

BOSTON UNIVERSITY MEDICAL CENTER
Office of Environmental Health & Safety
85 East Newton Street (M-470)
Boston, MA 02118
(617) 638-8830 Fax (617) 638-882

TO: Dr. Chris Andry, Cheryl Spencer
FROM: Brian W. Fenton, Office of Environmental Health and Safety
DATE: June 30th, 2009
RE: Formaldehyde Survey – CAP Inspection

Scope and Introduction:

During the last week of June, 2009 the Office of Environmental Health and Safety performed personal monitoring for the presence of formaldehyde in four “high hazard” areas at Boston Medical Center. The survey was performed at the request of Dr. Chris Andry to ensure that employees working with formaldehyde in the Pathology Department do not exceed the action levels established by the Occupational Safety and Health Administration [OSHA- 0.5ppm (TWA-Time Weighted Average)] for an eight hour time period.

The monitoring was conducted in rooms 323, 327A and 328 of 670 Albany Street as well as in room B-11 in the Newton Pavilion. These areas were identified by the pathology group as having the largest risk of exposure based on the amount of formaldehyde present, the time exposed, and the control measures used. The passive dosimeters (model X571) were placed on the lapels of Pathology employees in order to demonstrate possible respiratory exposure due to formaldehyde off gassing.

Background:

Formaldehyde is a common preservative used in the medical and research fields. It also has uses as a disinfectant and embalming fluid. Formaldehyde can be commonly found in hospital operating rooms, research laboratories, clinics, and in this particular case, in pathology laboratories. Formaldehyde has been found over the years to cause hazardous health effects if exposed. Formaldehyde is a known carcinogen, mutagen and a respiratory sensitizer leading to asthma and bronchitis when exposed to low levels for extended periods. Acute short-term exposures can also cause eye and respiratory tract irritation at levels as low as 0.1ppm. Health effects associated with high-level vapor exposures are irritation of the eyes, nose, and throat, coughing, and tearing of the eyes.

PPE and Engineering Controls:

B-11 – No Fume Hood

328 – Fume Hood

327A – No Fume Hood (transportation activities)

323 – Snorkel Hood

Personnel wearing impermeable nitrile gloves, eye protection, surgical masks and lab coats.

Results and Recommendations:

The passive dosimeters were sent to Assay Technology IH Laboratory for analysis. As reflected in the attached report, personnel did not reach the 8 hour TWA as established by OSHA.

Please review the attached laboratory analysis reports and air sampling survey forms for further information.

Break Down:

Media: 10% neutral buffered formalin

Amount of Use:

B-11: < 12 times per year, approx 30 minutes each event

328: Performed daily, < 8 hours per day

327A: < 2 times per week, 1 hour each event

323: 3 times per week, 3 hours each event.

Engineering Controls: 328 and 323 utilize local exhaust.

PPE: Nitrile gloves, eye protection, surgical mask and lab coat

If you have any questions, do not hesitate to call me at (617) 638 – 8866

cc: Helena Palacios. OEHS

AIR SAMPLING SURVEY FORMOffice of Environmental Health and Safety Industrial Hygiene
OF _____

PAGE _____

DATE: 6/24/2009

SURVEYOR(S): Brian Fenton

SAMPLE#:
GR6348CONTAMINANT:
Formaldehyde**I. AREA INFORMATION**DEPT:
PathologyBLDG:
Newton PavilionROOM:
B-11 (Morgue)SOURCE:
Pathological specimen samplesENGINEERING CONTROLS:
N/A**II. EMPLOYEE INFORMATION**FIRST NAME:
CherylLAST NAME:
TorresBU ID #:
10076094DEPT:
PathologyBLDG:
Newton PavilionJOB TITLE:
Biospecimen Archive Manager

EXPOSURE DURATION (HRS):

EXPOSURE (TIMES PER DAY):

EXPOSURE (DAYS PER YR):

JOB PERFORMED:
Organ WashingEXPOSURE REPRESENTS:
 TYPICAL WORK ACTIVITIES TYPICAL AREA
CONDITIONS
 UNUSUAL EVENT SPECIAL CIRCUMSTANCESBALANCE OF DAY:
 BALANCE OF SHIFT REPRESENTED BY SAMPLING PERIOD
 BALANCE OF SHIFT HAD NO EXPOSURE TO THIS
CONTAMINANT

PPE USED: (Respirator) Surgical Mask

(Glove) Nitrile

(Body) Scrubs, Apron

ADDITIONAL WORKERS
REPRESENTED BY THIS SAMPLING:
 ALL WITH SAME JOB TITLE /
TRADE

NAME:

BNL#:

NAME:

BNL#:

III. SAMPLING INFORMATION

SAMPLING TIME

ON OFF
1039 1110TEMP (°C)
DURING
SAMPLINGSAMPLE LOCATION
Newton Pavilion, Room B-11 (Morgue)

(INDICATE APPROPRIATE SAMPLE TYPE)

 PERSONAL SAMPLE: Worn on workers lapel (Breathing Zone)
 FIXED BREATHING ZONE: Fixed location near workers nose/mouth
 BLANK: Air not drawn through media
 AREA SAMPLE (Select choice below)
 SOURCE: Located at the source of the contaminant
 BACKGROUND: Located in area without exposure to source
 OTHER (describe): OPEN FACE CLOSED FACE I.O.M. CYCLONE
(_____ Micron)**IV. SURVEY INSTRUMENT INFORMATION**

INSTRUMENT (PUMP):

MODEL:

SERIAL#:

MEDIA:

MFGR/PART#:

LOT#:

CALIBRATION METHOD:
 ROTAMETER
 SOAP FILM BURETTE
 DRY CALC

PRE-CAL:

BY:

POST CAL:

BY:

FLOW:

TEMP: (°C)

FLOW:

TEMP: (°C)

TOTAL TIME (MIN):

AVG. FLOW:

TOTAL VOLUME (L):

AVG. TEMP DURING SAMPLING:

TEMP CORRECTION FACTOR:

ADJUSTED VOLUME:

AIR SAMPLING SURVEY FORMOffice of Environmental Health and Safety Industrial Hygiene
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DATE: 6/23/2009	SURVEYOR(S): Brian Fenton
SAMPLE#: GR8355	CONTAMINANT: Formaldehyde

I. AREA INFORMATION

DEPT: Pathology	BLDG: 670 Albany Street	ROOM: 323
SOURCE: Pathological specimen samples		
ENGINEERING CONTROLS: Snorkel Hood		

II. EMPLOYEE INFORMATION

FIRST NAME: Alyssa	LAST NAME: Brown	BU ID #: 10079745
DEPT: Pathology	BLDG: 670 Albany Street	JOB TITLE:
EXPOSURE DURATION (HRS):	EXPOSURE (TIMES PER DAY):	EXPOSURE (DAYS PER YR):
JOB PERFORMED: Specimen discard		
EXPOSURE REPRESENTS: <input checked="" type="checkbox"/> TYPICAL WORK ACTIVITIES <input checked="" type="checkbox"/> TYPICAL AREA CONDITIONS <input type="checkbox"/> UNUSUAL EVENT <input type="checkbox"/> SPECIAL CIRCUMSTANCES		BALANCE OF DAY: <input type="checkbox"/> BALANCE OF SHIFT REPRESENTED BY SAMPLING PERIOD <input type="checkbox"/> BALANCE OF SHIFT HAD NO EXPOSURE TO THIS CONTAMINANT
PPE USED: (Respirator) Surgical Mask (Glove) Nitrile (Body) Apron, Scrub, boots		
ADDITIONAL WORKERS REPRESENTED BY THIS SAMPLING: <input checked="" type="checkbox"/> ALL WITH SAME JOB TITLE / TRADE	NAME:	BNL#:
	NAME:	BNL#:

III. SAMPLING INFORMATION

SAMPLING TIME		TEMP (°C) DURING SAMPLING	SAMPLE LOCATION 670 Albany Street, Room 323 (INDICATE APPROPRIATE SAMPLE TYPE)
ON	OFF		
1335	1435		<input checked="" type="checkbox"/> PERSONAL SAMPLE: Worn on workers lapel (Breathing Zone) <input type="checkbox"/> FIXED BREATHING ZONE: Fixed location near workers nose/mouth <input type="checkbox"/> BLANK: Air not drawn through media <input type="checkbox"/> AREA SAMPLE (Select choice below) <input type="checkbox"/> SOURCE: Located at the source of the contaminant <input type="checkbox"/> BACKGROUND: Located in area without exposure to source <input type="checkbox"/> OTHER (describe): <input checked="" type="checkbox"/> OPEN FACE <input type="checkbox"/> CLOSED FACE <input type="checkbox"/> I.O.M. <input type="checkbox"/> CYCLONE (<input type="checkbox"/> Micron)
		START	
		END	
		MIN	
		MAX	

IV. SURVEY INSTRUMENT INFORMATION

INSTRUMENT (PUMP):	MODEL:	SERIAL#:		
MEDIA:	MFGR/PART#:	LOT#:		
CALIBRATION METHOD: <input type="checkbox"/> ROTAMETER <input type="checkbox"/> SOAP FILM BURETTE <input type="checkbox"/> DRY CALC	PRE-CAL:	BY:	POST CAL:	BY:
	FLOW:	TEMP: (°C)	FLOW:	TEMP: (°C)
TOTAL TIME (MIN):	AVG. FLOW:	TOTAL VOLUME (L):		
AVG. TEMP DURING SAMPLING:	TEMP CORRECTION FACTOR:	ADJUSTED VOLUME:		

AIR SAMPLING SURVEY FORMOffice of Environmental Health and Safety Industrial Hygiene
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DATE: 6/23/2009		SURVEYOR(S): Brian Fenton	
SAMPLE#: GR7815		CONTAMINANT: Formaldehyde	
I. AREA INFORMATION			
DEPT: Pathology	BLDG: 670 Albany Street	ROOM: 327A	
SOURCE: Pathological specimen samples			
ENGINEERING CONTROLS: N/A			
II. EMPLOYEE INFORMATION			
FIRST NAME: Cheryl	LAST NAME: Torres	BU ID #: 10076094	
DEPT: Pathology	BLDG: 670 Albany Street	JOB TITLE: Biospecimen Archive Manager	
EXPOSURE DURATION (HRS):	EXPOSURE (TIMES PER DAY):	EXPOSURE (DAYS PER YR):	
JOB PERFORMED: Transport specimens to tissue room			
EXPOSURE REPRESENTS: <input checked="" type="checkbox"/> TYPICAL WORK ACTIVITIES <input checked="" type="checkbox"/> TYPICAL AREA CONDITIONS <input type="checkbox"/> UNUSUAL EVENT <input type="checkbox"/> SPECIAL CIRCUMSTANCES		BALANCE OF DAY: <input type="checkbox"/> BALANCE OF SHIFT REPRESENTED BY SAMPLING PERIOD <input type="checkbox"/> BALANCE OF SHIFT HAD NO EXPOSURE TO THIS CONTAMINANT	
PPE USED: (Respirator) Surgical Mask (Glove) Nitrile (Body) Lab Coat			
ADDITIONAL WORKERS REPRESENTED BY THIS SAMPLING: <input checked="" type="checkbox"/> ALL WITH SAME JOB TITLE / TRADE	NAME:		BNL#:
	NAME:		BNL#:
III. SAMPLING INFORMATION			
SAMPLING TIME		TEMP (°C) DURING SAMPLING	SAMPLE LOCATION 670 Albany Street, Room 327A
ON	OFF		
1030	1132		(INDICATE APPROPRIATE SAMPLE TYPE)
		START	<input type="checkbox"/> PERSONAL SAMPLE: Worn on workers lapel (Breathing Zone)
		END	<input type="checkbox"/> FIXED BREATHING ZONE: Fixed location near workers nose/mouth
		MIN	<input type="checkbox"/> BLANK: Air not drawn through media
		MAX	<input type="checkbox"/> AREA SAMPLE (Select choice below)
			<input type="checkbox"/> SOURCE: Located at the source of the contaminant
			<input type="checkbox"/> BACKGROUND: Located in area without exposure to source
			<input type="checkbox"/> OTHER (describe):
			<input checked="" type="checkbox"/> OPEN FACE <input type="checkbox"/> CLOSED FACE <input type="checkbox"/> I.O.M. <input type="checkbox"/> CYCLONE (<input type="checkbox"/> Micron)
IV. SURVEY INSTRUMENT INFORMATION			
INSTRUMENT (PUMP):	MODEL:	SERIAL#:	
MEDIA:	MFGR/PART#:	LOT#:	
CALIBRATION METHOD: <input type="checkbox"/> ROTAMETER <input type="checkbox"/> SOAP FILM BURETTE <input type="checkbox"/> DRY CALC	PRE-CAL:	BY:	POST CAL:
	FLOW:	TEMP: (°C)	FLOW:
TEMP: (°C)	TOTAL TIME (MIN):		AVG. FLOW:
AVG. TEMP DURING SAMPLING:	TEMP CORRECTION FACTOR:	TOTAL VOLUME (L):	
		ADJUSTED VOLUME:	

Boston University

AIR SAMPLING SURVEY FORMOffice of Environmental Health and Safety Industrial Hygiene
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DATE: 6/23/2009		SURVEYOR(S): Brian Fenton			
SAMPLE#: GR7684		CONTAMINANT: Formaldehyde			
I. AREA INFORMATION					
DEPT: Pathology		BLDG: 670 Albany Street		ROOM: 328	
SOURCE: Pathological specimen samples					
ENGINEERING CONTROLS: Fume hood					
II. EMPLOYEE INFORMATION					
FIRST NAME: Reine		LAST NAME: Gedeon		BU ID #: U27542767	
DEPT: Pathology		BLDG: 670 Albany Street		JOB TITLE: Pathology Assistant	
EXPOSURE DURATION (HRS):		EXPOSURE (TIMES PER DAY):		EXPOSURE (DAYS PER YR):	
JOB PERFORMED: Gross specimens					
EXPOSURE REPRESENTS: <input checked="" type="checkbox"/> TYPICAL WORK ACTIVITIES <input checked="" type="checkbox"/> TYPICAL AREA CONDITIONS <input type="checkbox"/> UNUSUAL EVENT <input type="checkbox"/> SPECIAL CIRCUMSTANCES			BALANCE OF DAY: <input type="checkbox"/> BALANCE OF SHIFT REPRESENTED BY SAMPLING PERIOD <input type="checkbox"/> BALANCE OF SHIFT HAD NO EXPOSURE TO THIS CONTAMINANT		
PPE USED: (Respirator) Surgical Mask (Glove) Nitrile (Body) Scrubs, Arpon					
ADDITIONAL WORKERS REPRESENTED BY THIS SAMPLING: <input checked="" type="checkbox"/> ALL WITH SAME JOB TITLE / TRADE		NAME:		BNL#:	
		NAME:		BNL#:	
III. SAMPLING INFORMATION					
SAMPLING TIME		TEMP (°C) DURING SAMPLING	SAMPLE LOCATION		
ON	OFF		670 Albany Street, Room 328		
1330	1600		(INDICATE APPROPRIATE SAMPLE TYPE)		
		START	<input checked="" type="checkbox"/> PERSONAL SAMPLE: Worn on workers lapel (Breathing Zone)		
		END	<input type="checkbox"/> FIXED BREATHING ZONE: Fixed location near workers nose/mouth		
		MIN	<input type="checkbox"/> BLANK: Air not drawn through media		
		MAX	<input type="checkbox"/> AREA SAMPLE (Select choice below)		
			<input type="checkbox"/> SOURCE: Located at the source of the contaminant		
			<input type="checkbox"/> BACKGROUND: Located in area without exposure to source		
			<input type="checkbox"/> OTHER (describe):		
			<input checked="" type="checkbox"/> OPEN FACE <input type="checkbox"/> CLOSED FACE <input type="checkbox"/> I.O.M. <input type="checkbox"/> CYCLONE (<input type="checkbox"/> Micron)		
IV. SURVEY INSTRUMENT INFORMATION					
INSTRUMENT (PUMP):		MODEL:		SERIAL#:	
MEDIA:		MFGR/PART#:		LOT#:	
CALIBRATION METHOD: <input type="checkbox"/> ROTAMETER <input type="checkbox"/> SOAP FILM BURETTE <input type="checkbox"/> DRY CALC		PRE-CAL:	BY:	POST CAL:	BY:
		FLOW:	TEMP: (°C)	FLOW:	TEMP: (°C)
TOTAL TIME (MIN):		AVG. FLOW:		TOTAL VOLUME (L):	
AVG. TEMP DURING SAMPLING:		TEMP CORRECTION FACTOR:		ADJUSTED VOLUME:	



AT Labs A UNIT OF assay technology

LABORATORY REPORT
(Air Sampling)

The Innovation & Value Leader
in Occupational Hygiene Analysis

Batch No: 2009070157

Customer: BOSTON UNIVERSITY MEDICAL CENTER
Attention: BRIAN FENTON
Address: 85 EAST NEWTON ST
M-470

Contact No: 80589
Project No:
PO No:

City, State: BOSTON, MA 02118
Country:

Date Received: July 7, 2009
Date Reported: July 9, 2009
Date(s) Analyzed: 07/08/09

Tel No: (617) 638-8866
Fax No: (617) 638-8822

Exposure results are the average concentration for the period of time monitored. ND = None Detected. The results relate only to the items tested. Unless noted below, samples were received in acceptable condition, all applicable quality control were within method specifications, lab blanks were subtracted before a result was reported, and any customer supplied field blanks were not subtracted from sample results. The molar volume at 22 C (24.4 L/mole) was used to calculate parts per million, ppm. Air concentrations reported are based upon field sampling information provided by the customer. For assistance with the content of this report, please visit the Customer Services section of our web site at <http://www.assaytech.com> or contact Technical Support at 1-800-833-1238.

Lab Sample ID / Lab Code	Date Sampled	Media Cdr. - Client Sample ID	Media Lot / Serial #	Chemical Analyzed	Quantity Kept (µl)	Reporting Limit (µg)	Sample Volume (µl)	Sample Time (min)	Concentration/Exposure (ppm)	Reporting Limit (ppm)	Reporting Limit (mg/M3)
2009023548 - ATOH	6/23/09	J571 - FORMALDEHYDE-670-327	2F09 - GR7815	FORMALDEHYDE (1)	0.23	0.05	0.809	82	0.28	0.06	0.15
2009023547 - ATOH	6/23/09	J571 - PATHOLOGY-670-328	2F09 - GR7864	FORMALDEHYDE (1)	0.17	0.05	1.96	150	0.085	0.03	0.12
2009023548 - ATOH	6/23/09	J571 - PATHOLOGY-670-323	2F09 - GR8355	FORMALDEHYDE (1)	0.26	0.05	0.783	ED	0.34	0.06	0.05
2009023550 - ATOH	6/23/09	J571 - FORMALDEHYDE-NP-BLL	2F09 - GR6346	FORMALDEHYDE (1)	0.19	0.05	0.405	31	0.48	0.1	0.1

Messages

Lab Sample ID: 2009023548 - ATOH
Method: MGD NIOSH201E (OSHA PEL: 0.75 PPM, STEL: 2 PPM)
W. EWING
Method Name: MGD NIOSH201E (OSHA PEL: 0.75 PPM, STEL: 2 PPM)
W. EWING
Approved By: K. TAYLOR

Handwritten calculations:

$$670 - 327 = \frac{(.23 \times 1.05) + (0 \times 6.97)}{8} = \frac{.23}{8} = 0.029 \text{ ppm TWA}$$

$$670 - 328 = \frac{(.068 \times 2.5) + (0 \times 5.5)}{8} = \frac{0.17}{8} = 0.021 \text{ ppm TWA}$$

$$670 - 323 = \frac{(.27 \times 1) + (0 \times 2)}{8} = \frac{.27}{8} = 0.034 \text{ ppm TWA}$$

Additional handwritten notes:

$$(.58 \times .51) + (0 \times 2.14) = \dots$$

$$\frac{.19}{8} = 0.024 \text{ ppm TWA}$$

LAB CODE: ATCALAB 101726, ATOH-Lab 100903

S. GREEN-Laboratory Director, K. TAYLOR-Ono Supervisor

AIHA Accredited Lab #101728
AIHA Accredited Lab #100903

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