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 #201917871102A

<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>8888 University Dr</td>
<td>Education Building (Mechanical Room #6): Incident Response</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>
</table>

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**THERE ARE TWO (2) ORDERS OR OTHER ITEMS 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.</th>
<th>Status</th>
<th>Cited</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>✔️ Closed</td>
<td>OHS10.2</td>
</tr>
<tr>
<td>No. 2</td>
<td></td>
<td>OHS10.4(1)</td>
</tr>
<tr>
<td>No. 3</td>
<td></td>
<td>WCA115(2)(e)</td>
</tr>
</tbody>
</table>

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### 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Rescinded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>
INSPECTION NOTES

On Friday, October 11, 2019, WorkSafeBC prevention officer, Yvonne Nann, attended this workplace as a result of WorkSafeBC being notified of an incident that occurred at approximately 11:35 AM on October 11, 2019 to two workers of this employer that resulted in worker injuries.

Upon arrival, I met with the employer representatives and a worker representative. Items discussed included, but were not limited to, the following:

Incident Summary:

It was reported that while removing the mechanical hot water pump #25 from a pipe in the hot water heating system located in Mechanical Room #6, Room 765 of the Education Building, one worker sustained second degree burns to both lower extremities and first degree burns to the right hand. The second worker also sustained burn injuries to the upper extremities. On-site first aid was provided. Emergency services responded and both workers were transported to two separate hospitals for medical treatment.

Site Observations and Discussions:

- The employer representative stated that water in the pipe was shut off and locked out after the occurrence of the incident.

- Upon arrival, two permanent isolation valves on the water pipe are located at the upstream and downstream of pump #25. Pump #25 had been removed from the pipe and was observed to be located on the ground nearby. No specific markings were observed on these isolation valves to determine whether they were secured in the close or open position. As such, Order #1 is issued and closed.

- Drain spigot (lever) or bleed valve was observed to be located near pump #25 and the purpose is to drain water between the two isolation valves. The bleed valve was observed with the lever in the horizontal position and reported to be in the closed position. See section 10.6(2) of the OHSR in the Regulations Referenced section of this Inspection Report.

- The employer representative reported that the hot water closed loop heating system contains HVAC (heating ventilation and air conditioning) water treatment chemicals (e.g., Sodium Molybdate) with water temperature of approximately 95 degrees Celsius at the location of pump #25.

- Equipment that is not de-energized and locked out can unexpectedly start when maintenance work is being done, which can result in serious injuries. De-energization is the removing of energy sources from machinery or equipment. Lockout is the use of lock(s) to render machinery or equipment inoperable or to isolate the energy source in accordance with written procedures. Maintenance is any work performed to keep machinery or equipment in a safe operating condition. This includes installing, repairing, cleaning, and lubricating the equipment, as well as clearing obstructions to the normal flow of material. When asked, no lockout and isolation procedures were available. As such, Orders #2 and #3 are issued.

Incident Investigation:

I discussed with the employer representatives the requirements to conduct a preliminary investigation within 48 hours of the incident as per section 175(2) of the Workers Compensation Act. The employer is required to provide the preliminary incident investigation report to me on or before October 16, 2019.

I also discussed the requirements to conduct a full investigation as per section 176 of the WCA after the preliminary investigation to identify the cause(s) of an incident. This means analyzing the factors to identify its underlying factors. This includes the underlying factors that made the unsafe condition, act or procedures possible and identify health and safety deficiencies in the safety system or other management system.

The employer must ensure that a report of the employer's full incident investigation (EIIR) is prepared in accordance with the
polices of the board of directors (WorkSafeBC) as per Policy Item D10-176-1 (RE: Full Incident Investigation, Report and Follow-up Action). This full EIIR must be submitted to the Board (WorkSafeBC) within 30 days of the occurrence of the incident (i.e., no later than November 18, 2019).

The EIIR may be submitted to WorkSafeBC in any of these three (3) different ways:

1. Using the online report form and uploading it to the EIIR portal - see link below,
2. By fax to 604.276.3247 in the Lower Mainland or toll-free 1.866.240.1434, or
3. By mail to WorkSafeBC, PO Box 5350 Stn Terminal, Vancouver, BC V6B 5L5.

EIIR upload portal weblink:

Next Steps:

Before re-installation of a mechanical water pump and any work related to this specific area of the hot water heating system, we discussed the requirements:

- to have a qualified person inspect and evaluate the condition and effectiveness of the isolation valves for controlling all energy sources (e.g., hot water);
- to develop and effectively implement equipment specific written lockout and isolation procedures; and
- to have workers who are adequately instructed and supervised to perform the designated work.

Document Requested:

The employer is requested to submit the following documentation to me for review no later October 18, 2019:

- Record of new and young worker safety orientation and training for the two workers at this job site.
- Record of worker instruction, education and training on performing pump/motor replacement (i.e., this work activity).
- Equipment specific written lockout and isolation procedures for pump/motor changes.
- Safety Data Sheets for water treatment chemicals (e.g., Molybdate) for the hot water heating system.

Upon completion of the documentation review, a follow-up Inspection Report (IR) may be issued at a later date to address any additional violations if required.

Regulations Referenced:

Please refer to the REFERENCES section of this Inspection Report (IR) for additional health and safety items discussed.

Contact Information:

If you have any questions regarding this report, please contact me.

Yvonne Nann
Occupational Hygiene Officer
Prevention Field Services
e-mail: yvonne.nann@worksafebc.com

Mailing address: PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

More information about health and safety, including the Workers Compensation Act and the Occupational Health and Safety Regulation may be found at the WorkSafeBC website (www.worksafebc.com).
To report a serious accident/incident or major chemical release, call: 604.276.3100 in the Lower Mainland; 888.621.7233 toll-free within B.C. To report after hour health and safety emergencies, call 866.922.4357.
### ORDERS/ITEMS

**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**.**

<table>
<thead>
<tr>
<th>Order/Item No.1</th>
<th>Status: Closed</th>
<th>Cited: OHS10.2</th>
</tr>
</thead>
</table>

The employer representative stated that after the occurrence of the incident, hot water in the pipe of the hot water heating system was shut off and isolated to the pump #25 area. I observed an isolation valve located upstream and another isolation valve downstream to the mechanical hot water pump #25. There are not specific markings or indications to determine if the valves were closed or open to effectively isolate and control the energy source (e.g., hot water with approximate temperature of 95 degrees Celsius). A drain spigot lever or bleed valve was also observed near the mechanical hot water pump #25 that was intended to drain the water between the upstream and downstream isolation valves. This bleed valve was observed to be in the horizontal or closed position during this inspection. In discussions with a worker representative, it was uncertain if the isolation valves were closed or the water was adequately and effectively isolated and control prior to the removal of the mechanical hot water pump #25.

Therefore, the employer did not ensure that the energy source (e.g., hot water) was effectively and adequately isolated and controlled prior to the commencement of work activities on the hot water heating system.

This is in contravention of the Occupational Health and Safety Regulation Section 10.2.

If the unexpected energization or startup of machinery or equipment or the unexpected release of an energy source could cause injury, the energy source must be isolated and effectively controlled.

**Measures to Ensure Compliance:**

The employer must ensure that all energy sources (e.g., hot water, electrical, kinetic, potential, etc.) are adequately and effectively isolated and controlled before the commencement of any work on the equipment, machinery, or system where there is an unexpected energization or startup of machinery or equipment or the unexpected release of an energy source that could cause injury.

This order is coded as "closed" because after the occurrence of the incident, hot water to pump #25 had been isolated, isolation valves have been placed in the closed position, and there was no water leaking from the piping system at the pump #25 location.
## Orders/Items - Full Details

<table>
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<tbody>
<tr>
<td>2</td>
<td>Outstanding</td>
<td>OHS10.4(1)</td>
</tr>
</tbody>
</table>

Two workers of this employer were performing planned maintenance on the hot water close loop heating system in Mechanical Room #6, Room 765 of the Education Building. The work involved the removal and replacement of the mechanical hot water pump #25 in the piping system that contains hot water with approximately temperature of 95 degrees Celsius. An isolation valve was observed to be permanently installed at the upstream of the pipe and another isolation valve was permanently installed at the downstream of pump #25. A drain spigot or bleed valve is also located near pump #25 for the purpose of draining the water between the two isolation valves.

Lockout of energy isolating devices (e.g., isolation valves) was required, and the devices were not secured in the safe position using locks in accordance with the necessary procedures. When asked, lockout and isolation procedures were not available or had not been made readily available to all workers required to work on the machinery or equipment.

This is in contravention of the Occupational Health and Safety Regulation Section 10.4(1).

When lockout of energy isolating devices is required, the devices must be secured in the safe position using locks in accordance with procedures that are made available to all workers who are required to work on the machinery or equipment.

**Measures to Ensure Compliance:**

Without undue delay, the employer must develop machine/equipment specific written lockout and isolation procedures for the replacement of mechanical pumps in the hot water heating system and make these procedures readily available to all workers who are required to work on the machinery or equipment.

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<tbody>
<tr>
<td>3</td>
<td>Outstanding</td>
<td>WCA115(2)(e)</td>
</tr>
</tbody>
</table>

This employer has not provided the workers with adequate information, instruction, training and supervision to this specific equipment or task to ensure the health and safety of those workers in carrying out their work and to ensure the health and safety of other workers at the workplace. This is evidenced by but are not limited to:

- No written equipment specific lockout and isolation procedures had been developed or available prior to the incident to provide workers with information and instruction to perform their tasks.

- Discussions with worker representatives revealed that the performance of this task was from past experience, informal discussions among workers, and no specific guidance on replacing mechanical hot water pumps.

This is in contravention of the Workers Compensation Act Section 115 (2)(e).

An employer must provide to the employer's workers the information, instruction, training and supervision necessary to ensure the health and safety of those workers in carrying out their work and to ensure the health and safety of other workers at the workplace.

**Measures to Ensure Compliance:**

Without undue delay, the employer must ensure that any worker who is required to perform work on this equipment, machine, or hot water heating system at this workplace is provided with adequate and effective instruction, education, and training prior to the commencement of work. To achieve compliance, the employer must provide me with records of worker instruction, education, and/or training on this specific task.
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>
</tr>
</thead>
<tbody>
<tr>
<td>WCA172(1)(a)</td>
<td>The employer representative notified WorkSafeBC of the occurrence of the incident at approximately 12:00 PM on October 11, 2019.</td>
</tr>
<tr>
<td>OHS10.6(2)</td>
<td>Provided to the employer as reference and is related to Order #2. See Inspection Notes.</td>
</tr>
<tr>
<td>WCA173(1)</td>
<td>I discussed with the employer representatives the requirements to conduct a preliminary investigation and a full investigation. The preliminary investigation must be completed within 48 hours. However, a time extension to October 16, 2019 was provided to the employer to complete the preliminary investigation. The full investigation report is to be completed within 30 days of the incident and submitted to WorkSafeBC, which a time extension to November 18, 2019 has been provided to the employer.</td>
</tr>
<tr>
<td>WCA176(2)</td>
<td>The employer has been provided with a time extension to complete the full incident investigation. The full investigation report is required to be submitted to WorkSafeBC no later than November 18, 2019.</td>
</tr>
</tbody>
</table>
**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.

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