling and observations, IDPH recommends the following:

1. Have a contractor inspect and repair the HVAC system to lower relative humidity levels to less than 60%.
2. Conduct longer term indoor air sampling to identify IAQ trends in the school during occupancy.
3. Conduct bioaerosol sampling to determine the relative concentration of airborne viable particles.
4. Continue to deter the growth of microbials on surfaces through cleaning with a disinfectant solution.
5. Porous building components (ceiling tiles, bulletin boards, carpeting) with visible mold growth should be discarded. These materials cannot be adequately cleaned and disinfected.

If you have any questions or require additional information, feel free to contact us at (217) 782-5830.

Sincerely,



K. D. Runkle  
Toxicology Section

cc: McDonnough Co. Health Dept.  
IDPH Peoria Regional Office

**TABLE ONE -- MACOMB JR./SR. HIGH SCHOOL  
WALK-THROUGH INDOOR AIR SURVEY  
1 to 2 p.m., August 21, 1995**

<b>AREA SAMPLED</b>	<b>TEMPERATURE (F)</b>	<b>RELATIVE HUMIDITY</b>
Main Office	78.1	54.6
S-6	71.4	72.1
Hallway	73.3	71.0
S-8	72.0	72.5
S-10	69.2	68.4
Honors Lab	71.4	76.2
W-2	72.2	73.3