



Rod R. Blagojevich, Governor
Eric E. Whitaker, M.D., M.P.H., Director

245 West Roosevelt Road • West Chicago, Illinois 60185-3739 • www.idph.state.il.us

Case #:708010701

July 28, 2008

Ms. Mary Kalou
Assistant Superintendent of Business and Operations
Lake Zurich School District 95
400 S. Old Rand Rd.
Lake Zurich, IL 60047-2459

RECEIVED

JUL 29 2008

Division of
Environmental Health

Dear Ms. Kalou:

On July 14, 2008, Mr. Thomas Baughman, Ph.D., Environmental Toxicologist, West Chicago Regional Office, examined the new May Whitney Elementary School (May Whitney; formerly called the Annex) for possible moisture and mold problems.

For discussion purposes, Mr. Baughman divided the building into several parts. The Western Wing is the original 1929 building. It has 2 stories plus a basement. A one-story Central Connector joins this part to the Eastern Wing. The Eastern Wing has 2 stories plus a basement. A second, one-story Eastern Connector is east of the Eastern Wing, and the Eastern Connector joins the Eastern Wing to the original May Whitney Elementary Building. Locked steel fire doors separate the present and old May Whitney buildings. Mr. Baughman did not enter the old May Whitney building.

Mr. Baughman made a visual survey of the drainage around the building. He also made a visual survey of the exterior brick walls, the roofs of the various parts of the building, classrooms, and selected restrooms (male and female) for evidence of moisture intrusion or mold. He used a TSI Q-Trak to measure temperature and relative humidity outside and in selected areas of the building. He also used a Tramex Moisture Encounter to determine if water-stained building components were moist. About 1.5 inches of rain had fallen during July 10-11, and Mr. Baughman searched for evidence that any of this water had infiltrated into the building.

With two exceptions, the ground around May Whitney was graded to drain precipitation away from the building. South of the Central Connector, a small grass-covered area about 75 ft. by 25 ft. in size drained toward the building. The adjacent parking lot drained away from the building. Along the southern side of the Eastern Connector, water was present in a grass-covered depression. A drain was present downgradient along the building, but the land was not graded properly to drain to it. To reduce potential moisture problems, the land around a building should be graded to drain water away from the building (including to drains).

Improving public health, one community at a time

printed on recycled paper

The May Whitney building had a brick exterior, which was in very good condition. No open cracks were visible in the bricks or mortar. Several former cracks on the northern side of the Eastern Wing and Western Wing had been filled with mortar (tuck-pointed). Mr. Baughman found no visible gaps where water could infiltrate into the walls of the building. On the Western Wing, the exterior window sills were tilted downward to drain water away from the building, an unusual measure to prevent potential water problems.

The roof of the Western Wing was a rubber sheet, which appeared to be intact, although some patches were present. On the southeastern part of this roof, one large patch had an oval depression about 10 ft. by 15 ft. in size and about 4 to 6 inches deep, which was filled with windblown soil, water, and plants (water-loving sedges). Plant roots tend to expand existing cracks and potentially may compromise the long-term integrity of the roof. Freezing and thawing of standing water also could compromise the long-term integrity of the roof. The depth and size of this depression also suggests that a structural problem may exist in this roof, which should be investigated promptly. Alternatively, the depression may be from a former roof drain, which roofers may have covered with the rubber roof. Several other smaller puddles also were present on the roof.

The roof of the Central Connector was a rubber sheet, which appeared to be intact. Most of this roof was pitched to drain properly. However, a depression about 3 ft. by 4 ft. in size was immediately east of the intake for the ceiling-mounted univent of room 103. This depression contained water.

The roof of the Eastern Wing was a rubber sheet, which appeared to be intact. However, it had many small puddles across its surface, indicating that it did not drain properly. Standing water on the roof may contribute to freeze-thaw damage and, eventually, future roof leaks. A drain on the northwestern part of this wing had plants growing in it. Again, plant roots potentially could compromise the long-term integrity of the roof.

The roof of the Eastern Connector was tar and gravel, unlike the other roofs. No areas of ponded water were noted on this roof. A leak in this roof was reportedly repaired last week.

The interior of the building was of cinder block construction, and no drywall was present. The classrooms, restrooms, and hallways had false ceilings. The upper and main gyms had hardwood flooring with a good finish, and the floor was in good condition. The ceilings of the gyms were corrugated metal, which also formed the true top floor ceiling of the rest of the building. The cafeteria, restrooms, rooms 13 and 15, and some of the adjacent hallway had tile floors, which were in good condition. The rest of the classrooms and hallways had carpeting. No water stains were visible on the carpeting or walls.

At the start of the investigation, the outside air temperature was 74.7°F. The outside relative humidity was 52.0%.

On the second floor of the Western Wing, rooms 201, 202, 205, and 206 had no evidence of moisture intrusion. Room 205 was below the large oval roof depression that was growing water-loving plants. The relative humidity in Room 205 was 49.3%. On the 1st floor of the Western

Wing, rooms 100 and 101 had no evidence of moisture intrusion. The basement of the Western Wing had no child access, but contained boilers and a large storage area.

In the Central Connector, rooms 104, 106, 107, and 108 had no evidence of moisture intrusion. The relative humidity in room 106 was 50.0%. Room 103 had a water stain on the ceiling tile by the roof-mounted univent. This water stain was directly below a puddle on the roof, which was adjacent to the outside air intake for this univent. The water stain on the ceiling tile of room 103 was dry, indicating that it was from a past leak. The relative humidity in room 103 was 53.4%.

On the second floor of the Eastern Wing, rooms 214, 216, 219, 220, 221, 222, 223, 224, 225 had no evidence of water intrusion. The relative humidity in room 216 was 45.4%. In room 218, three ceiling tiles had small water stains about 6 inches across, which were dry. The metal ceiling above showed no evidence of water intrusion, but the roof evidently was a past moisture source. This room was not used during the 2007-2008 school year, but will be used during the 2008-2009 school year. In the hallway by the upper gym, one ceiling tile had an 8-inch diameter water stain, which was dry. The metal ceiling above showed no evidence of water intrusion, but evidently was a past source. On the first floor, the library, main gym, restrooms, teacher's lounge (room 118), and room 121 had no evidence of water intrusion. In room 120, some ceiling tiles had small water stains near the tops of the windows, which were dry. Possible past sources of water for these stains include a former leak in the exterior wall, a former window leak, or (for two of the stains) a former leak from the univent in room 220, above. In the basement of the Eastern Wing, the cafeteria and rooms 13, 15, 18, 19, 21, 23, and 25 had no evidence of water infiltration. Rooms 21 and 23, which are only partly below-grade, had buses parked about 5 feet from the outside air intakes of their univents. Room 20 had ceiling tiles with small water stains above the windows, with two of the water stains being above the univent. Notably, both rooms 120 and 20 had water-stained ceiling tiles in the approximate same locations, suggesting a common past water source. Room 22 had ceiling tiles with small water stains above the windows, which were dry. Room 24 had a ceiling tile with a small water stain, which was dry. Possible past moisture sources for these first-floor and basement water stains include a former leak in the exterior wall, a former window leak, or (for two of the stains) a former leak from the univent in the room above.

In the Eastern Connector, the office and rooms 131, 133, and 137 had no evidence of water infiltration. The relative humidity in room 133 was 54.8%. The hallway by rooms 137 and 141 had two ceiling tiles with large water stains, which were saturated with water. The water source was two leaks in an insulated pipe above these tiles. Room 135 had ceiling tiles with small water stains above the univent, which were dry. No water stains were present on the metal roof or wall above. The relative humidity in this room was 55.0%. Room 141 had small water stains on ceiling tiles along its eastern wall. All but the second stain from the south were dry; indicating past leaks. However, the 2nd stain from the south was saturated with moisture, indicating a current leak. The moisture source evidently was the roof, because the exterior wall in this location was in good condition.

Visible mold was not observed at any of the past or present water leaks; however, any material that stays wet for 24-48 hours may be a source of bacteria, dust mites, and mold. Bacteria, dust mites, and mold may aggravate allergies and asthma. Consequently, the water-damaged ceiling

tiles should be replaced. Furthermore, leaving the water-stained ceiling tiles may give the false impression that the building has widespread water leaks.

Buses were parked only 5 feet away from the outside air intakes of the univents of rooms 21 and 23. This practice may allow exhaust gases to be drawn into these rooms. Although diesel exhaust has little or no carbon monoxide, it does contain high concentrations of nitrogen oxides and particulates. These can cause eye, nose, throat, and lung irritation, and any irritant may aggravate asthma.

Our department recommends.

1. Promptly investigating the large depression in the roof of the Western Wing to determine if it indicates a structural problem in the roof.
2. Promptly repairing any water leaks, cleaning affected nonporous surfaces, and replacing any porous surfaces that remained wet more than 24-48 hours.
 - a. Repairing the leaks in the hallway by rooms 137 and 141, as well as the leak in room 141.
 - b. Replacing all water-stained ceiling tiles throughout the building.
 - c. Properly pitching the various roof sections to drain properly and eliminate puddles of standing water.
 - d. Removing plants from the roof, because plant roots may potentially compromise the long-term integrity of the roof.
 - e. Properly grading land on the southern side of the Central Connector to drain water away from the building.
 - f. Properly grading land on the southern side of the Eastern Connector to drain water to the existing drain.
3. Not relying on mold testing. Mold testing cannot establish that the indoor air quality of a building is acceptable, and mold testing has limited (if any) value.
4. Parking buses further from the building, so exhaust will not be drawn into the building. Additional lighting can be installed in the parking lot to encourage bus drivers to park further away from the building.
5. Continuing to implement the U.S. Environmental Protection Agency "Tools for Schools" program.

Please feel free to contact Thomas Baughman at our West Chicago Regional Office at 630-293-6800 or Tom.Baughman@illinois.gov if you have any questions.

Sincerely,



Joe O'Connor

Senior Public Service Administrator

cc: West Chicago Regional Office
Environmental Toxicology, Springfield ✓
Lake County Health Department
State Representative Ed Sullivan