

**April 26, 2007**

**Dr. Don Wayne**  
**Dr. Cedric Garland**  
**Lucinda Rubio-Barrick**

**Subject:** Indoor Environment and Air Quality Assessment at the Literature Building

This assessment was initiated by Lucinda Rubio-Barrick after occupants from the Literature Building expressed concern of the incidence of cancer, particularly breast cancer, in employees who work in this building. Lucinda provided a history of known cancer cases. Prior to 2002, four cases of breast cancer, two cases of uterine cancer, and one case of kidney cancer were diagnosed in employees working in the Literature Building. Since 2002, three cases of breast cancer, one case of uterine cancer, and one case of glandular cancer have been reported to Lucinda.

On March 6<sup>th</sup>, 2007, an open forum meeting was held in the Literature Building between building occupants, Daphne Thaug and Sarah Woodard of Environment, Health and Safety (EH&S), and Gary Jones, Art Van Roekel, and Charles Bryant of Facilities Management (FM). This allowed the occupants to express their concerns and comments, to inform how the investigation will be conducted, and to review the building ventilation system. A total of ten building occupants attended the meeting.

Dr. Cedric Garland, a highly regarded epidemiologist from Family and Preventative Medicine, was contacted to assist with this case. Dr. Garland has worked on many cancer cluster cases, and he is deemed the leading authority. Dr. Garland visited the Literature Building on March 14, 2007, and received the historical background information from Lucinda. Daphne and Dr. Garland continued the discussion on the course of the investigation. Per Dr. Garland's email on April 2, 2007, he needed the following information in reviewing this case:

1. Report of microscopic examination for genera of mold found in a sample from ceiling of Dr. Wayne's upstairs office.
2. Report of microscopic examination of dust found on one surface in one room: fibers, pollen grains, spores, etc.
3. Geiger counter readings, one wall on each floor.
4. Magnetic field readings in 10 rooms. Simple milliGauss or nanoTesla readings would be sufficient. These would take only 2-3 minutes per room.

5. Water: Test water from one water fountain: water for coliforms and screen it for heavy metals.

A follow-up meeting was held on April 5, 2007 with Dr. Garland, Dr. Wayne, Lucinda, and Daphne to discuss and plan the course of the investigation. Daphne shared preliminary Zefon air monitoring results and communicated EH&S's commitment in working with Dr. Garland.

### **Observation:**

The ventilation unit, Air Handler 3.17, serves the north and east side of the Literature Building from the first through third floors. On April 3, 2007, it was shut down temporarily for visual inspection and sample collection. According to Charles Bryant from Facilities Management, the pre-filters at this large ventilation unit are replaced every six months and the main filters are changed once a year. The filters were aligned next to one another, without gaps and were observed to be in good condition (no wear and tear, no water stains, or discoloration). Several individual ventilation units were also inspected throughout the southern end of the building. The filters to all units showed no visible built up of dirt. The units also had no visible sign of water leaks or mold intrusion.

### **Measurements:**

#### Air Samples

Particulate air samples were assessed indoors on April 3, 2007 and the results were compared to outside samples using the TSI Ultra Fine Particulate Instrument. Charles Bryant has been instrumental in our assessment of the ventilation system in the Literature Building. Particulate levels were lower, as to be expected after the pre-filters and main filters in the air handler. The ultrafine particulate air sampling throughout the Literature Building did not show any sign of concern for particulate built-up in the ventilation duct. The particulate counts were lower at the air supply registers than in the occupied spaces and the indoor counts were much lower than the outdoor particulate concentration.

The Zefon Air-O-Cell air samples taken on April 3, 2007 in Room 110 and Air Handler 3.17 were analyzed by Environmental Analysis Associates, Inc. Total mold spore count inside was considerably lower than the outdoor sample. Opaque particles count inside the Air Handler 3.17 was higher than expected, prompting additional sample collection.

Additional Zefon Air-O-Cells air samples were taken on April 11, 2007 in Room 354 and an interior duct to Air Handler 3.17. Both of these results were

compared to an outdoor sample. Overall, total interior mold spores in both Room 354 and Air Handler 3.17 were lower than total outside mold spores. *Stachybotrys* was identified in Room 354. This time the opaque particulate levels were lower inside the ventilation duct of the Air Handler # 3.17.

Biotest viable mold samples were collected on April 5, 2007 and counted by direct visual inspection after five days of incubation on April 10, 2007. The samples taken indoors (Rooms 110, 354, 1<sup>st</sup> floor hallway, and 4<sup>th</sup> floor hallway) were compared to an outdoor sample. After the incubation period, all samples taken did not show significant growth above the outdoor sample.

### Surface Samples

In Dr. Wayne's secondary office, Room 354, a surface sample was collected on the only ceiling tile that had a patch of about six inch diameter with mold growth. The tape sample was sent in for analysis to Environmental Analysis Associates, Inc. A request was immediately sent into Facilities Maintenance to remove this one ceiling tile. The ceiling tile sample was positive for *Stachybotrys*, thus prompting additional Zefon Air-O-Cell air sample.

Tape samples were taken from two undisturbed locations: a door sill in Room 317 and a cubicle wall in Room 110. Both samples showed negligible amount of skin cell fragments and opaque particles.

### Water Samples

Water samples collected by Bruce Bowers of Environment, Health and Safety from the sink in Room 110 and the first floor water fountain were sent to Environmental Engineering Laboratory, Inc. for total Coliform, *E. Coli* counts on April 5, 2007. The test parameters for total Coliform and plate counts for both locations were negative.

An additional water sample collected on April 5, 2007 from the first floor water fountain was sent to EnviroMatrix Analytical for heavy metal analysis. The drinking water was negative for mercury, arsenic, nickel, and lead. Negligible amounts of copper and barium were detected well below the Environmental Protection Agency's maximum contaminant levels.

### Electro Magnetic Field

Robert Normandin of Environment, Health and Safety assessed the magnetic and electric field levels on April 3, 2007. The survey results were that of background, thus, no detectable magnetic or electric magnetic field levels were present in the Literature Building. The measurements were taken with the Narda and Omega Engineering Gauss meters.

## **Summary:**

The visual inspection of the ventilation units, Zefon and Biotest air samples, surface tape samples, water samples, and electro magnetic field results did not show unusual signs or elevated levels at the Literature Buildings. From the Industrial Hygienist perspective, this assessment did not find likely evidence of a workplace exposure that would increase the incidence of cancer.

Additionally, an extensive review of the literature was completed with the aid of UCSD Librarian Alice Witkowski. According to the literature, an increase rate of breast cancer has only been detected in occupational settings where exposure included the manufacturing of or exposure to large amounts of solvents or pesticides, ionizing radiation, or EMF. Poor diet and lifestyle factors can also increase the risk for breast cancer. According the California Department of Health Services, breast cancer incidence rates may begin to rise in the next decade as the large number of women born after World War II reach the age where breast cancer becomes more common.

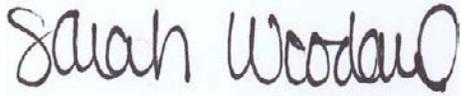
## **Recommendation and Action Items:**

As a follow up action item from the March 6, 2007 meeting with the occupants, portions of the exterior of the Literature Building is scheduled for power washing and subsequent sealant application. Several job walks have taken place with the vendors, Facilities Management, and EH&S. A bid has been received and a test patch will be completed in the coming weeks. The cleaning will take place on the weekend to ensure minimal inconvenience to the building tenants.

Since Dr. Wayne's secondary office in Room 354 did show a negligible amount of mold spores, *Stachybotrys*, a thorough cleaning is recommended. Because this office isn't used very often, a considerable amount of dust is present and the room is consistently closed. A thorough cleaning with a high efficiency particulate arrestance (HEPA) air filter vacuum on surfaces and carpet and use of a disinfectant will ensure that most mold spores are unable to proliferate. FM indicated the source of moisture which caused the six inch patch of mold growth had been repaired and there was no on-going sign of moisture.

Particulate levels were noticeably higher in offices with open windows. Although it is nice to feel the outside breeze, please keep in mind that this air is not filtered and does not go through the air handling system. If construction is nearby, the dust will inevitable enter through the open window.

This assessment finalizes the completion of items requested by Dr. Garland to review the cancer cluster case at the Literature Building. If you have questions regarding this report, please contact Daphne Thaung at 534-1075.

A handwritten signature in black ink that reads "Sarah Woodard". The signature is written in a cursive style and is set against a light blue rectangular background.

Sarah Woodard  
Associate Industrial Hygienist

A handwritten signature in black ink that reads "Daphne Thaung". The signature is written in a cursive style and is set against a light blue rectangular background.

Daphne Thaung, MPH, CIH  
Certified Industrial Hygienist

Cc: Gary Jones  
Art Van Roekel  
Charles Bryant  
Robert Hernandez  
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Jon Schmidt  
Steve Benedict