SBCCD July Board Presentation

Citadel Environmental Services, Inc.

Michelle Campbell, CIH
Director, Industrial Hygiene, Occupational Safety & Training

CITADEL ENVIRONMENTAL SERVICES, INC.
assess
resolve
strengthen

Objectives

- Introduction
- HLS Building – What's Been Done So Far?
- Ventilation assessment summary
- Recap of air monitoring results
- What's next?

What Has Citadel Done?

Dates	Work Performed
March 6, 2015	Ventilation Assessment: • Citadel asked to perform an assessment of HLS, Biology classroom spaces to assess room air changes per hour. • Citadel conducted a preliminary assessment of the number of air changes per hour in the Labs before and after filter changes, the HLS-Labs did have the required air changes as required by laboratory standards. Additional assessments are underway to ensure all components are the system are running as designed.
Dates	**Work Performed**
March 27, 2015	Compliance Air Sampling – Specimen Dissection Task: • Citadel performed personal sampling of one Instructor and two (2) Students during pig and cat dissections. • Sampling for acetone, phenol and formaldehyde was performed. • An additional area air sample was setup in the alcove of HLS-235 where specimens are stored prior to, and following class. This sample was collected to determine “ambient” concentrations of contaminants in the alcove that best represented “typical” conditions during specimen dissection.

Timeline continued…

Dates	Work Performed
April 3, 7 and 13, 2015	Faculty and Staff Interviews: • Citadel asked to perform in person interviews with all of the Biology Faculty and Staff. • Objectives were to understand room uses, and general chemical and specimen use and frequency to assist in the development of an industrial hygiene survey program. • A spreadsheet of this information was compiled and submitted, along with a recommended annual sampling program outline.

Dates	Work Performed
May 8, 2015	VOC Area Monitoring: • Citadel performed area monitoring inside HLS, Biology classroom spaces. • EPA Method TO15 was selected in order to capture a broad range of VOCs identified by Faculty and Staff to be used and/or stored in the labs and support areas, including ethanol, acetone, and paradichlorobenzene (a commonly used fumigant/insecticide in the labs).

Timeline continued…

Dates	Work Performed
May 28, 2015	Formaldehyde, Phenol and Glutaraldehyde Program Submitted: • Citadel drafted a site specific program, including SOPs for lab fume hood and snorkel system use.

Dates	Work Performed
May 29, 2015	Compliance Air Monitoring – A&P Lab Tech Routine and Non-Routine Tasks: • Citadel asked to perform air monitoring for two primary tasks that required the handling of formalin-fixed specimens preserved in Carolina's Perfect Solution™: 1) Routine–(duration of approximately 15 minutes, 2-3 times per day) loading/unloading cart with specimens in HLS-228 and transporting to/from lab areas; and 2) Non-routine activity (duration of 30 minutes to 3-hours, once per month) consolidating specimens and preservative from smaller containers into larger containers and segregating biological waste material for disposal. • Additional area air sampling was also implemented to establish "ambient" concentrations in the rooms and/or adjacent areas where the employees participating in the exposure assessment will be working during their shift. For the two identified tasks this was the Cat Morgue (HLS-228).

What did we find out?
Acetone Results – March 27

Sample Description	Result- Acetone (ppm)
Room 222 - Area Sample	None Detected
Room 222 – Personal Sample (Student – SE)	None Detected
Room 222 – Personal Sample (Student NW)	None Detected
Room 235 – Area Sample	None Detected
Room 235 – "Alcove"[2]	None Detected
Room 235 – Personal Sample (Instructor)	None Detected
Field Blank	N/A
CAL/OSHA PEL (8-Hour TWA)	1000

All results below the Cal/OSHA PEL

What did we find out?
Phenol Results – March 27

Sample Description	Result- Phenol (ppm)
Room 222 - Area Sample	None Detected
Room 222 – Personal Sample (Student – SE)	None Detected
Room 222 – Personal Sample (Student NW)	None Detected
Room 235 – Area Sample	None Detected
Room 235 – "Alcove"[3]	None Detected
Room 235 – Personal Sample (Instructor)	None Detected
Field Blank	None Detected
CAL/OSHA PEL (8-Hour TWA)	5

All results below the Cal/OSHA PEL

What did we find out? Formaldehyde Results – March 27

Sample Description	Result - Formaldehyde (ppm)	Calculated[4] 8-Hour TWA Formaldehyde (ppm)
Room 222 - Area Sample	0.24	0.064
Room 222 – Personal Sample (Student – SE)	5.5	1.421
Room 222 – Personal Sample (Student NW)	0.18	0.046
Room 235 – Area Sample	0.12	0.050
Room 235 – "Alcove"[5]	0.077	0.032
Room 235 – Personal Sample (Instructor)	1.2	0.545
Field Blank	N/A	N/A
CAL/OSHA PEL (8-Hour TWA)	0.75	0.75
CAL/OSHA Action Level	0.5	0.5

1.421 ppm:
Student performing cat Dissection -
Above the AL and PEL

0.545 ppm:
Instructor overseeing pig dissection practical -
Above AL

Formaldehyde results on March 27 triggered…

- Ceasing all dissection operations utilizing Carolina Perfect Solution™ until mechanisms are put in place to reduce formaldehyde exposure under the Action Limit.
- Posting of formaldehyde signage in impacted dissection locations.
- SBCCD medical enrollment/medical exam offering to all impacted personnel, per the standard.
- Construction project initiated to install local exhaust ventilation for lab's where dissections take place. Specifically, the installation of a snorkel system in the HLS labs, selected by the SBVC, Biology Division, estimated to be installed by Fall 2015.

What did we find out? VOC Results – May 8

The total area VOC concentrations were as follows:

0.110 mg/m^3 in Room 214
0.940 mg/m^3 in Room 218
0.170 mg/m^3 in Room 236
0.450 mg/m^3 in Room 243
1.100 mg/m^3 in Room 239
0.220 mg/m^3 in Room 240
0.690 mg/m^3 in Room 244
0.170 mg/m^3 in Room 228
0.046 mg/m^3 for the exterior ambient air sample

All results for 62+ compounds analyzed for were found to be present in trace (part per billion range) amounts and do not pose an indoor air quality concern. Although area sampling is not a direct assessment of personnel exposure levels, it is a good indication of cumulative chemical concentrations indoors, all compounds identified were well below their respective regulatory exposure limits.

What did we find out? Formaldehyde – May 29

Sample Number	Sample Description	Sample Results (ppm)	Calculated PEL TWA[1] Results (ppm)	Regulatory Limits for Formaldehyde			
				Cal-OSHA PEL TWA (ppm)	Cal-OSHA AL (ppm)	Cal-OSHA STEL (ppm)	ACGIH TLV-C* (ppm)
052915-IH-002	Area Sample HLS-228 (TWA)	0.059	0.052	*0.75*	*0.5*	*2*	*0.3*
052915-IH-004	Personal Sample – Routine Activity (STEL)	0.12	N/A				
052915-IH-005	Personal Sample – Non-Routine Activity (STEL)	0.082	N/A				
052915-IH-007	Field Blank	N/A	N/A				

All results below the Cal/OSHA PEL, AL and STEL

What did we find out? Phenol – May 29

Sample Number	Sample Description	Sample Results (ppm)	Calculated PEL TWA[1] Results (ppm)	Regulatory Limits for Phenol		
				Cal-OSHA PEL TWA (ppm)	*NIOSH STEL (ppm)*	*ACGIH TLV® (ppm)*
052915-IH-001	Area Sample HLS-228 (TWA)	<0.18	N/A	*5*	*15.6*	*5*
052915-IH-003	Personal Sample - M. Vallejo (TWA)	<0.77	N/A			
052915-IH-006	Field Blank	N/A	N/A			

All results below the Cal/OSHA PEL

To be completed before Fall 2015 Semester Begins...

- Citadel to provide all Biology Faculty and Staff with Site Specific Training Program to address lab safety, chemical hygiene, respiratory protection, medical surveillance, written program review, hazardous waste management, chemical storage and use
- Hands on practicum to demonstrate snorkel system use
- Job Hazard Analysis update campus-wide
- Schedule Phase 2 of compliance air monitoring during specimen dissection utilizing snorkel system

Ongoing Questions and Concerns…

Exposure of employees to paradichlorobenzene (PDB):

- Citadel conducted area monitoring for volatile organic compounds on May 8, 2015, which included paradichlorobenzene in areas identified during the interviews to have chemical use and storage. Concentrations for ambient air inside these areas were found to be in the part per billion (ppb) range and significantly lower than the Federal OSHA permissible exposure limit of 75 ppm.

Should custodial and/or maintenance staff working in the HLS Building participate in the medical surveillance program?

- Over exposure was as a result of specimen dissection and area sampling has indicated no concentrations exceeding the AL or PELs for any of the contaminants tested for. The custodial and/or maintenance employees should not be handling specimens and/or preservative and are therefore not at risk of exposure. **I do think there is any need to include them in the medical surveillance program.**

Michelle Campbell, CIH

151 Kalmus Drive, F4,
Costa Mesa, CA 92626
(714) 547-4301
mcampbell@citadelenvironmental.com

CITADEL ENVIRONMENTAL SERVICES, INC.
assess
resolve
strengthen