

**Faculty of Science & School of Nursing Safety Committee (SHSC)**

**Meeting Minutes for March 31, 2016, 10:00 AM, room S309**

**Attendance Aug 2015-June 2016 (X = present) (A = absent) (P = proxy received)**

Meeting Dates		8. 27	9. 24	10. 29	11 26	12. 17	1. 28	2. 25	3. 31	4.	5.	6.	Notes	
Chan, Janine	Resp	X	X	X	X	<b>M E E T I N G  C A N C E L L E D</b>	X	X	X					
McKenzie, Wendy	Nursing	P	P	X	X		X	X	X					
Hammer, Trent	Chemistry	X	P	P	P		X	P	X					
Jyrkkanen, Stacey	Safety & EM	X	A	X	X		X	P	X					
Prescott, Walter	ARET	A	A	A	A		X	X	P					
Purdy, Susan	Biology	X	A	X	X		X	X	X					
Lettinga, Marten	Chemistry/ Co-Chair	X	P	X	X		X	X	X					
Robinson, Lesley	Math	A	A	A	A		A	A	A					
Horton, Jane	UPrep	A	A	X	X		P	P	A					
Sorensen, Jacque	NRS	X	A	A	P		X	X	P					
Taylor, Colin	Physics /Co-Chair	X	X	X	X		X	X	X					
Urban, Joanna	Micro	A	A	A	A		A	P	A					
Van Wagoner, Nancy	Geology	X	A	A	P		A	P	A					
Walczak, Sonia	AHT	P	A	X	P		X	X	P					
Duggan, Bunny	recorder	X	X	X	A	X	X	X						
Lucille Anderson	GUEST							X						

**1. Adoption of Agenda**

APPROVED and ADOPTED: Colin Taylor

SECOND: Janine Chan

## **2. Review of Minutes from February 25th, 2016 Meeting**

Errors and Omissions: None

**Motion:** ACCEPT: Janine Chan,

SECOND by Colin Taylor

APPROVED: All in favour

## **3. Old Business**

**a) ID Badges** – Chair of SHSC contacted Science Dean’s Assistant to inform the Chairs regarding the use of ID Badges, discussion held among group to ask if the ID Badges had been brought up to other departments. Respiratory Representative will speak about ID Badge use at the next Allied Health meeting.

**ACTION:** Nothing to further report - Item completed.

**b) Emergency Program messaging/Green arrows (Stacey)** – Part of the Active Threat Program which all employees will be receiving by the end of December 2016. For the Science Building, scheduling requests have been sent to the Chairs (Science) and Dean (Nursing) to contact Stacey of S.E.M. to implement training which is mandatory for Violence in the workplace program. As of this date, the only response was from Animal Health Program. Follow up is requested as soon as possible as scheduling confirmations should be completed by the end of next week (April 8<sup>th</sup>, 2016) the Dean’s Assistant in the Faculty of Nursing, (NOTE: Faculty of Science Dean’s Assistant position will be vacant at this time), will be contacted again to set up scheduling dates for the Science Building. Discussion with Nursing regarding 4 or 6 blocks of training from August to September will be set as not all Nursing Faculty would be able to attend in one time-slot. Multiple time-slots should also be set up for Science Faculty rather than specific time-slots for each Department. Since Science Faculty are often scheduled to teach in other buildings, a concern was raised on how to provide training specific to other buildings. The training will be mandatory for all TRU employees.

The Green arrows refer to rooms that can be locked from the inside in case of an emergency.

**ACTION:** Stacey/Wendy M. to contact Dean’s Assistant in the Faculty of Nursing to schedule dates for training to all Science and Nursing Faculty.

**c) NMR Signage update (Trent)** - The existing States: “WARNING. LOW OXYGEN DO NOT ENTER” and sits above the door beside the alarm. The alarm will flash and make noise. Trent will order a sign that fits lower on the door that will say: “When Alarm is sounding, LOW OXYGEN, Do Not Enter.” A temporary sign has been erected until the new one has been ordered. The sign reads.

**When Alarm is sounding.**

**DO NOT ENTER**

**LOW OXYGEN**

**Open door to ventilate room.**

**Do not enter until alarm stops.**

Unanimous agreement that the signage is appropriate. This item is now complete.

**d) 3D Printer Emission – Updates:** (Sue)

Information was presented and links were provided regarding 3-D printer emission and ventilated rooms (see attached). Colin offered to make up stickers to put beside/or on the printers (3-D or otherwise) to educate employees that 3-D and desktop printers in offices should be used in a well ventilated room. It was reported that Gordon M. of S.E.M. had looked into the air-exchange in the small room that 3-D printers are in OM off the ARET computer lab, and the air-exchange is inadequate. It was felt by a committee member that the air could be vented straight outside or it could be improved upon by putting in some type of air exchange system to the exterior or through an existing bathroom. On the positive side, the two 3D printers are confined to this small room, but the air must be exchanged somehow and NOT into the rest of the building, but directly to the outside.

<http://pubs.acs.org/doi/abs/10.1021/acs.est.5b04983>

<https://www.elsevier.com/connect/could-particle-emissions-from-desktop-3d-printers-reach-unhealthy-levels>

**Action:** Colin Taylor to create signage educating people of dangers associated with printers in offices.

**Action:** Janine Chan to check through old minutes regarding old recommendations from Tom O’Byrne of facilities relating to 3-D printer ventilation.

**Action:** Susan Purdy to share research and put out a “blurb” for staff to start the education on the printers.

**(e) Incident Investigations demonstration** – Stacey J. S.E.M. wanted to thank the Committee members who joined the J.O.S.H.C. group. Root cause and contributing factors can be a challenge and it takes time and practice to do this type of investigation and make decisions. It is not something that can be done in a short period of time in one meeting. Those from the SHSC committee who participated in the training with Tim Ambrus and the rest of the J.O.H.S.C. team please hold Monday April 4 at 2:30–3:15 open if possible, Stacey will confirm as soon as she receives final approval. There will also be one in May. If there are no recent investigations to practice with, then one will be brought forward from past files. Colin T., Susan P. and Wendy M. to attend from SHSC.

**(f) Emergency Marshalls** – Update (Marten) Marten contacted Assistant to the Dean and item was presented to the chairs at the monthly FLC meeting.

**Action:** Marten to ask for list of Science Building Emergency Marshalls from Gordon M. of S.E.M

**(g) ARCHIBUS Inventory Management System** – Update (Trent).

A meeting with the organizers of ARCHIBUS Inventory management system was held. It appears that the system may not be compatible with the needs of the Science Department and Campus. It is extremely costly. Alternative options will be explored in the future. Necessities of the new system will be as follows: Chemicals should be tracked from arrival on campus to destination department. New labels will be required to sync with GHS; this will be a broad

initiative as it involves many campus programs and services. Chemistry will be the starting point and it will be up to the departments to continue the process.

**(h) Old Elevator Issues** – update (Marten/Sue/Janine). Issues with the elevator in the Ken Lepin Building were discussed. Assistant to the Dean forwarded an email from Warren Asuchak of facilities to Marten (co-chair of SHSC) outlining past problems with the elevators and the contractor (CONE). Issues were resolved and CONE assures TRU that problems have been figured out and the issues will be fixed after a new part is installed. A lively discussion ensued on problems regarding the elevator in the Ken Lepin Building, including the inability to transport a stretcher to and from the third floor.

**Action:** Marten (Co-Chair of SHSC) to send thank you to Warren Asuchak of facilities for dealing with this issue.

**Action:** Stacey will also inform Warren Asuchak of facilities recent problems with the elevator.

Committee member (Janine) reported on the current method of tracking work orders with facilities. At this time the work order number is required and a phone call to facilities help desk (5388) will update you on the status of your work order. Within the next year, a new method of electronic tracking should be in place with facilities.

Committee member (Susan) gave a brief account of her discussions at JOHSC regarding the elevator issues in the Ken Lepin Building on behalf of Science and Nursing.

#### **4. New Business**

**(a) Incidents - (Stacey)** No summary available at time of the meeting.

**(b) Other:** (Trent) Chemical storage facility – RFP has closed and we are evaluating the proponents. Nothing more to report at this time.

**(c) WHIMIS Training** – (Trent) Free WHIMIS training until the end of this month is available on line. A new course needs to be created, but time and cost are the main issues. It was discussed that the S.E.M. department collaborate with the University to create the new course. The question of how UBC-O handled this issue was brought up and a discussion was held on their practise of WHIMIS Training. This course should be free and available to Teaching Assistants and New Employees at TRU. It would be advantageous to have a BIO Safety person on campus to set this up.

Next Meeting: April 21<sup>st</sup> 10 am S309

## ATTACHMENT (1) for item 3.(d)

How Toxic Are ABS & PLA Fumes? 3Dsafety.org Examines VOCs

By [Davide Sher](#) Wed, October 28, 2015. [3D Printing](#), [Featured](#), [News](#), [Research](#)  
<http://3dprintingindustry.com/2015/10/28/toxic-abs-pla-fumes-3dsafety-org-inquires-vocs/>

While everyone knows the unpleasant odor from ABS cannot possibly be healthy to breathe in, most of us generally do not really care. However, not only ABS, but also PLA, may release toxic fumes known as VOCs (Volatile Organic Carbon). Not all VOCs are actually toxic, but some may be, especially for younger users. Before this becomes a serious health issue, a new study conducted by [3Dsafety.org](#), in collaboration with Italian 3D printer manufacturer WASP, has analysed the exact quantities of toxic VOCs – as well as potentially dangerous nanoparticles – released during filament extrusion, in order to assess the potential health risks.

The new study, presented by Dr. Fabrizio Merlo and Dr. Eng. Stefano Mazzoni, starts off from other previous research conducted in the early 90's, which demonstrated that during the fusion and processing of plastic materials, several toxic particles are released as gases, including ammonia, cyanidric acid, phenol, and benzene, among others.

The lab tests showed that ABS is significantly more toxic than PLA, but that the corn-based polymer is not exempt from dangerous emissions, especially if extruded at temperatures higher than 200°C. Furthermore (as may be expected), the same material spools, when acquired from different resellers, release very different quantities of VOCs, even if used in the same 3D printer and under the same parameters of speed and temperature.

A second critical aspect is that relating to the emission of nanoparticles, that is, particles with a diameter smaller than .1 micron, which can be absorbed directly by the pulmonary alveolus and the epidermis. In this case, the emissions, when using ABS, vary from 3 to 30 times those that occur when using PLA filament. The test also demonstrated that the time necessary for the nanoparticle concentration in the air to go back to standard levels was between 10 and 30 minutes after the extrusion processes stopped. Through a photo-ionization technology, the study ([which has been published on 3Dsafety.org](#) and will progressively be updated with further information) was also conducted on nylon, polystyrene, PET and other materials.

Among the effects that the absorption of toxic VOC's and nanoparticles can cause to humans, the most common are pulmonary pathologies, such as bronchitis, tracheitis, asthma. In some cases, these substances can also cause certain types of cancers, so this is not something to be taken lightly. The solution, however, is not too complicated. 3Dsafety.org, in collaboration with WASP, is working to increase

awareness as to the potential risks of toxic emissions from filament, while several practical tips can be implemented right away.

For example, working in well ventilated rooms: the ideal solution would be using an air ventilation system capable of moving three times the room's volume of air in one hour. This means that a room measuring 100 cubic meters should have a system capable of displacing 300 cubic meters of air in one hour. When using closed-chamber 3D printers, it may be possible in the near future to implement an active carbon filtration device, and the team is actively working toward development of a device specifically tailored for 3D printers, which can be regulated according to the type of filament material used.

Certainly this does not mean we should all just stop using 3D printers. However, dealing with the potential health risks of 3D printing materials early is the best way to make sure this technology evolves in a way that we can maximise its benefits and limit any risks involved.

## ABOUT THE AUTHOR

### **Davide Sher**

Davide was born in Milan, Italy and moved to New York at age 14, which is where he received his education, all the way to a BA. He moved back to Italy at 26 and began working as an editor for a trade magazine in the videogame industry. As the market shifted toward new business models Davide started working for YouTech, the first iPad native technology magazine in Italy, where he discovered the world of additive manufacturing and became extremely fascinated by its incredible potential. Davide has since started to work as a freelance journalist and collaborate with many of Italy's main generalist publications such as Corriere della Sera, Panorama, Focus Italy and Wired Italy: many of his articles have revolved around the different applications of 3D printing.