The Commonwealth of Massachusetts
Executive Office of Health and Human Services
Department of Public Health
Bureau of Environmental Health Assessment
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April 20, 2000

Paul, Frazier, Director,
Winthrop Health Department
Town Hall
Winthrop, MA 02152

Dear Mr. Frazier:

At your request, an indoor air quality assessment was done at the Winthrop Town Hall, Winthrop, MA. This assessment was conducted by the Massachusetts Department of Public Health (MDPH), Bureau of Environmental Health Assessment (BEHA). On March 21, 2000, a visit was made to this building by Michael Feeney, Chief of the Emergency Response/Indoor Air Quality (ER/IAQ) Program, BEHA. Accompanying Mr. Feeney and you during the assessment were Cory Holmes, Environmental Analyst for BEHA's ER/IAQ program, Tim Lesile, Job Superintendent and Leo Schiavuzzo, Public Facilities Coordinator. Concerns about pollutants generated by renovation efforts and the potential impact on occupied areas in the building prompted this request.

As you know, the Town Hall is currently under renovation while occupied by staff and is open to members of the general public. It was reported that renovation activities began in December 1999 and are scheduled for completion July 2000. The planned renovations include the installation of an elevator and the renovation of existing restrooms for handicapped access. It was reported to BEHA staff that several indoor air quality tests have been conducted previous to this visit regarding asbestos removal. The removal was conducted by A-Quality Removal, Inc. and the testing was done by Northeast Environmental Labs. A copy of the test results was forwarded to BEHA staff. The lab results concluded that all fiber levels during the time of testing were below recommended and/or established standards set by local, state and federal agencies (Northeast, 2000).

BEHA's assessment consisted of visual observation of renovation areas, air monitoring to determine if renovation activities were affecting adjacent areas as well as testing to evaluate general indoor air quality (which will be addressed in a later report). Testing conducted by BEHA staff during the assessment included carbon monoxide (CO),

carbon dioxide (CO_2), temperature, relative humidity and total volatile organic compounds (TVOCs).

CO readings in all areas surveyed were found to be equal to levels measured outdoors, (background CO = 0 ppm). This indicates no unusual sources of carbon monoxide within the building. TVOCs within occupied portions of the building were elevated above background levels in several areas (background TVOCs = 0.3 ppm). However, elevated levels of TVOCs were attributed to the operation of a liquid toner photocopier and/or cleaning products (i.e., air freshener) used inside the building, rather than from renovation activities. CO & TVOC results are listed in Tables 1 & 2.

Spaces in temporary walls were observed and were noted to Mr. Schiavuzzo & Mr. Lesile by BEHA staff. It is important to note that pollutants from renovation work could travel through these spaces (see Picture 1). BEHA staff recommended that spaces around containment walls be sealed with duct tape. BEHA staff also recommended that containment walls be covered with plastic sheeting and duct tape to provide a secondary barrier.

Missing ceiling tiles were also noted in several areas, providing spaces between the decking and wall (see Picture 2) which can provide a means of egress for renovation generated pollutants to enter occupied areas. None of the open spaces created by the lack of ceiling tiles have been sealed to prevent air movement above the ceiling tiles (see Figure 1). Dust and debris can move with drafts from the unoccupied construction section to occupied areas.

A number of pathways exist for pollutants to move from areas under renovation into occupied spaces. These pathways indicate that the temporary walls are not sufficient to contain pollutants related to renovation work. The following recommendations should be implemented in order to reduce the migration of renovation generated pollutants into occupied areas:

1. Establish communications between all parties involved with building renovations to prevent potential IAQ problems. Develop a forum for occupants to express concerns about renovations as well as a program to resolve IAQ issues.

2. Develop a notification system for building occupants immediately adjacent to construction activities to report construction/renovation related odors and/or dusts problems to the building administrator. Have these concerns relayed to the contractor in a manner to allow for a timely remediation of the problem.

3. When possible, schedule projects which produce large amounts of dusts, odors and emissions during unoccupied periods or periods of low occupancy.

4. Disseminate scheduling itinerary to all affected parties, this can be done in the form of meetings, newsletters or weekly bulletins.

5. Obtain Material Safety Data Sheets (MSDS) for all construction materials used during renovations and keep them in an area that is accessible to all individuals during periods of building operations as required by the Massachusetts Right-To-Know Act (MGL, 1983).

6. Consult MSDS' for any material applied to the effected area during renovation(s) including any sealant, carpet adhesive, tile mastic, flooring and/or roofing materials. Provide proper ventilation and allow sufficient curing time as per the manufacturer's instructions concerning these materials.

7. Use local exhaust ventilation and isolation techniques to control for renovation pollutants. Precautions should be taken to avoid the re-entrainment of these materials into the building's HVAC system. The design of each system must be assessed to determine how it may be impacted by renovation activities. Specific HVAC protection requirements pertain to the return, central filtration and supply components of the ventilation system. This may entail shutting down systems (when possible) during periods of heavy construction and demolition, ensuring systems are isolated from contaminated environments, sealing ventilation openings with plastic and utilizing filters with a higher dust spot efficiency where needed (SMACNA, 1995).

8. Seal utility holes, spaces in roof decking and temporary walls to eliminate pollutant paths of migration. Seal holes created by missing tiles in ceiling temporarily to prevent renovation pollutant migration.

9. Seal construction barriers with polyethylene plastic and duct tape to create a secondary barrier to prevent migration of renovation generated pollutants into occupied areas.

10. If possible, relocate susceptible persons and those with pre-existing medical conditions (e.g., hypersensitivity, asthma) away from areas of renovations.

11. Implement prudent housekeeping and work site practices to minimize exposure to renovation pollutants. This may include constructing barriers, sealing off areas, and temporarily relocating furniture and supplies. To control for dusts, a high efficiency particulate air filter (HEPA) equipped vacuum cleaner in conjunction with wet wiping of all surfaces is recommended.

12. Close windows adjacent to construction activities to prevent unfiltered air from entering the building.

13. Continue working with the construction contractor and/or the Public Facilities Coordinator to monitor indoor air quality.

We suggest that these steps be taken on any renovation project within a public building. Please feel free to contact us at (617) 624-5757 if you are in need of further information or technical assistance.

Respectfully,

Suzanne Condon, Director
Bureau of Environmental Health Assessment

cc/ Mike Feeney, Chief, Emergency Response/Indoor Air Quality
Cory Holmes, Emergency Response/Indoor Air Quality
Paul Frazier, Director, Winthrop Health Department
Leo Schiavuzzo, Public Facilities Coordinator
Tim Lesile, Job Superintendent, Di Giorgio & Messina

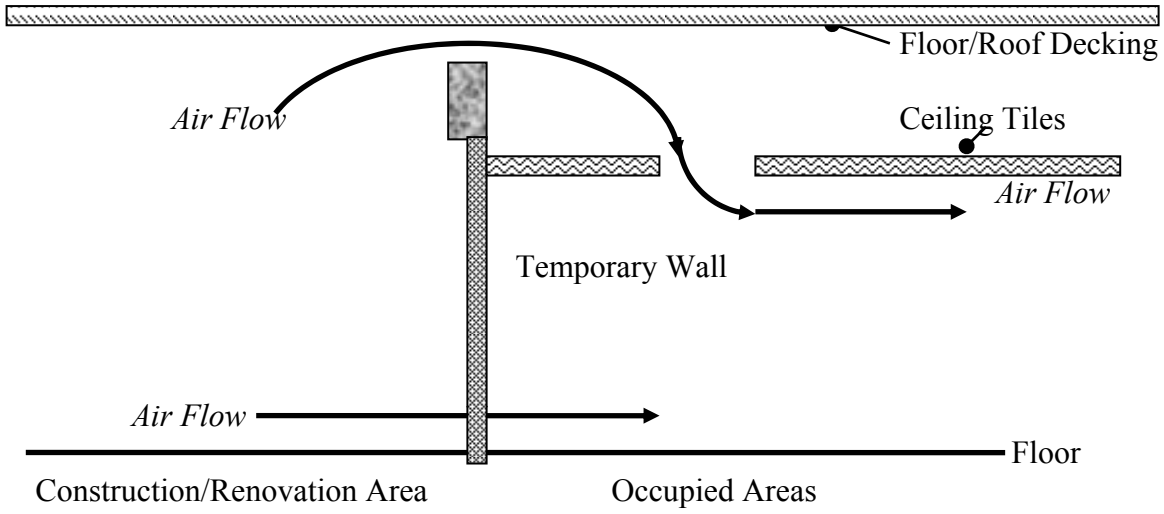
References

MGL. 1983. Hazardous Substances Disclosure by Employers. Massachusetts General Laws. M.G.L. c. 111F.

Northeast. 2000. Summary of Analytical Test Results. Winthrop Town Hall. February 18, 2000. Northeast Environmental Labs, Lawrence, Massachusetts.

SMACNA. 1995. IAQ Guidelines for Occupied Buildings Under Construction. 1st ed. Sheet Metal and Air Conditioning Contractors' National Association, Inc., Chantilly, VA.

Figure 1



(Figure Not To Scale)

Picture 1

Unsecured Containment Barrier around Restroom Renovations
Note the Only Means of Egress is through This Barrier

Picture 2

Missing Ceiling Tiles Noted in Office Area Adjacent to the Construction Zone

TABLE 4

Indoor Air Test Results –Winthrop Town Hall, Winthrop, MA – March 21, 2000

Location	Carbon Monoxide *ppm	TVOCs *ppm	Windows Openable	Remarks
Outside (Background)	Non-Detectable	0.3		
Clerk of the Works	Non-Detectable	0.5	yes	gravity exhaust
Town Clerk Reception	Non-Detectable	4.7	no	photocopier toner odors
Town Clerk's Office	Non-Detectable	4.8	no	photocopier toner odors
Assistant Town Clerk's Office	Non-Detectable	5.2		photocopier toner odors
Break Room	Non-Detectable	2.4	yes	
Board of Health Office	Non-Detectable	0.6	yes	
Building Inspector's Office			yes	
MIS Office			yes	window mounted a/c-on
Basement Auditorium	Non-Detectable	0.3	yes	
Smoking Room	Non-Detectable	0.3	yes	window open
Veteran's Services	Non-Detectable	0.3	yes	
Town Counsel	Non-Detectable	0.3	yes	window open,2 ceiling tiles ajar
Selectman's Secretary	Non-Detectable	0.3	yes	door open
Selectman's Office	Non-Detectable	0.3	yes	gravity exhaust
Executive Secretary's Office	Non-Detectable	0.3	yes	

Location	Carbon Monoxide *ppm	TVOCs *ppm	Windows Openable	Remarks
Conference Room	Non-Detectable	0.3	yes	
Accounting	Non-Detectable	0.3	yes	
Accounting-Private Office	Non-Detectable	0.3	yes	
Retirement	Non-Detectable	0.3	yes	
Assessor's Office	Non-Detectable	0.3	yes	
Assessor's Private Office	Non-Detectable	0.3	yes	
Treasurer's Office	Non-Detectable	0.8	no	air freshener odors
Treasurer's Private Office	Non-Detectable	0.3	no	
Board of Health Main Room	Non-Detectable	0.7	yes	
Martin	Non-Detectable	0.7	yes	