Cornell University
Environmental
Health and Safety

Greg Smith
395 Pine Tree Road, Suite 210
Ithaca, New York 14850
c. 607.229.0219
f. 607.255.8267
e. gjs25@cornell.edu
www.ehs.cornell.edu

MEMO

To: **Lauren Stulgis**
Dan Woodie

From: **Greg Smith**
Phil VanChieri
Blaine Harteis

Date: **February 13, 2020**

Subject: **JanFab – Upson Hall**

Overview

EHS conducted various site inspections and monitoring of different work activities during the time frame called JanFab within B70, B70E Upson Hall and 101 of Upson Automotive Lab. Attendees included Phil VanChieri, Greg Smith, and Blaine Harteis, EHS.

Program areas that were reviewed during the walkthrough included:

- General Housekeeping
- Slips, Trips, and Fall Hazards
- General Oil and Chemical Storage
- Container Labeling
- Emergency Preparedness
- Signage
- Monitoring

Results

The chemical monitoring for fiberglass/carbon fiber lay-up and painting, was conducted using AssayTechnology 525 TraceAir II Organic Vapor monitoring badge(s) with 25 organic solvent panel. Badges were placed within breathing zone of JanFab participants and the area of B70. The organic solvents that were found above non-detectable levels were Acetone, Methyl Ethyl Ketone, Methyl Isobutyl Ketone, Xylene, Ethyl Acetate, and Styrene. Styrene had the highest detectable level but was still below Occupational Health and Safety Administration(OSHA) permissible exposure level(PEL) when calculated time weighted average(TWA). The other detected chemicals were well below the PELs when the TWAs were calculated.

Total Dust monitoring was conducted for fiberglass sanding procedures and cutting of fiberglass panels/tubes. PVC PW 37mm cassettes with SKC pumps were placed within breathing zone of JanFab participants and area of B70. Results were well below OSHA's PEL for total dust.

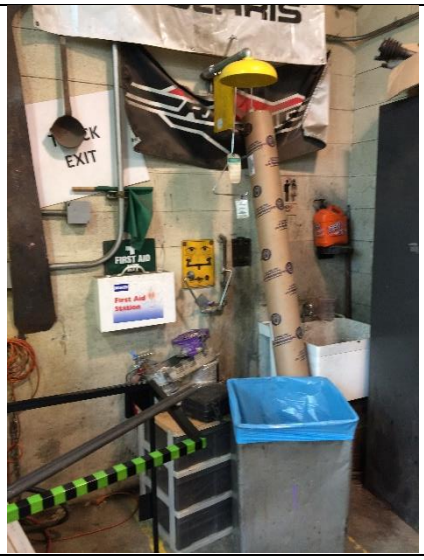
Even with the results of the monitoring below OSHA PELs, recommend continued use of N95 and/or ½ face respirators with organic vapor protection and N95s for particulates. Recommend performing the lay-up work within the paint booth area to allow for increased exhausting of odors.

The ventilation of the snorkel units were smoke tested to observe the draw of the unit(s). The result of the testing showed that the snorkels have a draw capability of approximately one foot in distance from cone beyond that distance the capture is minimum to none. Recommend increasing exhaust fan motor for the units or investigate alternative exhaust capturing devices.

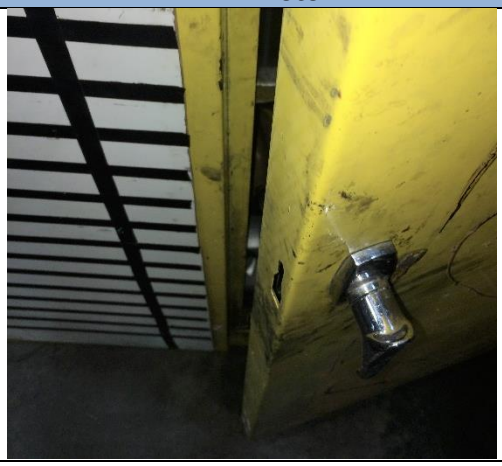
As a result of the various inspections conducted on January 13, 14, and 15, and 25th the following findings were identified for follow-up.

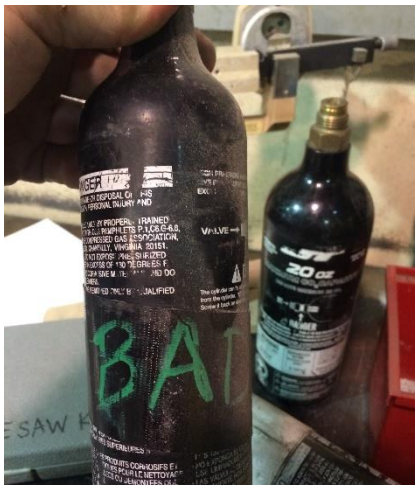
To see the full laboratory results, you can find them in the appendices section below.

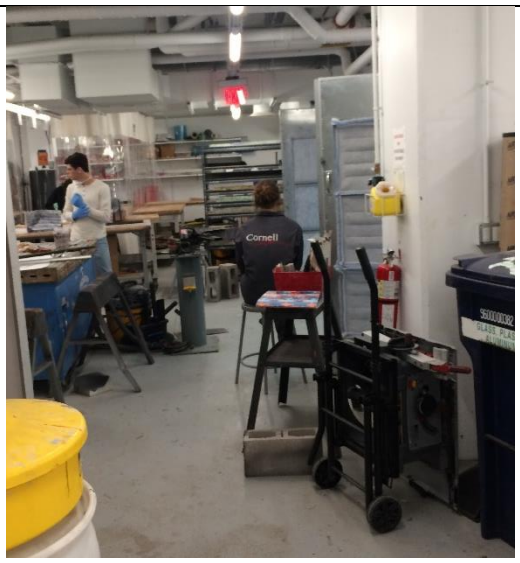
Finding	Photo	Requirement
Upson Hall – B70 – There are various containers/bins with previously used half-face respirators with cartridges attached.	 	Recommend removing and disposing of half-face respirators.
Upson Hall - B70E- bench top drill presses and floor stand vise are not bolted down.		**1910.212(b)** Anchoring fixed machinery. Machines designed for a fixed location shall be securely anchored to prevent walking or moving.

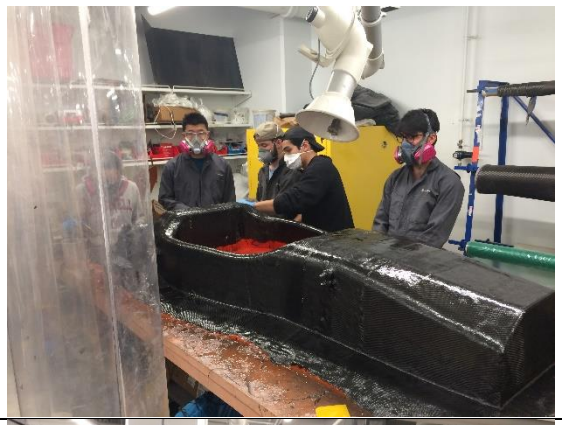
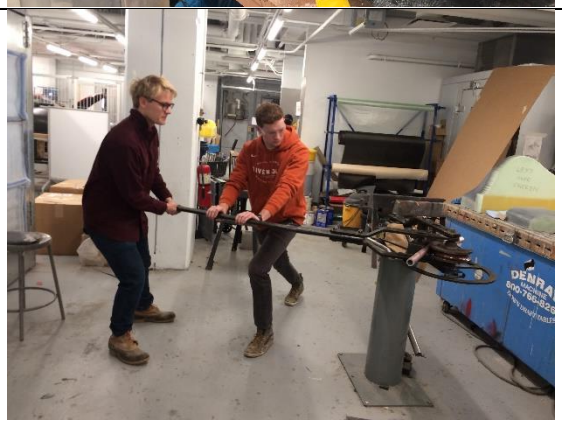
Finding	Photo	Requirement
		
Upson Automotive Lab – 101 – Emergency eyewash and shower blocked by various items.		**CU Lab Safety Manual – 5.5.1 Testing and Inspection of Emergency Eyewash and Showers –** The units need to be maintained so the unit is not obstructed. Recommend installing demarcating tape on the floor minimum of 3ft and/or signage on the wall to prevent items from being stored directly in front of the unit(s).
Upson Automotive Lab – 101 – There are multiple grinding units (not all grinders are pictured) that are missing work rests or the work rests and tongue guards are to far from the wheel.		**1910.215(a)(4)** Work rests shall be used to support the work. Work rests shall be kept adjusted closely to the wheel with a maximum opening of one-eighth inch to prevent the work from being jammed between the wheel and the rest, which may cause wheel breakage. **1910.215(b)(9)** The distance between the wheel periphery and the adjustable tongue or the end of the peripheral member at the top shall never exceed one-fourth inch.

Finding	Photo	Requirement
	  	
Upson Automotive Lab – 101 – The flammable cabinet does not securely close, latching handle has no closure assembly.	 	**1910.106(d)(3)(ii)(a)** Metal cabinets constructed in the following manner shall be deemed to be in compliance. The bottom, top, door, and sides of cabinet shall be at least No. 18 gage sheet iron and double walled with 1 1/2 - inch air space. Joints shall be riveted, welded or made tight by some equally effective means. The door shall be provided with a three-point lock, and the door sill shall be raised at least 2 inches above the bottom of the cabinet

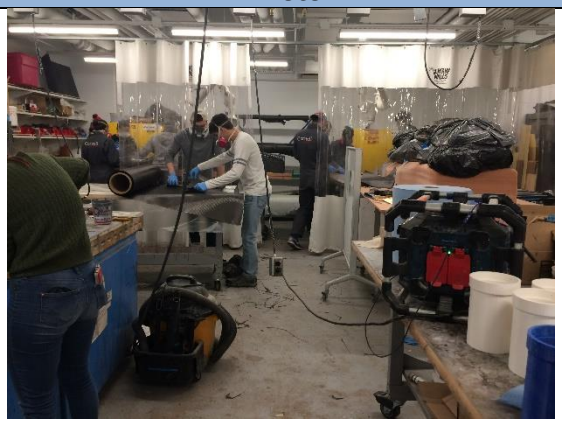
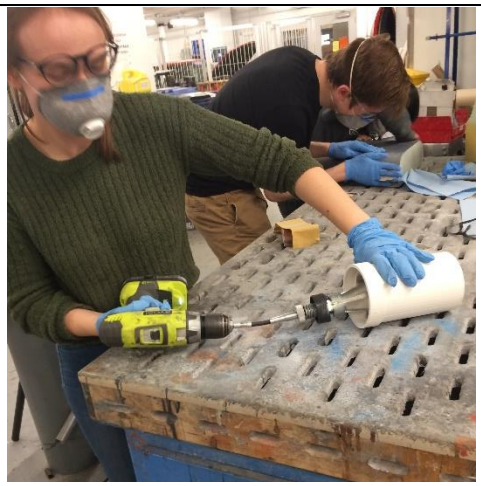
Finding	Photo	Requirement
		
Upson – B70 and Upson Automotive Lab – 101 – various chemical containers labels have faded or not labeled. Also liquids in containers do not coincide with contents.	 	**OSHA 1910.1200(f)(2)** Chemicals must be labeled. When a hazardous chemical or product is transferred from the original container, or the label becomes illegible or falls off, a new label with all the elements of the original manufacturers label must be affixed. **CU Lab Safety Manual – 7.8.2 Labeling requirements –** All chemical containers (both hazardous and non-hazardous) MUST be labeled. Chemical names must be written out in English. If a label is starting to fall off a chemical container or is becoming degraded, then the container needs to be relabeled (using tape, permanent marker, OSHA secondary labels, etc.) or the chemical needs to be transferred to another properly labeled container.

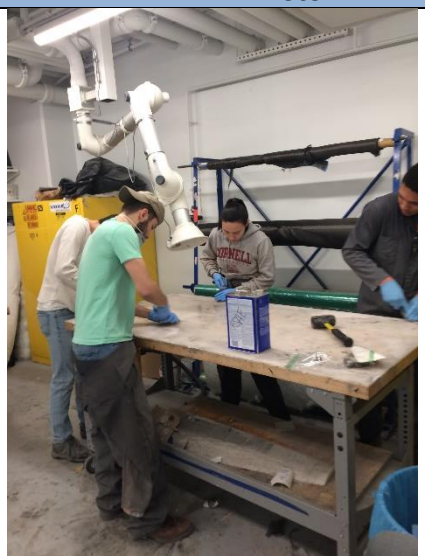
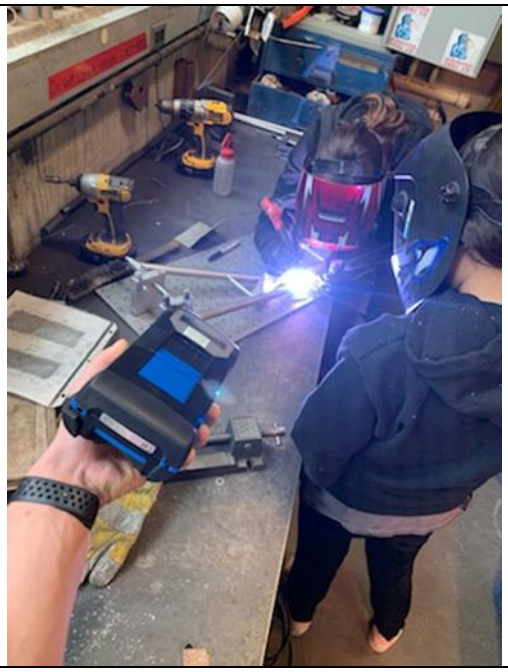
Finding	Photo	Requirement
	 	
Upson Automotive Lab – 101 – compressed air/gas cylinders past hydrotest date	 	**49 CFR 180.209 Requirements for [requalification](#) of specification cylinders.** **(a)** ***Periodic qualification of cylinders.*** Each specification cylinder that becomes due for periodic requalification, as specified in the following table, must be requalified and marked in conformance with the requirements of this subpart

Finding	Photo	Requirement
Upson Hall – B70 and Automotive Lab – 101 – inadequate vehicle battery storage.	 	Recommend batteries be stored in or on secondary containment in order to prevent any leakage of battery acid on to floor. Also recommend storing batteries on a lower shelf/floor level to prevent potential liquid spillage when removing. Contact R5 if batteries are be recycled.
Upson – B70 – maintaining egress		**1910.37(a)(3) egress general** Exit routes must be free and unobstructed. No materials or equipment may be placed, either permanently or temporarily, within the exit route. The exit access must not go through a room that can be locked, such as a bathroom, to reach an exit or exit discharge, nor may it lead into a dead-end corridor. Stairs or a ramp must be provided where the exit route is not substantially level.

Finding	Photo	Requirement
Upson Hall – B70 – Various activities that use chemical components/paints uniform PPE requirements are recommended to be established.	 	Recommend uniform PPE when preforming certain activities ie paint booth – coveralls/long sleeves, chemical cartridges, safety glasses/googles, nitrile gloves
Upson – B70 –. Students slipping when using the pipe bender. Pipe bender blocking a means of egress.		**OSHA 1910.37(a)(3) egress general** Exit routes must be free and unobstructed. No materials or equipment may be placed, either permanently or temporarily, within the exit route. The exit access must not go through a room that can be locked, such as a bathroom, to reach an exit or exit discharge, nor may it lead into a dead-end corridor. Stairs or a ramp must be provided where the exit route is not substantially level. Recommended slip resistant shoes when operating pipe bender or provide a rubber mat to ensure the students have proper traction. When the pipe bender is not in use, ensure that the extended piece of the

Finding	Photo	Requirement
		machine is removed to keep egress path clear
Upson Hall – B70 – Inadequate working surface, improper gloves, Awkward posture/improper ergonomics. Power cords pose a tripping hazard.	 	Recommended giving the miter saw a designated working surface that avoids students getting into awkward positions or that are ergonomically hazardous. Specifically, on a table that is at a comfortable height for the user. Cover the power cord or place them where students cannot trip over them. Position saw so the cuttings/dust is in the direction of the air flow within the paint booth.

Finding	Photo	Requirement
Upson – B70 – Power cords and vacuum are blocking a means of egress.		**OSHA 1910.22(a)(3)** Walking-working surfaces are maintained free of hazards such as sharp or protruding objects, loose boards, corrosion, leaks, spills, snow, and ice.
Upson – B70 – Tool use.		Recommend reviewing types tools for securing objects being worked on.

Finding	Photo	Requirement
Upson – B70 – Snorkels have minimum distance capture. Inadequate PPE while removing chemicals.		Recommend that students work as close to the snorkels as possible. When removing hardened resins and/or using chemical solvents to release hardened material wear the appropriate PPE such as gloves, eye protection, long sleeves.
Upson Automotive Lab – No local exhaust ventilation in the area to collect the hazardous fumes		Recommended that a local exhaust ventilation system be installed to collect welding fumes. Metered TIG welding for Nitrous fumes and Ozone. Each contaminant was tested three times each reading was below detectable levels.

Finding	Photo	Requirement
Upson – B70 – Exposed wiring		**OSHA 1910.334(a)(2)(ii)** If there is a defect or evidence of damage that might expose an employee to injury, the defective or damaged item shall be removed from service, and no employee may use it until repairs and tests necessary to render the equipment safe have been made.
General findings: **Injuries:** Report any injuries sustained using the online form found at the following link - https://rmps-prod.hosting.cornell.edu/accinj/		

Results from 1/13/20 (Paint booth)
Table. 1

Chemical	Time sampled (minutes)	Results (PPM)	OSHA 8hr-PEL (PPM)	Over/Under OSHA PEL
Acetone	40	.475	1,000	Under
Ethylacetate	40	.575	400	Under
Methylethyl Ketone	40	.610	200	Under
Styrene	40	.492	100	Under

Results from 1/14/20 area sample (Fiber glass lay-up)
Table. 2

Chemical	Time sampled (minutes)	Results (PPM)	OSHA 8hr-PEL (PPM)	Over/Under OSHA PEL
Acetone	159	.109	1,000	Under
Methylethyl Ketone	159	.013	200	Under
Styrene	159	.993	100	Under

Results from 1/14/20 student sample (Fiber glass lay-up)
Table. 3

Chemical	Time sampled (minutes)	Results (PPM)	OSHA 8hr-PEL (PPM)	Over/Under OSHA PEL
Acetone	165	11.34	1,000	Under
Methylethyl Ketone	165	.180	200	Under
Methyl Isobutyl Ketone	165	.031	100	Under
Styrene	165	44.7	100	Under
Xylenes	165	.009	150	Under

Results from 1/14/20 student #2 sample (Fiber glass lay-up)
Table. 4

Chemical	Time sampled (minutes)	Results (PPM)	OSHA 8hr-PEL (PPM)	Over/Under OSHA PEL
Acetone	160	12.3	1,000	Under
Methylethyl Ketone	160	.130	200	Under
Methyl Methacrylate	160	.013	100	Under
Styrene	160	33.3	100	Under

Results from 1/14/20 Total Dust Sample
Table. 5

Sample	Air Volume (Liter)	Total (mg)	Concentration (mg/m3)
1 - Sanding	120	<0.050	<0.42
2 - Sanding	120	<0.050	<.042
3 - Sanding	120	<0.050	<0.42
4 – Saw cutting	12	<0.050	<0.42

Results from 1/25/20 Student #1 Vinyl Ester-Resin Sample
Table. 6

Chemical	Time sampled (minutes)	Results (PPM)	OSHA 8hr-PEL (PPM)	Over/Under OSHA PEL
Acetone	65	.80	1,000	Under
Methylethyl Ketone	65	.150	200	Under
Styrene	65	21.6	100	Under

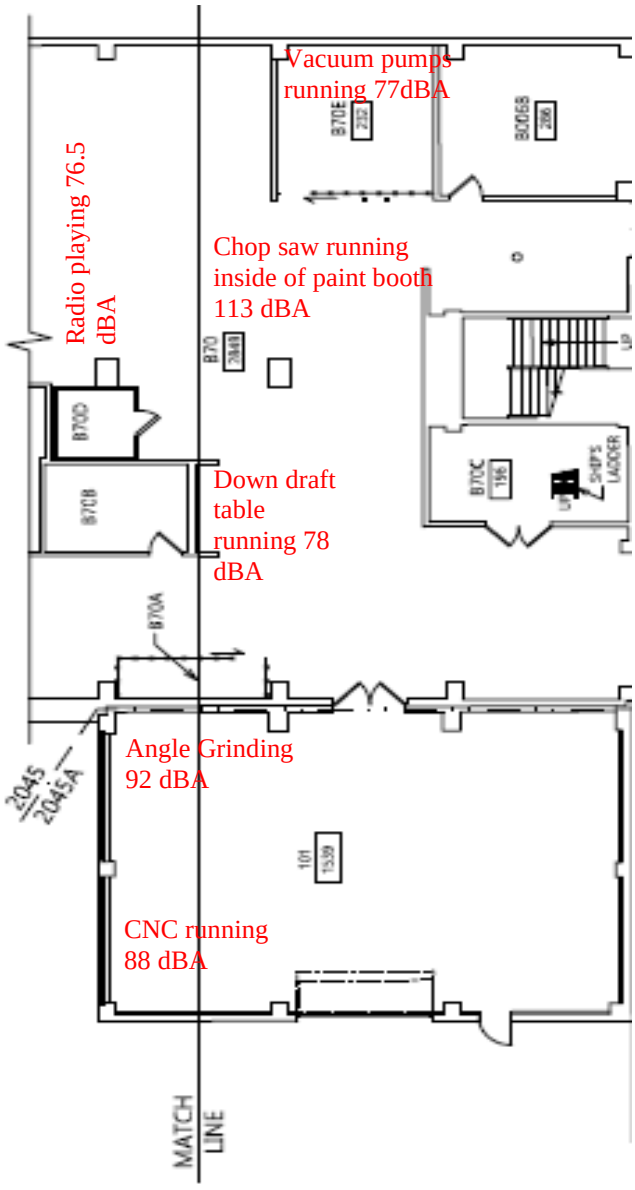
Results from 1/25/20 Student #2 Vinyl Ester-Resin Sample
Table 7.

Chemical	Time sampled (minutes)	Results (PPM)	OSHA 8hr-PEL (PPM)	Over/Under OSHA PEL
Acetone	65	.30	1,000	Under
Methylethyl Ketone	65	.030	200	Under
Styrene	65	5.55	100	Under

Results from 1/25/20 Area Sample Vinyl Ester-Resin Sample
Table. 8

Chemical	Time sampled (minutes)	Results (PPM)	OSHA 8hr-PEL (PPM)	Over/Under OSHA PEL
Acetone	60	.312	1,000	Under
Styrene	60	2	100	Under

Noise Results from 1/14/20



Results with no equipment running were between 70-72 dBA. Room B70 experienced levels between 95-97 dBA with the chop saw running inside of the paint booth.

Hearing protection recommendations

Hearing protection becomes required when noise levels meet or exceed 85dBA.

Ear Plugs			Description	Grainger Part Number
3M E-A-R Push-Ins with Grip Rings	30		• oft, flexible foam conforms to the unique shape of each ear for comfortable noise reduction • Grip rings gently seal ear canal to enhance fit. • Soft polyurethane foam tips • Flexible stem makes insertion and removal easy and helps keep the tips clean when the wearer's hands are dirty	1VJY3(w/o Cord) 1VJY4(w Cord)
3M E-A-Rsoft Yellow Neons	33		• Soft, pliable foam offers comfort for wearing over an extended time • Low-pressure foam makes plugs less noticeable • Earplugs are easy to roll down for quick and easy insertions	3NZF4 (200 ct.)

Ear Muff	NRR		Replacement Parts	Description	Grainger Part Number
3M Peltor X5A	31		Hygiene Kit HYX5 	• Highest NRR (31 dB) for an earmuff on the market which makes them ideal for very high noise situations. • Newly designed spacers, specially formulated earcup liners and innovative foam contained in the cushions. • Earcup pivot points tilt for optimum comfort and efficiency.	21DE18 Hygiene Kit 21DE28

Appendices

Appendix A. Laboratory results from 1/13/20 and 1/14/20.

sample results 1_13 and 1_14_2020 for fi

Appendix B. Laboratory Total Dust results from 1/14/20.

dust monitoring results from 1_14_2C

Appendix C. Laboratory Vinyl Ester-Resin Results from 1/25/20

2020010687_AIR_1.pdf