The *Workers Compensation Act* requires that the employer must post a copy of this report in a conspicuous place at or near the workplace inspected for at least seven days, or until compliance has been achieved, whichever is the longer period. A copy of this report must also be given to the joint committee or worker health and safety representative, as applicable.

### Inspection Report #201717212011A

<table>
<thead>
<tr>
<th>Employer Name</th>
<th>Jobsite Inspected</th>
<th>Scope of Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMON FRASER UNIVERSITY</td>
<td>250 - 13450 – 102nd Avenue Surrey BC V3T 0A3</td>
<td>partial hygiene - Mechatronics IRMS 4272</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date of Initiating Inspection</th>
<th>Date of This Inspection</th>
<th>Delivery Date of This Report</th>
<th>Delivery Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar 22, 2017</td>
<td>Mar 22, 2017</td>
<td>Mar 29, 2017</td>
<td>Email</td>
</tr>
</tbody>
</table>

**THERE IS ONE (1) ORDER OR OTHER ITEM OUTSTANDING**

**ACTION REQUIRED**

### Summary of Orders or other Items

See “Orders/Items – Full Details” section of this Inspection Report for orders/items cited

<table>
<thead>
<tr>
<th>Order/Item No.1</th>
<th>Status: Outstanding</th>
<th>Cited: OHS5.55(1)</th>
</tr>
</thead>
</table>

### ORDER STATUS LEGEND

<table>
<thead>
<tr>
<th>Order Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outstanding</td>
<td>Order Outstanding - Action Required to Achieve Compliance</td>
</tr>
<tr>
<td>Complied</td>
<td>Compliance Achieved - No Further Action Required</td>
</tr>
<tr>
<td>Closed</td>
<td>Order is Closed</td>
</tr>
<tr>
<td>Rescinded</td>
<td>Order has been cancelled – No Further Action Required</td>
</tr>
</tbody>
</table>

IR 201717212011A Printed: Mar 29, 2017 14:07
INSPECTION NOTES

On March 22, 2017, I (Occupational Hygiene Officer Jennifer Shum) attended a site meeting at this worksite, initiated by this employer, to discuss the potential use of a laser cutter in the Mechatronics Instructional and Research Machine Shop (IRMS) Room 4272.

Issues discussed with the employer and worker representative included, but were not limited to, the following:

LASER CUTTER AND RECIRCULATION OF CONTAMINANTS

-The employer stated that the laser cutter (Universal Laser Systems Versa Laser) is currently not in use. The employer would like to start using it but would like to first clarify with WorkSafeBC regarding any applicable regulatory requirements for the startup and use of the laser cutter.

-I discussed Occupational Health and Safety Regulation (OHSR) section 5.70(1) regarding "Discharged air", which states that:

(1) The use of a ventilation system designed to recirculate contaminants into the work area is restricted by the provisions of Table 5-1.

The following is an excerpt of the applicable verbiage from Table 5-1:

Recirculation permitted without written approval:
- A nuisance particulate with an 8-hour TWA limit of at least 10 mg/m3, provided that its concentration in the discharged air is less than 10% of the TWA limit.
- Asbestos fibre or other particulate, except a biological contaminant, provided that it is exhausted from a portable vacuum cleaner or bench-top containment unit, fitted with an effective HEPA filter.
- Non-allergenic softwood dust, provided that its concentration in the discharged air is less than 10% of the 8-hour TWA limit.

Recirculation only with written approval by the Board:
- Allergenic wood dust.
- Non-allergenic hardwood dust.
- Any contaminant not otherwise listed in this Table.

No recirculation permitted:
- A substance identified under section 5.57(1), unless otherwise identified in this Table

I discussed with the employer the concept of designated substances, which, in other words, is a substance identified under section 5.57(1). A designated substance is one that falls under any one of the following criteria by American Conference of Governmental Industrial Hygienists (ACGIH) or International Agency for Research on Cancer (IARC):
(a) ACGIH A1 or A2, or IARC 1, 2A or 2B carcinogen;
(b) ACGIH reproductive toxin;
(c) ACGIH sensitizer;
(d) ACGIH L endpoint.

Control of the above substances must be implemented to ensure worker exposures are kept As Low As Reasonably Achievable (ALARA); and on that basis, recirculation is not permitted.

The employer stated that they hope to use the laser cutter to cut balsa wood and acrylic.

Balsa wood is a hard wood and this type of wood dust is a carcinogen as per the regulation. Note that historically hard wood is known to be more hazardous than soft wood, but recently IARC has classified all wood dust to be carcinogenic.

Acrylic, otherwise known as poly(methyl methacrylate), is a synthetic polymer of methyl methacrylate. Methyl methacrylate is
considered a sensitizer as per OHSR 5.57(1).

This officer provided the above information but the employer is also to conduct their assessment as to what is the actual contaminant that will be generated by laser cutting the materials the employer is intending to cut.

For example, the argument may be presented that laser cutting wood produces little or no wood dust. Then, the byproducts produced by cutting the type of wood via the specific laser cutting process would have to be assessed as to where it falls within Table 5-1 of the regulation. Smoke from wood that is not burned completely contains a number of chemicals, including carbon monoxide.

Also, as an example, the question may be considered as to what is the byproduct of laser cutting the type of acrylic that this employer intends to cut. Based on limited research and literature review conducted by this officer, it appears that when laser cutting acrylic, most of the decomposed acrylic is converted into its constituent monomers, such as methyl methacrylate (again, this is a sensitizer and no recirculation is permitted).

**USE OF OTHER METAL- AND WOOD-WORKING MACHINERY**

- As part of the meeting I observed two other pieces of equipment within the same workspace (Room 4272): 1) a dual swivel metal cutting band saw, and 2) a vertical band saw.

- I was told that both pieces of equipment were used to cut metal (aluminum or steel) and wood (unsure regarding type of wood), although the frequency of usage is intermittent. See order #1.

- Discussed that if workers are exposed to respiratory hazards, such as wood dust, and particularly if the dust collection system does not effectively control wood dust, workers will need to use appropriate respiratory protection. Workers must be equipped with the right respirator and type of cartridge for the job (typically an elastomeric half-face respirator with P100 cartridges, at a minimum).

- Use only respirators that have been approved by the National Institute for Occupational Safety and Health (NIOSH) and ensure workers are fit tested and trained to use them properly. It is the employer’s responsibility to provide the appropriate respirator for the job, based on a risk assessment and efficiency of other controls such as ventilation. Because the goal here is to protect against wood dust which is known to cause cancer, the minimum requirement is a half-face elastomeric respirator fitted with P100 filter cartridges (which is generally more effective than the disposable kind).

- Workers must also be clean shaven where the respirator seals with the face and fit tested to ensure a proper fit.

- Metal dust generated from the work processes (as well as metalworking fluids used, depending on the type) can also be hazardous to health. Ensure appropriate control measures are implemented as required based on a risk assessment conducted by a qualified person.

**RESOURCES**


If you have any questions regarding this Inspection Report please contact:

Jennifer Shum, MSc.  
Occupational Hygiene Officer  
Prevention Field Services  
WorkSafeBC
For further assistance, the employer is advised to contact the Employer's Adviser's Office (604-713-0303) who will provide employers with assistance in WorkSafeBC matters.

Further information and publications regarding the Workers Compensation Act and OHS Regulation can be found on www.worksafebc.com.

The employer is also advised of the WorkSafeBC prevention information line (604-276-3100 or 1-888-621-SAFE) that is available to answer questions about workplace health and safety, worker and employer responsibilities, or if you are calling to report a workplace accident or incident.
An employer who fails to comply with Part 3 of the *Workers Compensation Act*, the Occupational Health & Safety Regulation, or WorkSafeBC orders may be subject to monetary or other sanctions as prescribed by the *Workers Compensation Act*.

### Orders/Items - Full Details

<table>
<thead>
<tr>
<th>Order/Item No.1</th>
<th>Status: <strong>Outstanding</strong></th>
<th>Cited: <strong>OHS5.55(1)</strong></th>
</tr>
</thead>
</table>

There is a risk to a worker from exposure to a hazardous substance, and the employer has not eliminated the exposure, or has not otherwise controlled it below harmful levels, or below the applicable exposure limit established under section 5.48.

The following were found as evidence of this violation:

Specifically, in Room 4272, this employer has in place two pieces of metal- and wood-working machinery: a dual swivel metal cutting band saw and a vertical band saw. Both were recently used to cut metal (stainless steel and aluminum) and wood (unknown what type). I was told that they were used by students as well as at least one staff member of this employer. A regular shop vacuum was observed to serve as a dust collector for the vertical band saw; this set up is not considered to be an appropriate type of exhaust ventilation for woodworking processes.

At the time of inspection both pieces of equipment / machinery were not in use. However, there was visible wood dust observed on and near the equipment indicating that they had recently been used. On site representatives confirmed that one was used about a month ago and the other was used more recently than that.

As local exhaust ventilation was lacking / observed to be ineffective, I asked whether staff and students are required to wear respirators. The site representative told me that respirators are used for wood cutting but not for metal cutting. Further, there was no criteria or standard as to which type of respirator to use, and the worker representative did not know the requirement for fit testing and was not fit tested for their respirator.

The International Agency for Research on Cancer (IARC) has listed all wood dust as cancer-causing, and as such any exposure is considered harmful exposure and the employer must prevent worker exposures to as low as reasonably achievable. Sawing wood can produce high dust levels. Based on the current set up and work practices, dust levels have not been kept as low as possible.

This is in contravention of the Occupational Health and Safety Regulation Section 5.55(1)

If there is a risk to a worker from exposure to a hazardous substance by any route of exposure, the employer must eliminate the exposure, or otherwise control it below harmful levels and below the applicable exposure limit established under section 5.48 by

(a) substitution,
(b) engineering control, or
(c) administrative control,
(d) personal protective equipment.

Measures to Ensure Compliance:

The employer has confirmed that they have removed the above referenced equipment out of service for the time being, until a risk assessment is done by a qualified person and adequate controls put in place.

The employer must provide me with an action plan with respect to when the risk assessment would be completed.
REFERENCES

In addition to any orders, or other items, and the information provided in the Inspection Notes section in this Inspection Report, the officer may discuss other health and safety issues with the employer arising out of the inspection. The information below sets out the health and safety requirements discussed with the employer, and unless otherwise noted, violations of these requirements were not observed.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Details Discussed</th>
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<tbody>
<tr>
<td>OHS5.70(1)</td>
<td>Discussed this section of the regulation with the employer and worker representative, as well as Table 5-1 referenced in the regulation.</td>
</tr>
<tr>
<td></td>
<td>The use of a ventilation system designed to recirculate contaminants into the work area is restricted by the provisions of Table 5-1.</td>
</tr>
<tr>
<td>OHS8.40(1)</td>
<td>Discussed the requirement for providing a worker with a fit test to determine adequate seal. This applies to elastomeric respirators AND disposable N95s which require an effective seal with the wearer's face.</td>
</tr>
<tr>
<td></td>
<td>A respirator which requires an effective seal with the face for proper functioning must not be issued to a worker unless a fit test demonstrates that the facepiece forms an effective seal with the wearer's face.</td>
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</tbody>
</table>
### Employer # | Mailing Address | Classification Unit # | Operating Location
---|---|---|---
112786 | 8888 UNIVERSITY DR BURNABY BC  V5A 1S6 | 765010 | 014

<table>
<thead>
<tr>
<th>Lab Samples Taken</th>
<th>Direct Readings</th>
<th>Results Presented</th>
<th>Sampling Inspection(s)</th>
<th>Workers onsite during Inspection</th>
<th>Notice of Project Number</th>
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<tbody>
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<tr>
<th>Inspection Report Delivered To</th>
<th>Employer Representative Present During Inspection</th>
<th>Worker Representative Present During Inspection</th>
<th>Labour Organization &amp; Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike Neudorf</td>
<td>Mike Neudorf</td>
<td>Zain Ulabdin</td>
<td></td>
</tr>
</tbody>
</table>

**WorkSafeBC Officer Conducting Inspection**

Jennifer Shum

<table>
<thead>
<tr>
<th>*Inspection Time</th>
<th>*Travel Time</th>
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</thead>
<tbody>
<tr>
<td>3.25 hrs</td>
<td>1.00 hrs</td>
</tr>
</tbody>
</table>

*The time recorded above reflects the inspection time and travel time associated with this inspection report and includes time spent on pre and post-inspection activities. Additional time may be added for subsequent activity.*

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**Right to Review**

Any employer, worker, owner, supplier, union, or a member of a deceased worker’s family directly affected may, within 45 calendar days of the delivery date of this report, in writing, request the Review Division of WorkSafeBC to conduct a review of an order, or the non-issuance of an order, by contacting the Review Division. Employers requiring assistance may contact the Employers’ Advisers at 1-800-925-2233.

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WorkSafeBC values your feedback. To obtain that feedback, an external market research provider may be contacting you to complete a survey.