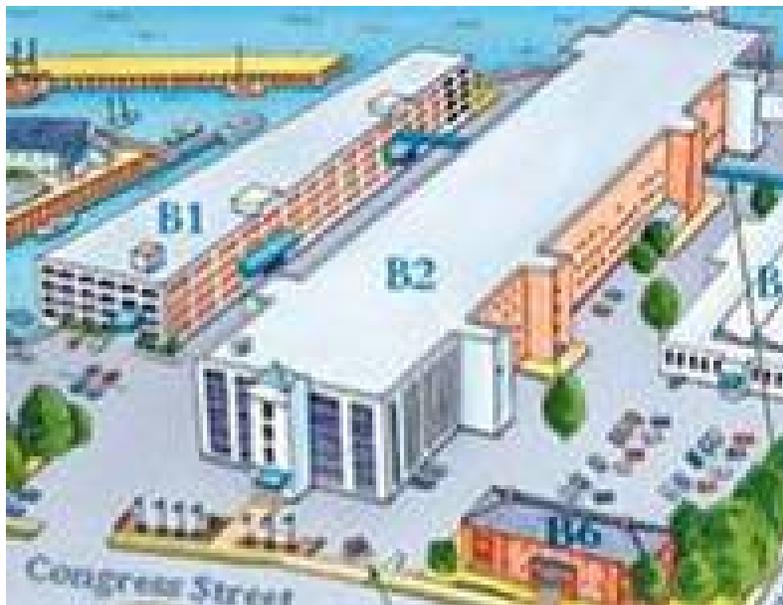


INDOOR AIR QUALITY ASSESSMENT

**Department of Revenue
Shetland Park
35 Congress Street
Salem, MA**



Prepared by:
Massachusetts Department of Public Health
Center for Environmental Health
Emergency Response/Indoor Air Quality Program
February 2007

Background/Introduction

At the request of Donald Trudell, Deputy Director of Facilities, Massachusetts Department of Revenue (DOR), the Massachusetts Department of Public Health (MDPH), Center for Environmental Health (CEH) conducted an indoor air quality assessment at the Salem DOR office located in the Shetland Park Office Complex, 35 Congress Street. The request was prompted by concerns regarding an unidentified odor that occurred on Thursday January 18, 2007 in the west wing of the DOR offices, as well as ongoing complaints of eye and respiratory irritation by occupants of that area of the DOR offices.

On February 5, 2007, a visit to conduct an indoor air quality assessment was made to the DOR offices by Cory Holmes, an Environmental Analyst in CEH's Emergency Response/Indoor Air Quality (ER/IAQ) Program. Mr. Holmes was accompanied by Edward Carney, DOR Project Manager, during the assessment.

The DOR offices are located on the third floor of a four-story office building that was reportedly constructed as a shoe factory in the late 1800s to early 1900s. The DOR occupied areas were reportedly renovated prior to occupancy and are separated into three main areas; the east, central and west wings. The DOR has occupied the east and central wings since 2002. Occupants in the west wing have occupied their space since 2004. The three wings are of similar layout, with offices located around the perimeter and work stations separated by floor dividers located at the center of each wing. Offices and common areas have dropped ceiling tile systems. Central work areas have approximately 15 foot-high concrete ceilings. Windows are openable throughout the DOR space.

DOR staff in the west wing had previously reported odor incidents and IAQ concerns. In response to these concerns, DOR administration staff contacted ATC Associates, an environmental consulting firm, to conduct an IAQ inspection in August 2006. The ATC report recommended: (1) cleaning of carpeting using high temperature steam and vacuuming with a vacuum cleaner equipped with a high efficiency particulate arrestance (HEPA) filter; (2) replacing water-stained ceiling tiles; (3) investigating and repairing active leaks; and (4) storing water coolers/bottles/refrigerators on plastic sheeting to protect carpeting (ATC, 2006).

Methods

Tests for carbon dioxide, temperature and relative humidity were conducted with a TSI, Q-Trak, IAQ Monitor, Model 8551. Screening for total volatile organic compounds (TVOCs) was conducted using a Hnu, Model 102 Snap-on Photo Ionization Detector (PID). CEH staff also performed visual inspection of building materials for water damage and/or microbial growth.

Results

The DOR offices have a combined employee population of approximately 135 with approximately 50 staff occupying the west wing. The tests were taken during normal operations. Areas where tests were taken are indicated by room/office number, function or occupant's last name. Test results appear in Table 1.

Discussion

Ventilation

It can be seen from Table 1 that carbon dioxide levels were above 800 parts per million (ppm) in all areas surveyed on the day of the assessment, indicating less than optimal air exchange throughout the space occupied by the DOR. It is important to note that the assessment was conducted on an extremely cold day (12 °F), with a wind chill below 0 °F. During these types of temperature extremes, fresh air drawn into the heating, ventilating and air-conditioning (HVAC) system is often reduced to prevent freezing/damage of HVAC system components. Limiting fresh air intake either by mechanical and/or natural means (e.g., closing of windows) can contribute to an increase in carbon dioxide levels.

Fresh, heated air is supplied to all areas of the DOR by air-handling units (AHUs) suspended from the ceiling (Picture 1). Fresh air is drawn into the AHUs through air intakes located on the exterior of the building (Picture 2 and 3). Ceiling-mounted air diffusers ducted to the AHUs distribute fresh tempered air to the spaces (Pictures 4 and 5). Return air is drawn into ceiling-mounted vents equipped with pleated air filters (Pictures 6 and 7). Some return air is ducted back to AHUs, where it is mixed with fresh air and redistributed to the office space. Return air can also be exhausted out of the building through exhaust vents located on the exterior of the building (Picture 8). Exhaust vents on the exterior of the building were equipped with wind shields to prevent re-entrainment of exhausted air.

Digital wall-mounted thermostats control the HVAC system. Each thermostat has fan settings of “on” and “automatic”. Thermostats were set to the “automatic” setting in the west wing during the assessment. The automatic setting on the thermostat activates the HVAC system at a preset temperature. Once the preset temperature is reached, the HVAC system is

deactivated. Therefore, no mechanical ventilation is provided until the thermostat re-activates the system. Without a continuous source of fresh outside air and removal via the exhaust/return system, indoor environmental pollutants can build-up and lead to indoor air quality/comfort complaints.

To maximize air exchange, the MDPH recommends that both supply and exhaust ventilation operate continuously during periods of occupancy. In order to have proper ventilation with a mechanical supply and exhaust system, the systems must be balanced to provide an adequate amount of fresh air to the interior of a room while removing stale air from the room. It is recommended that HVAC systems be re-balanced every five years to ensure adequate air systems function (SMACNA, 1994). The date of the last balancing of these systems was not available at the time of the assessment but should have occurred prior to occupation.

The Massachusetts Building Code requires that each area have a minimum ventilation rate of 20 cubic feet per minute (cfm) per occupant of fresh outside air or openable windows (SBBRS, 1997; BOCA, 1993). The ventilation must be on at all times that the room is occupied. Providing adequate fresh air ventilation with open windows and maintaining the temperature in the comfort range during the cold weather season is impractical. Mechanical ventilation is usually required to provide adequate fresh air ventilation.

Carbon dioxide is not a problem in and of itself. It is used as an indicator of the adequacy of the fresh air ventilation. As carbon dioxide levels rise, it indicates that the ventilating system is malfunctioning or the design occupancy of the room is being exceeded. When this happens, a buildup of common indoor air pollutants can occur, leading to discomfort or health complaints. The Occupational Safety and Health Administration (OSHA) standard for carbon dioxide is

5,000 parts per million parts of air (ppm). Workers may be exposed to this level for 40 hours/week, based on a time-weighted average (OSHA, 1997).

The MDPH uses a guideline of 800 ppm for publicly occupied buildings. A guideline of 600 ppm or less is preferred in schools due to the fact that the majority of occupants are young and considered to be a more sensitive population in the evaluation of environmental health status. Inadequate ventilation and/or elevated temperatures are major causes of complaints such as respiratory, eye, nose and throat irritation, lethargy and headaches. For information concerning carbon dioxide, please see [Appendix A](#).

Temperature readings ranged from 71° F to 76° F, which were within the MDPH recommended comfort guidelines on the day of the assessment. The MDPH recommends that indoor air temperatures be maintained in a range of 70° F to 78° F in order to provide for the comfort of building occupants. In many cases concerning indoor air quality, fluctuations of temperature in occupied spaces are typically experienced, even in a building with an adequate fresh air supply.

The relative humidity measured in the building ranged from 16 to 19 percent, which was below the MDPH recommended comfort range in all areas. The MDPH recommends a comfort range of 40 to 60 percent for indoor air relative humidity. Relative humidity levels in the building would be expected to drop during the winter months due to heating. The sensation of dryness and irritation is common in a low relative humidity environment. Low relative humidity is a very common problem during the heating season in the northeast part of the United States.

Microbial/Moisture Concerns

Water-stained ceiling tiles were observed in a few areas (Table 1). A stained tile in the corner of Mr. Auerbach's office reportedly occurred after a recent, heavy, wind-driven rain, indicating an active leak. Several stained tiles in the east wing appeared to be from condensation due to the staining pattern which appears to follow the contour of a horizontal pipe (Picture 9). Water-damaged ceiling tiles can provide a source for mold and should be replaced after a water leak is discovered and repaired.

As previously noted by ATC, a number of areas had refrigerators, water coolers and water containers placed directly on carpeting. Refrigerators can generate condensation during operation; water spillage or overflow of cooler catch basins can result in the wetting of the carpet. In addition, some coolers had residue/build-up in the reservoir. These reservoirs are designed to catch excess water during operation and should be emptied/cleaned regularly to prevent microbial and/or bacterial growth.

Spaces were observed between the counter and sink backsplashes in the kitchen. If not watertight, water can penetrate through these seams. Water penetration and chronic exposure of porous and wood-based materials can cause these materials to swell and show signs of water damage. Several areas contained plants. Plants, soil and drip pans can serve as sources of mold growth, and thus should be properly maintained.

The US Environmental Protection Agency (US EPA) and the American Conference of Governmental Industrial Hygienists (ACGIH) recommends that porous materials be dried with fans and heating within 24 to 48 hours of becoming wet (US EPA, 2001; ACGIH, 1989). If porous materials are not dried within this time frame, mold growth may occur. Water-damaged

porous materials cannot be adequately cleaned to remove mold growth. The application of a mildewcide to moldy porous materials is not recommended.

Odor Investigation

As previously mentioned, the assessment was prompted primarily due to odor concerns. DOR staff had reported an “unusual smell” to DOR management and facilities staff on Thursday January 18, 2007. Some occupants described the odor as “egg salad”. Shetland Management toured the space with DOR staff to investigate, but reportedly no point source of the odor was identified. The windows were opened and the odor reportedly dissipated within several hours. Although the source of odors could not be identified, Shetland management reportedly agreed to clean all the vents and install “wind-shields” on the exhaust vents to prevent potential backdrafting (Picture 8).

At approximately 3:00 pm the following day, Friday January 19, 2007, an odor complaint was anonymously reported to the Salem Fire Department (SFD). According to the SFD incident report, a number of occupants from the west wing were experiencing dizziness, burning of the eyes, upset stomachs and facial rash outbreaks when SFD responded (SFD, 2007; [Appendix B](#)). Occupants of the west wing reported that they had been experiencing these symptoms over a long time span (SFD, 2007). The SFD subsequently contacted the Salem Health Department (SHD) and an ambulance service to assist in the investigation; no occupants were transported to medical facilities. The SFD incident report did not indicate the presence of any detectible odors nor recommendations for mitigation (e.g., venting) (SFD, 2007). However, the incident report provided by the SHD mentioned that an odor was present, and the odor was attributed to a

cleaning agent (SHD, 2007; [Appendix C](#)). The SHD recommended opening windows and/or using fans to dissipate the odor (SHD, 2007).

At the time of the CEH assessment, no other odors/complaints were reported by DOR staff, and CEH staff did not detect any odors. To investigate previous odor complaints, CEH staff conducted screening for total volatile organic compounds (TVOCs). VOCs are carbon-containing substances that have the ability to evaporate at room temperature. For example, chemicals evaporating from a paint can stored at room temperature would most likely contain VOCs. Frequently, exposure to low levels of VOCs may produce eye, nose, throat and/or respiratory irritation in some sensitive individuals. In an effort to determine whether VOCs were present, air monitoring was conducted throughout the DOR space. Outdoor TVOC concentrations were non-detect (ND) (Table 1). Indoor TVOC concentrations throughout the DOR were also ND (Table 1). Please note, TVOC air measurements are only reflective of the indoor air concentrations present at the time of sampling.

Other IAQ Evaluations

Indoor air quality can be negatively influenced by the presence of respiratory irritants, such as products of combustion. The process of combustion produces a number of pollutants. Common combustion emissions include carbon monoxide, carbon dioxide, water vapor and smoke (fine airborne particle material). Carbon monoxide is a by-product of incomplete combustion of organic matter (e.g., gasoline, wood and tobacco). Exposure to carbon monoxide can produce immediate and acute health affects.

Carbon monoxide is a by-product of incomplete combustion of organic matter (e.g., gasoline, wood and tobacco). Exposure to carbon monoxide can produce immediate and acute

health affects. Several air quality standards have been established to address carbon monoxide and prevent symptoms from exposure to these substances. The MDPH established a corrective action level concerning carbon monoxide in ice skating rinks that use fossil-fueled ice resurfacing equipment. If an operator of an indoor ice rink measures a carbon monoxide level over 30 ppm, taken 20 minutes after resurfacing within a rink, that operator must take actions to reduce carbon monoxide levels (MDPH, 1997).

The American Society of Heating Refrigeration and Air-Conditioning Engineers (ASHRAE) has adopted the National Ambient Air Quality Standards (NAAQS) as one set of criteria for assessing indoor air quality and monitoring of fresh air introduced by HVAC systems (ASHRAE, 1989). The NAAQS are standards established by the US EPA to protect the public health from six criteria pollutants, including carbon monoxide and particulate matter (US EPA, 2006). As recommended by ASHRAE, pollutant levels of fresh air introduced to a building should not exceed the NAAQS levels (ASHRAE, 1989). The NAAQS were adopted by reference in the Building Officials & Code Administrators (BOCA) National Mechanical Code of 1993 (BOCA, 1993), which is now an HVAC standard included in the Massachusetts State Building Code (SBBRS, 1997). According to the NAAQS, carbon monoxide levels in outdoor air should not exceed 9 ppm in an eight-hour average (US EPA, 2006).

Carbon monoxide should not be present in a typical, indoor environment. If it is present, indoor carbon monoxide levels should be less than or equal to outdoor levels. CEH staff conducted air sampling for carbon monoxide. Outdoor carbon monoxide concentrations were ND (Table 1). Carbon monoxide levels measured inside were also ND (Table 1).

Several other conditions that can affect indoor air quality were observed during the assessment. Plug-in air fresheners were observed in one area. Air fresheners contain chemicals

that can be irritating to certain sensitive individuals. In addition, air fresheners do not remove materials causing odors, but rather mask odors, which may be present in the area. VOC-containing cleaning materials were observed to clean personnel work areas (Picture 10). This cleaning agent contains several VOCs (e.g., isopropyl alcohol and monoethanolamine) that can be irritating to the eyes, nose and throat (3M, 2000) (Picture 11).

Occupants expressed concerns about the potential of odors/materials migrating from adjacent areas (i.e., offices that share a common wall/floor/ceiling with the DOR). However, no consistent complaints or patterns of specific odors related to adjacent business were reported; therefore odor migration is unlikely. In addition, the HVAC systems for each of the business at Shetland Park are self-contained within each work space; therefore they do not share common ductwork, which would further indicate that odor migration is unlikely.

Finally, although supply and return vents in common work areas had been cleaned, exhaust vents in restrooms were observed to be occluded with dust and debris (Picture 12). Picture 13 demonstrates such dust accumulation, which can greatly inhibit airflow.

Conclusions/Recommendations

As discussed at the time of the CEH assessment, no odors were detected and measurements for TVOCs and CO were non-detectable. However, carbon dioxide levels indicated a lack of adequate air exchange, which can allow odors that may be present to persist/linger, leading to IAQ complaints. In the event of future reports of odors, three sources are likely:

- Inside DOR space: air fresheners, cleaners, cooking odors, personal products such as nail polish removers, etc.

- Outside DOR space: pollutants such as vehicle exhaust drawn in through air intakes on the exterior of the building); and/or
- Adjacent to the DOR space: odors from surrounding space/hallway.

In the event of future odor complaints, the following investigative/mitigation steps should be taken:

1. Observe conditions directly outside the building to rule out external sources.
2. Observe conditions inside DOR space and consult with staff to determine if any personal/cleaning products were used or cooking in progress.
3. Work with building management/maintenance staff to identify and seal any potential pathways between adjacent businesses, such as utility holes in ceilings/floors/walls.
4. Install door sweeps on hallway doors to prevent odor migration from the hallway.

General Air Quality Recommendations

In addition to the recommendations made by ATC, the following additional recommendations are made to improve indoor air quality:

1. Operate ventilation systems continuously. Set thermostat controls to the fan “on” position to provide constant supply and exhaust ventilation during periods of occupancy.
2. Use openable windows to supplement airflow and control for comfort (with the exception of periods of high outdoor relative humidity to avoid condensation problems). Care should be taken to ensure windows are properly closed at night and weekends to avoid pipe freezing and potential flooding (during winter months).

3. Contact the building's HVAC consultant to determine whether the existing fresh air intake system can be adjusted to increase outside air intake.
4. Consider balancing mechanical ventilation systems every five years as per ventilation industrial standards (SMACNA, 1994).
5. For buildings in New England, periods of low relative humidity during the winter are often unavoidable. Therefore, scrupulous cleaning practices should be adopted to minimize common indoor air contaminants whose irritant effects can be enhanced when the relative humidity is low. To control for dusts, a high efficiency particulate arrestance (HEPA) filter equipped vacuum cleaner in conjunction with wet wiping of all surfaces is recommended. Drinking water during the day can help ease some symptoms associated with a dry environment (throat and sinus irritations).
6. Ensure leaks are repaired and replace water-stained ceiling tiles. Take measures to reduce condensation generation on pipes (e.g., inspect insulation).
7. Examine sink countertop and backsplash areas for water damage and/or mold growth. Disinfect and replace as necessary. Seal breaches to prevent damage.
8. Continue to change HVAC filters on current schedule or more frequently if needed.
9. Clean supply, return and exhaust vents periodically of accumulated dust.
10. Refrain from or reduce the use of VOC-containing cleaning materials.
11. Refrain from using air fresheners and deodorizers to prevent exposure to VOCs.
12. Consider cleaning carpeting annually (or semi-annually in soiled high traffic areas) as per the recommendations of the Institute of Inspection, Cleaning and Restoration Certification (IICRC). Copies of the IICRC fact sheet can be downloaded at: http://www.cleancareseminars.com/carpet_cleaning_faq4.htm (IICRC, 2005)

13. Refer to resource manuals and other related indoor air quality documents for further building-wide evaluations and advice on maintaining public buildings. Copies of these materials are located on the MDPH's website: http://mass.gov/dph/indoor_air.

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Picture 1



AHU Suspended from the Ceiling

Picture 2



Interior View of Air Intake Ducts/Vent, 3rd Floor DOR

Picture 3



Fresh Air Intake for HVAC System on Exterior of Building

Picture 4



Ducted Air Diffusers in Central Work Areas

Picture 5



Example of Multi-Directional Air Diffuser in Offices and Common Areas with Dropped Ceilings

Picture 6



Return Vent with Pleated Air Filter Installed

Picture 7



Pleated Air Filter

Picture 8



Exhaust Vent with Wind Shield Installed to Prevent Backdrafting

Picture 9



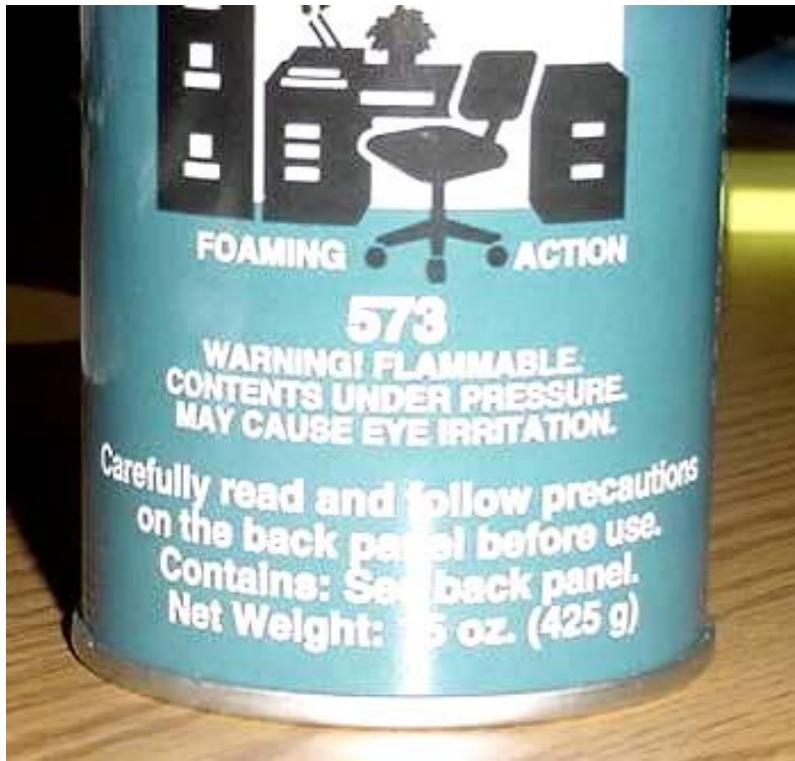
Water-Stained Ceiling Tiles, like from Pipe Condensation

Picture 10



VOC-Containing Spray Cleaner

Picture 11



Close-up of Warning Label on Cleaning Material used at DOR

Picture 12



Dust Accumulation on Restroom Exhaust Vent

Picture 13



Dust Accumulation on Restroom Exhaust Vent, Note Slots were Obstructed Inhibiting Airflow

Table 1
Indoor Air Test Results – DOR Offices, 35 Congress Street, Salem MA – February 5, 2007

Location	Carbon Dioxide (*ppm)	Carbon Monoxide (*ppm)	TVOCs (*ppm)	Temp (°F)	Relative Humidity (%)	Occupants in Room	Windows Openable	Ventilation		Remarks
Background	370	ND	ND	12	17					Cold, clear, winds WSW 15-25 mph
West Wing										
Auerbach	1232	ND	ND	71	19	2	Y	Y	Y	1 WD CT-corner-active leak reported
Forcellati	1198	ND	ND	72	18	1	N	Y	Y	1 WD CT
Artuso	1201	ND	ND	73	18	0	N	Y	Y	
Office 5	1109	ND	ND	73	18	1	N	Y	Y	
Imperato	1041	ND	ND	73	17	0	N	Y	Y	
Rubin	1046	ND	ND	73	18	2	N	Y	Y	
Bachini	1061	ND	ND	73	17	3	Y	Y	Y	PFs
Malone	1071	ND	ND	72	17	2	Y	Y	Y	
Joslin	1087	ND	ND	72	18	3	N	Y	Y	

* ppm = parts per million parts of air, CT = ceiling tile

WD = water damage, ND = non detectable, PF = personal fan

Comfort Guidelines

Carbon Dioxide -	< 600 ppm = preferred
	600 - 800 ppm = acceptable
	> 800 ppm = indicative of ventilation problems
Temperature -	70 - 78 °F
Relative Humidity -	40 - 60%

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								Y	Y	
Adams	1138	ND	ND	72	18	0	N	Y	Y	
Conference Room	1020	ND	ND	73	17	1	N	Y	Y	
Pagliuca	1105	ND	ND	73	17	3	Y	Y	Y	
Diaz	1095	ND	ND	73	17	3	Y	Y	Y	
Magno	1125	ND	ND	72	17	2	Y	Y	Y	
Central Wing										
Palumbo	1070	ND	ND	73	17	5	N	Y	Y	
Poole	1077	ND	ND	73	17	0	Y	Y	Y	
Schrimpf	1098	ND	ND	73	18	2	N	Y	Y	
McNamara	1159	ND	ND	73	18	1	N	Y	Y	
Vacca	1105	ND	ND	73	17	1	N	Y	Y	

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								Y	Y	
DeShales	1125	ND	ND	74	17	1	Y	Y	Y	
Davis	1219	ND	ND	73	18	3	Y	Y	Y	
Menton	1098	ND	ND	74	17	0	Y	Y	Y	
Gillis	1146	ND	ND	74	17	0	N	Y	Y	
Comfort	1148	ND	ND	73	17	1	Y	Y	Y	
Brown	1183	ND	ND	73	17	4	Y	Y	Y	
Gaffee	1172	ND	ND	74	17	3	N	Y	Y	
Laspina	1142	ND	ND	74	18	1	N	Y	Y	
File Room	969	ND	ND	73	17	0	N	Y	Y	
Reception	1128	ND	ND	73	18	1	N	Y	Y	
Interview Room 1	1085	ND	ND	72	17	0	N	Y	Y	

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								Y	Y	
Conference Room 1	1058	ND	ND	72	17	0	N	Y	Y	
Conference Room 2	1058	ND	ND	72	16	4	N	Y	Y	DEM
Kitchen	1201	ND	ND	72	18	7	Y	Y	Y	Space between sink countertop and backsplash
Mail Room	1154	ND	ND	72	18	0	N	Y	Y	Dusty vents
Ho	1132	ND	ND	72	17	0	N	Y	Y	
Khan	1141	ND	ND	72	17	0	N	Y	Y	
East Wing										
Peterson	1236	ND	ND	73	18	2	Y	Y	Y	
Baltodano	1259	ND	ND	73	18	3	Y	Y	Y	Water cooler on carpet
Quintal	1265	ND	ND	73	18	1	Y	Y	Y	
Crist	1250	ND	ND	72	17	0	Y	Y	Y	

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								Y	Y	
Gargas	1273	ND	ND	74	18	0	Y	Y	Y	
Famiglietti	1244	ND	ND	74	17	0	Y	Y	Y	
Congdon	1264	ND	ND	74	18	1	Y	Y	Y	
Fowler	1313	ND	ND	75	17	3	N	Y	Y	
Clark	1248	ND	ND	75	17	1	N	Y	Y	7 WD CT near interior wall/exit
Barcroft	1262	ND	ND	76	17	3	N	Y	Y	
Howard	1228	ND	ND	76	17	2	N	Y	Y	
Prak	1244	ND	ND	76	17	1	N	Y	Y	
Abdelmesseh	1165	ND	ND	75	16	0	N	Y	Y	
Reczek	1147	ND	ND	75	16	0	N	Y	Y	Plug-in air freshener
Dirlinger	1171	ND	ND	75	16	1	N	Y	Y	PF

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Woodbury	1233	ND	ND	76	17	0	N	Y	Y	4 WD CT
Miller	1252	ND	ND	76	17	0	N	Y	Y	Plant
Hentz	1240	ND	ND	76	17	1	N	Y	Y	
Vincent	1247	ND	ND	76	17	0	N	Y	Y	
Stephan	1270	ND	ND	76	17	1	N	Y	Y	
Walston	1235	ND	ND	76	17	0	N	Y	Y	
Women's Restroom						0	N	N	Y	Dusty exhaust vents

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Appendix B

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MA DOR

003/008

81.23/2087 15:32 9787459482

SALEM FIRE DISPATCH

PAGE 02

A : 09258 FDID #		MA State #	MM DD YYYY 01 19 2007 Incident Date #	1 Station	07-0000334 Incident Number #	000 Exposure #	Change No Activity	2049 -00	
B Location #		<input checked="" type="checkbox"/> Street address		35 Congress Street		Street Type		Suffix	
<input type="checkbox"/> Intersection		<input type="checkbox"/> In front of		Route 253 Salem		State MA		Zip Code 01970	
<input type="checkbox"/> Near of		<input type="checkbox"/> Adjacent to		Apt./Suite/Room		City		Cross street or direction, as applicable	
<input type="checkbox"/> Dispositions		C Incident Type #		E1 Date & Times		Midnight is 0000		E2 Shift & Alarm	
420 Notice condition, other		Incident Type		Check boxes if dates are the same as Alarm Date.		Month Day Year hr min sec		Local Option	
D Aid Given or Received #		1 <input type="checkbox"/> Mutual aid received		Alarm # 01 19 2007		15:02:00		2 01 STA 1	
2 <input type="checkbox"/> Automatic aid recov.		Their FDID State		ARRIVAL required, unless canceled or did not arrive		15:05:00		Shift or Alarm District	
3 <input type="checkbox"/> Mutual aid given		Their Incident Number		<input checked="" type="checkbox"/> Arrival # 01 19 2007		15:05:00		E3 Special Studies	
4 <input type="checkbox"/> Automatic aid given				<input type="checkbox"/> Controlled		LAST UNIT CLEARED, required except for wildland fires		Local Option	
5 <input type="checkbox"/> Other aid given				<input checked="" type="checkbox"/> Cleared		01 19 2007 17:25:00		Special Study ID# Special Study Value	
6 <input checked="" type="checkbox"/> None				G1 Resources #		G2 Estimated Dollar Losses & Values		Losses: Required for all fires if med. Optional for non fires.	
F Actions Taken #		36 Investigate		Check this box and skip this section if an Apparatus or Personnel form is used.		Property \$ 000,000		None	
Primary Action Taken (1)		37 Notified Health		Apparatus Personnel		Contents \$ 000,000		Optional	
Additional Action Taken (2)		38 Notify other agencies.		Suppression		PROPERTY VALUE: Optional		Property \$ 000,000	
Additional Action Taken (3)				EMS		Contents \$ 000,000		Optional	
				Other 0001					
				<input type="checkbox"/> Check box if separate events include aid received resources.					
Completed Modules		H1 Casualties #		H3 Hazardous Materials Release		I Mixed Use Property			
<input type="checkbox"/> Fire-2		Deaths Injuries		<input type="checkbox"/> None		<input type="checkbox"/> Not mixed			
<input type="checkbox"/> Structure-3		Fire Service		1 <input type="checkbox"/> Natural Gas: slow leak, no immediate or further action		10 <input type="checkbox"/> Assembly use			
<input type="checkbox"/> Civil Fire Cas.-4		Civilian		2 <input type="checkbox"/> Propane gas: on sh. vent (in or less than 20 ft)		20 <input type="checkbox"/> Education use			
<input type="checkbox"/> Fire Serv. Cas.-5		H2 Detector		3 <input type="checkbox"/> Gasoline: volatile fuel tank or portable container		33 <input type="checkbox"/> Medical use			
<input type="checkbox"/> EMS-6		Required for Confined Fires.		4 <input type="checkbox"/> Kerosene: fuel burning equipment or portable storage		40 <input type="checkbox"/> Residential use			
<input type="checkbox"/> Structure-7		1 <input type="checkbox"/> Detector alerted occupants		5 <input type="checkbox"/> Diesel fuel/diesel oil: volatile fuel tank or portable		51 <input type="checkbox"/> Row of stores			
<input type="checkbox"/> Wildland Fire-8		2 <input type="checkbox"/> Detector did not alert them		6 <input type="checkbox"/> Household solvents: home/office still, always leak		53 <input type="checkbox"/> Enclosed wall			
<input checked="" type="checkbox"/> Apparatus-9		0 Unknown		7 <input type="checkbox"/> Motor oil: from engine or portable container		58 <input type="checkbox"/> Shop & Residential			
<input type="checkbox"/> Personnel-10				8 <input type="checkbox"/> Paint: from paint cans containing > 9% solvent		59 <input type="checkbox"/> Office use			
<input type="checkbox"/> Arson-11				9 <input type="checkbox"/> Other: Special permit actions required or spill > legal. (Check appropriate use number form)		60 <input type="checkbox"/> Industrial use			
						63 <input type="checkbox"/> Military use			
						65 <input type="checkbox"/> Farm use			
						66 <input type="checkbox"/> Other mixed use			
						00			
J Property Use #		341 <input type="checkbox"/> Clinic, clinic-type infirmary		539 <input type="checkbox"/> Household goods, sales, repairs					
Structures		342 <input type="checkbox"/> Doctor/dentist office		579 <input type="checkbox"/> Motor vehicle/boat sales/repair					
131 <input type="checkbox"/> Church, place of worship		361 <input type="checkbox"/> Prison or jail, not juvenile		571 <input type="checkbox"/> Gas or service station					
161 <input type="checkbox"/> Restaurant or cafeteria		419 <input type="checkbox"/> 1- or 2-family dwelling		599 <input checked="" type="checkbox"/> Business office					
162 <input type="checkbox"/> Bar/Tavern or nightclub		429 <input type="checkbox"/> Multi-family dwelling		615 <input type="checkbox"/> Electric generating plant					
213 <input type="checkbox"/> Elementary school or kindergarten		439 <input type="checkbox"/> Rooming/boarding house		629 <input type="checkbox"/> Laboratory/science lab					
215 <input type="checkbox"/> High school or junior high		449 <input type="checkbox"/> Commercial hotel or motel		700 <input type="checkbox"/> Manufacturing plant					
241 <input type="checkbox"/> College, adult education		459 <input type="checkbox"/> Residential, board and care		819 <input type="checkbox"/> Livestock/poultry storage (barn)					
311 <input type="checkbox"/> Care facility for the aged		464 <input type="checkbox"/> Dormitory/barracks		882 <input type="checkbox"/> Non-residential parking garage					
331 <input type="checkbox"/> Hospital		519 <input type="checkbox"/> Food and beverage sales		891 <input type="checkbox"/> Warehouse					
Outside		936 <input type="checkbox"/> Vacant lot		981 <input type="checkbox"/> Construction site					
124 <input type="checkbox"/> Playground or park		938 <input type="checkbox"/> Graded/care for plot of land		984 <input type="checkbox"/> Industrial plant yard					
653 <input type="checkbox"/> Crops or orchard		946 <input type="checkbox"/> Lake, river, stream							
669 <input type="checkbox"/> Forest (timberland)		951 <input type="checkbox"/> Railroad right of way							
807 <input type="checkbox"/> Outdoor storage area		960 <input type="checkbox"/> Other street							
919 <input type="checkbox"/> Dump or sanitary landfill		961 <input type="checkbox"/> Highway/divided highway							
931 <input type="checkbox"/> Open land or field		962 <input type="checkbox"/> Residential street/driveway							
						Lookup and enter a Property Use code only if you have not checked a Property Use box!			
						Property Use 599			
						Business office			
						FIRE-1 REVISION 03/11/99			

Appendix B (Cont.)

02/06/2007 12:51 FAX 6176263599

NA DOR

004/008

31/23/2007 15:32 9787459482

SALEM FIRE DISPATCH

PAGE 03

K1 Person/Entity Involved		Area Code	Phone Number
Local Option		Business name (if applicable)	
<input type="checkbox"/> Check this box if same address as incident location. Then ship the three duplicate address labels.	Mr., Ms., Mrs. First Name Number Post Office box State Zip Code	HI Last Name Street Type City Apt./Suite/Room	Suffix Suffix
<input type="checkbox"/> More people involved? Check this box and attach Supplemental Forms (SFIRS-16) as necessary			
K2 Owner		Area Code	Phone Number
Local Option		Business name (if applicable)	
<input type="checkbox"/> Check this box if same address as incident location. Then ship the three duplicate address labels.	Mr., Ms., Mrs. First Name Number Post Office box State Zip Code	HI Last Name Street Type City Apt./Suite/Room	Suffix Suffix
L Remarks			
Local Option Investigate a complaint of an odor in Suite 351 of 35 Congress Street (Department of Revenue) . Upon arrival , numerous occupants of the newer cubicle area (added on approximately one to two years ago) complained of physical symptoms such as dizziness, burning of the eyes, upset stomachs, and outbreaks of facial rash . The occupants also stated that these symptoms had occurred over a long span of time. N.S. Ambulance, Salem P.D, and Salem Public Health were called and responded to assist with the investigation and treat the occupants. Names and symptoms of seven occupants were recorded by Salem P.D. and ambulance personnel, with no transports to Medical facilities. Mr, Bob Crist, the regional director of the department , stated that several of the occupants had complained of these symptoms for quite a period of time. The state had an " Indoor Air Quality/ Microbial Investigation Report" performed on September 28, 2006. A copy of this report was acquired and the results, recommendations, and limitations can be viewed and interpreted as needed. Mr. Crist also stated that the exposed ductwork and vents in the ceiling area were in the process of being cleaned as we spoke. (Company name unknown) C2 reported the incident to "DEP" at approximately 1800 hours on this date, left a message on a recording with Chris Bresnahan @ 978 694-3377. All meter readings recorded by C2 were in the normal range. The Department of Revenue office was closed at 1800 hours this date and will reopen on Monday morning, January 22th. Mr. Bob Crist @ 978 825-2801			
L Authorization			
07632	Munroe, Deputy, John L	DC	01 19 2007
Officer in charge ID	Signature	Position or rank	Assignment Month Day Year
07632	Munroe, Deputy, John L	DC	01 19 2007
Check box if same as Officer in charge.	Officer making report ID	Signature	Position or rank Assignment Month Day Year

Appendix C

02/06/2007 12:52 FAX 6176263599

MA DOR

006/006

Jan 23 07 04:32p

Joanne Scott Salem BOH

978 745 0343

p. 2

January 22, 2007

Shetland Park
35 Congress Street
Salem, MA 01970

On Friday January 19, 2007 the Salem Board of Health received a call from the Salem Fire Department regarding odors at 35 Congress Street - Shetland Park. The Salem Fire Department, North Shore Ambulance and I all were on scene.

The odors appeared to be some sort of cleaning agent. After observing the office space for approximately one hour, the odor did not appear to get any stronger. I recommended opening windows or possibly get some fans up and running.

Deputy Chief Munroe stated he was going to contact the DEP or EPA regarding the issue. An air quality test was done approximately 6 months earlier on that site by the management. A copy was given to Deputy Chief Munroe. Deputy Chief Munroe stated he would fax over any information necessary.

John Gehan
Sanitarian.

