

Agenda – January 25, 2016
Group 9 Health and Safety Committee (College of Engineering)

1. Attending

Fiona Spencer, AA
Colleen Irvin, BioE
Sean Yeung, CEE
Karen Liebert, EE
Morgan Tubby, HCDE
Sheila Prusa, ISE

Bill Kuykendall, ME
Chris Adams, MoES
Sonia Honeydew, DO
Phil Numoto, EH/S
Arne Biermans, ChemE
Tracy Erbeck, CSE

2. Absent

Tatyana Galenko, MSE
Emma Alder, EH/S

Michael Glidden, DO

3. Group Business

- Welcome new members; introductions
- EH&S required Safety Committee Member Training (next 1/28 9am – register)
- 2016-2017 meeting schedule and location
- Elect Group 9 Chair, Vice-Chair, UW-wide reps
- UW Safety, Sustainability, and Preparedness Expo on Feb 10 from 10-2 (RSVP)
- Husky Ready inquiry
- Group 9 Evacuation
- Stacie Smith (UWEM Seismic Resilience Mgr) in July/Aug? Great Shakeout in Oct?

4. Previous Meeting Minutes

- November 2015 – approve?
- (no meeting in December)

5. Department Incident Reports

- BIOE – contractor spilled chemical (July)
- CEE – acidic reagent splash in eye (Nov)
- BIOE – shaker bottle spill (Nov)
- BIOE – pipette tip cut thumb (Nov)
- BIOE – exposure to resin from 3D printer (Dec)
- CEE – lid of pressurized vessel popped off (Dec)

6. UW-Wide Meeting

- November notes attached
 - Construction Safety Presentation
 - Evacuation Drill Subcommittee Report
 - Group Reports
 - EH&S Report (including description of PEAT team)
- December agenda attached
- (no meeting in January)

7. Department Updates

8. Next Meeting

- February 29th at 2pm, in CSE 128?

DRAFT Meeting Minutes

Health and Safety Committee for Group 9 (College of Engineering)

Meeting Date: November 30, 2015

Attended

Fiona Spencer, AA

Colleen Irvin, BioE

J. Sean Yeung, CEE

Heidi Dlubac for Tracy Erbeck, CSE

Sonia Honeydew, DO

Cassie Atkinson-Edwards, HCDE

Sheila Prusa, ISE

Bill Kuykendall, ME

Chris Adams, MoIES

Tatyana Galenko, MSE

Absent

Arne Biermans, ChemE

Emma Alder, EH&S

Michael Glidden, DO

John Young, EE

Previous Meeting Minutes

- October 2015 – approved as is

Incident Reports

- BIOE – contractor spilled chemical (July): will discuss in December
- AA – glue in eye: PI in new space. Phil Numoto of EH&S is requiring safety documentation and training before lab work can commence.
- CEE – natural gas smell: unknown cause

UW-Wide Meeting

- November meeting minutes attached
 - Construction Safety talk included description of four procurement methods, efforts to improve safety culture.
 - Evacuation Drill Subcommittee Update: Provost presented with recommendations; subcommittee's work complete, though interest is high to ensure follow-up.
 - EH&S report included description of PEAT team and the new RATS team (the post-quake research animal care team)

DRAFT Meeting Minutes

Health and Safety Committee for Group 9 (College of Engineering)

- December agenda attached
 - Stuart Cordts retiring end of Feb. EH&S recruiting for his position, “Accident Reporting Administrator”.
 - Lots of construction on campus right now, but biggest disruption is the Burke Gilman trail (next section is towards Ponderay)
 - Campus Security Advisory meeting: high volume of requests for active campus shooter training. Will respond to those, then reach out to other depts. To make this more regular rather than ad hoc. Talking about how to put into EEOPs. A new version of “Run, Fight, Hide” film will be made with a UW-specific intro and conclusion.
 - Evac Drill Subcomm Rpt to Provost next week. Comments? EH&S will take on centrally scheduling all evacuation drills. Hope to utilize Building Coordinators in a different way. Graduate Students in GPSS also recommending 2-5 minute evacuation review at beginning of each course.
 - EH&S Board met yesterday for first time since May. Mark Murray’s presentation on Evac Drill Subcomm recommendations were well received. Risk Management gave workers comp presentation. Emma talked about OARS and root cause analysis. Jude presented on prioritizing EH&S services and risks.
 - EOC now offering free seismic mitigation walk-thrus to give improvement ideas, and offer reduced prices for straps, etc for seismic resilience. Stacie Smith hired – new concierge of earthquake issues. UW Alert list will be scrubbed in January (membership is for life unless you opt out – they’re checking for people who have left UW).

Group Business

- Husky Ready (BARC) presentation by Scott Preston of EOC.
- EOC visit (field trip).

Department Updates

- N/A

Next Meeting

- December 28th at 2pm, CSE 128



University of Washington Accident / Incident Report

Report Number: 2015-07-040

Contact EH&S at 206-543-7262

Person Reporting Incident

Last Name: EDMARK	First Name: RICHARD
Phone: +1 206 685-3581	Email: edmarkr@uw.edu
Occupation/Position: RESEARCH SCIENTIST	Department: BIOENGINEERING
Date Reported (yyyy/mm/dd): 2015/07/15	Time of Reporting: 02:23 PM

Person Involved or Affected

Last Name: [REDACTED]	First Name: [REDACTED]
Phone:	Email:
Occupation/Position: Contractor	Department:

Incident Details

Date of Incident (yyyy/mm/dd): 2015/07/15	Time of Incident: 10:30 AM	When Shift Begins: N/A
Campus: Seattle	Incident Location/Parking Lot: W.H. FOEGE BIOENG	
Room: N409C	Other:	

Incident Details:

Installation contractor accidentally spilled 10 ml of 4:1 DMF/Piperidine on floor. Liquid was wiped up with paper towels and placed in fume hood to evaporate. All personnel left the lab because of residual odor. The odor disappeared after 20 min. EH&S Chemical Response was contacted for advice. They recommended the action performed followed by cleaning the area with 1% Liquinox and rinsing then drying. The wax coating on the floor was removed due to the type of chemicals. The paper towels will be thrown in the trash after all solvent has evaporated. The PI was informed after remediation of the spill.

Attachment: **No**

Supervisor

Last Name: EDMARK	First Name: RICHARD
Phone: +1 206 685-3581	Email: edmarkr@uw.edu
Occupation/Position: RESEARCH SCIENTIST	Department: BIOENGINEERING

Classification

Level 1:
Property damage only,
Injury or Exposure, no first aid required,

Type of Incident

Injury Description: **None,**

Body Parts Affected: **None,**

Cause of Injury or Damage: **Chemicals,**

Possible Causes

Equipment: **Other,**

Environment:

Policies / Procedures:

Human Factors: **Inattention,**

Suggested corrective action by the affected party			
Supervisor's Comments			
Root Causes: (Please look at all the factors that may have contributed to the accident. Such factors may include equipment, environment, policies, procedures, and personnel.) Contractor is an instrument installation expert and not a laboratory chemist who routinely handles chemicals on a daily basis. Space around the newly installed instrument was limited due to all the materials needed for assembling it.			
Recommendations/Preventive Measures: Advise future instrument installation contractors about safety handling chemicals. A general lab safety orientation was performed prior to work being started.			
Corrective Actions Target Date (yyyy/mm/dd): 2015/07/15		Corrective Actions Complete Date (yyyy/mm/dd): 2015/07/16	
Other Comments:			
EHS Review			
Last Name:	First Name:	Phone Number:	Email:
Occupation/Position:		Department:	
Comments:			

Accident Summary Report

HSC 9

11/1/2015 to 11/30/2015

<i>Case#</i>	<i>Org Name</i>	<i>Job Title</i>	<i>Date Reported</i>	<i>Employee Activity</i>	<i>Supervisor Corrective Action</i>
2015-11-022	CIVIL & ENVIR ENGR	STUDENT ASSISTANT	11/6/2015	<p>My name is [REDACTED]. I am a student researcher with the Winkler lab, SID# [REDACTED]. I work in Ben Hall Interdisciplinary Research building, researching some very cool ammonia oxidizing archaea and bacteria. I had time between my biology class and the o chem midterm, and decided to run into work so I could make a nitrite reagent that I use to see if my bacteria are growing. The reagent has phosphoric acid, sulfanilamide, and N-ethylenediamine dichloride amongst other things. I made the reagent, but it was already 2:00 (midterm was at 2:30) and I was rushing to clean up. I dropped a beaker, tried to catch it, and spilled the acidic reagent, and some splashed into my right eye, as I was unwisely not wearing goggles. Consequently, I had to sit under the eyewash for 2 periods of 15 minutes to be safe, and clean up the glass and spilled reagent with baking soda, with help from members of the Lidstrom lab next door to ours. I also had to go to hall health for a check up to make sure my eye is ok. The doctor did some tests and verified my eye was ok.</p>	Take a class on Managing Laboratory Chemicals

<i>Case#</i>	<i>Org Name</i>	<i>Job Title</i>	<i>Date Reported</i>	<i>Employee Activity</i>	<i>Supervisor Corrective Action</i>
2015-11-033	BIOENGINEERING		11/10/2015	<p>A 20-ml glass scintillation bottle containing 1000mg of PLGA dissolved in 5 mL of HFIP was thrown from the rotational shaker in which it was placed ~2 minutes prior and shattered on the floor. The owner of the bottle was [REDACTED] [REDACTED] was wearing nitrile gloves and a lab coat at the time of the incident, as well as long pants and close-toed shoes. So were the [REDACTED] and [REDACTED] the other people in the room at the time of the incident. [REDACTED] put on a respirator and isolated the spill using diking material. [REDACTED] called [REDACTED], the lab manager, to assist with the clean up, then she and [REDACTED] left the room as they did not have respirators. When [REDACTED] arrived, he donned PPE: a lab coat, nitrile gloves, chemical resistant gloves, and a respirator with organic vapor cartridges. He sealed the doors to the lab and ventilated the room by opening the sash of the fume hood adjacent to the spill. Absorbent/neutralizer powder was applied over the spill and allowed to sit for ~5 minutes. [REDACTED] donned a respirator with organic vapor cartridges and swept the room with a broom searching for more glass and HFIP that had not been found. No more was found. The powder was collected with a hand broom and pan, then disposed of in a double-bagged hazardous waste disposal bag. The sealed bag and its contents were left in the fume hood along with the gloves used during cleanup and the cartridges used in the respirators so that that residual HFIP would be contained and would be carried out by the ventilated hood. Cartridges in the respirators were replaced to be ready for immediate use, should the need arise in the future. After completion of the clean up individuals were allowed back in the room and asked if they smelled the distinctive odor of HFIP. None were able to detect the odor and normal lab use continued. An SOP will be written that all organic solvent based samples on stirrers or rotational shakers must be kept in the fume hood to prevent future spills like this. Dr. Woodrow has been notified about the incident and a hazardous waste pick up has been scheduled for the double-bagged waste.</p>	The practice of placing organic solutions being mixed in the fume hood has been verbally shared with several lab members and an SOP will be written followed by group training.
2015-11-069	BIOENGINEERING	RESEARCH SCIENTIST	11/23/2015	<p>[REDACTED] was inserting a 10 ml plastic serological pipette into a pipette aid to be used for transferring cell media. The tip of the pipette broke and the jagged end contacted the right thumb of his double-gloved hand. Neither glove was punctured. After removing both gloves he noticed a small amount of blood and proceeded to treat the minor laceration. He washed the area with warm soapy water, rubbed it with an alcohol pad and applied a small bandage. He then contacted Rick Edmark and reviewed what happened.</p>	Be aware of possibility of pipette breakage and use due caution when inserting into pipette aid.



University of Washington Accident / Incident Report

Report Number: 2015-11-022

Contact EH&S at 206-543-7262

Person Reporting Incident

Last Name: [REDACTED]	First Name: [REDACTED]
Phone: [REDACTED]	Email: injury@u.washington.edu
Occupation/Position: STUDENT ASSISTANT	Department: OFFICE OF RESEARCH
Date Reported (yyyy/mm/dd): 2015/11/06	Time of Reporting: 01:36 PM

Person Involved or Affected

Last Name: [REDACTED]	First Name: [REDACTED]
Phone: [REDACTED]	Email: injury@u.washington.edu
Occupation/Position: STUDENT ASSISTANT	Department: CIVIL & ENVIR ENGR

Incident Details

Date of Incident (yyyy/mm/dd): 2015/10/28	Time of Incident: 2:00 PM	When Shift Begins: N/A
Campus: Seattle	Incident Location/Parking Lot:	
Room:	Other: Benjamin Hall Interdisciplinary Research Building	

Incident Details:

My name is [REDACTED]. I am a student researcher with the Winkler lab, SID# [REDACTED]. I work in Ben Hall Interdisciplinary Research building, researching some very cool ammonia oxidizing archaea and bacteria. I had time between my biology class and the o chem midterm, and decided to run into work so I could make a nitrite reagent that I use to see if my bacteria are growing. The reagent has phosphoric acid, sulfanilamide, and N-ethylenediamine dichloride amongst other things. I made the reagent, but it was already 2:00 (midterm was at 2:30) and I was rushing to clean up. I dropped a beaker, tried to catch it, and spilled the acidic reagent, and some splashed into my right eye, as I was unwisely not wearing goggles. Consequently, I had to sit under the eyewash for 2 periods of 15 minutes to be safe, and clean up the glass and spilled reagent with baking soda, with help from members of the Lidstrom lab next door to ours. I also had to go to hall health for a check up to make sure my eye is ok. The doctor did some tests and verified my eye was ok.

Attachment: No

Supervisor

Last Name: WINKLER	First Name: MARIKAROLIINA
Phone: 2067479363	Email: mwinkler@uw.edu
Occupation/Position: ASST PROFESSOR	Department: CIVIL & ENVIR ENGR

Classification

Level 1:
Injury requiring first aid,

Type of Incident

Injury Description: Burn (Thermal, Chemical, Electrical),

Body Parts Affected: Eyes,

Cause of Injury or Damage: Chemicals, Splash,

Possible Causes

Equipment: No Guards/Barriers,

Environment: Chemicals,

Policies / Procedures: Failure to Follow Procedures,			
Human Factors: Inadequate, Improper PPE,			
Suggested corrective action by the affected party			
Supervisor's Comments			
<p>Root Causes: (Please look at all the factors that may have contributed to the accident. Such factors may include equipment, environment, policies, procedures, and personnel.) Student was not paying attention on proper lab practice. She was in a rush and did not follow all necessary safety procedures.</p>			
<p>Recommendations/Preventive Measures: Take a class on Managing Laboratory Chemicals</p>			
Corrective Actions Target Date (yyyy/mm/dd): 2015/12/04		Corrective Actions Complete Date (yyyy/mm/dd): 2015/12/07	
<p>Other Comments: Student took class The class covers chemical hazards, protective measures, chemical storage, safety data sheets, hazardous waste disposal, and chemical spill prevention and response in laboratories. The class includes the unique hazards and specific emergency response procedures for work with hydrofluoric acid. The class partially fulfills federal and state chemical safety and hazardous waste training requirements and must be supplemented with laboratory-specific training on chemical hazards and waste management. Intended Audience: UW faculty, staff, and students who work in laboratories where hazardous chemicals are present</p>			
EHS Review			
Last Name:	First Name:	Phone Number:	Email:
Occupation/Position:		Department:	
Comments:			



University of Washington Accident / Incident Report

Report Number: 2015-11-033

Contact EH&S at 206-543-7262

Person Reporting Incident

Last Name: EDMARK	First Name: RICHARD
Phone: +1 206 685-3581	Email: edmarkr@uw.edu
Occupation/Position: RESEARCH SCIENTIST	Department: BIOENGINEERING
Date Reported (yyyy/mm/dd): 2015/11/10	Time of Reporting: 10:56 AM

Person Involved or Affected

Last Name: [REDACTED]	First Name: [REDACTED]
Phone:	Email:
Occupation/Position: Volunteer	Department:
Person was in Paid Position: No	

Incident Details

Date of Incident (yyyy/mm/dd): 2015/11/10	Time of Incident: 10:30 AM	When Shift Begins: N/A
Campus: Seattle	Incident Location/Parking Lot: W.H. FOEGE BIOENG	
Room: N551B	Other:	

Incident Details:

A 20-ml glass scintillation bottle containing 1000mg of PLGA dissolved in 5 mL of HFIP was thrown from the rotational shaker in which it was placed ~2 minutes prior and shattered on the floor. The owner of the bottle was [REDACTED]. [REDACTED] was wearing nitrile gloves and a lab coat at the time of the incident, as well as long pants and close-toed shoes. So were the [REDACTED] and [REDACTED] the other people in the room at the time of the incident. [REDACTED] put on a respirator and isolated the spill using diking material. [REDACTED] called [REDACTED] the lab manager, to assist with the clean up, then she and [REDACTED] left the room as they did not have respirators. When [REDACTED] arrived, he donned PPE: a lab coat, nitrile gloves, chemical resistant gloves, and a respirator with organic vapor cartridges. He sealed the doors to the lab and ventilated the room by opening the sash of the fume hood adjacent to the spill. Absorbent/neutralizer powder was applied over the spill and allowed to sit for ~5 minutes. [REDACTED] donned a respirator with organic vapor cartridges and swept the room with a broom searching for more glass and HFIP that had not been found. No more was found. The powder was collected with a hand broom and pan, then disposed of in a double-bagged hazardous waste disposal bag. The sealed bag and its contents were left in the fume hood along with the gloves used during cleanup and the cartridges used in the respirators so that that residual HFIP would be contained and would be carried out by the ventilated hood. Cartridges in the respirators were replaced to be ready for immediate use, should the need arise in the future. After completion of the clean up individuals were allowed back in the room and asked if they smelled the distinctive odor of HFIP. None were able to detect the odor and normal lab use continued. An SOP will be written that all organic solvent based samples on stirrers or rotational shakers must be kept in the fume hood to prevent future spills like this. Dr. Woodrow has been notified about the incident and a hazardous waste pick up has been scheduled for the double-bagged waste.

Attachment: **Yes**

Supervisor

Last Name: EDMARK	First Name: RICHARD
Phone: +1 206 685-3581	Email: edmarkr@uw.edu
Occupation/Position: RESEARCH SCIENTIST	Department: BIOENGINEERING

Classification

Level 1:
 Property damage only,
 Injury or Exposure, no first aid required,

Type of Incident

Injury Description: **Property Damage Only,**

Body Parts Affected: **None,**

Cause of Injury or Damage: **None,**

Possible Causes

Equipment: **Inadequate Guards/Barriers,**

Environment:

Policies / Procedures: **Appropriate Procedures Non-existent,**

Human Factors: **Inadequate Training,**

Suggested corrective action by the affected party

A SOP will be written to specify all organic solvent based solutions on stirrers or rotating mixers are kept in the fume hood and all samples on rotating mixers are additionally secured with tape.

Supervisor's Comments

Root Causes:
(Please look at all the factors that may have contributed to the accident. Such factors may include equipment, environment, policies, procedures, and personnel.)
The securing clips on the rotating mixers typically hold samples securely for indefinite amounts of time. Occasionally the clips allow a sample vial to move and be released. Securing vials with additional tape will prevent the accidental release of a bottle.

Recommendations/Preventive Measures:
The practice of placing organic solutions being mixed in the fume hood has been verbally shared with several lab members and an SOP will be written followed by group training.

Corrective Actions Target Date (yyyy/mm/dd): 2015/11/13	Corrective Actions Complete Date (yyyy/mm/dd): 2015/11/13
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Other Comments:
SOP has been written and lab will be trained at Friday's group meeting. Lab has been trained on new SOP.

EHS Review

Last Name:	First Name:	Phone Number:	Email:
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Occupation/Position:	Department:
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Comments:



University of Washington Accident / Incident Report

Report Number: 2015-11-069

Contact EH&S at 206-543-7262

Person Reporting Incident

Last Name: EDMARK	First Name: RICHARD
Phone: +1 206 685-3581	Email: edmarkr@uw.edu
Occupation/Position: RESEARCH SCIENTIST	Department: BIOENGINEERING
Date Reported (yyyy/mm/dd): 2015/11/23	Time of Reporting: 11:58 AM

Person Involved or Affected

Last Name: [REDACTED]	First Name: [REDACTED]
Phone: +1 [REDACTED]	Email: [REDACTED]
Occupation/Position: RESEARCH SCIENTIST	Department: BIOENGINEERING

Incident Details

Date of Incident (yyyy/mm/dd): 2015/11/23	Time of Incident: 11:30 AM	When Shift Begins: N/A
Campus: Seattle	Incident Location/Parking Lot: W.H. FOEGE BIOENG	
Room: N409D	Other:	

Incident Details:

[REDACTED] was inserting a 10 ml plastic serological pipette into a pipette aid to be used for transferring cell media. The tip of the pipette broke and the jagged end contacted the right thumb of his double-gloved hand. Neither glove was punctured. After removing both gloves he noticed a small amount of blood and proceeded to treat the minor laceration. He washed the area with warm soapy water, rubbed it with an alcohol pad and applied a small bandage. He then contacted Rick Edmark and reviewed what happened.

Attachment: No

Supervisor

Last Name: EDMARK	First Name: RICHARD
Phone: +1 206 685-3581	Email: edmarkr@uw.edu
Occupation/Position: RESEARCH SCIENTIST	Department: BIOENGINEERING

Classification

Level 1:
Injury requiring first aid,

Type of Incident

Injury Description: **Cut, Laceration, Puncture, Scratch, Abrasion (Open Wound),**

Body Parts Affected: **Fingers,**

Cause of Injury or Damage: **Broken Glass, Splinter, Sharp Furniture Edge, etc.,**

Possible Causes

Equipment: **Defective Material,**

Environment:

Policies / Procedures:

Human Factors:

Suggested corrective action by the affected party

Made aware of possibility that pipettes may break when being inserted into pipette aids and use caution.

Supervisor's Comments

Root Causes:

(Please look at all the factors that may have contributed to the accident. Such factors may include equipment, environment, policies, procedures, and personnel.)

Individual has used this type equipment many times over the years and has never experienced this situation with a pipette breaking. It is believed that the pipette may have been defective with a hair-line crack that caused the tip to break off during normal use.

Recommendations/Preventive Measures:

Be aware of possibility of pipette breakage and use due caution when inserting into pipette aid.

Corrective Actions Target Date (yyyy/mm/dd):
2015/12/04

Corrective Actions Complete Date (yyyy/mm/dd):

Other Comments:

At the next regularly scheduled lab meeting on Friday, December 4 the lab will be made aware of the possibility of pipette breakage during insertion into pipette aids and to use caution.

EHS Review

Last Name:

First Name:

Phone Number:

Email:

Occupation/Position:

Department:

Comments:

Accident Summary Report

HSC 9

12/1/2015 to 12/31/2015

<i>Case#</i>	<i>Org Name</i>	<i>Job Title</i>	<i>Date Reported</i>	<i>Employee Activity</i>	<i>Supervisor Corrective Action</i>
2015-12-028	BIOENGINEERING		12/9/2015	<p>Dear EH&S staff,</p> <p>We would like to report an incident related to exposure of the hands and forearm to a certain photolabile chemical ("photoresin" or "resin") that we use for 3D-printing. The 3D-printer is completely covered by a plastic curtain and its top is connected to exhaust (the same exhaust that has been used for other chemicals before), inside our clean room (Foegel N-423G). This resin is a mixture of poly-ethylene glycol-diacrylate (MW ~ 258) (PEG-DA-258) mixed with the photoinitiator 0.4% wt. Irgacure 819. The harmed students followed the safety data sheet instructions for both compounds, yet the exposure appear to have happened through the protective barriers (nitrile gloves) worn by the operators (graduate student and postdoc). The exposure on the forearm can be explained by the presence of condensation droplets of resin on the inside of the plastic curtain that covers the 3D-printer that, upon reaching, accidentally ended up on and seeped through the clean room garment. Condensation occurred because the 3D-printer was being operated by a projector with a lamp that generated heat. The students reported that the exposure led to a mild burning sensation that over time developed into skin rashes, itching and swelling. They did not seek medical treatment.</p> <p>At first, the students didn't think the exposure was serious, so the P.I. was only informed of the severity of the exposure well after the rashes had started healing. The safety data sheet of the individual chemicals indicate that nitrile gloves are sufficient to provide adequate protection against exposure to these chemicals. However, we have now learned that the mixture solution could go through the gloves over time and can create severe burns when exposed to light by light-assisted creation of free radicals. We would like to seek EH&S' guidance to see if all the following corrective measures are the appropriate ones.</p>	<p>We have taken the following corrective measures after evaluating the risks associated with this particular chemical:</p> <ol style="list-style-type: none">1) The lamp-based projector has been substituted by a (cold) LED-based projector that does not generate any more condensation issues2) The operator(s) must wear double gloves when working with this chemical3) If there is any suspicion that the gloves or garment have contacted the resin solution, the operator must thoroughly rinse the hands or other suspected body parts with water (the resin is water-soluble)4) The clean-room coats worn by the operators are laundered if they get exposed to resin.5) Any spills or leaks of the chemical on the bench are immediately wiped off with paper towel, which is disposed off into a closed chemical waste bin.6) A proper PPE will be provided.

<i>Case#</i>	<i>Org Name</i>	<i>Job Title</i>	<i>Date Reported</i>	<i>Employee Activity</i>	<i>Supervisor Corrective Action</i>
2015-12-028- A	BIOENGINEERING		12/10/2015	<p>Dear EH&S staff,</p> <p>We would like to report an incident related to exposure of the hands and forearm to a certain photolabile chemical ("photoresin" or "resin") that we use for 3D-printing. The 3D-printer is completely covered by a plastic curtain and its top is connected to exhaust (the same exhaust that has been used for other chemicals before), inside our clean room (Foegel N-423G). This resin is a mixture of poly-ethylene glycol-diacrylate (MW ~ 258) (PEG-DA-258) mixed with the photoinitiator 0.4% wt. Irgacure 819. The harmed students followed the safety data sheet instructions for both compounds, yet the exposure appear to have happened through the protective barriers (nitrile gloves) worn by the operators (graduate student and postdoc). The exposure on the forearm can be explained by the presence of condensation droplets of resin on the inside of the plastic curtain that covers the 3D-printer that, upon reaching, accidentally ended up on and seeped through the clean room garment. Condensation occurred because the 3D-printer was being operated by a projector with a lamp that generated heat. The students reported that the exposure led to a mild burning sensation that over time developed into skin rashes, itching and swelling. They did not seek medical treatment.</p> <p>At first, the students didn't think the exposure was serious, so the P.I. was only informed of the severity of the exposure well after the rashes had started healing. The safety data sheet of the individual chemicals indicate that nitrile gloves are sufficient to provide adequate protection against exposure to these chemicals. However, we have now learned that the mixture solution could go through the gloves over time and can create severe burns when exposed to light by light-assisted creation of free radicals. We would like to seek EH&S' guidance to see if all the following corrective measures are the appropriate ones.</p>	<p>We have taken the following corrective measures after evaluating the risks associated with this particular chemical:</p> <ol style="list-style-type: none"> 1) The lamp-based projector has been substituted by a (cold) LED-based projector that does not generate any more condensation issues 2) The operator(s) must wear double gloves when working with this chemical 3) If there is any suspicion that the gloves or garment have contacted the resin solution, the operator must thoroughly rinse the hands or other suspected body parts with water (the resin is water-soluble) 4) The clean-room coats worn by the operators are laundered if they get exposed to resin. 5) Any spills or leaks of the chemical on the bench are immediately wiped off with paper towel, which is disposed off into a closed chemical waste bin. 6) A proper PPE will be provided.

<i>Case#</i>	<i>Org Name</i>	<i>Job Title</i>	<i>Date Reported</i>	<i>Employee Activity</i>	<i>Supervisor Corrective Action</i>
2015-12-047	CIVIL & ENVIR ENGR		12/16/2015	<p>Lid of pressurized vessel popped off. This is part of a photoreactor system. The student was hit by the lid and suffered a bloody lip.</p> <p>The vessel was overpressured, and the 4 plastic screws holding the lid in place snapped, allowing some parts to fly upward. The student was wearing eye protection, and followed procedures correctly while operating the system.</p> <p>Afterwards, the PI, myself, and student looked over the system and were able to identify a few possible faults. We will remove a membrane at the exit of the vessel to reduce backpressure, and will be sure to dry the flow regulator before attaching it to the system. The frit at the inlet also needs to be cleaned regularly to prevent precipitates from blocking flow.</p>	<p>(1) All Teflon tape used in the fitting connecting the air supply line to the flow meter will be removed, and the fitting itself (nut and ferrule assembly) will be replaced.</p> <p>(2) The body of the flow meter will be cleaned with high purity water and fully air dried before returning to service. This will be performed after each experiment if necessary to ensure that the flow meter is operating properly. If regular cleaning of the flow meter is not sufficient to ensure proper operation, the existing flow meter will be replaced with a new one.</p> <p>(3) The porous glass frit used in the pressurized vessel will be flushed with high purity water after each experiment to remove any salt precipitates that may accumulate within the pores of the frit.</p>



University of Washington Accident / Incident Report

Report Number: 2015-12-028

Contact EH&S at 206-543-7262

Person Reporting Incident

Last Name: BHATTACHARJEE	First Name: NIRVEEK
Phone: +1 206 616-9036	Email: nirveek@u.washington.edu
Occupation/Position: SENIOR RESEARCH FELLOW	Department: BIOENGINEERING
Date Reported (yyyy/mm/dd): 2015/12/09	Time of Reporting: 06:25 PM

Person Involved or Affected

Last Name: XXXXXXXXXX	First Name: XXXXXXXXXX
Phone: XXXXXXXXXX	Email: XXXXXXXXXX
Occupation/Position:	Department: BIOENGINEERING
Person was in Paid Position: No	

Incident Details

Date of Incident (yyyy/mm/dd): 2015/11/24	Time of Incident: Can Not Be Determined	When Shift Begins: N/A
Campus: Seattle	Incident Location/Parking Lot: W.H. FOEGE BIOENG	
Room: Foege N423G	Other:	

Incident Details:

Dear EH&S staff,

We would like to report an incident related to exposure of the hands and forearm to a certain photolabile chemical ("photoresin" or "resin") that we use for 3D-printing. The 3D-printer is completely covered by a plastic curtain and its top is connected to exhaust (the same exhaust that has been used for other chemicals before), inside our clean room (Foege N-423G). This resin is a mixture of polyethylene glycol-diacrylate (MW ~ 258) (PEG-DA-258) mixed with the photoinitiator 0.4% wt. Irgacure 819. The harmed students followed the safety data sheet instructions for both compounds, yet the exposure appear to have happened through the protective barriers (nitrile gloves) worn by the operators (graduate student and postdoc). The exposure on the forearm can be explained by the presence of condensation droplets of resin on the inside of the plastic curtain that covers the 3D-printer that, upon reaching, accidentally ended up on and seeped through the clean room garment. Condensation occurred because the 3D-printer was being operated by a projector with a lamp that generated heat. The students reported that the exposure led to a mild burning sensation that over time developed into skin rashes, itching and swelling. They did not seek medical treatment.

At first, the students didn't think the exposure was serious, so the P.I. was only informed of the severity of the exposure well after the rashes had started healing. The safety data sheet of the individual chemicals indicate that nitrile gloves are sufficient to provide adequate protection against exposure to these chemicals. However, we have now learned that the mixture solution could go through the gloves over time and can create severe burns when exposed to light by light-assisted creation of free radicals. We would like to seek EH&S' guidance to see if all the following corrective measures are the appropriate ones.

Attachment: **Yes**

Supervisor

Last Name: FOLCH	First Name: ALBERT
Phone: +1 206 685-2257	Email: afolch@u.washington.edu
Occupation/Position: ASSOCIATE PROFESSOR	Department: BIOENGINEERING

Classification

Level 1:
Injury requiring first aid,

ON FILE: Affected/Injured Employee's date of birth, gender, date of hire, and hours of employment.

Type of Incident

Injury Description: **Burn (Thermal, Chemical, Electrical), Pain, Irritation, Inflammation, Swelling, Rash, Eczema, Dermatitis, Other Skin Condition,**

Body Parts Affected: **Hands, Wrists,**

Cause of Injury or Damage: **Chemicals,**

Possible Causes

Equipment: **Inadequate Guards/Barriers,**

Environment: **Chemicals,**

Policies / Procedures: **Appropriate Procedures Non-existent,**

Human Factors: **Inadequate, Improper PPE,**

Suggested corrective action by the affected party

We have taken the following corrective measures after evaluating the risks associated with this particular chemical:

- 1) The lamp-based projector has been substituted by a (cold) LED-based projector that does not generate any more condensation issues
- 2) The operator(s) must wear double gloves when working with this chemical
- 3) If there is any suspicion that the gloves or garment have contacted the resin solution, the operator must thoroughly rinse the hands or other suspected body parts with water (the resin is water-soluble)
- 4) The clean-room coats worn by the operators are laundered if they get exposed to resin.
- 5) Any spills or leaks of the chemical on the bench are immediately wiped off with paper towel, which is disposed off into a closed chemical waste bin.

In addition, the PI, Albert Folch is particularly concerned about whether the home-made exhaust system is sufficient for this dangerous chemical. We would like some guidance from EH&S about possible alternative locations, in particular the possibility of moving it right next to our chemical hood (would that be safer?).

The PI, Prof. Albert Folch (afolch@uw.edu), will be leaving on Sunday until the beginning of January and so we would very much appreciate a meeting on Thursday or Friday (12/10 or 12/11). He only has a meeting at 1 pm on Thursday, otherwise he is committed to be very flexible with his hours so as to adapt to your schedule. His priority is to make his lab a safe working environment.

Supervisor's Comments**Root Causes:**

(Please look at all the factors that may have contributed to the accident. Such factors may include equipment, environment, policies, procedures, and personnel.)

- One layer of gloves was insufficient
- PPE was inexistent

Recommendations/Preventive Measures:

We have taken the following corrective measures after evaluating the risks associated with this particular chemical:

- 1) The lamp-based projector has been substituted by a (cold) LED-based projector that does not generate any more condensation issues
- 2) The operator(s) must wear double gloves when working with this chemical
- 3) If there is any suspicion that the gloves or garment have contacted the resin solution, the operator must thoroughly rinse the hands or other suspected body parts with water (the resin is water-soluble)
- 4) The clean-room coats worn by the operators are laundered if they get exposed to resin.
- 5) Any spills or leaks of the chemical on the bench are immediately wiped off with paper towel, which is disposed off into a closed chemical waste bin.
- 6) A proper PPE will be provided.

Corrective Actions Target Date (yyyy/mm/dd):
2016/02/26

Corrective Actions Complete Date (yyyy/mm/dd):

Other Comments:

EHS Review

Last Name: **CORDTS**

First Name: **STUART T**

Phone Number: **+1 206 616-3442**

Email: **scordts@uw.edu**

Occupation/Position:

Department:

Comments:EH&S evaluation provided by Phil Numoto on 12/18/2015 is attached, concurred with PI's evaluation and provided some suggestions for ventilation.



University of Washington Accident / Incident Report

Report Number: 2015-12-028-A

Contact EH&S at 206-543-7262

Person Reporting Incident		
Last Name: BHATTACHARJEE	First Name: NIRVEEK	
Phone: +1 206 616-9036	Email: nirveek@u.washington.edu	
Occupation/Position: SENIOR RESEARCH FELLOW	Department: BIOENGINEERING	
Date Reported (yyyy/mm/dd): 2015/12/10	Time of Reporting: 01:48 PM	
Person Involved or Affected		
Last Name: ██████████	First Name: ██████	
Phone:	Email: injury@u.washington.edu	
Occupation/Position:	Department: BIOENGINEERING	
Incident Details		
Date of Incident (yyyy/mm/dd): 2015/11/24	Time of Incident: Can Not Be Determined	When Shift Begins: N/A
Campus: Seattle	Incident Location/Parking Lot: W.H. FOEGE BIOENG	
Room: Foege N423G	Other:	
<p>Incident Details:</p> <p>Dear EH&S staff,</p> <p>We would like to report an incident related to exposure of the hands and forearm to a certain photolabile chemical ("photoresin" or "resin") that we use for 3D-printing. The 3D-printer is completely covered by a plastic curtain and its top is connected to exhaust (the same exhaust that has been used for other chemicals before), inside our clean room (Foegen N-423G). This resin is a mixture of polyethylene glycol-diacrylate (MW ~ 258) (PEG-DA-258) mixed with the photoinitiator 0.4% wt. Irgacure 819. The harmed students followed the safety data sheet instructions for both compounds, yet the exposure appear to have happened through the protective barriers (nitrile gloves) worn by the operators (graduate student and postdoc). The exposure on the forearm can be explained by the presence of condensation droplets of resin on the inside of the plastic curtain that covers the 3D-printer that, upon reaching, accidentally ended up on and seeped through the clean room garment. Condensation occurred because the 3D-printer was being operated by a projector with a lamp that generated heat. The students reported that the exposure led to a mild burning sensation that over time developed into skin rashes, itching and swelling. They did not seek medical treatment.</p> <p>At first, the students didn't think the exposure was serious, so the P.I. was only informed of the severity of the exposure well after the rashes had started healing. The safety data sheet of the individual chemicals indicate that nitrile gloves are sufficient to provide adequate protection against exposure to these chemicals. However, we have now learned that the mixture solution could go through the gloves over time and can create severe burns when exposed to light by light-assisted creation of free radicals. We would like to seek EH&S' guidance to see if all the following corrective measures are the appropriate ones.</p> <p>Attachment: Yes</p>		
Supervisor		
Last Name: FOLCH	First Name: ALBERT	
Phone: +1 206 685-2257	Email: afolch@u.washington.edu	
Occupation/Position: ASSOCIATE PROFESSOR	Department: BIOENGINEERING	
Classification		
<p>Level 1: Injury requiring first aid,</p>		
Type of Incident		

ON FILE: Affected/Injured Employee's date of birth, gender, date of hire, and hours of employment.

Injury Description: **Burn (Thermal, Chemical, Electrical), Pain, Irritation, Inflammation, Swelling, Rash, Eczema, Dermatitis, Other Skin Condition,**

Body Parts Affected: **Hands, Wrists,**

Cause of Injury or Damage: **Chemicals,**

Possible Causes

Equipment: **Inadequate Guards/Barriers,**

Environment: **Chemicals,**

Policies / Procedures:

Human Factors: **Inadequate, Improper PPE,**

Suggested corrective action by the affected party

We have taken the following corrective measures after evaluating the risks associated with this particular chemical:

- 1) The lamp-based projector has been substituted by a (cold) LED-based projector that does not generate any more condensation issues
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- 6) A proper PPE will be provided.

In addition, the PI, Albert Folch is particularly concerned about whether the home-made exhaust system is sufficient for this dangerous chemical. We would like some guidance from EH&S about possible alternative locations, in particular the possibility of moving it right next to our chemical hood (would that be safer?).

The PI, Prof. Albert Folch (afolch@uw.edu), will be leaving on Sunday until the beginning of January and so we would very much appreciate a meeting on Thursday or Friday (12/10 or 12/11). He only has a meeting at 1 pm on Thursday, otherwise he is committed to be very flexible with his hours so as to adapt to your schedule. His priority is to make his lab a safe working environment.

Supervisor's Comments

Root Causes:

(Please look at all the factors that may have contributed to the accident. Such factors may include equipment, environment, policies, procedures, and personnel.)

- One layer of gloves was insufficient
- PPE was inexistent

Recommendations/Preventive Measures:

We have taken the following corrective measures after evaluating the risks associated with this particular chemical:

- 1) The lamp-based projector has been substituted by a (cold) LED-based projector that does not generate any more condensation issues
- 2) The operator(s) must wear double gloves when working with this chemical
- 3) If there is any suspicion that the gloves or garment have contacted the resin solution, the operator must thoroughly rinse the hands or other suspected body parts with water (the resin is water-soluble)
- 4) The clean-room coats worn by the operators are laundered if they get exposed to resin.
- 5) Any spills or leaks of the chemical on the bench are immediately wiped off with paper towel, which is disposed off into a closed chemical waste bin.
- 6) A proper PPE will be provided.

Corrective Actions Target Date (yyyy/mm/dd):
2016/02/26

Corrective Actions Complete Date (yyyy/mm/dd):

Other Comments:

EHS Review

Last Name: **CORDTS**

First Name: **STUART T**

Phone Number: **+1 206 616-3442**

Email: **scordts@uw.edu**

Occupation/Position:

Department:

Comments:EH&S evaluation provided by Phil Numoto on 12/18/2015 is attached, concurred with PI's evaluation and provided some suggestions for ventilation.

Interdepartmental Correspondence

DATE: December 18, 2015

TO: Albert Folch, Principal Investigator, Bioengineering, Box 355061

FROM: Phil Numoto, CIH; Occupational Health and Safety Specialist; Box 357165

SUBJECT: Findings of a Hazard Review for a Photopolymer-Based 3D Printer
Department: Bioengineering
Location: Foege Hall, Room 432C

UW Environmental Health and Safety (EH&S) received Online Accident Reporting System (OARS) reports 2015-12-028 and 2015-12-028-A, which described exposures to a photopolymer resin during 3D printing that resulted in rashes to researchers' hands and arms. The exposure occurred when a researcher reached inside a curtain that covered the 3D printer. The inner plastic curtain was coated with resin droplets that were created when the printer lamp generated heat, evaporated the resin, and vapors condensed to form liquid droplets on the cover. As corrective action, the light was replaced with a low heat-generating LED bulb to minimize the evaporation. The Principal Investigator (PI) also requested further assistance from EH&S to evaluate the exhaust system provided to the 3D printer.

Background Information on 3D Printing

3D printing uses computer software to successively add layers of material to create a three dimensional object of interest. 3D printers can be grouped by the type of process used:

- Extrusion deposition
- Binding of granular materials
- Lamination
- Photopolymerization
- Metal wire processes

Description of the 3D Printer in Foege Hall

The 3D printer in Foege Hall was located in Room 423G and it used stereolithography (SLA) technology. This SLA employs a vat of liquid photopolymer resin that is curable with ultraviolet light at a wavelength of 380 nm. This printer uses a moveable supporting plate upon which the object is built. The first layer is laid on the base plate. For the initial and each successive layer, the light beam traces a pattern of the cross-section of the object on the layer of liquid resin. Exposure to the ultraviolet light cures and hardens the resin into the pattern traced and it joins to the layer previously laid.

For each layer, the SLA plate is raised by a distance equal to the thickness of a single layer, typically 0.05 mm to 0.15 mm (0.002" to 0.006"). Upon rising, resin in the vat flows by gravity to fill the vacated space on the bottom surface of the vat to form a fresh layer of uncured resin. The light traces the image on the resin surface, the resin cures in the shape of the design, and the added layer joins the previous layer. The sequential addition of layers forms the three dimensional object being printed. Upon completion, the object is manually removed.

Description of Printer Resin

The two components of the resin system are the polymer which is poly(ethylene glycol) diacrylate and the activator powder which is Irgacure 819. The two components are mixed in 50 milliliter (ml) tubes in the chemical fume hood in the main lab. Forty (40) ml of solution are mixed and capped in the tube. Two capped tubes are transported to the printer and resin is poured into the printer vat which is approximately 11 inches long by 6 inches wide. The vat has a clear bottom and the light source is located under the vat. The UV light shines upward through the clear bottom vat and cures the liquid resin where the pattern is traced.

The printer and resin vat are draped to protect it from extraneous unwanted light sources. The protective cover consists of an inner plastic liner and an outer black cloth cover.

The researchers wear a lab coat, safety glasses, and nitrile exam gloves while mixing, transporting, and pouring the resin.

Exposure Hazards for Resin

The adverse health hazard effects that occur upon exposure to resins used in 3D printers include the following:

- A splash to the eyes can cause severe irritation to permanent damage depending on the material.
- Skin contact can cause irritation, dermatitis, or a rash depending on the resin. When ultraviolet light contacts the mixed resin, a photochemical reaction is initiated and continues to completion. The reacting resin is more aggressive at creating health effects compared to uncured, non-activated resin.
- Inhalation of vapors causes respiratory tract irritation.

Cause of the Incident Reported in OARS

The PI determined that the resin exposure to the skin occurred when the researcher reached under the drape to remove the object. The inner liner was coated with liquid resin condensate that came in contact with the skin and caused the irritation and a rash. The users wore nitrile gloves and found that the resin dissolved the gloves. It was noted that neither of the two components individually caused the gloves to degrade.

The following actions were taken by the PI prior to the EH&S evaluation:

1. The resin had been heated with a high heat-producing light bulb that caused the resin to evaporate and condense as droplets on the cool liner of the drape. To minimize further evaporation, the light bulb was replaced with a low heat-producing LED style bulb.
2. The 3D printer users now wear double nitrile gloves when opening the drape and removing the part. The gloves are frequently checked when parts are handled and surfaces are touched in the vicinity of the open vat of resin. If liquid comes in contact with the gloves, the outer glove is removed and replaced.

Further Improvements to Minimize Exposure Concerns

The draped enclosure was ventilated with a flexible duct that was suspending along the ceiling and connected to a building exhaust ventilation duct. The flexible duct was approximately 15 feet long by 4 inches in diameter. The exhaust air flow under the draped portion of the 3D printer was tested with an air current tube and there was little exhaust air flow provided. The air current tube was also used to check the exhaust air flow provided to the plexiglass enclosure located immediately below the building exhaust air ductwork. The air flow was found to be effective.

The drape over the printer was flexible and somewhat difficult to access to remove a printed object. If resin condenses on the inner lining, it is difficult to observe by visual inspection.

The following additional actions are recommended:

1. Move the 3D printer so it is within 4 to 6 feet of the building exhaust ductwork. Connect the flexible enclosure to the building exhaust ventilation system with duct runs that are as short and straight as possible for the most effective exhaust air flow.
2. Post a sign on the ductwork indicating that the duct interior may be contaminated with liquid chemicals which, in the presence of sunlight, may cause skin rashes and chemical burns if they come in contact with the skin.
3. Provide a clear rigid enclosure over the printer with a hinged door to enclose, contain, and allow for capture of resin vapors that evaporate from the open vat. Provide the enclosure with a dark cloth removable drape to protect the 3D printer vat from external light that interferes with the resin curing reaction.
4. Construct the enclosure for the 3D printer with plexiglass or other compatible material. The surfaces of an existing ventilated enclosure are cleaned with isopropyl alcohol which is the same cleaning agent used to clean the 3D printer surfaces. If resin splashes onto the enclosure surfaces during printing, the residue can be removed with isopropyl alcohol while causing little damage to the surfaces of the enclosure.
5. If exposure to UV light is a concern, contact EH&S Radiation Safety and request assistance. Radiation Safety has instruments available to measure the intensity of non-ionizing radiation including UV light. As needed, select and provide eye protection that is

protective against UV light. Some safety eyewear is available with a UV protective coating that may provide sufficient protection.

If you have questions, please contact me by phone at 206-616-6212 or by email at pnumoto@uw.edu.

CC: Emma Alder, Interim Manager, EH&S Chemical and Occupational Safety, Box 35716
Amy Lim, Compliance Analyst, EH&S Radiation Safety, 354400



University of Washington Accident / Incident Report

Report Number: 2015-12-047

Contact EH&S at 206-543-7262

Person Reporting Incident

Last Name: YEUNG	First Name: JEREMY
Phone: +1 206 543-2547	Email: jsean@u.washington.edu
Occupation/Position: LABORATORY MANAGER	Department: CIVIL & ENVIR ENGR
Date Reported (yyyy/mm/dd): 2015/12/16	Time of Reporting: 02:37 PM

Person Involved or Affected

Last Name: [REDACTED]	First Name: [REDACTED]
Phone:	Email: injury@u.washington.edu
Occupation/Position:	Department: CIVIL & ENVIR ENGR
Person was in Paid Position: No	

Incident Details

Date of Incident (yyyy/mm/dd): 2015/12/16	Time of Incident: 11:00 AM	When Shift Begins: N/A
Campus: Seattle	Incident Location/Parking Lot: MORE HALL	
Room: 324A	Other:	

Incident Details:

Lid of pressurized vessel popped off. This is part of a photoreactor system. The student was hit by the lid and suffered a bloody lip.

The vessel was overpressured, and the 4 plastic screws holding the lid in place snapped, allowing some parts to fly upward. The student was wearing eye protection, and followed procedures correctly while operating the system.

Afterwards, the PI, myself, and student looked over the system and were able to identify a few possible faults. We will remove a membrane at the exit of the vessel to reduce backpressure, and will be sure to dry the flow regulator before attaching it to the system. The frit at the inlet also needs to be cleaned regularly to prevent precipitates from blocking flow.

Attachment: **No**

Supervisor

Last Name: DODD	First Name: MICHAEL
Phone: +1 206 685-7583	Email: doddm@u.washington.edu
Occupation/Position: ASSOCIATE PROFESSOR	Department: CIVIL & ENVIR ENGR

Classification

Level 1:
Injury or Exposure, no first aid required,

Type of Incident

Injury Description: Bruise, Contusion, Cut, Laceration, Puncture, Scratch, Abrasion (Open Wound),
Body Parts Affected: Mouth,
Cause of Injury or Damage: Pressure Extreme (High or Low), Struck or Pinched by Moving Object,

Possible Causes

Equipment: **Inadequate Maintenance,**

Environment:			
Policies / Procedures: Inadequate Planning, Preparation,			
Human Factors:			
Suggested corrective action by the affected party			
Clean inlet frit regularly, remove membrane at outlet, clean & dry flow regulator.			
Supervisor's Comments			
<p>Root Causes: (Please look at all the factors that may have contributed to the accident. Such factors may include equipment, environment, policies, procedures, and personnel.) This incident was most likely caused by one or both of two factors:</p> <p>(1) Blockage of the gas flow line used in supplying air to the flow meter used to control gas flow rates (2) Blockage of gas flow through body of the flow meter (3) Blockage of the porous glass frit used for bubbling air through the pressurized vessel</p>			
<p>Recommendations/Preventive Measures:</p> <p>(1) All Teflon tape used in the fitting connecting the air supply line to the flow meter will be removed, and the fitting itself (nut and ferrule assembly) will be replaced.</p> <p>(2) The body of the flow meter will be cleaned with high purity water and fully air dried before returning to service. This will be performed after each experiment if necessary to ensure that the flow meter is operating properly. If regular cleaning of the flow meter is not sufficient to ensure proper operation, the existing flow meter will be a replaced with a new one.</p> <p>(3) The porous glass frit used in the pressurized vessel will be flushed with high purity water after each experiment to remove any salt precipitates that may accumulate within the pores of the frit.</p>			
Corrective Actions Target Date (yyyy/mm/dd): 2015/12/16		Corrective Actions Complete Date (yyyy/mm/dd): 2015/12/16	
Other Comments:			
EHS Review			
Last Name:	First Name:	Phone Number:	Email:
Occupation/Position:		Department:	
Comments:			

University-Wide Health and Safety Committee Meeting Agenda

December 9, 2015

1:00 – 2:30 PM

Foege N130A

Regular Attendees:

- 2015 University-Wide Health and Safety Committee Members
(<http://www.ehs.washington.edu/ohssafcom/groups.shtm>)
- Jude Van Buren, Katia Harb, Emma Alder, EH&S

Agenda Items	Persons Responsible	Process	Time
Call to Order	Leslie Anderson, Chair		
Approve Meeting Minutes	Leslie Anderson	Robert's Rules of Order	5 min
Evacuation Drill Subcommittee Update	Leslie Anderson	Presentation	10 min
EH&S Board Update	Liz Kindred	Discussion	5 min
Organizational Group Reports	Committee Members	Discussion	10 min
Union Reports	Union Representatives	Discussion	5 min
Ex-Officio Reports	Ex-Officio Members	Discussion	5 min
Recognition	Jude Van Buren, EH&S	Presentation	10 min
Group Photo and Celebration	Committee Members	Discussion	40 min
Adjourn	Leslie Anderson		

University-Wide Health and Safety Committee Meeting Minutes

November 10, 2015 1:00-2:30 pm
Foegle N130A

Elected Membership		Appointed Membership		X	
X	Leslie Anderson (1)	X	Paul Zuchowski (3)	X	Doug Gallucci, EH&S
X	Ryan Hawkinson (1)		Bob Ennes (4)	X	Chris Pennington
X	Paula Lukaszek (2)	X	Nadia Khan (4)		
	Sterling Luke (2)		Nicole Sanderson (7)		
X	Sara Jones (3)		Michael Glidden (9)		
X	Ron Maxell (6)	X	David Zuckerman (10)		
	Paul Miller (6)	X	Liz Kindred (5)		
	Charlotte Rasmussen (7)		Rob Hinton (5)		
X	Stephen Rondeau (8)				
X	Sonia Honeydew (9)				
	Roy Farrow (10)				
	Kathy Newell (10)				
X	Rick Gleason (Faculty Senate)				
Labor Union Representation		Ex Officio Membership		Support	
	Jim Bals WFSE Local 1488	X	Michelle Doiron Attorneys General Office		Jude Van Buren, Director, EH&S
	(Vacant) SEIU Local 1199	X	Tracey Mosier Facilities Services	X	Katia Harb, Asst. Director, EH&S
	Laura Harrington SEIU 925		Wendy Winslow-Nason Risk Management	X	Emma Alder, EH&S Technical
	Peter Johnston UAW 4121	X	Ron Fouty Capital Projects		
			Josh Kavanagh, Transportation Services		
*X= Present at meeting					

Agenda

1. Call to Order
 2. Construction Safety Presentation
 3. Approval of Minutes
 4. Election Update
 5. Evacuation Drill Subcommittee Update
 6. Group Reports
 7. Union Reports
 8. Ex-Officio Reports
 9. EH&S Reports
 10. Good of the Order
 11. Adjourn
-

Recorded: by Emma Alder

1. **Call to Order:** Meeting called to order at 1:05 PM by Leslie Anderson.
2. **Construction Safety Presentation:** Ron Fouty gave a presentation on construction safety and the safety initiatives and approach of the Capital Planning and Development. He gave an overview of the phases the departments goes through when conducting safety assessments of capital projects. The phases include the contract documents, design hazard analysis, site specific safety plans, safety walks, incident reporting, and a safety review. Ron discussed how contract documents are generated. Some contracts allow UW to pre-screen contractors, which would include an analysis of how they plan to keep the contractors safe during the project. He then discussed best practices for design of projects and the process for accident reporting, investigation, and follow-up. He finished with safety metrics and thoughts on supporting a safety culture.

Presentation: <http://ehs.washington.edu/ohssafcom/ConstructionSafetyNovember15U-Wide.pdf>

3. **Approval of Minutes:** Changes to the October minutes were suggested. The minutes were approved as amended.
4. **Evacuation Drill Subcommittee Report:** Leslie Anderson gave an update on the most recent subcommittee meeting. Discussed updating information to provide to Interim Provost regarding the subcommittee and utilizing the building coordinators to assist with subcommittee improvement ideas.
5. **Organizational Group Reports:**
 - a. **Group 1:** Ryan Hawkinson reported that they met this morning. He gave an update on their election process. Another special election will be held to get more sections represented on the committee. The group also discussed the need to include building coordinators on incidents that involve their buildings.

- b. **Group 2:** Paula Lukaszek reported that Group 2 has not met yet.
- c. **Group 3:** Paul Zuchowski discussed the most recent Group 3 meeting. The group went over their accident reports. The cut gloves for Housing and Food Services are all almost in. A few incidents have involved pavers breaking outside new residential halls; there have been four incident reports over the last few months. They are in the process of getting the pavers replaced. Other incidents have involved people walking into glass walls and the group discussed ways to make it more visible. The group also discussed slips and falls on red square and if this would be a project that the U-Wide could take on next term.
- d. **Group 4:** Nadia Khan was not at the last Group 4 meeting but reported that the group discussed elections.
- e. **Group 5:** Liz Kindred reported that Group 5 met at the end of October. Reviewed accident reports, which included eye injuries with disinfecting wipes. The group is conducting their elections. The voting is taking place now and the nominations were open for two weeks.
- f. **Group 6:** Ron Maxell reported that Group 6 met in the Chemistry Building. He reported on U-Wide and discussed workers compensation report. He also reported on evacuation drill subcommittee. Chairman Paul Miller talked to Dean's Office about elections and the need for an election coordinator.
- a. **Group 7:** No members present.
- b. **Group 8:** Stephen Rondeau reported that a call for nominations has gone out and the group has not met since last U-Wide.
- c. **Group 9:** Sonia Honeydew reported that Group 9 discussed that the Great Shakeout earthquake drill did not seem well advertised this year. They also discussed whether instructors/professors know the proper procedure for building evacuations. There will be a review of Husky Ready at the next meeting as Sonia is on the UW Resilience Work Group.
- d. **Group 10:** David Zuckerman reported that Group 10 met on October 19th. Continued discussion on head injuries. He found guidelines in place for head injuries in athletics and perhaps is there a way that we can tweak these guidelines for broader use. He then reported that most units have conducted evacuation drills and they are looking into how they can educate the faculty when they are not in a familiar room so they can know evacuation routes and let the students know what to do. The elections are coming along well for the college and could be complete by the next meeting. There are groups within their College that are going through bloodborne pathogen training due to coming across transient groups and syringes found.

6. Union Reports

- a. **SEIU Local 1199:** No representative present.
- b. **SEIU Local 925:** No representative present.
- c. **UAW 4121:** No representative present.
- d. **WFSE Local 1488:** Paula Lukaszek wanted an update on the legionella testing and treatment at UWMC. Emma Alder will follow-up with Rob Hinton.

7. **Ex-Officio Reports:** Tracey Mosier reported on the election progress in Facilities Services.

8. **Election Update:** Emma Alder, EH&S, gave an update of the election progress to the committee.

9. **Faculty Senate:** No report.

10. EH&S Reports

- a. **L&I Update:** Emma Alder updated the committee on the most recent L&I inspections and activity.
- b. **Staff Updates:** Doug Gallucci gave a background on the Pre Entry Assessment Team (PEAT) and what their responsibilities are after an earthquake.

11. **Meeting Adjournment:** The meeting was adjourned by Leslie Anderson at 2:30 PM.